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Activities of Daily Living Scale in Hoarding Disorder

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Abstract

Research on hoarding over the last two decades has shown that hoarding disorder appears to be a distinct disorder that burdens the individual, the community and the families of people who hoard. Although hoarding clearly interferes with the daily functioning, especially in the context of extensive clutter, no validated measures of this interference have been developed. The present research examined the psychometric properties of the Activities of Daily Living in Hoarding scale (ADL-H) in two large samples of individuals with significant hoarding problems, one identified through the internet (n=363) and a second through clinical diagnostic interviews (n=202). The ADL-H scale test-retest (1–12 weeks), interrater and internal reliabilities ranged from 0.79 to 0.96. Convergent and discriminant validity were established through analyses of correlational data collected for measures of hoarding severity and non-hoarding psychopathology (obsessive compulsive disorder [OCD], mood state, attention deficit, and perfectionism/uncertainty), as well as through comparisons of scores among individuals with hoarding, hoarding plus OCD, OCD without hoarding, and community controls. The ADL-H scale appears to have strong psychometric properties and to be useful in clinical and research settings. Suggestions are made for expansion of the scale, and study limitations are noted.

Keywords

hoarding; clutter; activities of daily living; assessment

Hoarding disorder, the latest addition to the DSM-5 (Mataix-Cols, Billotti, Fernández de la Cruz & Nordsletten, 2012), is defined by difficulty discarding possessions because of strong urges to save items; accumulation of clutter (at home, workplace or elsewhere) preventing normal use of the space; and clinically significant distress or impairment in functioning due to hoarding. Hoarding is typically associated with excessive acquiring as well. Prevalence rates range from 2.3% in the UK (Iervolino et al., 2009) to 3.7% (5.3% weighted) in the US (Samuels et al., 2008) and 4.6% in Germany (Mueller, Mitchell, Crosby, Glaesmer, & de Zwaan, 2009).

Hoarding interferes with functioning in a variety of ways including loss of job, medical disability, and family dysfunction (Tolin, Frost, Steketee, & Fitch, 2008a; Tolin, Frost,

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Steketee, Gray, & Fitch, 2008b), and in severe cases, fires have resulted in death (Frost, Steketee, & Williams, 2000). Health officials report that people with hoarding disorder struggle to keep their home clutter-free even after court-ordered cleaning. Hoarding complaints often involve multiple agencies and a single clean out can cost tens of thousands of dollars (Frost et al., 2000). In addition, family members of people who hoard report experiencing significant childhood distress related to severe clutter, embarrassment about their home and rejection of the hoarding family member (Tolin et al., 2008a). Overall, hoarding disorder affects not only the community and the family of people who hoard, but also the individual's ability to function normally in the home.

Several standardized measures focus on hoarding symptoms (e.g., Saving Inventory-Revised (SI-R) by Frost, Steketee, & Grisham, 2004; Hoarding Rating Scale (HRS) by Tolin, Frost, & Steketee, 2010). These instruments provide general ratings of hoarding severity, but do not inquire about the specific nature of the interference in daily living caused by hoarding. For example, the SI-R items include "How much clutter in your home interferes with your social, work or everyday functioning?" and "To what extend does clutter in your home cause you distress?" Similarly, HRS items ask "Because of the clutter or number of possessions, how difficult is it for you to use the rooms in your home?" The Clutter Image Rating (Frost, Steketee, Tolin, & Renaud, 2008) is a pictorial measure of clutter severity that requires respondents to choose the best matches to their own rooms from among a set of 9 photos of an increasingly cluttered living room, bedroom, and kitchen. The CIR provides an index of clutter volume in different areas of the home, but does not address the functional impairment clutter provokes. Thus, these instruments provide general assessments of hoarding symptoms, but provide limited information about the impact of hoarding on specific everyday activities (e.g., can you eat at your kitchen table?). Such specific information is valuable for designing treatment (e.g., which locations and activities to prioritize) and monitoring progress.

A related measure, the Home Environment Index (HEI), captures the extent of squalor or unsanitary conditions in the home (Rasmussen, Steketee, Brown, Frost, & Tolin, submitted). Squalid conditions characterize a relatively small percentage of hoarded homes, but can have very serious consequences (Frost et al., 2000). Although the HEI measures a specific form of impairment, it is not a central feature and characterizes only a small number of hoarding sufferers.

There have been several attempts to measure specific activity interference in hoarding, particularly in the elderly where such difficulties can have serious consequences. In an interview study of hoarding in the elderly, Kim, Steketee and Frost (2001) asked participants about restriction of movement in the house, access to kitchen utilities (stove, refrigerator, sink) and personal hygiene but provided no formal measure.Frost et al. (2004) asked participants to rate frequency of interference in routine household activities due to the clutter (e.g., "Using the stove," "Eating at a table," "Sitting on a sofa") on a 3-point scale. Internal reliability of the 12-item scale scores was .83 (α), and the scale was moderately correlated with the SI-R total scale as well as with subscales of difficulty discarding and clutter. Grisham, Frost, Steketee, Kim, and Hood (2006) expanded this instrument to 15 items rated on 5-point scales - the Activities of Daily Living in Hoarding (ADL-H) - to determine how much clutter interfered with daily activities for people with hoarding. They calculated a mean of the items to create a single score.

The present study examined the reliability and validity of this scale using a sample of self-identified people with hoarding problems from a large internet study and a sample of carefully diagnosed hoarding participants. We employed standard measures of hoarding severity, as well as measures selected to address impairment in the home (squalor) and

comorbid problems and personality features (e.g., attention deficit, OCD symptoms, depressed and anxious moodstate, perfectionism/uncertainty) associated with hoarding (see Pertusa et al., 2010) that may influence daily activities.

Study 1

Method

Participants—Potential participants who had provided e-mail information following several national media announcements were invited to complete a web survey in September 2009. Of the 852 individuals who logged on and self-identified with hoarding, 535 met study inclusion criteria for serious hoarding and were asked to complete the ADL-H along with other study measures. Inclusion criteria for hoarding status required scores of 4 (moderate) or higher on clutter, difficulty discarding, and distress or interference items from the Hoarding Rating Scale. These criteria are consistent with criteria proposed for DSM-5 (Mataix-Cols et al., 2010) and have been used in previous studies to indicate significant hoarding problems (Frost, Tolin, Steketee, Fitch, & Selbo-Bruns, 2009; Tolin et al., 2008b). A total of 363 (68% of 535) completed the ADL-H.

Participants ranged in age from 22 to 80, with a mean age of 52.8 (*SD*=10.3). The sample was predominantly female (94.2%) and white (94.2%); other racial/ethnic groups were African-American (2.2%), Asian (1.9%), Indian (2.2%), and Other (3.2%). The study was approved by the Institutional Review Boards at Smith College, Boston University, and Hartford Hospital. All participants gave informed consent before completing the survey

Measures—The Activities of Daily Living in Hoarding (ADL-H) contains 15 items (see Appendix) related to activities of daily living such as “Prepare food,” “Use bath/shower,” “Use refrigerator,” etc. Items are rated from 1 (“can do it easily”) to 5 (“unable to do”), with higher scores indicating more impairment. A “not applicable” (NA) response is provided for cases where individual items don’t apply. Scoring consists of the mean of items not designated as NA. The ADL-H items were generated from responses of hoarding participants to interviews about the ways in which clutter prevents them from using different parts of their homes (Frost & Gross, 1993). The measure was designed to provide information about the specific activities impaired by hoarding, and not as a measure of saving or discarding behavior.

Three measures of hoarding severity and a measure of squalor were used to assess the convergent validity of the ADL-H. The Hoarding Rating Scale-Self-Report (HRS-SR; Tolin et al., 2008a) is a 5-item self-report measure that rates the dimensions of hoarding (clutter, difficulty discarding, excessive acquisition, distress, and impairment) from 0 (“none”) to 8 (“extreme”). It is designed to provide a global index of hoarding severity. Scores on the scale have demonstrated internal consistency (α = .80 in the current study), and test-retest (1 to 12 weeks) and interrater reliability (Tolin et al., 2008a). The interview version of the HRS scale differentiated hoarding from non-hoarding participants and correlated highly with other measures of hoarding (Tolin et al., 2010).

The Saving Inventory-Revised (SI-R; Frost et al., 2004) is a 23-item measure assessing hoarding severity. Subscale scores corresponding to the three primary features of hoarding (clutter, difficulty discarding, and excessive acquisition) are calculated along with a total score. Items are coded on a scale from 0 to 4. Reliability and validity of all scale scores on the SI-R have been documented, and the measure has become the most widely used self-report measure of hoarding severity (see Frost & Hristova, 2011). Internal consistencies for the present study were: total score (α = .91), Clutter (α = .90), Difficulty Discarding (α = .83), and Excessive Acquisition (α = .84).

The Clutter Image Rating (CIR; Frost et al., 2008) assesses severity of clutter through nine photographs of each of three rooms (living room, kitchen, and bedroom). Participants choose the picture that most closely represents the living conditions in their own home. The mean of the ratings for the 3 rooms constitute the CIR scale score. Reliability and validity of the CIR scale scores have been established (see Frost & Hristova, 2011). Internal reliability in the present study was α=.78.

The Home Environment Index (HEI; Rasmussen et al., submitted) consists of 15 items assessing symptoms of squalor in hoarding such as “Rotten food,” “Dirty sink,” and “Odor of house.” The items are rated on a scale from 0 (“no presence”) to 3 (“severe symptoms”) and summed to create a total scale score. The total scale score has shown evidence of reliability and validity (Rasmussen et al., submitted). Internal consistency in the present study was α = .75.

In addition, measures of attention deficit, depression, obsessive-compulsive symptoms and perfectionism/uncertainty were used to assess the discriminant validity of the ADL-H. These characteristics have been found to be correlated with hoarding symptoms (Pertusa et al., 2010). The Attention-Deficit Hyperactivity Disorder Symptom Scale (ADHDSS; Barkley & Murphy, 1998) consists of 18 items measuring inattention and hyperactivity symptoms over the last six months. Items are rated from 0 (“never or rarely”) to 3 (“very often”). Often used in clinical practice, this measure has demonstrated reliability and validity (Barkley & Murphy, 1998). In the present sample the Cronbach alpha for the inattention scale items was .88 and for hyperactivity, .83.

The Depression Anxiety Stress Scale-21 item version (DASS-21; Lovibond & Lovibond, 1995a, 1995b) measures the level of depression, anxiety, and stress over the past week. The items are scored on a 4-point Likert scales with higher scores indicating more symptoms. In the current study, internal reliabilities were .92 for depression, .83 for anxiety, and .88 for stress.

The Obsessional Beliefs Questionnaire-44 (OBQ-44; OCCWG 2005) contains 44 obsessional beliefs rated on 7-point scales from “disagree very much” to “agree very much.” Only the 16-item perfectionism/uncertainty scale was completed by study participants (α = .95) since perfectionism and indecisiveness have been hypothesized to be a core deficits of hoarding (Frost & Hartl, 1996).

The Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al. 2002) consists of 18 items that assess checking, washing, ordering, obsessing, neutralizing, and hoarding. Questions are rated on 5-point scales from “not at all” to “extremely.” A 15-item total OCI-R total scale score, excluding the 3-item hoarding subscale, was used in the analyses for this study (α = .89).

Data Analyses—Data were analyzed using SPSS 17.0 (SPSS Inc.) Convergent validity was tested by examining Pearson correlations between ADL-H and scores of other measures of hoarding (e.g., SI-R); discriminant validity was tested using correlations between ADL-H and scores of other measures of psychopathology (e.g., DASS). Out of the 535 initial respondents, 172 did not complete the ADL-H. Among the remaining participants, imputations were conducted for 27 participants (5%) who were missing fewer than 15% of ADL-H items in order to retain them in the analyses; missing values were replaced with mean scores using linear interpolation, yielding a final sample of 363.

Results

Reliability and validity—All 15 items of the ADL-H showed good item-total correlations (*r*'s =.44 to .75). The most frequent activity dysfunction was for finding important things (M=3.30, SD=1.05), followed by moving around inside the house (M=2.65,SD=0.62). The least frequent dysfunction was the inability to use the toilet (M=1.27, SD=0.62) and inability to use the bath or shower (M=1.34, SD=0.72). Although the latter frequencies were very low, the severity of the consequences of such impairments warrants retaining these items in the scale. The overall internal consistency of the scale was good (α = .91).

Interestingly, the ADL-H showed a small but significant negative correlation with age, $r = -.19$, $p < .01$.

To determine whether the ADL-H scale was more closely associated with measures of clutter than with other features of hoarding, we employed Pearson's correlations followed by Meng, Rosenthal, and Rubin's (1992) z-tests to examine relative strength of correlations. As Table 1 indicates, the correlations with hoarding measures ranged from .28 to .62, with an average of .48. As expected, the ADL-H total scores were significantly more highly correlated with scores on the SI-R Clutter and the Home Environment Index than with the SI-R Difficulty Discarding and Acquisition subscales (for *z* tests, all *p*s < .01). With regard to discriminant validity, the correlations of ADL-H score with ADHD, DASS, OBQ, and OCI-R scores ranged from *r*=.06 to .31, with an average of only .19. Meng et al.'s *z* tests showed that the correlation of ADL-H with SI-R total score was significantly higher than the correlations with scores of other measures of psychopathology (all *p*s < .01). These data provide evidence for good convergent and discriminant validity of the ADL-H scale. Unexpectedly, however, the correlation between the ADL-H and the SI-R difficulty discarding and acquisition subscales did not differ significantly from those with the OCI-R, perfectionism/uncertainty, depression, or ADHD inattention scales (*ps* > .05).

Study 2

Study 2 replicated and extended findings from Study 1 using two groups of carefully diagnosed hoarding participants (those with or without comorbid OCD) who were compared to participants with obsessive compulsive disorder (OCD) and community controls. To examine test-retest and inter-rater (participants vs. observers) reliability, we also examined participants' ADL-H scores across time (1–12 weeks) and context (clinic vs. home). We also expected the ADL-H scale to discriminate among hoarding, OCD and community control participants. Lastly, we hypothesized that ADL-H scores would correlate more highly with scores of other measures of hoarding severity than with those of measures of other psychopathology.

Method

Participants—Participants recruited between 2005 and 2008 included 178 with clinical levels of hoarding but not OCD, 39 with clinical levels of hoarding and comorbid OCD, 96 with OCD but not hoarding, and 130 community controls. Comparisons across these 4 groups were done to establish contrasting groups validity. Hoarding participants were recruited through media information and word-of-mouth and met the same criteria required for Study 1 as determined by trained diagnostic interviewers using the Anxiety Disorders Interview Schedule for DSM-IV Lifetime version (ADIS-IV-L; Di Nardo, Brown, & Barlow, 1994) with the addition of hoarding symptoms derived from the HRS-I. Participants with OCD were recruited from regional anxiety clinics and mental health institutions, as well as media information, and were included if OCD was their primary diagnosis according to the ADIS-IV-L. They were allowed to have hoarding symptoms that did not meet our

clinical criteria for hoarding. Community controls were recruited through newspaper and internet advertisements for people without a psychiatric history and were not permitted to meet criteria for any mental health disorder as determined by the ADIS-IV-L, except for a diagnosis of specific phobia. Phobias were permitted in the community sample because they are relatively common in the population and rarely provoke sufficient impairment to require treatment.

Demographic information for Study 2 participants is presented in Table 2. All four groups had similar age ranges, but the OCD only group had a significantly lower mean age ($F(3, 420) = 57.8$, $p < .001$) than the hoarding only, hoarding plus OCD, and community control groups. Gender distribution also varied significantly across groups ($\chi^2 = 29.4$, $p < .001$); both hoarding groups and the community control group included more women, whereas men and women were almost equally distributed in the OCD sample. With regard to ethnicity, all four groups had similar small numbers of non-white and Hispanic participants.

Measures—Measures included the 15-item ADL-H and the CIR, SI-R, and OCI-R scales described in Study 1. In addition to the self-report ADL-H completed by the participants at the clinic, participants also completed this measure during a home visit. In addition, a trained assessor who was blind to participant ADL-H scores completed the ADL-H during a visit to participants' homes. The ADL-H assessor rating was completed for 151 hoarding participants who received a home visit.

The Beck Anxiety Inventory (BAI; Beck & Steer, 1993) and the Beck Depression Inventory, 2nd Version (BDI-II; Beck, Steer, & Brown, 1996), were used to examine the discriminant validity of the ADL-H. The BAI is a 21-item self-report measure of anxiety in which participants rate their symptoms in the past week using 4-point scales that range from 0 ("not at all") to 3 ("severely"). A total score is calculated by summing all 21 responses. The BAI is used widely in clinical practice and had an internal consistency of .92 in the current study. The BDI-II assesses 21 self-reported depressive symptoms on scales from 0 to 3, with total scores ranging from 0 to 63. This scale has been used widely with demonstrated reliability and validity (Beck, Steer, Ball, & Ranieri, 1996); internal consistency in the present sample was .92.

Procedure—The current study was approved by the Institutional Review Boards at Smith College, Boston University, and Hartford Hospital. All participants were briefly assessed over the telephone and all signed a consent form before completing the clinical assessment at either Boston University or The Institute of Living/Hartford Hospital. Between 1 and 12 weeks after the assessment at the clinic, most participants received a home visit during which study measures were repeated by participants and the clinical assessor. The majority of home visits were completed within one month of the clinic visit.

Of the 217 hoarding participants, 15 (7%) were missing the entire ADL-H measure and were excluded from analyses, yielding a final sample of 202. For 25 (12%) who were missing an item, missing values were replaced with mean scores using linear interpolation. Because not all participants completed the ADL-H at home, sample sizes for test-retest assessment were 145 for ADL-H self-reports.

Results

Reliability—The internal consistency of the self-report ADL-H scale was .92, replicating the findings from Study 1. Inter-rater and test-retest reliabilities were calculated using the self and assessor ratings done in the participants' homes. The assessor-rated ADL-H done in the home also had high internal reliability ($\alpha = .96$). Test-retest reliability (1 to 12 weeks) was examined by correlating participants' scores from the clinic visit with those from the

home visit. Strong test-retest correlation ($r = .79$, $p < .001$) emerged despite the two sources of variability (time and context) and wide variability in the time interval between assessments. We also tested interrater reliability by correlating hoarding participants' scores with assessor ratings in the home. The ADLH was strongly correlated across raters ($r = .71$, $p < .001$), providing further support for the reliability of the ADL-H scale.

Unlike Study 1, there was no correlation between the ADL-H and age, $r = .00$, $p > .05$.

Contrasting group, convergent, and discriminant validity—To test whether the ADL-H scores could discriminate between hoarding only, hoarding plus OCD, OCD only, and community controls, we conducted a one-way analysis of variance (ANOVA) comparing mean scores on self-report ADL-H total scale for each of the four groups of participants. A significant main effect was found (see Table 3); post-hoc analyses using Games-Howell indicated that both hoarding groups scored significantly higher than the OCD and Community Control groups which did not differ from each other.

As in Study 1, we tested convergent validity by examining the correlations between self-report ADL-H score and other measures of hoarding severity (SI-R, CIR). Correlations for the total sample and for the hoarding participants are reported in Table 4. Again, we expected higher correlations with measures of clutter versus measures of acquisition and difficulty discarding. The analyses showed that the correlations of ADL-H scores with those of the SI-R and CIR ranged from .33 to .73, with an average correlation of .55 for hoarding participants (Table 4). Among the full sample of participants, correlations ranged from .69 to .84 with an average of .77 (Table 4). Meng et al.'s z tests showed that scores on the ADL-H demonstrated significantly higher correlation with scores on the SI-R Clutter than with the other two SI-R subscales for both the hoarding participants and the full sample. Correlations of the ADL-H and CIR scores were .73 and .84 (hoarding and full sample, respectively) which were both significantly higher than correlations involving non-clutter hoarding measures ($ps < .01$).

Discriminant validity was tested by correlating scores on the clinic-based self-reported ADL-H scale with the OCI-R, BAI, and BDI-II scores. Again, the results supported discriminant validity, as these correlations ranged from .19 to .36 with an average of .27 for hoarding participants, and from .10 to .48 with an average of .32 for the full sample (Table 4). These were considerably smaller than the average correlation between ADL-H scale score and scores of other measures of hoarding severity. Moreover, the correlation between ADL-H with SI-R total score was significantly higher when compared to those for the OCI-R, BAI, and BDI-II (all ps $< .01$) using Meng et al.'s z tests.

The correlations involving the hoarding participants in Study 2 were consistent with those of Study 1. Although the correlation between the ADL-H and the SI-R clutter subscale was significantly larger than the comparable correlations with the OCI-R, BAI, and BDI-II, the ADL-H correlation with the SI-R difficulty discarding subscale was not significantly different from the ADL-H correlations with the OCI-R, BAI, or BDI-II. The correlation between the ADL-H and SI-R acquisition was greater than those between the ADL-H and the OCI-R and BDI-II, but not the BAI. Using the full sample of Study 2 participants, however, these differences were significant in each case.

Findings for contrasting group, convergent, and discriminant validities for the assessor ADL-H ratings revealed the same pattern of results as the self-reported ADL-H. Accordingly, only the results for the latter were provided in Table 4.

Discussion

The present study reports findings from two studies that examined the psychometric properties of the ADL-H which assesses everyday activities that might be affected by hoarding behavior. In a sample of self-identified participants with hoarding problems, the internal consistency of the ADL-H was .91 and in a sample of diagnosed participants with hoarding problems, the internal consistency of the ADL-H was .92, indicating very good reliability. Further, the strong correlation between self-report ratings at the clinic and during the home visit in Study 2 suggest that the ADL-H scale can be administered in either setting. Good interrater reliability was indicated by the strong correlation between home ratings done by hoarding participants and by assessors.

Data from Study 2 support the validity of the ADL-H in discriminating participants with hoarding from those with OCD and from community controls. The absence of significant differences between the OCD and community sample on the ADL-H suggests that this instrument is not assessing general psychopathology but problems specific to hoarding. Further support for convergent and discriminant validity comes from correlational analyses in both studies. Self-reported ADL-H scores correlated strongly with scores from other measures of hoarding severity. As predicted, the ADL-H scores were more strongly correlated with clutter scores (SI-R Clutter) than with hoarding symptoms of discarding and acquiring. This finding fits with the choice of ADL-H items that address impairment in daily activities stemming from clutter. In addition to its association with other self-report measures of hoarding that share self-report method variance, the ADL-H was also strongly associated with an observational measure of clutter, the CIR, thereby demonstrating strong convergent validity across different methods of assessment.

The discriminant validity of the ADL-H was indicated by significantly weaker correlations with scores from other measures of psychopathology, such as OCD symptoms, mood state, attention deficit, and perfectionism/uncertainty. These findings suggest that the ADL-H measures impairment due to hoarding and not other mental disorders. Cross-method validity was further evident in Study 2 findings of convergent and discriminant validity based on assessor ratings in the home as well as self-report ratings. Unexpectedly, the correlations between the ADL-H and SI-R difficulty discarding and excessive acquisition were not larger than correlations with OCD symptoms assessed via the OCI-R in Study 1; likewise in Study 2, the correlation between ADL-H and SI-R difficulty discarding among hoarding participants was not higher than correlations with moodstate assessed via the BAI and BDI-II. However, correlations using the full sample in Study 2 were consistent with the expectation that ADL-H correlations with self-reported hoarding symptoms (SI-R difficulty discarding and excessive acquisition) would be higher than those with non-hoarding pathology, but lower than correlations with measures of clutter. It may be that the restricted range of scores in strictly hoarding samples reduced the magnitude of the correlations between the ADL-H and SI-R subscales.

Overall, the ADL-H appears to be a reliable and valid measure of the impairment of activities of daily living in people with hoarding disorder. It is unique in its ability to measure specific interference, stemming mainly from clutter, that goes beyond a global rating of hoarding impairment. The ADL-H is brief and easy to administer in clinical and home settings, allowing clinicians to monitor client progress over time. Further, the ADL-H can be completed by both client and clinician in cases when the client has limited insight into the damage caused by the hoarding problem. By comparing ratings, clinicians can point out discrepancies and direct the discussion to areas of least or most disagreement, depending on the stage of the therapy.

A limitation of the present study is the small sample of men included, a problem that pervades research on hoarding, as women volunteer to participate at a much higher rate than men, despite the fact that men may be at least as likely to report hoarding according to epidemiological studies (Iervolino et al., 2009; Mueller et al., 2009; Samuels et al., 2008). Also, both samples contained mainly white participants, making it unclear whether results can be generalized to other racial/ethnic groups. Although it has been shown that hoarding is present across different cultures (Mataix-Cols et al., 2010), levels of dysfunction due to clutter in the home might vary across ethnicities. Another limitation concerns missing data, especially in Study 1 where 32% of those with clinical hoarding did not complete the ADL-H. In Study 2, 18% missed one or two items on the ADL-H, perhaps due to fatigue from the lengthy assessment battery or possibly because the item did not apply. Although most of the home visits were completed within one month of the initial clinic visit, the variation in the time interval between administrations of the ADL-H in Study 2 may have influenced the test-retest reliability; nonetheless, test-retest reliability was remarkably high considering the fact that administrations varied across both time and context. Subsequent studies are needed to determine the usefulness of expanding the ADL-H to include other impaired activities.

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Appendix

Activities of Daily Living in Hoarding

Sometimes clutter in the home can prevent you from doing ordinary activities. For each of the following activities, please circle the number that best represents the degree of difficulty you experience in doing this activity <u>because of the clutter or hoarding problem</u>. If you have difficulty with the activity for other reasons (for example, unable to bend or move quickly due to physical problems), do not include this in your rating. Instead, rate only how much difficulty you would have due to hoarding. If the activity is <u>not relevant</u> to your situation (for example, you don't have laundry facilities or animals), check the Not Applicable (N/A) box.

Activities affected by clutter or hoarding problem	Can do it easily	Can do it with a little difficulty	Can do it with moderate difficulty	Can do it with great difficulty	Unable to do	N/A
1. Prepare food	1	2	3	4	5	6
2. Use refrigerator	1	2	3	4	5	6
3. Use stove	1	2	3	4	5	6
4. Use kitchen sink	1	2	3	4	5	6
5. Eat at table	1	2	3	4	5	6
6. Move around inside the house	1	2	3	4	5	6
7. Exit home quickly	1	2	3	4	5	6
8. Use toilet	1	2	3	4	5	6
9. Use bath/shower	1	2	3	4	5	6
10. Use bathroom sink	1	2	3	4	5	6
11. Answer door quickly	1	2	3	4	5	6
12. Sit in sofa/chair	1	2	3	4	5	6
13. Sleep in bed	1	2	3	4	5	6
14. Do laundry	1	2	3	4	5	6
15. Find important things (such as bills, tax forms, etc.)	1	2	3	4	5	6

Table 1

Correlations of ADL-H with Measures of Hoarding Severity and Non-hoarding Pathology in Study 1

	ADL-H
SI-R Clutter	.57**
SI-R Difficulty Discarding	.28**
SI-R Acquisition	.32**
SI-R Total	.50**
CIR	.62**
HEI Total	.61**
ADHD Inattention	.24**
ADHD Hyperactivity	.06
DASS Depression	.23**
DASS Anxiety	.13*
DASS Stress	.17**
OBQ Perfectionism/Uncertainty	.21**
OCI-R Total	.31**

Note: ADL-H = Activities of Daily Living in Hoarding; ADHD = Attention-Deficit Hyperactivity Disorder Symptom Scale; CIR = Clutter Image Rating; DASS = Depression Anxiety Stress Scale; HEI = The Home Environment Index; OBQ = Obsessional Beliefs Questionnaire; OCI-R = Obsessive Compulsive Inventory-Revised; SI-R = Saving Inventory-Revised.

* $p < .05$;

** $p < .01$

Ns ranged from 357 to 363 due to missing data for some measures.

Table 2

Demographic information for Study 2 groups

	Hoarding (*N*=165)	Hoarding plus OCD (*N*=37)	OCD (*N*=94)	Community Controls (*N*=130)
Age				
- Range	27-78	21-66	18-74	21-83
- Mean (*SD*)	53.40[a]	50.20[a]	34.54[b]	52.63[a]
	(9.72)	(12.20)	(13.73)	(13.48)
% Female	80.0%	62.2%	47.9%	70.0%
Ethnicity				
- White	87.1%	94.4%	85.6%	88.3%
- African American	9.8%	5.6%	5.6%	6.3%
- Asian American	1.2%	0%	5.6%	3.1%
- Native American	.6%	0%	2.2%	1.6%
- Hispanic	1.3%	5.7%	3.3%	5.6%
- Other	1.2%	0%	1.1%	.8%

Note. Means with different superscripts are significantly different from each other at $p < .001$.

Table 3

ADL-H difference across study groups

	Hoarding (*N*=165)	Hoarding plus OCD (*N*=37)	OCD (*N*=94)	Community Controls (*N*=130)	
ADL-H	2.20[a] (0.74)	1.95[a] (0.75)	1.19[b] (0.37)	1.15[b] (0.75)	F (3,422)=110.5 *

Note. Means with different superscripts are significantly different from each other at $p < .001$.

* $p < .01$

Table 4

Correlations of the ADL-H with measures of hoarding, OCD and moodstate in Study 2

	Hoarding Participants (n = 182 – 202)	All Participants (n = 394 – 415)
SI-R Clutter	.66**	.81**
SI-R Difficulty Discarding	.33**	.69**
SI-R Acquisition	.49**	.72**
SI-R Total	.63**	.79**
CIR	.73**	.84**
OCI Total	.19**	.10*
BAI Total	.36**	.39**
BDI –II Total	.27**	.48**

Note: ADL-H = Activities of Daily Living in Hoarding; SI-R = Saving Inventory-Revised; CIR = Clutter Image Rating; OCI = Obsessive-Compulsive Inventory; BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory, 2nd Version. N's varied due to missing data for some of the measures,

* $p < .05$.

** $p < .01$.