Cognitive Therapy and Research (2019) 43:1075–1085
https://doi.org/10.1007/s10608-019-10025-y

ORIGINAL ARTICLE

Should I Keep It? Thoughts Verbalized During a Discarding Task

Christiana Bratiotis[1] · Gail Steketee[2] · JoAnn Dohn[3] · Carole A. Calderon[2] · Randy O. Frost[4] · David F. Tolin[5]

Published online: 15 May 2019

Abstract
An essential criterion for hoarding disorder (HD) is difficulty parting with possessions, but relatively little research has been conducted on responses by people with HD during actual efforts to discard objects. Frost et al. (Behav Res Therapy 85:13–22, 2016) reported quantitative findings from a discarding task comparing those with HD to community control participants without significant hoarding symptoms (CC) on discarding behavior. The present study used qualitative data analysis of the verbal statements made by HD and CC participants while talking aloud about whether to discard or keep a personal object of low monetary value. Data were coded and analyzed using Atlas.ti software via an iterative process in order to examine thoughts reported during decision-making. Findings indicated that participants made more comments about reasons for saving than discarding and that HD participants reported more reasons to save and fewer reasons to discard than did CC participants. They also voiced more thoughts about emotions, both negative and positive, than did controls, especially for anxiety, anger and guilt and general distress. HD participants expressed more ambivalence about discarding compared to controls. Findings are discussed in relation to the cognitive and behavioural model for hoarding, previous findings regarding reasons for saving, and treatment implications.

Keywords Hoarding · Cognitions · Thought-listing · Discarding task

In DSM-5 hoarding disorder (HD) is defined by difficulty parting with objects, clutter that interferes with effective use of the home, and associated distress and impairment in functioning (American Psychiatric Association [APA] 2013). Clinical hoarding behavior has serious adverse consequences that can include poor health and safety, financial risk (Tolin et al. 2008), and homelessness (Rodriguez et al. 2012). HD is commonly accompanied by depression, social anxiety, and generalized anxiety (Frost et al. 2011). A hallmark feature of difficulty discarding or letting go of possessions appears to be associated with impairment in decision-making about objects. According to a cognitive and behavioral model of hoarding behavior (Frost and Hartl 1996; Steketee and Frost 2003), this may stem from information processing deficits, maladaptive beliefs about possessions, and strong emotional responses—both positive and negative—to objects.

Several studies have supported this model of HD. For example, people who hoard had difficulty categorizing personal (but not non-personal) objects (Wincze et al. 2007) and showed deficits in attention (Grisham et al. 2007; Tolin and Villavicencio 2011; Tolin et al. 2011) and executive functioning (Grisham et al. 2010). In addition, Tolin and colleagues found that anxiety, sadness, and indecisiveness were more common among people with HD compared to people with OCD and those without psychiatric conditions, and these features were associated with less discarding (Tolin et al. 2012). With regard to beliefs, difficulty parting with objects was linked to concerns about memory, losing important information, need for control, and responsibility for objects and avoidance of waste (Frost et al. 2015; Steketee and Frost 2003). In addition, those with hoarding attached more emotional significance to objects compared to healthy controls (Frost et al. 2015), and relied on possessions for emotional comfort (Frost et al. 1995).

✉ Christiana Bratiotis
christiana.bratiotis@ubc.ca

[1] School of Social Work, The University of British Columbia, Jack Bell Bldg., 102-2080 West Mall, Vancouver, BC V6T 1Z2, Canada

[2] Boston University, Boston, USA

[3] Portland State University, Portland, USA

[4] Smith College, Northampton, USA

[5] Hartford Hospital, Yale University School of Medicine, New Haven, USA

A limited number of studies have examined actual discarding behavior and the potential factors that influence this behavior. Tolin et al. (2009, 2012) employed experimental discarding tasks using personal possessions in two studies, both of which indicated that HD participants have different activity patterns in the brain while discarding compared to people without a psychiatric condition. To further understand behavioral, emotional, and cognitive responses to discarding choices, Frost et al. (2016) compared participants with HD to non-hoarding participants (community controls—CC) during a decision making task about personal possessions. As expected, HD participants reported stronger hoarding beliefs about objects than did community controls. In general, HD participants' beliefs related to emotional attachment, utility/instrumental value, and the aesthetic/intrinsic value of objects declined in intensity during the course of the 60–80 min trial, as did reported distress.

Interestingly, in the Frost et al. (2016) study, hoarding participants who were encouraged to talk aloud about their thoughts (thought listing or TL) while making the decision about discarding showed a significant decline in emotional attachment, whereas HD participants who were asked questions designed to restructure their hoarding beliefs did not show such a reduction. Somewhat surprisingly, the thought listing condition appeared to be more helpful in reducing distress early in the discarding process, although cognitive restructuring reduced distress later on in the days after the task ended. In the end, there were no differences in the effect of thought listing and cognitive restructuring on beliefs and distress. By the end of the experiment, the HD participants remained more distressed about their personal item than did the community participants.

Beliefs about objects have been assessed using the Saving Cognitions Inventory (SCI), a self-report questionnaire that was based on anecdotal clinician observation of people with hoarding and early theoretical and empirical work on this problem (Steketee and Frost 2003). The SCI developers sought to assess the following constructs: (1) memory, especially visual memory and confidence in memory (Hartl et al. 2004); (2) emotional attachment including concepts of hyper-sentimentality, objects as safety signals, and identity (Frost and Hartl 1996; Warren and Ostrom 1988); (3) the need to control objects and one's personal environment; and (4) responsibility for the proper use and well-being of objects (Furby 1978). In addition, Frost et al. (1998) reported that participants recruited for hoarding behavior gave several reasons for saving newspapers or magazines, including to avoid discomfort, maintain control, and be prepared. Psychometric testing of these concepts produced the self-report Saving Cognitions Inventory (SCI) with four subscales of beliefs relevant to hoarding: Emotional attachment (value/importance, comfort, loss) which accounted for the largest amount of scale variance (55%), as well as memory, responsibility, and the need to control possessions. The authors called for additional research to identify relevant beliefs that might become the focus of clinical treatment.

The present study is a qualitative investigation of beliefs, attitudes and emotions relevant to hoarding based on recorded statements made by individuals with hoarding disorder during a decision-making task about whether to discard a personal item. Details of the discarding task are described in Frost et al. (2016) and summarized below. Participants for the present study were those in the thought listing strategy who were encouraged to talk aloud about their beliefs and emotions during the decision-making process. The overall goal was to use qualitative data to identify cognitive and emotional content for people with clinical hoarding, and to determine whether beliefs assessed by the SCI (emotional attachment, instrumental and intrinsic value, responsibility, objects as memory aids) emerged as frequent themes.

Methods

Participants

Participants included 25 adults (age 18 and older) with hoarding disorder (HD) and 46 community controls (CC) representing a subset of participants described in Frost et al. (2016) whose talk aloud process was taped and transcribed. Participants were recruited through news media, clinics and mental health settings, and word of mouth from 2005 to 2008 as part of a larger study of hoarding symptoms and features. Trained interviewers used the Anxiety Disorders Interview Schedule for DSM-IV: Lifetime Version (ADIS-IV-L; Brown et al. 1994) to verify non-hoarding diagnostic criteria for inclusion. Consistent with current DSM-5 criteria for hoarding (APA 2013), inclusion in the HD group required interviewer ratings of moderate (rating of 4) or greater on clutter, difficulty discarding, and either distress or impairment from hoarding according to the Hoarding Rating Scale (see below). Although this study was conducted before the development of DSM-5 criteria for HD (APA 2013), diagnostic inclusion criteria matched closely the current HD criteria, including the requirement that HD symptoms were not attributable to another condition (e.g., OCD, depression). Participants were excluded if they reported risk factors requiring immediate attention (e.g., suicidal ideation), psychotic symptoms, substance abuse or dependence within the past 3 months, or showed evidence of cognitive impairment (e.g., developmental disability, dementia). Community control (CC) participants were not permitted to meet criteria for any mental health disorder, except specific phobia. Subthreshold hoarding symptoms could be present if they did not meet diagnostic criteria.

HD participants were mainly women (76%), 92% non-Hispanic white (8% African American; none were Hispanic), with a mean age of 52.3 years (SD = 8.5). CC participants were 64% women, 91% non-Hispanic white (6% African American, 3% Asian American; 7% were Hispanic), with a mean age of 51.5 years (SD = 13.1). *T* test (age) and Chi square analyses (gender, race/ethnicity) indicated that groups did not differ on any of these demographic variables (all *p*'s > .408).

Measures

The *Anxiety Disorders Inventory Schedule for DSM-IV Lifetime version* (ADIS-IV-L, Brown et al. 1994) was used to determine diagnosis of OCD, anxiety, mood, somatic, and substance use disorders and to screen for psychotic disorders. Clinical interviews were conducted by master's level clinical psychologists or postdoctoral fellows trained to criteria using the ADIS-IV-L and supervised by licensed psychologists. The ADIS has shown good to excellent reliability for all the principal DSM-IV anxiety and mood diagnoses excepting dysthymia (Brown et al. 2001).

The *Hoarding Rating Scale-Interview* (HRS-I; Tolin et al. 2010b) is a 5-item semi-structured interview that assesses difficulty discarding, clutter, acquisition, distress, and impairment. Responses are scored from 0 to 8, with higher ratings indicating greater symptom severity. This measure has demonstrated excellent reliability (test–retest, inter-rater, home versus office, internal consistency) and validity (concurrent, discriminant) validity. The HRS was used in conjunction with the ADIS to determine diagnosis of HD. The internal consistency (Cronbach's α) of the HRS-I for the larger sample from which the current participants were drawn was excellent (α = .97; Frost et al. 2011).

The possessions list-discarding (PL-D) is a list of 81 ordinary types of items (e.g., clothing, books, markers, paper) based on a previously compiled list of objects that are likely to be collected or hoarded (Frost and Gross 1993); item scores ranged from 1 = not at all (I only save what I use) to 7 = very much (I save far more than I will ever use). Items with the highest scores for each participant were selected for the discarding task, and included clothing, school papers, newspapers, catalogues, and baskets.

Procedure

Study procedures are detailed in Frost et al. (2016) and described briefly below. The study was approved by the Institutional Review Boards at each recruiting site. Participants signed an informed consent form for the present study following their participation in a psychopathology study of hoarding by the investigators (Frost et al. 2011); they were reimbursed $20/hour for their participation. Trained graduate research assistants administered the ADIS-IV-L and HRS-I to determine eligibility for a larger study of the psychopathology of hoarding disorder. HD participants who qualified were randomly assigned to either thought listing or cognitive restructuring during an experimental task in which they were asked to decide whether to discard an ordinary personal item[1] of little monetary value that was similar to the types of objects most people would be able to discard. Only those in the thought listing condition are included here. CC participants completed the same thought listing task in which participants were asked to speak aloud about their thoughts during a 4-min period before deciding whether to keep or discard a personal object selected using the PL-D as for the HD group described above.

Undergraduate and graduate research assistants (RA) trained in study procedures conducted the discarding task in participants' homes. Upon arrival in the home, experimenters selected an initial item from among those the participant rated highest on the PL-D that listed commonly hoarded items of low monetary value that most people would be able to discard (e.g., newspapers, magazines, junk mail, clothing, containers). Whenever possible, PL-D items rated 4 or higher (save at least "some" of these items) were chosen, although items rated lower could be used if necessary.

Task items included mainly clothing and paper/reading material, as well as some household, cooking, and office items. After responding to a few initial questions (see Frost et al. 2016), participants were asked to spend 4 min describing aloud their thoughts about discarding the object. Participants who stopped speaking during this time period were prompted to continue talking aloud. The experimenter made no effort to direct or modify their thoughts. All verbal responses were recorded on tape. At the end of the discarding task, participants completed additional ratings and were asked to decide whether to keep or discard the object. The experimenter removed discarded items from the room and eventually discarded them. If the item was not discarded, the experiment continued with a second item. For the present study, only the taped comments for the first personal item were analyzed because of the small sample size for second items.

Data Analyses

Two MSW students trained in qualitative methods by the first author served as independent coders who were blind to the status of the participant (HD or CC). Content analysis was used for analyzing the transcripts given that our

[1] The personal item discarding task was followed by a second task in which participants were asked to discard a magazine given to them by the experimenter. Those data are not included here.

investigation was based on existing research on hoarding and our primary aim was to determine frequency, patterns and relationships between the words used by study participants (Patton 1990).

During the training period, each coder listened to three audio-taped recordings while reading the written transcript and then coded the data using ATLAS-ti (version 8) software to establish inter-rater reliability. They then met with the trainer to resolve discrepancies and agree on coding methods. Consistent with content analysis method, coders then completed coding of all remaining audio files/transcripts, generating a codebook of unique primary and secondary codes that were then reviewed and consolidated by the first author. Once coding was complete, without knowing HD or CC status, the first and second authors used an iterative process to further reduce, combine and modify codes over the course of four extensive reviews of the coded data, examining original transcripts and audiotapes as needed to confirm meanings and contexts.

Due to the nature of the thought-listing task that requested participants to engage in a complex task of evaluating their object, the secondary codes within the primary code of *object evaluation* were sometimes overlapping so some phrases or statements were coded in more than one category. For example, a clothing item was positively evaluated by one participant as *sentimental* because it was a gift, and *attractive* in colour and texture. The participant also expressed *attachment* to the same object. In contrast, secondary codes within the primary codes of *emotions*, *ambivalence, family/friends* were all discrete non-overlapping codes. In reporting the frequency of code occurrence (number of mentions) within primary code clusters (e.g., "object evaluation", "emotions"), the total number of mentions of individual codes may not sum to the total number of primary codes because rare codes are not described. Because the CC sample size was larger than the HD sample size, we calculated weighted frequencies for the CC group to facilitate comparison with HD code frequencies (see Table 1). Consistent with methodological reporting of qualitative research studies (e.g., Patton 1990), the findings reported below are followed immediately by brief discussion in light of the aims of this study. It may be useful to keep in mind that, as reported in Frost et al. (2016), most study participants from (85%) chose to discard their item, perhaps due to the demand characteristics of the task. There appeared to be no differences in the types of saved versus discarded objects.

Findings

Qualitative coding identified three primary themes that were frequently mentioned during the talk-aloud discarding task: evaluation of the object (positive for saving and negative for discarding), emotions (negative and positive), and ambivalence/doubt. Three additional themes were also identified: perspectives on the hoarding problem; how objects were acquired; and impact on family and friends. Secondary codes for these primary themes are described below for HD and CC groups, followed by discussion of previous research findings and fit with Frost and Hartl's model of hoarding.

Evaluation of Objects

Given the nature of the task, it is not surprising that the bulk of thematic codes focused on evaluating the objects and the anticipated impact of a discarding decision (755 mentions). Within this overarching theme, participants overall made more comments about reasons to save (442 mentions, 58.5%) than about reasons to discard (313 mentions, 41.5%). Table 1 displays the frequency of primary and secondary codes for these themes. As evident from the table, HD participants made somewhat more positive comments (175) regarding saving than did CCs (145, weighted number), whereas the reverse was true for discarding comments: CCs made more total comments about discarding (125, weighted) than did HDs (82). This overall finding is consistent with Frost et al.'s (1998) report that people who hoard focus more on reasons for saving than for discarding.

Positive: Reasons for Saving

Within this category, the most frequent comments focused on (1) personal values about responsibility to avoid wasting objects, (2) possible future use and need, and (3) emotional attachment to the item and/or a person (see Table 1). Concerns about responsibility and waste included such thoughts as "I don't like to throw it away if it's still in good shape", "I feel it's wasteful", "I'm potentially throwing away money", "I feel I have to recycle", "I have to give it to the right person", and "It has to go to the right place". Future use by oneself or others was evident in comments such as "Maybe I would [wear, use] it", "I'm not finished reading it", and "I want someone else to use it". Expressions of emotional attachment were evident in nostalgic reminiscences such as "It means so much to me" and "I'd be lost without it". Interestingly, HD and CC groups differed little on these three codes, suggesting that these are universal considerations when considering whether to keep or discard owned objects.

One theme that appeared to discriminate between groups was objects as reminders and remembrances, evident in comments such as "It brings memories" (of treasured life experiences) and "I don't want to forget". HD participants made these comments twice as often as did controls, suggesting that objects may more often carry specific sentimental meaning for those who hoard. This is consistent with findings from the SCI assessment among people with hoarding in which the need to remember was endorsed for beliefs about

Table 1 Number of coded comments within thematic clusters for hoarding disorder (HD) and community control (CC) participants for "think aloud" statements during a discarding task

Primary code	Secondary codes	HD (n = 25)	CC (n = 46)	Weighted CC[a]
Object evaluation	Total positive (for saving) and negative (for discarding)	257	498	270.4
Positive (save)	Total	175	267	145.0
	Personal values: sense of responsibility (to recycle, avoid waste, give to right people/place, makes a contribution)	36	56	30.4
	Possible future use: might wear, might need, still has value, multi-purpose, not done reading, want others to use	33	49	26.6
	Attachment (to object and person): Emotional value, important, means so much to me, lost without it, don't want to forget her or have others forget	28	68	36.9
	Reminder/remembrance: brings memories (of self, others and experiences—treasured life experience), sentimental, nostalgia, reminiscence, don't want to forget	20	18	9.8
	Cost/value: worth, cost, very expensive (to acquire, replace), paid for it, earned it, throw away money, good deal/on sale	14	18	9.8
	Reluctant (to discard): don't want to throw out, don't want to, unprepared	9	12	6.5
	Anticipate/avoid distress: will feel bad, might regret	9	9	4.9
	Special object: symbolism, creativity, interesting	9	7	3.8
	Identity: afraid of giving up a dream if I throw this out, lost opportunity/losing something	7	9	4.9
	Current use: practical, still good, convenient to have, comfortable	0	11	6.0
	Appreciation/attractive (visual/sensory): is pretty, soft, dainty; cute, visually stimulating (color), tactile (soft, texture)	4	5	2.7
	Information –losing/missing information	2	0	0
	Like to collect	2	0	0
	Part of a collection: part of a set, matches other things	1	3	1.6
	No reason to discard: doesn't interfere (to keep it)	0	2	1.1
Negative (discard)	Total	82	231	125.4
	Ready and willing: confident about discarding, willing to let it go, have wanted to get rid of it, time to discard	17	55	29.9
	No negative impact: object not important, don't need, have others (too many, multiples, can find by other means), forgot I had it (buried), can replace	15	39	21.2
	Anticipate positive outcome: object put to good use, doing a good deed, give away (gift, help others), can recycle	10	25	13.6
	Attachment (no): not strong, no sentimental/emotional need, not a favorite	11	13	7.1
	Negative emotion (no): not distressed, don't feel bad, not upset, okay without it, can cope, not anxious, no regret (won't miss it, not a favorite), no guilt	9	42	22.8
	Useful (not): have not used recently (rarely, once, never), did not use as planned, unable to use, broken, haven't worn it, lack of time	7	24	13.0
	Cost/value (low): low cost or free, no monetary value, can't recall if I paid for it	5	9	4.9
	Positive emotions: happy (glad, feel good), relief (feel better, wanted to), pride	5	8	4.3
	Making space: have too much (stuff), don't have room, clear out (more space, efficient use of space)	2	6	3.3
	Attractive (not): not in style, doesn't fit, old, don't like, not important to me	0	8	4.3
	Reduces negative emotion: clutter is disturbing	0	2	1.1
Emotions	Total negative and positive	147	120	65.2

Table 1 (continued)

Primary code	Secondary codes	HD (n = 25)	CC (n = 46)	Weighted CC[a]
Negative emotions	Total	133	80	43.4
	Anxiety: fear (of discarding), worry, concern, apprehension, nervous, scared, guarded	42	16	8.7
	Anger: frustration, more than angry, furious, angry at self	25	2	1.1
	Guilt (about discarding): disappointment in self, feel responsibility for object	21	32	17.4
	General negative mood: upset, unhappy, distressed, stressed (about discarding), disturbed (by clutter)	18	6	3.3
	Regret: buying object, waste	8	7	3.8
	Sadness (about discarding): grief, loss, empty	5	6	3.3
	Hate (my behavior): dislike object	5	7	3.8
	Embarrassed: silly, stupid	4	2	1.1
	Shame: humiliated	3	0	0
	Distrust: (of people with object)	2	7	3.8
Positive emotions	Total	14	40	21.7
	Happy (about discarding): okay, fine, good, like it, feels good	7	16	8.7
	Enjoyment: joy, pride, appreciation	2	15	8.1
	Hopeful (for future use of object)	2	3	1.6
	Relief (discarding)	2	0	0
	Calm: comfort, security (for safety/protection)	0	6	3.3
Ambivalence	Total	32	21	11.4
	Doubt: gnawing feeling, not sure/unsure, uncertain/uncertainty, confused/confusion, what to do?	14	10	5.4
	Conflict/conflicted: hard decision, difficult, wrestling with decision, hard struggle, change my mind, concern about finality, hesitation, reluctant (to discard), contradiction	14	5	2.7
	Indecisive: *questions to self* (Will I ever? Does it fit? Would I wear it?, says "*probably*" (never use, keep), *describes mixed emotions*; postpones decision (need time to decide, think about it for a while)	2	2	1.1
Perspectives on hoarding problem	Successful (discarding), healthy, separation process, emotional detachment, clutter is disturbing (can't find things), disorganized, unable to organize	11	2	1.1
How object was acquired	Purchased (on sale/good deal, tag sale), as a gift, from work/volunteering, due to death, can't remember	10	22	11.9
Family/friends	Impact on husband and kids (Strained relationships), neglect friends, family wants me to discard, positive impact on family (discarding)	4	13	7.1

[a]Weighted CC figures were calculated (CC count × 25/46) to provide a comparison with HD code counts in view of the larger CC sample size

objects (Steketee et al. 2010). HD participants commented slightly more often than CCs about the cost or monetary value of items, but both groups noted such reasons to save: "They were expensive", "It's expensive to replace", "I need to use it because I paid for it". Although less frequently mentioned, HD participants appeared to more often anticipate distress ("I might regret…") and consider the object special with regard to symbolism, creativity/interest and personal identity ("I'm afraid of giving up a dream if I throw this out") than did their community counterparts. Surprisingly, those with HD did not refer to current use (versus future use—see above) of the object, in contrast to occasional mention of current use by controls ("It's practical", "It's still in good condition", "It's comfortable"). The value of objects as important sources of information was rarely referenced, although the need to save an item (e.g., a newsletter) to avoid losing the information it contained has been reported for clinical HD participants (Frost and Steketee 2010).

Negative: Reasons for Discarding

The largest portion of reasons to discard referenced the lack of negative consequences, both practical and emotional, of discarding the item. The most frequent

comments from both groups were categorized into the following several subthemes: (1) being *ready and willing* to discard ("I'm confident", "It's time", "I've wanted to get rid of it"), (2) anticipating *no negative reactions* ("I'm pretty sure I'm just as well off without it", "It wouldn't be a big deal", "I will manage ok without it", "It's not a favorite"), with some participants (3) anticipating *positive outcomes* ("I'll be doing a good deed", "It's healthy to get rid of clutter"). Somewhat less common subthemes were (4) *lack of attachment* ("I'm not emotionally attached", "It never was important to me"), (5) *absence of negative feelings* ("I won't regret it", "I'll be able to cope"), and (6) *not useful* ("It doesn't fit anymore", "I haven't used it recently", "Most people wouldn't use it").

As noted earlier, CCs commented more often than HDs about these reasons for discarding, and large discrepancies between groups were evident for several of these themes. Compared to the HD sample, the CC group made nearly twice as many comments about being ready to discard the item, and spoke much more often about not anticipating negative feelings. Somewhat more often than HDs, they also voiced expectations that they would not experience adverse effects and would experience positive outcomes from discarding. Likewise, CCs commented more often than HDs on the (lack of) usefulness of items as reasons to discard. Comments about strong attachment or emotional need for the object occurred somewhat more frequently among HD than CC participants but the difference was surprisingly small. Monetary cost ("It has no monetary value", "I can't remember if I paid for it or not"), positive feelings ("happy", "relief", "pride"), and making space ("I don't have room", "I have too much stuff") were rarely mentioned and groups did not appear to differ on these comments. Interestingly, only control participants referenced the attractiveness of the item ("It's not in style").

Emotions

Participants made frequent references to their emotional reactions about the objects, the task, and themselves, with both groups mentioning negative emotions more often than positive ones. Negative feelings also appeared to span a somewhat wider range of affective states than did positive ones. Overall, HD participants reported their emotions more than twice as often as CCs (147 versus 65 [weighted], see Table 1), and consistent with the conceptual model for hoarding disorder (Frost and Hartl 1996), they focused far more often on negative (133 codes) than positive feelings (14 codes). This was also true for CC participants but at a much lower frequency (43 versus 22 weighted codes). The types of emotions reported are described below.

Negative Emotions

Most commonly reported were anxious feelings ("nervous", "scared"), constituting more than 30% of HD negative emotion comments and 20% of CC emotions. It is not surprising that HD participants indicated such feelings four times more often than CC participants. Next in overall frequency was anger, expressed in 19% of comments by HD participants but very rarely by CC participants (only two people mentioned this). Anger and frustration were mainly self-directed, expressed in such terms as "furious", "more than angry", "disappointed with myself" and "hate my behavior". Next in frequency was guilt about discarding ("responsibility to do the right thing"), noted by both HD (16% of HD negative emotion comments) and CC participants who mentioned guilt more frequently than any other negative emotion (40% of CC negative emotion comments). In addition, HD participants often referenced general negative mood states ("unhappy", "distressed", "stressed" (mainly about the discarding decision), and "disturbed" (by the clutter); 13.5%), whereas such comments were rarely made by CC participants (7.5%). Regret (about buying the object, not using it) was not as common, though voiced twice as often by HD versus CC participants. HD participants occasionally referenced feelings of sadness (loss, emptiness), embarrassment (about their difficulty making a decision: "This is silly", "stupid"), and shame ("humiliated"). Though rare, comments about distrusting people with objects ("don't respect my values" or "don't take my objects seriously") were mentioned more often by CCs than HDs.

Positive Emotions

CC participants were somewhat more likely to report positive emotions than were HDs (22 [weighted] versus 14). Both groups commented approximately equally about feeling good about discarding ("I'm glad", "It's good", "I feel better when I'm successful"), while CCs mainly noted their enjoyment of the object ("I like it"). Other relatively infrequent comments about emotions referenced feeling hopeful that objects would be used in the future and relief about discarding. A few CCs, but no HDs, mentioned feelings of calm, comfort and security.

Ambivalence

A number of comments during the discarding task indicated ambivalence, defined as a mixture of emotions and cognitive processing is evident in participants' comments and questions as they struggled to weigh the pros and cons of keeping or discarding their item. Ambivalent language occurred approximately three times as often for those with HD (32 comments) compared to controls (11 weighted comments).

These were mainly expressions of doubt ("a gnawing feeling", "feeling unsure", "confused") and feeling conflicted ("wrestling with the decision", "a hard struggle"), with an occasional wish to postpone the decision despite the clear task time limit. Expressions of ambivalence were also evident in the use of words like *probably* or *likely* ("I probably won't ever use it", "I'm probably going to keep it") and asking themselves *questions* during the task ("Will I ever…?", "Will I wear it?", "Do I value it?"). Such comments and questionings were relatively infrequent among controls.

Acquisition, Hoarding Problem, and Reactions of Family and Friends

Participants occasionally gave voice to how they acquired the object, their thoughts about the hoarding problem itself, and the reactions of family and friends. An equal but small number of HD (10) and CC (12, weighted) comments noted how they had obtained the object they were considering discarding: Purchased on sale ("a good deal") or received as gifts, reward for work, or inherited. Some stated that they could not recall how the object was acquired. Object acquisition did not appear to figure prominently in participant's decision making, but its origin might be more important for other types of items than the low value ordinary ones selected for this discarding task.

Eleven HD and 2 CC observations pertained to their own discarding behavior, referencing it as "healthy", noting the need for separation and emotional detachment from the object, and reporting frustration with clutter and disorganization in their home. That only a few comments referenced family and friends is not surprising given the laboratory-based study task. Community participants made 7 such comments (weighted) compared to only 4 from HD participants. Comments referred to the adverse impact of saving, mainly on spouses and children, noting strained relationships ("She's stressed out", "Drives him crazy that I hang onto it", "My husband is desperate for me to give it away"). A few mentioned neglect of their friends due to hoarding.

Discussion

This qualitative investigation found that participants used four main criteria when deciding whether to discard a personal object of low value to most people. As might be expected, the primary themes referred to reasons to save (responsibility, future use, attachment, remembrance) versus reasons to discard (readiness, lack of negative impact, anticipated positive outcome, low attachment, low distress). These were often, but not always, parallel. That HD participants gave twice as many reasons for saving as for discarding, in contrast to CC participants who made similar numbers of saving and discarding comments, is consistent with published reports indicating that people who hoard focus more often on the benefits of keeping items to the exclusion of reasons for discarding (e.g., Frost et al. 1998). It is not surprising that both the saving and discarding themes referenced similar constructs (e.g., attachment, personal impact, anticipated emotional reactions, cost/monetary value, use, attractiveness), albeit conceptually reversed and with varying frequencies. Somewhat surprisingly, current use and informational value rarely figured into HD participants' thinking, whereas usefulness was more prominent for CC participants for both saving and discarding. Perhaps future and past focus are more prevalent among those with HD versus those without HD who may focus on present usefulness. However, given that most participants chose to discard the object, it is possible that the pattern of comments about reasons to discard reflected the demand characteristics of the experiment rather than thinking that occurs under naturalistic circumstances.

Both negative and positive emotions featured prominently among participants' thoughts, and ambivalence was evident. Among models for obsessive–compulsive spectrum conditions, the model for hoarding disorder is somewhat unique in including both positive and negative emotions related to decisions to acquire and discard objects. Findings from this analysis of verbalized thoughts converge with the cognitive and behavioral model of hoarding (Frost and Hartl 1996; Steketee and Frost 2014) that proposes a range of both positive and negative emotions, including anxiety, grief, sadness, and guilt, as well as excitement, joy and pleasure (see Kyrios 2014). Overall, references to negative emotions outweighed positive ones by a factor of 10 to 1 for hoarding participants compared to controls for whom the ratio was only 2 to 1. This stark difference confirms the adverse experience of people with HD when deciding about discarding an ordinary object of limited value and suggests that the negative feelings focus on both discomfort with the task and also on dislike of their hoarding behavior. Given that difficulty making decisions is hypothesized to be a central feature underlying saving behavior and clutter (e.g., Frost and Shows 1993), it is not surprising that negative emotions predominated in a task avoided by most people with HD. That most HD participants chose to discard their item may have accentuated their reported negative feelings, especially anxiety about the decision. Alternatively, the opportunity to express their emotions during the task may have facilitated discarding, especially in view of the finding that HD participants in the thought listing condition from which current participants were drawn chose to discard somewhat more often than those in the cognitive restructuring condition (Frost et al. 2016).

In addition to anxiety, participants also reported feelings of anger, guilt and general distress, whereas they rarely mentioned regret, sadness, embarrassment, shame, and distrust

of others. These emotions may not emerge during a brief discarding task of this type but might become more prominent under other circumstances (e.g., later on after discarding more items or more difficult ones). It seems unlikely that feelings of distrust and beliefs about the need to control possessions will arise during experimental discarding tasks such as this one as the threat of removal of objects by others (family, friends, employer) against one's will is not present.

In contrast to the wide range of negative feelings reported, positive emotions were more limited in scope, mainly referring to the object and, to a lesser extent, relief in getting rid of it. As this was a discarding rather than an acquiring task, positive emotions (excitement, pleasure, joy in considering acquiring a new object) might be expected to occur less frequently than negative ones. These findings confirm the importance of assessing negative mood as part of HD symptoms in such measures as the Saving Inventory—Revised (Frost et al. 2004) and Hoarding Rating Scale (Tolin et al. 2010a, b). Expanding the assessment to include a range of negative emotions (e.g., anxiety, anger, guilt, regret) may provide clinicians with a helpful picture of clients' experiences when discarding.

The reported ambivalence about discarding is consistent with participants' positive and negative reasons for saving/discarding, as well as with their negative and positive emotions. The doubt and indecision reflected especially in HD participants' comments is consistent with conceptual models in which indecisiveness is considered a hallmark symptom of hoarding (Frost and Hartl 1996; Frost et al. 2011; Saxena 2008). Indeed, ambivalence about discarding and not acquiring is commonly observed during clinical treatment and in community settings with both voluntary clients and non-voluntary clients. Motivational interviewing, as well as training in decision-making skills, exposure practice, and cognitive therapy methods are designed to address ambivalence and improve decision-making during CBT treatment for hoarding clients (Steketee and Frost 2014). The thought listing strategy used by these participants may help clients articulate their ambivalence during treatment.

Coding of these talk-aloud comments suggests some consistency and also some differences with previous findings that identified concerns about waste as prominent drivers of saving behavior, followed by saving for information and emotional reasons, and to a lesser extent, aesthetics (Frost et al. 2015). We also sought to determine whether reported thoughts about objects would mirror the four main belief areas of emotional attachment, concerns about memory, need for control over possessions, and responsibility included in the Saving Cognitions Inventory (Steketee and Frost 2003). In this discarding task, reported reasons to save reflected a focus on personal values of responsibility (to avoid waste, find the right people/place for the object), possible future use, attachment and emotional value, and as a sentimental reminder of treasured life experiences. In contrast, comments about aesthetic (attractiveness) and monetary value were infrequent, perhaps because of the ordinary types of items selected for this task. Interestingly, the focus on future rather than current use, as well as comments about identity and lost opportunities, appear consistent with clinical observations of hoarding participants who express a strong wish to take advantage of potential opportunities that might arise (Frost and Steketee 2010). We also note that anthropomorphizing of items observed by other investigators (Timpano and Shaw 2013) did not emerge in the present study, perhaps because the items (mainly clothing and paper/reading materials) included few objects that could be viewed as animate.

The reasons for saving also included anticipation and avoidance of distress from discarding, and conversely, the reasons for discarding included the anticipated absence of adverse emotional and/or practical effects of discarding. In contrast, expectation of positive feelings and relief were less prominent. In light of the low insight and reluctance to seek help (Tolin et al. 2010a), the comments by HD participants may reflect difficulty facing their fears about discarding (see Frost and Gross 1993) as they seek to avoid bad experiences rather than considering good outcomes that might follow "letting go" of objects. This is consistent with the greater emotion-based decision making, especially negative emotions and ambivalence, for HD participants compared to CC participants whose decisions appear to be based on evaluation of the object more than on emotions (see Table 1).

Taken as a whole, the qualitative findings suggest that both hoarding and non-hoarding participants shared many emotional and cognitive features in making discarding decisions, but differed in the degree of their negative and positive reactions, and sometimes in the foci of their comments. This suggests that dimensional models of HD may be more accurate than categorical ones, as other nosology studies have suggested (e.g., Meyer et al. 2013; Timpano et al. 2013).

In view of the limited efficacy achieved by current cognitive and behavioral treatment for HD (Tolin et al. 2015), efforts to improve treatment strategies are much needed. Participants' comments about their objects suggest that encouraging clients to speak aloud about their thoughts and feelings during discarding practice may improve motivation and facilitate coping with uncomfortable negative emotions, although clinicians will want to avoid offering reassurance that may temporarily reduce discomfort but ultimately support the anxiety cycle. Many participants provided important perspectives on their hoarding behavior, especially in comments on their successful efforts, ways to detach themselves from their objects, and finding clutter and the disorganization disturbing. Although limited in number, comments about family point to potential benefits of involving them as important motivators and supporters of the treatment process (Chasson et al. 2014).

The present study has several limitations. The mainly white and female HD and CC sample limits the generalizability of findings to other groups that may differ in cultural behavior and attitudes toward possessions. The HD sample was also smaller than expected at 25 of 46 HD participants (54%) who were included in the Frost et al. (2016) experimental study versus 46 of 66 CC participants (70%). This reflected data collection problems as a number of thought listing voice recordings were inaudible or could not be located. All participants were recruited for and formally diagnosed with current HD criteria, and both treatment and non-treatment seeking adults were included, but the sample may have been constrained by the academic research setting. In addition, the presence of an experimenter may have affected reporting during the talk aloud protocol.

A further limitation is that although the choice of objects owned by participants was intended to increase ecological validity, in practice it was difficult to standardize the task across participants with regard to difficulty of discarding and anticipated distress. The restriction of items to simple household objects of little monetary value may have made discarding easier and biased reporting of thoughts and emotions. Indeed, over 85% of our sample discarded their item after the thought listing task, providing too small a sample of those who saved their items to examine thoughts and feelings that might have distinguished saving from discarding behavior. Accordingly, the study provides a limited test of portions of the HD model, as the direct influence of emotions and beliefs on discarding behavior was not assessed. Future research that utilizes even more naturalistic discarding conditions may help clarify such questions. For example, participants might be instructed to identify and select objects that would represent a pre-selected level of decision-making difficulty. Overall, however, the study corroborates and extends portions of the model of hoarding and confirms several of the types of beliefs assessed in the SCI.

Funding This study was funded by Grants from the National Institute of Mental Health to Randy Frost (R01 MH068008) and Gail Steketee (R01 MH068007).

Compliance with Ethical Standards

Conflicts of Interest Christiana Bratiotis, Gail Steketee, Randy O. Frost, and David F. Tolin have received royalties from Oxford University Press. JoAnn Dohn and Carole A. Calderon have no conflicts of interests to disclose.

Informed Consent All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Animal Rights No animal studies were carried out by the authors for this article.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Association.

Ayers, C. R., Wetherell, J. L., Golshan, S., & Saxena, S. (2011). Cognitive-behavioral therapy for geriatric compulsive hoarding. *Behaviour Research and Therapy, 49,* 689–694. https://doi.org/10.1016/j.brat.2011.07.002.

Brown, T. A., Di Nardo, P. A., & Barlow, D. H. (1994). *Anxiety disorders interview schedule for DSM-IV: Adult version*. New York: Oxford University Press.

Brown, T. A., Di Nardo, P. A., Lehman, C. L., & Campbell, L. A. (2001). Reliability of DSM-IV anxiety and mood disorders: Implications for the classification of emotional disorders. *Journal of Abnormal Psychology, 110,* 49–58. https://doi.org/10.1037/0021-843X.110.1.49.

Chasson, G. S., Carpenter, A., Ewing, J., Gibby, B., & Lee, N. (2014). Empowering families to help a loved one with hoarding disorder: Pilot study of family-as-motivators training. *Behaviour Research and Therapy, 63,* 9–16. https://doi.org/10.1016/j.brat.2014.08.016.

DeRubeis, R. J., Evans, M. D., Hollon, S. D., Garvey, M. J., Grove, W. M., & Tuason, V. B. (1990). How does cognitive therapy work? Cognitive change and symptom change in cognitive therapy and pharmacotherapy for depression. *Journal of Consulting and Clinical Psychology, 58,* 862–869. https://doi.org/10.1037/0022-006X.58.6.862.

Frost, R. O., & Gross, R. (1993). The hoarding of possessions. *Behaviour Research and Therapy, 31,* 367–382. https://doi.org/10.1016/0005-7967(93)90094-B.

Frost, R. O., & Hartl, T. L. (1996). A cognitive-behavioral model of compulsive hoarding. *Behaviour Research and Therapy, 34,* 341–350. https://doi.org/10.1016/0005-7967(95)00071-2.

Frost, R. O., Hartl, T., Christian, R., & Williams, N. (1995). The value of possessions in compulsive hoarding: Patterns of use and attachment. *Behaviour Research and Therapy, 33,* 897–902. https://doi.org/10.1016/0005-7967(95)00043-W.

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. https://doi.org/10.1016/S0005-7967(98)00056-4.

Frost, R. O., Ong, C., Steketee, G., & Tolin, D. F. (2016). Behavioral and emotional consequences of thought listing versus cognitive restructuring during discarding decisions in hoarding disorder. *Behaviour Research and Therapy, 85,* 13–22. https://doi.org/10.1016/j.brat.2016.08.003.

Frost, R. O., & Shows, D. L. (1993). The nature and measurement of compulsive indecisiveness. *Behaviour Research and Therapy, 31,* 683–692. https://doi.org/10.1016/0005-7967(93)90121-A.

Frost, R. O., & Steketee, G. (2010). *Stuff: Hoarding and the meaning of things*. New York: Houghton Mifflin Harcourt.

Frost, R. O., Steketee, G., & Grisham, J. (2004). Measurement of compulsive hoarding: Saving Inventory-Revised. *Behaviour Research and Therapy, 42,* 1163–1182. https://doi.org/10.1016/j.brat.2003.07.006.

Frost, R. O., Steketee, G., & Tolin, D. F. (2011a). Comorbidity in hoarding disorder. *Depression and Anxiety, 28,* 876–884. https://doi.org/10.1002/da.20861.

Frost, R. O., Steketee, G., Tolin, D. F., Sinopoli, N., & Ruby, D. (2015). Motives for acquiring and saving in hoarding disorder,

OCD, and community controls. *Journal of Obsessive-Compulsive and Related Disorders, 4,* 54–59. https://doi.org/10.1016/j.jocrd.2014.12.006.

Frost, R. O., Tolin, D. F., & Maltby, N. (2010). Insight-related challenges in the treatment of hoarding. *Cognitive and Behavioral Practice, 17,* 404–413. https://doi.org/10.1016/j.cbpra.2009.07.004.

Frost, R. O., Tolin, D. F., Steketee, G., & Oh, M. (2011b). Indecisiveness and hoarding. *International Journal of Clinical Psychotherapy, 4,* 253–262. https://doi.org/10.1521/ijct.2011.4.3.253.

Furby, L. (1978). Possessions: Toward a theory of their meaning and function throughout the life cycle. In P. B. Baltes (Ed.), *Life span development and behavior* (pp. 297–336). New York: Academic Press.

Grisham, J. R., Brown, T. A., Savage, C. R., Steketee, G., & Barlow, D. H. (2007). Neuropsy- hological impairment associated with compulsive hoarding. *Behaviour Research and Therapy, 45,* 1471–1483. https://doi.org/10.1016/j.brat.2006.12.008.

Grisham, J. R., Norberg, M. M., Williams, A. D., Certoma, S. P., & Kadib, R. (2010). Categorization and cognitive deficits in compulsive hoarding. *Behaviour Research and Therapy, 48,* 866–872. https://doi.org/10.1016/j.brat.2010.05.011.

Hartl, T. L., Frost, R. O., Allen, G. J., Deckersbach, T., Steketee, G., Duffany, S. R., et al. (2004). Actual and perceived memory deficits in individuals with compulsive hoarding. *Depression and Anxiety, 20,* 59–69. https://doi.org/10.1002/da.20010.

Hofmann, S. G., Meuret, A. E., Rosenfield, D., Suvak, M. K., Barlow, D. H., Gorman, J. M., et al. (2007). Preliminary evidence for cognitive mediation during cognitive-behavioral therapy of panic disorder. *Journal of Consulting and Clinical Psychology, 75,* 374–379. https://doi.org/10.1037/0022-006X.75.3.374.

Kyrios, M. (2014). Psychological models of hoarding. In R. O. Frost & G. Steketee (Eds.), *Handbook of hoarding and acquiring* (pp. 206–220). New York: Oxford University Press.

Meyer, J. F., Frost, R. O., Brown, T. A., Steketee, G., & Tolin, D. F. (2013). A multitrait-multimethod matrix investigation of hoarding. *Journal of Obsessive-Compulsive and Related Disorders, 2,* 273–280. https://doi.org/10.1016/j.jocrd.2013.03.002.

Muroff, J., Steketee, G., Bratiotis, C., & Ross, A. (2012). Group cognitive and behavioral therapy and bibliotherapy for hoarding: A pilot trial. *Depression and Anxiety, 29,* 597–604. https://doi.org/10.1002/da.21923.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Thousand Oaks, CA: Sage.

Rodriguez, C. I., Hermon, D., Alcon, J., Chen, S., Tannen, A., Essock, S., et al. (2012). Prevalence of hoarding disorder in individuals at potential risk of eviction in New York City: A pilot study. *Journal of Nervous and Mental Disease, 200,* 91–94. https://doi.org/10.1097/NMD.0b013e31823f678b.

Saxena, S. (2008). Neurobiology and treatment of compulsive hoarding. *CNS Spectrums, 13*(Suppl 14), 29–36. https://doi.org/10.1017/S1092852900026912.

Smits, J. A., Rosenfield, D., McDonald, R., & Telch, M. J. (2006). Cognitive mechanisms of social anxiety reduction: An examination of specificity and temporality. *Journal of Consulting and Clinical Psychology, 74,* 1203–1212. https://doi.org/10.1037/0022-006X.74.6.1203.

Steketee, G., & Frost, R. O. (2003). Compulsive hoarding: Current status of the research. *Clinical Psychology Review, 23,* 905–927. https://doi.org/10.1016/j.cpr.2003.08.002.

Steketee, G., & Frost, R. O. (2014). *Treatment for hoarding disorder: Therapist guide* (2nd ed.). New York: Oxford University Press.

Steketee, G., Frost, R. O., Tolin, D. F., Rasmussen, J., & Brown, T. A. (2010). Waitlist-controlled trial of cognitive behavior therapy for hoarding disorder. *Depression and Anxiety, 27,* 476–484. https://doi.org/10.1002/da.20673.

Timpano, K. R., Broman-Fulks, J. J., Glaesmer, H., Exner, C., Rief, W., Olatunji, B. O., et al. (2013). A taxometric exploration of the latent structure of hoarding. *Psychological Assessment, 25,* 194–203. https://doi.org/10.1037/a0029966.

Timpano, K. R., & Shaw, A. M. (2013). Conferring humanness: The role of anthropomorphism in hoarding. *Personality and Individual Differences, 54,* 383–388. https://doi.org/10.1016/j.paid.2012.10.007.

Tolin, D. F., Fitch, K. E., Frost, R. O., & Steketee, G. (2010a). Family informants' perception of insight in compulsive hoarding. *Cognitive Therapy and Research, 34,* 69–81. https://doi.org/10.1007/s10608-008-9217-7.

Tolin, D., Frost, R., & Steketee, G. (2010b). A brief interview for assessing compulsive hoarding: The Hoarding Rating Scale. *Psychiatry Research, 178,* 147–152. https://doi.org/10.1016/j.psychres.2009.05.001.

Tolin, D. F., Frost, R. O., Steketee, G., Gray, K. D., & Fitch, K. E. (2008). The economic and social burden of compulsive hoarding. *Psychiatry Research, 160,* 200–211. https://doi.org/10.1016/j.psychres.2007.08.008.

Tolin, D. F., Frost, R. O., Steketee, G., & Muroff, J. (2015). Cognitive behavioral therapy for hoarding disorder: A meta-analysis. *Depression and Anxiety, 32,* 158–166. https://doi.org/10.1002/da.22327.

Tolin, D. F., Kiehl, K. A., Worhunsky, P., Book, G. A., & Maltby, N. (2009). An exploratory study of the neural mechanisms of decision making in compulsive hoarding. *Psychological Medicine, 39,* 325–336. https://doi.org/10.1017/S0033291708003371.

Tolin, D. F., Stevens, M. C., Villavicencio, A. L., Norberg, M. M., Calhoun, V. D., Frost, R. O., et al. (2012). Neural mechanisms of decision making in hoarding disorder. *Archives of General Psychiatry, 69,* 832–841. https://doi.org/10.1001/archgenpsychiatry.2011.1980.

Tolin, D. F., & Villavicencio, A. (2011). An exploration of economic reasoning in hoarding disorder patients. *Behaviour Research and Therapy, 49,* 914–919. https://doi.org/10.1016/j.brat.2011.09.005.

Tolin, D. F., Villavicencio, A., Umbach, A., & Kurtz, M. M. (2011). Neuropsychological functioning in hoarding disorder. *Psychiatry Research, 189,* 413–418. https://doi.org/10.1016/j.psychres.2011.06.022.

Warren, L. W., & Ostrom, J. C. (1988). Pack rats: World class savers. *Psychology Today, 22,* 58–62.

Wincze, J. P., Steketee, G., & Frost, R. O. (2007). Categorization in compulsive hoarding. *Behaviour Research and Therapy, 45,* 63–72. https://doi.org/10.1016/j.brat.2006.01.012.