

## Attachment to people and to objects in obsessive-compulsive disorder: an exploratory comparison of hoarders and non-hoarders

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People with Obsessive-Compulsive Disorder (OCD) who hoard have been posited to have an atypical emotional attachment to the inanimate objects that they pathologically accumulate, yet this hypothesis has not been formally examined using methodology from the attachment field. To explore this hypothesis, attachment to people and to inanimate objects was assessed in 30 individuals with OCD ( $n = 14$  hoarders,  $n = 16$  non-hoarders). Attachment was assessed using standard measures of interpersonal attachment: the Reciprocal Attachment Questionnaire and the Five Minute Speech Statement. These measures were adapted to evaluate inanimate object attachment as well. The data provides preliminary evidence that individuals who hoard report significantly higher levels of emotional over-involvement (EOI) with inanimate objects and lower levels of EOI with people than non-hoarders. Hoarders also reported significantly higher levels of care-seeking behavior from inanimate objects, and less effectiveness in making use of the inanimate object relationship in comparison to non-hoarders. Hoarding severity was correlated with significantly increased dysfunction in all of these areas. Fear of losing an inanimate object was found to significantly predict hoarding severity. In general, female participants had significantly higher mean ratings of interpersonal attachment insecurity than male participants, regardless of OCD symptomatology. Although limited in sample size and methodology, this study provides preliminary data on attachment style in people with OCD, and the data generate specific hypotheses about attachment in those who compulsively hoard that should be explored in future research.

**Keywords:** hoarding; Obsessive-Compulsive Disorder; OCD; attachment

### Introduction

Compulsive hoarding, currently conceived of as a subtype of Obsessive Compulsive Disorder (OCD), is defined as “(1) the acquisition of, and failure to discard a large number of possessions that appear to be useless or of limited value; (2) living spaces sufficiently cluttered so as to preclude activities for which those spaces were designed; and (3) significant distress or impairment in functioning caused by the hoarding” (Frost & Hartl, 1996, p. 341). Hoarders have been found to have increased psychological disability and unemployment, lower levels of general functioning, worse insight, higher rates of treatment failure, and higher rates of social disability,

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including social withdrawal, family conflict and lower rates of marriage than non-hoarders with OCD (Frost, Steketee, & Williams, 2000a; Frost, Steketee, Williams, & Warren, 2000b; Saxena et al., 2002; Steketee, Frost, Wincze, Greene, & Douglas, 2000). In contrast to the dysfunction reported in hoarders' interpersonal relationships, hoarders' appear to be very connected to inanimate objects (Cermele, Melendez-Pallitto, & Pandina, 2001; Frost, Hartl, Christian, & Williams, 1995; Frost & Hartl, 1996; Steketee & Frost, 2003). Steketee and colleagues (2003) identified emotional connection as one of four central constructs that mediate hoarders' relationship to inanimate objects. However, patterns of attachment to people or to inanimate objects have not been formally studied in hoarders.

Attachment theory may be helpful in understanding hoarders' relationships to people and to inanimate objects. Attachment theory proposes that all individuals seek proximity to an attachment figure as an evolutionary mechanism to maintain safety when threatened, and to have a secure base from which to explore the world (Bowlby, 1969/1982, 1988). Early infant-caregiver attachment experiences are thought to create a working model for attaching to others that endures across the lifespan (Bowlby, 1969/1982; Main, Kaplan, & Cassidy, 1985). Securely attached individuals tend to view their relationships to people as relatively safe and reliable, whereas insecurely attached individuals develop doubts about their self-efficacy, and the intentions or reliability of others. Insecure interpersonal attachment experiences in youth have been associated with OCD in childhood and adolescence (Warren, Huston, Egeland, & Sroufe, 1997). Thus it is reasonable to expect that an insecure interpersonal attachment style may be characteristic of adults with OCD, particularly OCD hoarders. Emotional relationships to inanimate objects have been discussed by theorists such as D.W. Winnicott (1951/1975) in regards to using a transitional object for comfort in childhood when the caregiver is unavailable, but the role of an emotional attachment to inanimate objects in the pathology of an adult clinical population such as hoarders has never been empirically tested, to our knowledge.

This study assessed attachment to people and to inanimate objects in 30 individuals with OCD, about half of whom were compulsive hoarders. Using standard measures in the attachment field, we assessed attachment to people and then adapted these measures to explore attachment to objects. Because attachment has been little studied in OCD and never formally studied in hoarders, our goal was to generate hypotheses that could be tested in future studies. Based on the available literature, we explored two hypotheses: (1) Hoarders will demonstrate more insecure attachment to people than non-hoarders, and (2) Hoarders will report more secure attachment to inanimate objects than non-hoarders.

In the interest of brevity, the words "hoarder" and "non-hoarder" will be used to refer to individuals who do and do not compulsively hoard. The phrase "inanimate object" will be used to refer to the belongings that hoarders and non-hoarders possess. For the purposes of comparison, the word "attachment" will be used in reference to both relationships to people and to inanimate objects. The authors understand that use of the word "object" for belongings may pose some confusion for analytic readers, and readers from a purist tradition in the Attachment field may disagree with using the word "attachment" in reference to inanimate things (Stevenson-Hinde, 2007). However, both of these phrases were used intentionally to propose that hoarders' relationship to inanimate objects may be as significant and meaningful as that of any other (interpersonal) attachment relationship.

## Method

### *Participants*

Thirty participants (16 men and 14 women) between the ages of 20 and 72 ( $M = 46.09$ ,  $SD = 16.12$ ) were recruited from the Anxiety Disorders Clinic at the New York State Psychiatric Institute, or from OCD support groups in New York City. They were paid \$20 (US\$) for their participation. To be included, participants all had to have a principal diagnosis of OCD as per the Structured Clinical Interview for DSM-IV (SCID-IV; First, Spitzer, Gibbon, & Williams, 1996) and be at least 18 years of age. Fourteen participants (6 men and 8 women) had OCD hoarding symptomatology, and 16 participants (10 men and 6 women) had OCD symptomatology other than hoarding, as determined by the Saving Inventory-Revised (Frost, Steketee, & Grisham, 2004) and described in more detail below. All participants provided written consent.

### *Materials*

#### *OCD measurement*

The *Structured Clinical Interview for DSM-IV Axis I Disorders-Patient Version* (SCID-I/P; First et al., 1996) is a clinician-administered diagnostic interview for Axis I psychiatric disorders. The clinician-administered *Yale-Brown Obsessive Compulsive Scale* (Y-BOCS; Goodman et al., 1989a, 1989b) assessed OCD severity (mild, 8–15; moderate, 16–23; severe, 24–31; extreme, 32–40). Individuals with a Y-BOCS score of 10 or higher were included in the study. One participant scored in the mild range, the others scored in the moderate ( $n = 4$ ), severe ( $n = 14$ ), or extreme ( $n = 11$ ) range. The *Yale-Brown Obsessive Compulsive Symptom Checklist* (Y-BOCS-SC; Goodman et al., 1989a, 1989b) lists common obsessions and compulsions. The *Saving Inventory-Revised* (SI-R; Frost et al., 2004) is a self-report measure of clutter, acquisition and difficulty discarding that was used to identify clinically significant hoarding behavior. The SI-R was used to differentiate OCD hoarders from non-hoarders (as per psychometric information provided in Frost, Steketee, & Grisham, 2004, and correspondence with Dr. Gail Steketee, personal communication, March 3, 2007). Based on this information, a cut-off number of 36 on the total score of the SI-R differentiated hoarders ( $n = 14$ ) from non-hoarders ( $n = 16$ ).

#### *Interpersonal attachment measurement*

Interpersonal attachment was assessed using both qualitative and quantitative measures following standard practice in the attachment field (Crowell, Fraley, & Shaver, 1999).

*Reciprocal Attachment Questionnaire* (RAQ; West, Sheldon, & Reiffer, 1987; West & Sheldon-Keller, 1992) was selected because it offers a broad description of various features and patterns of the attachment relationship. As relatively little is known about the attachment relationships of OCD hoarders, the breadth of information provided by the RAQ seemed particularly useful. The RAQ is a self-report measure consisting of 75 items that assesses attachment security (20 items resulting in four subscales), attachment patterns (40 items resulting in four subscales), and features of the attachment relationship (15 items resulting in three

subscales). Each item is scored on a 5-point Likert scale. The RAQ conceptualizes attachment security and insecurity as falling along a spectrum as opposed to within concise categories. Interpersonal attachment security was assessed by summing scores on the four attachment security subscales (i.e., Secure Base, Separation Protest, Proximity Seeking, and Feared Loss) to create an attachment security/insecurity dimension (that spans from 15–75), following the methodology of West and Sheldon-Keller (1992). Higher scores on any of the attachment subscales or the overall attachment security variable indicate greater interpersonal attachment insecurity. Likewise, higher scores on the four subscales assessing attachment patterns (i.e., Angry Withdrawal, Compulsive Care-Giving, Compulsive Care-Seeking, or Compulsive Self-Reliance), or on the three subscales assessing features of the interpersonal attachment relationship (i.e., Availability and Responsiveness, Reciprocity, and Use of the Attachment Figure) indicate a stronger proclivity to that respective attachment pattern or feature of the interpersonal attachment relationship.

*Five-Minute Speech Sample (FMSS; Magana, Goldstein, Karno, Miklowitz, Jenkins, & Falloon, 1986)* evaluates expressed emotion (EE) to provide qualitative information about the tone of the relationship to a human attachment figure. The participant is asked to speak on audiotape for 5 minutes about their attachment figure. Quality of the initial statement, quality of the relationship, the presence of criticism and of emotional over-involvement (EOI) are each scored for degree of EE following a standardized manual (Magana-Amato, 1993). An overall EE rating is then assigned by integrating the scores on the items above in terms of High EE or Low EE using a standard formula. A high-EE profile indicates a risk for insecure attachment.

### *Object attachment measurement*

No measures currently exist to assess attachment to inanimate objects in adults. Thus, the RAQ and FMSS were adapted from their original versions to measure this construct. The findings from these measures should be considered preliminary until further research confirms the reliability and validity of these measures to assess the inanimate object attachment construct. For the RAQ, participants answered questions regarding their attachment to “belongings” in their home instead of an “attachment figure.” Forty-four of the 75 items on the RAQ became nonsensical through this word replacement and were omitted (e.g., items asking about availability and responsiveness, reciprocity, or specific attachment patterns). Seven new items specific to the population of hoarders were added to augment existing subscales in the measurement of inanimate object attachment (see Table 1). Pearson correlation and Cronbach alpha reliability testing of the existing subscales and the new items determined the distribution of the new items (i.e. adequate subscale reliability  $\geq .70$ ). Shown in Table 1, the adapted version of the RAQ (RAQ-A) consists of 38 items that assess inanimate object attachment security (17 items resulting in four subscales), attachment patterns (20 items resulting in four subscales), and use of the attachment relationship to inanimate objects (one item). Cronbach alpha reliability analyses indicated that the RAQ-A has good internal consistency ( $\alpha = .89$ ), and that all of the subscales with the exception of Compulsive Self Reliance ( $\alpha = .39$ ) have adequate to good reliability ( $\alpha$  ranging from 0.73 to 0.85). Scores from the RAQ-A were used to assess attachment security, attachment

Table 1. Cronbach alpha reliability ratings of the RAQ-A subscales.

RAQ-A subscales	Subscale items	Cronbach alpha ratings	
		Excluding new item(s)	Including new item(s)
<i>Attachment security subscales</i>			
Feared loss	It's hard for me to believe that I'll always have my belongings.	$\alpha = .86$	$\alpha = .85$
	I worry about losing my belongings. I have a terrible fear that I will have to get rid of some of my belongings. I'm afraid that I will lose my belongings. <b>Having so many belongings in my life makes things difficult.</b> I have to have my belongings with me or nearby me when I'm upset.	$\alpha = .80$	$\alpha = .80$
Proximity seeking	When I'm upset, the most important thing is to be surrounded by my belongings. I feel lost if I'm upset and my belongings are not around.		No new items were added to this subscale.
	When I am anxious I desperately need to be close to my belongings. The further I am from my belongings, the more insecure I feel.	$\alpha = .81$	$\alpha = .85$
Secure bases	Being with my belongings is my only source of security. <b>I do not know how I would manage if I had to reduce the number of belongings in my life.</b>		
	I feel much more insecure or vulnerable when I am away from my belongings. I feel comfortable going away from my belongings for a few days. <sup>a</sup>	$\alpha = .71$	$\alpha = .74$
Separation protest	<b>The loss of my belongings would be difficult, but not the end of the world<sup>a</sup></b> I feel vulnerable when I am away from my belongings for a few days. I protest strongly when I have to leave my belongings.		

(continued)

Table 1. (Continued).

RAQ-A subscales	Subscale items	Cronbach alpha ratings	
		Excluding new item(s)	Including new item(s)
<i>Attachment patterns:</i>			
Angry withdrawal <sup>b</sup>	I get really angry at myself because I think taking care of my belongings takes up too much time. I can't get on with my work if my belongings are not the way I like them. I put the needs of my belongings before my own. I enjoy taking care of my belongings. I'm not the type to be a "martyr" for my belongings. <sup>a</sup> Taking care of my belongings is not my mission in life. <sup>a</sup> I don't make a fuss over my belongings. <sup>a</sup> I don't sacrifice my own needs in order to take care of my belongings. <sup>a</sup>	N/A	N/A
Compulsive care-giving	<b>It makes me feel better when I spend time taking care of my belongings.</b> <b>My belongings often get in my way.</b> I often feel too dependent on my belongings. <b>The amount of belongings in my home interferes with my life.</b> If I make a decision, I always check to see how it will affect my belongings. I do not need belongings in my life to feel safe. <sup>a</sup> I would be helpless without my belongings. I feel that the hardest thing to do is to stand on my own. I'm quite capable of organizing my own life. <sup>a</sup> <b>I feel like my belongings are taking over my life.</b> I feel it is best not to depend on my belongings. I enjoy being close to my belongings. <sup>a</sup>	$\alpha = .76$	$\alpha = .77$
Compulsive care-seeking	I turn to my belongings for many things, including comfort and reassurance. <sup>a</sup>	$\alpha = .67$	$\alpha = .86$
Compulsive self-reliance		$\alpha = .39$	$\alpha = .39$ No new items were added to this subscale.
<i>Attachment features:</i>			
Use of attachment relationship <sup>b</sup>		N/A	N/A

Note: Items in bold are the new items created to augment existing subscales in the measurement of inanimate object attachment. All items were rated on a 5-point Likert scale.

<sup>a</sup>This item is scored in the reverse.

<sup>b</sup>Reliability analyses were not completed on subscales consisting of only one item.

patterns and use of the attachment relationship to inanimate objects, as described for the RAQ. For the adapted version of the FMSS (FMSS-A), participants were asked to speak for 5 consecutive minutes on audiotape regarding the nature of their relationship to their belongings in their home. Quality of the initial statement, quality of the relationship, the presence of criticism and of emotional over-involvement (EOI) were each scored for degree of EE in the inanimate object narrative, as described for the FMSS.

### ***Procedure***

After a verbal description of the study procedures, those interested in participating completed a brief diagnostic screening and scheduled an in-person test appointment. Written informed consent was obtained at the beginning of each test appointment, followed by the clinician-administered SCID-IV and Y-BOCS, FMSS, and FMSS-A. A questionnaire consisting of demographic questions, the SI-R, the RAQ, and the RAQ-A was completed at the end of the test appointment.

### ***Data analysis***

Between-group differences (for demographic and clinical characteristics) were assessed using two-tailed, independent samples *t*-tests for continuous variables, chi square analyses for categorical variables, and two-way between-groups analyses of variance. Independent sample *t*-tests were used to compare hoarders to non-hoarders on ratings of attachment security, patterns and relationship features on the RAQ and RAQ-A. Chi-square analyses evaluated the degree of EE in the initial statement, quality of the attachment relationship, criticism and overall emotional involvement via FMSS and FMSS-A data. A Pearson correlation matrix assessed relationships between OCD severity, hoarding severity, overall attachment security ratings, and the RAQ and RAQ-A subscales. A standard multiple regression evaluated attachment security subscales and hoarding severity. Logistic and multinomial regression analyses controlled for the effect of gender while assessing hoarding in FMSS and FMSS-A data. Hierarchical regression analyses controlled for gender while assessing hoarding in interpersonal and inanimate object attachment relationship security, patterns and features on the RAQ and RAQ-A. Statistical significance for all analyses was determined at an alpha of 0.05. Given the exploratory nature of the study, corrections were not made for multiple comparisons.

## **Results**

### ***Demographic and clinical findings***

Demographic and clinical features of the participants (categorized by hoarders versus non-hoarders) are shown in Table 2. Hoarders were more likely to be female and to be unemployed, although these differences did not reach significance in this small sample. No significant differences in current OCD severity, or number of lifetime or current co-morbid DSM-IV Axis I disorders were found between hoarders and non-hoarders. However, the lifetime prevalence of Binge Eating Disorder was found to be significantly higher in hoarders than non-hoarders,  $\chi^2(1, N = 30) = 4.52, p = .033$ . The most common current co-morbid diagnoses are Binge Eating Disorder (hoarders = 4, non-hoarders = 0), and mood disorders

Table 2. Demographic and clinical comparisons between hoarders and non-hoarders.

	Hoarders ( <i>n</i> = 14)	Non-hoarders ( <i>n</i> = 16)	Test value	<i>p</i> value
Age: mean*	51.29 (17.06)	41.55 (14.24)	$t = -1.704$	.356
Gender**			$\chi^2 = 2.08$	.149
Female	64.3%	31.3%		
Male	35.7%	68.8%		
Highest level of education**			$\chi^2 = 2.65$	.619
High school diploma or less	7.1%	0%		
Some college or professional school	42.9%	25%		
College or professional school degree	21.4%	31.3%		
Some post-grad school	14.3%	18.7%		
Post-graduate degree	14.3%	25%		
Employed currently**	42.9%	81.3%		
Marital status**			$\chi^2 = 3.23$	.072
Single	57.1%	68.8%	$\chi^2 = 8.04$	.090
Married	7.1%	31.3%		
Divorced	21.4%	0%		
Widowed	7.1%	0%		
Separated	7.1%	0%		
Y-BOCS OCD severity*	30.07 (3.97)	28.25 (7.22)	$t = -.839$	.409
Average no. of CURRENT co-morbid diagnoses*	1.50 (1.23)	1.88 (1.54)	$t = .717$	.480
Average no. of LIFETIME co-morbid diagnoses*	2.79 (1.48)	2.31 (1.78)	$t = -.786$	.439
LIFETIME binge eating disorder**	35.7%	0%	$\chi^2 = 4.52$	.033
SI-R*				
Total score	57.79 (12.47)	22.63 (10.15)	$t = -8.513$	.000
Clutter subscale	23.86 (7.78)	6.19 (5.47)	$t = -7.267$	.000
Difficulty discarding/saving subscale	19.50 (4.54)	7.94 (5.57)	$t = -6.177$	.000
Acquisition subscale	15.86 (4.74)	4.25 (3.45)	$t = -7.736$	.000

Note: This table represents differences between hoarders and non-hoarders using data from independent sample *t*-tests and chi-square analyses. Significant differences were evaluated at  $p < .05$ . Y-BOCS = Yale-Brown Obsessive Compulsive Scale. SI-R = Saving Inventory, Revised.

\*Mean (standard deviation).

\*\*Percentage.



(Major Depressive Disorder [single, recurrent, melancholic, atypical] and Dysthymia: hoarders = 6, non-hoarders = 5). The most common lifetime co-morbid diagnoses are Binge Eating Disorder (hoarders = 5, non-hoarders = 0), mood disorders (Major Depressive Disorder [recurrent and single]: hoarders = 8, non-hoarders = 5), and Alcohol Abuse or Dependence (hoarders = 7, non-hoarders = 4). As expected, the average SI-R total score was significantly higher for hoarders in comparison to non-hoarders,  $t(28) = -8.51, p < .000$ . Significant differences between the mean scores of hoarders and non-hoarders were also observed on all of the SI-R subscales: Clutter [ $t(28) = -7.27, p < .000$ ], Difficulty Discarding/Saving [ $t(28) = -6.18, p < .000$ ], and Acquisition [ $t(28) = -7.74, p < .000$ ].

### ***Interpersonal attachment: hoarders versus non-hoarders***

Every participant reported having an interpersonal attachment relationship in his/her life. Family members or a spouse/romantic partner (i.e., either current or past) were listed as the attachment figure in relatively equal numbers by hoarders (Family = 35.7%, Partner = 35.7%) and non-hoarders (Family = 37.6%, Partner = 43.8%).

### ***Reciprocal attachment questionnaire***

Gender had a large effect on interpersonal attachment security ratings (partial eta squared = .27). Female participants ( $M = 54.29, SD = 13.35$ ) had significantly higher mean ratings of interpersonal attachment insecurity than male participants ( $M = 40.19, SD = 10.91; F(1,26) = 9.37, p = .005$ ), regardless of OCD symptomatology. A hierarchical linear regression was computed to assess the impact of hoarding on attachment relationship patterns, features and security while controlling for gender (see Table 3). Only gender was found to account for a significant amount of the variance (26.6%) in predicting interpersonal attachment security ratings, whereas the contribution of hoarding was non-significant,  $F(1,28) = 10.12, p = .004$ . Gender was also found to account for a significant amount of the variance in predicting attachment security subscales Proximity Seeking (40%;  $F(1,28) = 18.69, p = .000$ ), Secure Base (24.8%;  $F(1,28) = 9.24, p = .005$ ), Separation Protest (14.8%;  $F(1,28) = 4.88, p = .035$ ), and the attachment pattern Compulsive Care-Seeking (32.1%;  $F(1,28) = 13.27, p = .001$ ), but hoarding was non-significant. Neither gender nor hoarding significantly predicted any of the remaining RAQ security, pattern or relationship feature subscales.

### ***Five minute speech statement***

Wald statistics from a logistic regression indicated that hoarding categorization,  $\chi^2(1, N = 30) = 3.554, p = .059$ , and gender,  $\chi^2(1, N = 30) = 3.554, p = .059$ , were each found to have a marginally significant effect in predicting interpersonal emotional over-involvement (see Table 3). The odds ratio of gender (6.51) indicated that being female predicts an increase in interpersonal emotional over-involvement in comparison to males. In terms of hoarding categorization, the odds ratio (.15) indicated that the presence of hoarding symptomatology appears to predict a decrease in interpersonal emotional over-involvement in comparison to non-hoarders. Logistic and multinomial regression analyses of interpersonal FMSS

Table 3. Interpersonal attachment ratings as predicted by gender and hoarding categorization.

Measure RAQ <sup>1</sup> :	Mean ( <i>SD</i> )			<i>B</i> ( <i>SE</i> )			$\beta$	
	Hoarders ( <i>n</i> = 14)	Non-hoarders ( <i>n</i> = 16)	$R^2$	$\Delta R^2$	Gender	Hoarding	Gender	Hoarding
Attachment security subscales:								
Separation protest	14.00 (4.56)	13.69 (4.30)	0.04	0.01	1.10 (1.61)	0.94 (1.61)	0.13	0.11
Fearful loss	12.93 (4.86)	11.69 (3.91)	0.40	0.00	5.77 (1.36)	-0.40 (1.36)	0.64**	-0.05
Proximity-seeking	10.79 (3.73)	9.81 (3.39)	0.25	0.00	3.66 (1.26)	0.16 (1.26)	0.49**	0.02
Secure base	9.43 (3.65)	9.06 (4.67)	0.15	0.00	3.41 (1.61)	0.08 (1.61)	0.38*	0.01
Overall attachment security rating	47.14 (13.43)	44.25 (12.81)	0.27	0.00	13.95 (4.60)	0.78 (4.60)	0.51**	0.03
Attachment pattern subscales:								
Angry withdrawal	22.57 (7.80)	24.06 (7.43)	0.08	0.00	4.44 (2.86)	-0.89 (2.85)	0.29	-0.06
Compulsive care-giving	30.43 (5.39)	28.31 (6.80)	0.08	0.04	2.23 (2.32)	2.39 (2.32)	0.18	0.19
Compulsive care-seeking	25.36 (6.25)	24.38 (4.88)	0.32	0.00	6.20 (1.78)	0.20 (1.78)	0.56**	0.02
Compulsive self-reliance	22.36 (4.34)	24.19 (6.48)	0.06	0.00	-2.65 (2.10)	-0.32 (2.10)	-0.24	-0.03
Attachment relationship features:								
Availability & responsiveness	10.43 (3.65)	13.50 (5.07)	0.03	0.03	-0.35 (1.76)	-1.51 (1.76)	-0.04	-0.20
Reciprocity <sup>2</sup>	8.21 (2.01)	10.75 (3.87)	0.13	0.10	-0.73 (1.28)	-2.23 (1.28)	-0.12	-0.32
Use of the attachment figure	10.14 (3.23)	11.88 (4.57)	0.04	0.00	-1.46 (1.56)	-0.50 (1.56)	-0.18	-0.06
Percentage								
Measure	Hoarders ( <i>n</i> = 14)	Non-hoarders ( <i>n</i> = 16)	Wald $\chi^2$			Odds Ratio		
FMSS (EE ratings):			Gender	Hoarding	Gender	Hoarding	Gender	Hoarding
Initial statement:								
Negative	14.3%	12.5%	-0.57	-0.30	0.44	0.57	0.10-3.09	0.14-3.94
Neutral	57.1%	62.5%						
Positive	28.6%	25%						
Relationship:								
Negative	14.3%	18.8%	-0.05	1.40	0.00	0.95	0.12-7.74	0.36-45.02
Neutral	57.1%	62.5%	-0.47	-0.20	0.27	0.62	0.10-3.75	0.14-4.95
Positive	28.6%	18.8%						

(continued)

Table 3. (Continued).

Measure	Percentage		B		Wald $\chi^2$		Odds Ratio		95% CI	
	Hoarders (n = 14)	Non-hoarders (n = 16)	Gender	Hoarding	Gender	Hoarding	Gender	Hoarding	Gender	Hoarding
FMSS (EE ratings):										
Overall critical rating:										
Low	64.3%	37.5%	-0.26	-0.59	0.09	0.46	0.77	0.56	0.14-4.20	0.10-3.03
Borderline	21.4%	37.5%	0.29	1.34	0.07	1.07	1.33	3.82	0.15-12.13	0.30-48.50
High	14.3%	25%								
Overall emotional over-involvement: <sup>3</sup>										
Low	50%	87.5%	1.87	-1.87	3.55*	3.55*	6.51	0.15	0.93-45.67	0.02-1.08
Borderline	14.3%	0%								
High	35.7%	12.5%								
Final EE profile:										
Low	42.9%	56.3%	0.56	0.11	0.55	0.02	1.75	1.11	0.40-7.70	0.26-4.91
High	57.1%	43.8%								

Note: RAQ = Reciprocal Attachment Questionnaire. FMSS = Five Minute Speech Sample. EE = Expressed Emotion. Mean (SD) and percentages in this table represent differences between hoarders and non-hoarders using data from independent sample *t*-tests and chi-square analyses. The RAQ data was analyzed using hierarchical regressions (Step II: Gender + Hoarding data listed), and the FMSS data was analyzed using logistic and multinomial regressions.

<sup>1</sup>Higher scores indicate higher rates of attachment insecurity (on the attachment security subscales or overall rating), or a stronger proclivity for the respective attachment pattern or feature being assessed.

<sup>2</sup>*t*(28) = 2.20, *p* = .036.

<sup>3</sup> $\chi^2(2, N = 30) = 6.35, p = .042$ .

\**p* ≤ .05.

\*\**p* ≤ .01.

ratings onto gender and hoarding categorization indicated that neither gender nor hoarding account for a significant amount of the variance in predicting the initial statement (negative/neutral vs. positive), the interpersonal relationship rating (negative vs. positive), level of criticism (low, borderline, high), or the final EE profile (low vs. high) for interpersonal relationships (see Table 3). However, wide confidence intervals indicate that these estimations of hoarding effect on interpersonal EE ratings (while controlling for gender) are less precise than is ideal. Future research is needed to confirm these findings.

### ***Inanimate object attachment: hoarders versus non-hoarders***

All but three participants reported some level of attachment to inanimate objects (i.e., 2 non-hoarders, and 1 hoarder who stated that the need to find a use for all objects prevents him from discarding anything). When asked to list the objects that they are attached to in their homes, hoarders listed significantly more paper products (e.g., newspapers, files, mail, books and magazines) than non-hoarders,  $t(28) = 2.80$ ,  $p = .009$ . As expected, hoarders also listed significantly more general clutter (including unsorted items, collections, garbage/recycling and miscellaneous broken objects) than non-hoarders,  $t(28) = 4.48$ ,  $p < .000$ . No significant differences were reported for furniture/household belongings, clothing or other personal items. Hoarders and non-hoarders differed in the quality of their attachment to these inanimate objects.

### ***Reciprocal attachment questionnaire-adjusted***

A hierarchical linear regression was computed to assess the impact of hoarding on inanimate object attachment relationship patterns, features and security while controlling for gender. Hoarding accounted for a significant amount of the variance (17.7%) in predicting inanimate object attachment security ratings, and there was no effect of gender (see Table 4;  $F(2,27) = 3.23$ ,  $p = .05$ ). This finding appears to have been driven by the fact hoarding accounted for a significantly large amount of variance (39.9%) in predicting the attachment security variable Feared Loss,  $F(2,27) = 9.02$ ,  $p = .001$ . Comparisons between hoarders and non-hoarders indicated that hoarders had higher levels of relationship insecurity regarding the loss of objects than non-hoarders,  $t(28) = -3.31$ ,  $p = .003$ . Hoarding was also found to account for a significant amount of the variance in predicting the attachment pattern Compulsive Care-Seeking (51.7%;  $F(2,27) = 14.56$ ,  $p < .001$ ), and Use of the Attachment Relationship feature (24%;  $F(2,27) = 4.28$ ,  $p = .024$ ), but gender was non-significant. Comparisons between hoarders and non-hoarders indicated that hoarders were more prone to seek comfort or care in their relationship to inanimate objects than non-hoarders, as shown by significantly higher scores on the Compulsive Care-Seeking attachment pattern subscale,  $t(21) = -4.44$ ,  $p < .000$ . However, hoarders were less able to make use of their attachment to inanimate objects in times of need than non-hoarders, as shown by significantly lower scores on the Use of the Attachment Figure subscale,  $t(28) = 2.34$ ,  $p = .028$ . Neither gender nor hoarding significantly predicted any of the remaining RAQ-A security or pattern subscales. These findings indicate that gender does not have a confounding effect on the differences in attachment to inanimate objects observed between hoarders and non-hoarders.

Table 4. Inanimate object attachment ratings as predicted by gender and hoarding categorization.

Measure	Mean (SD)			B (SE)			β	
	Hoarders (n = 14)	Non-hoarders (n = 16)	ΔR <sup>2</sup>	Gender	Hoarding	Gender	Hoarding	
<b>Attachment security subscales:</b>								
Feared loss <sup>2</sup>	16.86 (3.59)	11.56 (4.94)	0.40	-1.64 (1.54)	6.53 (1.54)	-0.16	.64**	
Proximity-seeking	8.79 (3.17)	7.19 (3.35)	0.12	-1.44 (1.21)	2.06 (1.21)	-0.22	0.31	
Secure base	8.50 (2.82)	7.63 (3.85)	0.11	-1.34 (1.24)	1.20 (1.24)	-0.20	0.30	
Separation protest	8.21 (2.81)	9.19 (4.05)	0.02	-1.01 (1.34)	0.49 (1.34)	-0.15	0.07	
Overall attachment security rating	42.36 (10.31)	35.56 (14.44)	0.19	-5.43 (4.55)	11.08 (4.55)	-0.21	0.43*	
<b>Attachment pattern subscales:</b>								
Angry withdrawal	2.79 (.80)	2.31 (1.30)	0.05	-0.02 (0.42)	0.48 (0.42)	-0.01	0.22	
Compulsive care-giving	20.43 (4.97)	20.00 (5.30)	0.03	1.37 (1.97)	0.87 (1.97)	0.14	0.09	
Compulsive care-seeking <sup>3</sup>	27.64 (3.32)	18.25 (7.69)	0.52	-2.92 (2.09)	11.24 (2.09)	-0.19	0.73**	
Compulsive self-reliance	6.43 (1.83)	7.19 (1.97)	0.11	-0.62 (0.68)	-0.95 (0.68)	-0.17	-0.26	
<b>Attachment relationship features:</b>								
Use of the attachment figure <sup>4</sup>	2.36 (1.22)	3.44 (1.32)	0.24	0.19 (0.45)	-1.31 (0.45)	0.07	-.50**	
<b>Percentage</b>								
		<b>B</b>		<b>Wald χ<sup>2</sup></b>		<b>Odds Ratio</b>		
Measure	Hoarders (n = 14)	Non-hoarders (n = 16)	Gender	Hoarding	Gender	Hoarding	Gender	Hoarding
FMSS (EE ratings):								
Initial statement:								
Negative	0%	0%	1.22	-1.22	0.96	0.96	0.30-39.13	0.03-3.39
Neutral	78.6%	93.8%						
Positive	21.4%	6.3%						
Relationship:								
Negative	0%	0%	0.96	-0.96	1.41	1.41	0.53-12.78	0.08-1.87
Neutral	50%	75%						
Positive	50%	25%						

(continued)

Table 4. (Continued).

Measure	Percentage		B		Wald $\chi^2$		Odds Ratio		95% CI	
	Hoarders (n = 14)	Non-hoarders (n = 16)	Gender	Hoarding	Gender	Hoarding	Gender	Hoarding	Gender	Hoarding
FMSS (EE ratings):										
Overall critical rating: <sup>5</sup>										
Low	100%	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Borderline	0%	0%								
High	0%	0%								
Overall emotional over-involvement: <sup>6</sup>										
Low	21.4%	68.8%	-0.49	-0.86	0.32	0.96	0.61	0.42	0.11-3.33	0.08-2.36
Borderline	42.9%	25%								
High	35.7%	6.3%	-1.02	-2.40	0.84	3.63*	0.36	0.09	0.04-3.20	0.01-1.07
Final EE profile:										
Low	64.3%	93.8%	0.77	-2.01	0.57	2.87	2.17	0.13	0.29-16.09	0.01-1.40
High	35.7%	6.3%								

Note: RAQ-A = Reciprocal Attachment Questionnaire, adapted version. FMSS = Five Minute Speech Sample, adapted version. EE = Expressed Emotion. Mean (SD) and percentages in this table represent differences between hoarders and non-hoarders using data from independent sample *t*-tests and chi-square analyses. The RAQ data was analyzed using hierarchical regressions (Step II: Gender + Hoarding data listed), and the FMSS data was analyzed using logistic and multinomial regressions.

<sup>1</sup>Higher scores indicate higher rates of attachment insecurity (on the attachment security subscales or overall rating), an increased capacity to use the attachment relationship, or a stronger proclivity for the respective attachment pattern assessed.

<sup>2</sup>*t*(28) = -3.31, *p* = .003.

<sup>3</sup>*t*(28) = -4.23, *p* = .000.

<sup>4</sup>*t*(28) = 2.33, *p* = .028.

<sup>5</sup>A regression analysis was not computed due to the fact that all subjects rated zero criticism in their relationship to inanimate objects.

<sup>6</sup> $\chi^2(2, N = 30) = 8.04, p = .018$ .

\**p* ≤ .05.

\*\**p* ≤ .01.

*Five minute speech statement–adjusted*

A multinomial regression indicated that hoarding categorization was found to have a marginally significant effect in predicting high levels of emotional over-involvement in inanimate objects but was non-significant for low or borderline EOI, and gender was non-significant,  $\chi^2(1, N = 30) = 3.63, p = .057$ . Odds ratio analyses (.09) indicated that being a non-hoarder significantly predicted a decrease in emotional over-involvement in the inanimate object in comparison to hoarders. Additional comparisons between hoarders and non-hoarders indicated that nearly 70% of non-hoarders had low and only 6.3% had high EOI, whereas 21.4% of hoarders had low and 36% had high EOI in their relationship to inanimate objects (see Table 4). Logistic and multinomial regressions of FMSS-A ratings onto gender and hoarding categorization indicated that neither gender nor hoarding accounted for a significant amount of the variance in predicting the initial statement (negative/neutral vs. positive), inanimate object relationship rating (negative/neutral vs. positive), or the final EE profile (high vs. low) for inanimate objects. All participants rated low criticism in their relationship to inanimate objects, thus it is not clear to what degree either gender or hoarding categorization had on this rating.

*Posthoc correlations*

OCD severity, as measured by the Y-BOCS, was significantly correlated with several RAQ subscales, but not with RAQ-A subscales. In particular, OCD severity was significantly and positively correlated with several of the attachment security subscales [Secure Base ( $r = .42, p = .021$ ), Feared Loss ( $r = .53, p = .002$ )], the overall attachment security rating ( $r = .46, p = .010$ ), and two interpersonal attachment patterns [Compulsive Care-Seeking ( $r = .51, p = .004$ ) and Angry Withdrawal ( $r = .39, p = .034$ )]. Thus, higher levels of OCD symptom severity (for hoarders and non-hoarders) was correlated with higher rates of interpersonal attachment insecurity and potentially maladaptive patterns of relating.

Hoarding severity, as measured by the SI-R, was correlated with the RAQ Reciprocity interpersonal attachment subscale ( $r = -.38, p = .036$ ), suggesting that as hoarding severity increases, confidence in the reciprocity of interpersonal attachment relationships decreases. Hoarding severity was also significantly correlated with several RAQ-A subscales. Specifically, it was positively correlated with the Feared Loss inanimate object attachment security subscale ( $r = .53, p = .003$ ) and with the Compulsive Care-Seeking inanimate object attachment pattern ( $r = .63, p < .000$ ), but negatively correlated to the Use of the Attachment Figure subscale for inanimate objects ( $r = -.40, p = .028$ ). The Feared Loss subscale for inanimate object attachment was the only subscale to significantly predict hoarding severity ( $\beta = .67, t(21) = 3.225, p = .004$ ) and it explained a significant proportion of the variance in hoarding severity, adjusted  $R^2 = .45, F(8,21) = 3.96, p = .005$ . Thus, as hoarding severity increases, the hoarder is more likely to seek comfort from the inanimate object, is less effective in making use of the relationship to objects to meet his/her attachment needs, and is more likely to have a relationship to the inanimate object characterized by insecurity.

**Discussion**

This is the first study to examine attachment relationships in adults with OCD using validated instruments from the attachment field, the RAQ and the FMSS. It is also

the first study to explore whether those who compulsively hoard demonstrate more insecure attachment to people and more secure attachment to objects. This study is limited by its small sample, its use of adapted measures to explore attachment to objects (since no validated instrument yet exist), and the lack of a matched healthy sample. At the same time, the findings, although preliminary, suggest important directions for future study.

First, we found that every person with OCD endorsed an attachment to people, and all but three participants endorsed an attachment to inanimate objects. With regard to interpersonal attachment, we found that individuals with OCD (both hoarders and non-hoarders) scored on average mildly higher on all RAQ subscales in comparison to psychiatric populations (consisting of Axis II diagnoses, pathological grief and eating disorders; Aronson et al., 2006; Ward, Ramsay, Turnbull, Benedettini, & Treasure, 2000), and much higher on all RAQ subscales in comparison to non-psychiatric populations (Calabrese, Farber, & Weston, 2005; West, Spreng, Casares-Knight, Rose, & Leiper, 1998). These findings support prior findings correlating anxiety disorders in adolescence and adulthood with higher ratings of insecure attachment to people (Fonagy et al., 1996). We also found that greater OCD symptom severity was positively associated with higher levels of interpersonal attachment insecurity and potentially maladaptive patterns of relating to people. Because ours is the first attempt to explore attachment to inanimate objects in OCD, we cannot compare our findings with those from psychiatric and non-psychiatric populations.

Second, contrary to our expectation, hoarders in this sample did not demonstrate more insecure attachment to people than non-hoarders. Instead, we found that gender had a significant effect in terms of interpersonal attachment ratings. When the effect of gender was controlled, we found that gender as opposed to OCD symptomatology (hoarder vs. non-hoarder) predicts interpersonal attachment security, and ratings on the compulsive care-giving attachment pattern. In general, female participants had significantly higher mean ratings of interpersonal attachment insecurity than male participants regardless of OCD symptomatology. Hoarding and gender had a marginally significant effect in predicting emotional over-involvement in the interpersonal attachment relationship. Being female was found to predict an increase in interpersonal emotional over-involvement in comparison to being male, and hoarding symptomatology was found to predict a decrease in interpersonal emotional over-involvement (EOI) in comparison to non-hoarders. In terms of EOI, comparisons between hoarders and non-hoarders indicated that overall hoarders endorsed more variable levels of interpersonal EOI (from low to high), whereas the majority of non-hoarders endorsed low EOI (see Table 3). This finding offers preliminary evidence that individuals with hoarding symptomatology significantly differ from non-hoarders in terms of their emotional involvement in interpersonal relationships. However, wide confidence intervals indicate that these estimations are less precise than is ideal, and need to be confirmed with future research.

Available data do not support a gender difference in interpersonal attachment ratings in healthy controls (van IJzendoorn & Bakermans-Kranenburg, 1996). Attachment ratings in a psychiatric population by gender was not found in the attachment literature, however the literature does suggest that attachment insecurity is more prevalent than attachment security in psychiatric populations (Fonagy et al., 1996; van IJzendoorn & Bakermans-Kranenburg, 1996). Future research is needed



to study attachment ratings by gender in a psychiatric population. An exploration of gender differences within the hoarding phenotype also merits future study, as per gender differences in hoarders recently observed by Wheaton and colleagues (2008).

Interesting to note, post-hoc comparisons found that approximately 50% of individuals with OCD in this study (35.7% hoarders, 12.5% non-hoarders) had interpersonal attachment relationships characterized by high levels of emotionality. While not a significant difference between OCD groups, this finding has potential clinical implications in that high EE levels in interpersonal relationships have been found to correlate with illness relapse in depressed (Hooley, 1986) and schizophrenic populations (Vaughn & Leff, 1976), and to exacerbate OCD symptomatology (Bressi & Guggeri, 1996; Chambless & Steketee, 1999; Emmelkamp, Kloek, & Blaauw, 1992; Steketee, 1993).

Finally, hoarders in our sample did not report significantly higher levels of overall secure attachment to inanimate objects than non-hoarders. Hoarders did endorse more high levels of emotional over-involvement with inanimate objects than non-hoarders, which is one indicator of an insecure attachment relationship. Hoarders also demonstrated significantly more fear of losing their inanimate objects, more compulsive care-seeking, and less ability to use their inanimate objects in times of need. As hoarding severity increased, these attachment behaviors and insecurities also increased. As would be expected from the literature (Frost & Gross, 1993; Frost & Hartl, 1996), fear of losing an inanimate object was found to significantly predict hoarding severity. Tones of identification, frustration, confusion and devotion evident in hoarders' qualitative statements indicated a strong, albeit often ambivalent, emotional attachment to inanimate objects. An additional finding that distinguished hoarders from non-hoarders is that hoarders were significantly more likely to have a binge eating disorder in the course of their lifetime than non-hoarders. This finding is consistent with hoarding literature indicating significant comorbidity between OCD hoarding and eating disorders (Fontenelle, Mendlowicz, Soares, & Versiani, 2004).

This study had several important limitations. First, the sample was small ( $N = 30$ ), limiting the statistical power to detect small differences especially with categorical variables. Second, although the measures for interpersonal attachment are standard in the field, inanimate object attachment measures were adapted for this study as there are no standard measures to assess this construct. One problem we encountered is the difficulty of finding appropriately worded items that can assess inanimate object attachment separately from hoarding symptoms and their repercussions. Future research will need to confirm the reliability and validity of our measures, and determine what type of inanimate object attachment style is normative in clinical and non-clinical populations. Third, a single rater (blind to participant identity, but not to the study hypotheses) scored all of the FMSS and FMSS-A data. Although the FMSS scoring was done according to a standard manual, the possibility of biased ratings cannot be excluded. Moreover, the FMSS was originally developed to assess EE in the relatives of psychiatric patients, not in the patients themselves.

As a result of these limitations, the study findings should be considered preliminary until confirmed by further research. At the same time, the data suggest that hoarders may have a problematic attachment style to both people and inanimate objects, given their contrasting levels of emotional over-involvement with both. Future studies of psychiatric populations are needed to better understand the

implications of emotional over-involvement in different types of relationships, as well as the role of gender and attachment ratings in this population.

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