

Comparing Effects of Acceptance Training and Psychoeducation on Hoarding Symptoms

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## Abstract

Hoarding symptoms include difficulty letting go of possessions, excessive acquisition, and clutter that precludes use of active living spaces. The current study compared the effects of acceptance training to psychoeducation on hoarding severity in a sample of college students with elevated hoarding symptoms. Participants ( $N = 47$ ) completed self-report measures at baseline, posttest, and one-week follow-up and an in vivo discarding behavioral task at posttest. There were no differences in self-reported outcomes between conditions over time, suggesting acceptance training was not more effective than psychoeducation. Significant and large effect sizes for hoarding severity and maladaptive hoarding cognitions were found from baseline to one-week follow-up, indicating both interventions improved hoarding symptoms in our sample. There was a medium and marginally significant effect favoring acceptance training for number of items discarded ( $p = .05$ ). These findings tentatively support the utility of acceptance-based techniques and psychoeducation in the treatment of hoarding. In addition, brief early interventions may be effective for people who present with moderate hoarding severity. Limitations of the study include lack of a true control group to estimate placebo effects, lack of assessment of processes of change, and use of a nonclinical, demographically homogeneous sample.

*Keywords:* hoarding, discarding, acceptance, psychoeducation, analogue study

### Comparing Effects of Acceptance Training and Psychoeducation on Hoarding Symptoms

Difficulty letting go of belongings is the hallmark behavioral feature of hoarding disorder (HD), which is additionally characterized by excessive acquisition of items, consequent clutter that precludes the use of active living spaces, and significant distress and/or functional impairment (American Psychiatric Association, 2013; Frost, Tolin, Steketee, Fitch, & Selbo-Bruns, 2009). According to the cognitive-behavioral model of hoarding (Frost & Hartl, 1996), reasons for difficulty discarding include information processing deficits (e.g., inattention, indecisiveness); intense emotional attachment to and maladaptive beliefs about possessions; and experiential and behavioral avoidance (e.g., avoidance of distress associated with discarding, avoidance of decision making; Ayers, Castriotta, Dozier, Espejo, & Porter, 2014; Shaw, Timpano, Steketee, Tolin, & Frost, 2015).

Accordingly, the empirically supported treatment for HD, cognitive-behavioral therapy (CBT), has historically targeted these specific processes using techniques like psychoeducation, motivational interviewing, cognitive restructuring, and exposure (Muroff, Bratiotis, & Steketee, 2011; Muroff et al., 2009; Steketee, Frost, Tolin, Rasmussen, & Brown, 2010; Tolin, Frost, & Steketee, 2007). Despite demonstrating effectiveness for a relatively difficult-to-treat condition, currently available treatments for HD can be further improved given 57 to 75% of HD patients continue to exhibit symptom severity within the clinical range at posttreatment (Tolin, Frost, Steketee, & Muroff, 2015).

Acceptance and commitment therapy (ACT) is an acceptance- and mindfulness-based cognitive-behavioral therapy that has been found to be effective for a range of clinical conditions including those closely associated with HD like anxiety disorders (Arch et al., 2012), depression (A-Tjak, Morina, Topper, & Emmelkamp, 2018), and obsessive-compulsive disorder (Twohig,

2008; Twohig et al., 2018). The hypothesized process of change in ACT is psychological flexibility, the ability to respond effectively to inner experiences and select actions congruent with self-chosen values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

Psychological flexibility encompasses six subprocesses of change: acceptance, defusion, present-moment awareness, self-as-context, committed action, and values. Acceptance refers to the willingness to experience thoughts, feelings, and sensations without trying to change their frequency or form. Defusion describes disentanglement of meaning from thought, such that thoughts are seen as what they literally are: sounds in our heads. Practicing defusion reduces the believability of thoughts (Masuda et al., 2010)—or how seriously we treat them—and, thus, their power over behavior. ACT also uses mindfulness-based strategies, such as being present, which requires being in continuous, nonjudgmental contact with internal and external events as they occur. Self-as-context relies on perspective taking with respect to the self; specifically, treating the self as an observer or container of inner experiences (e.g., “I am noticing anxiety”) rather than as defined by those inner experiences (e.g., “I am an anxious person”). The difference between defusion and self-as-context is the “I” is addressed more explicitly in self-as-context. Defining values clarifies desired life directions and allows them to shape behavior. Committed action refers to acting consistently with chosen values. We note differences in subprocesses are theoretical rather than practical; in reality, it would be difficult to practice a process in isolation because of their inherent interconnectedness.

Low psychological flexibility or psychological inflexibility has been associated with hoarding symptoms in clinical and nonclinical samples (Ayers et al., 2014; Fernández de la Cruz et al., 2013; Wheaton, Abramowitz, Franklin, Berman, & Fabricant, 2011) and been found to mediate the relationship between distress and hoarding severity (Ong, Krafft, Levin, & Twohig,

2018), suggesting targeting psychological inflexibility may be a way to decrease hoarding symptoms. In addition, ACT trials that included hoarding presentations in OCD samples showed improved outcomes, suggesting acceptance-based techniques used in ACT may be relevant to HD (Twohig, Hayes, & Masuda, 2006; Twohig et al., 2010).

Psychological inflexibility in hoarding can manifest as experiential or behavioral avoidance (Ayers et al., 2014). Experiential avoidance refers to attempts to control internal events, such as thoughts or sensations (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), reflecting an inability or unwillingness to tolerate distress (Ayers et al., 2014; Steketee & Frost, 2003). Behavioral avoidance is typically characterized by saving (i.e., avoiding discarding and decision making) and acquiring (avoiding decision making). In a way, behavioral avoidance is the means through which experiential avoidance is achieved (i.e., saving to avoid distress associated with discarding). Relatedly, research has shown hoarding severity is associated with deficits in emotion regulation skills (e.g., Grisham et al., 2018; Tolin, Levy, Wootton, Hallion, & Stevens, 2018), pointing to a generalized inability to effectively respond to the difficult emotions common in HD (Shaw et al., 2015). To the extent saving and acquiring—core symptoms of HD—can be conceptualized as avoidance or deficits in emotion regulation skills, it is evident maladaptive emotional responding plays an integral role in hoarding.

Applying acceptance-based principles to difficulty discarding would entail increasing willingness to experience distress, undermining the influence of rules over behaviors (e.g., “I cannot get rid of this because it is expensive,” “I must keep this because my friend gave it to me”), and building up a pattern of values-consistent action. For example, defusion or decentering techniques that encourage seeing thoughts as thoughts without buying into their meaning could foster flexible responding to maladaptive cognitions such that individuals can choose to discard

instead of save objects when doing so is important to them (Frost, Ong, Steketee, & Tolin, 2016).

A recent manual for group CBT for HD explicitly incorporates acceptance-based strategies to cope with difficult emotions (Tolin, Worden, Wootton, & Gilliam, 2017). Treatment based on this manual was more efficacious than a waitlist control condition and produced a higher rate of clinically significant change (42%) than the average of 35% (Tolin et al., 2015; Tolin et al., 2019). These results suggest addressing how to respond to intense emotions may be a helpful element in treatment for HD. However, the treatment package also included other evidence-based components such as cognitive restructuring, contingency management, and motivational interviewing (Tolin et al., 2017). Thus, it is unclear to what extent treatment efficacy can be attributed to practicing acceptance skills specifically.

Dismantling trials and tests of change processes are needed to determine the unique therapeutic value of acceptance-based strategies in HD interventions. Examining the effects of specific treatment components on hypothesized change processes and outcomes is crucial because such research has the potential to elucidate how treatment works and, consequently, improve subsequent treatment iterations (Kazdin, 2007). Currently, the only consistent change process in CBT for HD is decreases in maladaptive beliefs about possessions (Levy et al., 2017; Tolin et al., 2019).

Given limited data on change processes underlying treatment for HD and the contribution of acceptance-based strategies to treatment response, the present study aimed to investigate the effects of acceptance training on hoarding symptoms in a nonclinical sample of college students with elevated hoarding symptoms. Strategies used in full treatment packages for HD like cognitive restructuring and motivational interviewing (Muroff et al., 2009; Tolin et al., 2017) were not a part of the current intervention. Psychoeducation was used as an active control

condition. We predicted acceptance training would increase discarding and decrease hoarding severity, hoarding cognitions, and psychological inflexibility over the course of the study compared to psychoeducation.

## Method

### Recruitment

Participants were recruited from undergraduate psychology classes at a university in the western U.S. through class announcements and online postings. To be eligible for the study, individuals had to meet the following criteria: (1) score of at least 37 on the Saving Inventory—Revised (SI-R; 1 SD above nonclinical mean; Coles, Frost, Heimberg, & Steketee, 2003; Wheaton et al., 2011), (2) at least 18 years of age, and (3) ability to complete measures in English.

### Measures

**Background information.** This questionnaire contained items on demographic information (gender, age, ethnicity, marital status).

**SI-R (Frost, Steketee, & Grisham, 2004).** The SI-R is a 23-item self-report measure comprising three subscales: difficulty discarding, clutter, and excessive acquisition. Sample questions include: “How distressing do you find the task of throwing things away?” and “How strong is your urge to buy or acquire free things for which you have no immediate use?” Items on the SI-R are scored between 0 and 4, with higher scores indicating greater hoarding severity. Internal consistency, test-retest reliability, and convergent and divergent validity have been established for the scale (Frost et al., 2004). Cronbach’s  $\alpha$ s ranged from .83 to .91 in the current sample indicating good to excellent internal consistency.

**Saving Cognitions Inventory (SCI; Steketee, Frost, & Kyrios, 2003).** The SCI is a 24-

item self-report measure that evaluates maladaptive beliefs about and emotional attachment to possessions. It is composed of four subscales: emotional attachment, control, responsibility, and memory. Each item on the SCI represents a thought associated with one of the subscales. Items include: “I could not tolerate it if I were to get rid of this” and “This possession is equivalent to the feelings I associate with it.” Participants are asked to rate the extent to which they had each thought when deciding whether or not to discard something in the past week, from 1 (*not at all*) to 7 (*very much*). The scale has demonstrated very good to excellent internal consistency, as well as convergent and discriminant validity (Steketee et al., 2003). Cronbach’s  $\alpha$ s ranged from .87 to .94 in the current sample indicating good to excellent internal consistency.

**Acceptance and Action Questionnaire – II (Bond et al., 2011).** The AAQ-II is a 7-item self-report measure of psychological inflexibility. Items are scored from 1 (*never true*) to 7 (*always true*); higher scores suggest greater psychological inflexibility. An example item is: “I worry about not being able to control my worries and feelings.” The AAQ-II has demonstrated good internal consistency, test-retest reliability, convergent validity, and discriminant validity (Bond et al., 2011). Cronbach’s  $\alpha$ s ranged from .90 to .95 in the current sample indicating excellent internal consistency.

**Homework completion.** Participants provided ratings from 1 (0%) to 5 (100%) for the amount of homework they completed as well as the amount of effort they put into achieving the goal they set during the lab session. Scores on each item were summed to create a measure for overall homework completion (range = 2 to 10). This scale showed good internal consistency ( $\alpha = .84$ ).

## **Procedure**

Study procedures were approved by a university institutional review board and

participants provided informed consent at the start of the study. Participants received course credit as determined by their instructor for study participation.

**Pre-session instructions.** Before arriving in the lab, participants were instructed to bring five items that met the following criteria: (1) owned by participants, (2) low monetary value (to avoid the confound of monetary value of items), (3) not needed or used in the past year (to avoid the confound of active use), (4) other people might get rid of the item, and (5) easily transportable. In addition, the item had to be rated  $\geq 4$  on a scale of 1 to 5 for at least one of the following dimensions: importance, distress or discomfort associated with letting go of item, and unwillingness to let go of item. These criteria are intended to approximate the kind of items individuals with hoarding typically possess and have difficulty discarding (Frost & Hartl, 1996; Nordsletten & Mataix-Cols, 2012).

**Pretest.** At the start of the experiment, participants completed pretest measures (i.e., SI-R, SCI, AAQ-II) on Qualtrics, an online survey platform.

**Experimental manipulation.** A trained graduate student administered both study interventions under the supervision of a clinical psychologist (MPT). Each intervention was prefaced by the rationale for the approach used as well as a brief assessment of the impact of saving and acquiring on participants' functioning.

The acceptance condition was a 75-minute training primarily focused on acceptance, cognitive defusion, and values. Other ACT processes were highlighted as indicated by participants' specific struggles. The general format of the intervention began with assessment, identifying values, teaching acceptance and defusion, clarifying confusion, and going over homework. Because the training was individualized to participants based on the brief assessment conducted at the outset of the session, it varied across participants, though skills covered tended

to overlap (e.g., being open to uncertainty associated with discarding, disentangling from thoughts about the need to save possessions, connecting with the reasons underlying discarding). For homework, participants articulated their values as well as a specific behavioral commitment in line with those values and were instructed to follow through on the behavior goal over the following week.

The psychoeducation condition was also 75 minutes long. In this condition, participants received psychoeducation about hoarding (diagnostic criteria for HD, cognitive-behavioral model of hoarding, dimensionality of hoarding symptoms) after the assessment. Then, they watched a 40-minute episode of *Hoarders* to expose them to real-life examples of clinically significant hoarding, followed by a discussion on the content of the episode as well as how elements in the episode were relevant to their own struggles with saving. Questions used in the discussion after the episode included: “What parts of the episode could you relate to?” “What did you learn about hoarding from the episode?” “Why do you think this is such a struggle for the participants in the show?” We selected an episode that contained minimal treatment elements to curtail infusion of CBT in the psychoeducation condition. To control for the amount of talking in which participants engaged across conditions, the psychoeducation condition was set up as a discussion rather than a lecture. Homework was a self-monitoring form for participants to track their saving and discarding behavior over the following week.

**Behavioral task.** Participants were asked to discard, donate, or keep the items they brought with them. Difficulty discarding was measured by the number of items discarded and/or donated in this task (range = 0 to 5).

**Posttest.** At the end of the experiment, participants completed posttest measures (i.e., SI-R, SCI, AAQ-II) on Qualtrics.

**One-week follow-up.** One week after the study visit, participants were emailed a link to a follow-up battery containing the SI-R, SCI, AAQ-II, and homework completion items. They were instructed to complete the measures within three days.

### **Analyses**

Statistical analyses were conducted with R in RStudio (R Core Team, 2019; RStudio Team, 2015), using the following packages: tidyverse (Wickham, 2017), lme4 (Bates, Maechler, Bolker, & Walker, 2015), texreg (Leifeld, 2013), furniture (Barrett & Brignone, 2017), and effsize (Torchiano, 2017). An independent-samples *t*-test was used to evaluate the effect of condition on number of items discarded during the behavioral task. Multilevel modeling with maximum likelihood estimation was used to evaluate the effect of condition on SI-R, SCI, and AAQ-II scores over time (from preintervention to one-week follow-up). To determine the appropriate function for the time variable, we compared model fit indices for a linear mixed effects model to a quadratic mixed effects model. For all three outcomes, the quadratic model fit significantly better based on the  $\chi^2$ -difference statistic ( $ps < .05$ ); thus, time was specified as a quadratic function. The model for each outcome of interest included condition, time (in days), and the interaction term for condition and time as fixed predictors. Intercepts were allowed to vary by individual. Hedges' *g* effect sizes are reported due to our relatively small sample.

### **Results**

Twenty-four participants were randomly assigned to the acceptance condition and 23 to the psychoeducation condition ( $N = 47$ ).

### **Sample Description**

Due to a data collection error, demographic information was only obtained from 17 participants (36% of full sample), however, these descriptive statistics likely approximate the

demographic profile of our full sample given that the recruitment method used in the present study has typically produced relatively homogenous samples (CITATION REMOVED FOR BLINDING). The subsample who provided demographic data had a mean age of 21.4 years ( $SD = 6.0$  years, range = 18 to 41 years) with 64.7% identifying as female and 88.2% as European American/White. Eighty-two percent were single. Twenty-eight participants (70% of complete cases) from the full sample met the clinical cutoff of 43 on the SI-R for young adults (< 40 years old; Kellman-McFarlane et al., 2019). The average total SI-R score at baseline was 47.7 ( $SD = 9.0$ ).

### **Effect of Condition on Outcomes**

Participants in the acceptance condition discarded 0.85 more items ( $M_{AT} = 3.38$ ) on average out of five possible items relative to the psychoeducation condition ( $M_{PE} = 2.52$ ), translating to a medium effect size (Hedges'  $g = 0.58$ ). This difference was marginally statistically significant ( $t = 2.01, p = .050$ ).

Results from the mixed effects models are presented in Table 1. There was no significant main effect of condition or interaction effect of condition by time for any outcome measure. There was a main effect of time on SI-R and SCI indicating significant decreases in hoarding severity and hoarding cognitions over time across groups ( $ps < .01$ ). No main effect of time was observed for the AAQ-II. Effect sizes for change in SI-R and SCI scores from baseline to one-week follow-up were large (Hedges'  $gs = 1.20$  and  $0.81$ , respectively); a small effect was observed for the decrease in AAQ-II total score (Hedges'  $g = 0.42$ ). Mean scores over time are reported in Table 2 and the trajectories of each dependent variable are illustrated in Figure 1.

### **Homework Completion**

Homework completion ratings did not significantly differ between groups ( $M_{AT} = 8.09$ ,

$M_{PE} = 7.95, p = .83$ ); mean scores indicated both groups reported relatively high rates of homework completion.

### **Discussion**

Contrary to predictions, both acceptance training and psychoeducation significantly reduced hoarding severity and hoarding cognitions from baseline to one-week follow-up among college students who reported elevated hoarding symptoms and no between-group differences were found on self-report measures. The effect sizes observed in the current study are comparable to those reported for pre- to posttreatment improvement in a meta-analysis of CBT for HD (Tolin et al., 2015) suggesting symptom reduction in the present study was of clinical significance. These findings support the utility of both acceptance-based techniques as well as psychoeducation for decreasing self-reported hoarding symptoms in a nonclinical sample with elevated hoarding.

The sizable impact of a single intervention session on self-reported hoarding symptoms in both conditions suggests acceptance training and psychoeducation may be useful brief early interventions when severity is in the moderate range or in the context of a stepped care model for the prevention or treatment of HD. The efficacy of psychoeducation is especially notable because providing psychoeducation poses a relatively low burden on mental health resources (e.g., little training is needed to provide psychoeducation) and may obviate the consequent need for care if hoarding symptoms were to maintain or increase (Tolin, Meunier, Frost, & Steketee, 2010). Furthermore, the ease of implementation of psychoeducation may facilitate adoption in community settings that have greater access to people at risk for developing severe hoarding. We submit these two approaches may be promising preventative or early interventions that need to be further tested in more diverse samples to verify the reliability of current findings.

At the same time, the efficacy of psychoeducation in the present study may be surprising given approximately half the intervention entailed watching a TV episode of *Hoarders*, which arguably sensationalizes HD and would likely be contraindicated in HD treatment given stigma associated with hoarding (Chasson, Guy, Bates, & Corrigan, 2018). There are two possible explanations for the large effect sizes observed within the psychoeducation condition. First, we used a nonclinical sample of college students with elevated hoarding symptoms who may be less sensitive to exaggerated portrayals of HD than people who have been struggling with hoarding for decades. Second, the context in which the episode was shown might have influenced how participants regarded its content. The episode was prefaced by a discussion on the cognitive-behavioral model of hoarding and the dimensionality of hoarding symptoms and followed by a guided discussion on reactions to the episode with questions requiring self-reflection. The presentation of the episode in this setting might have encouraged participants to orient to the function of learning rather than entertainment. These features may be important to consider when implementing psychoeducation in different populations.

Participants in the acceptance condition discarded or donated approximately one more item on average than those in the psychoeducation condition following the study intervention (3.38 vs. 2.52). Although this medium effect size just met the cutoff for statistical significance ( $p = .050$ ), it is possible acceptance training was more readily generalizable to behaviors than psychoeducation. That is, participants who were taught acceptance techniques might have found it easier to practice them with actual items in contrast to psychoeducation, which focused more on broadly teaching participants about hoarding rather than what to do with items. Nonetheless, it is notable participants in both conditions discarded or donated about half the items they brought in on average as those items were supposed to be difficult to let go of. Therefore,

whereas both conditions could be efficacious approaches for difficulty discarding, acceptance training may have incremental benefit for behavior change—but not for self-reported severity.

Psychological flexibility did not shift correspondingly with symptom reduction; this finding undermines the theory of change underlying ACT. It appears psychological flexibility did not explain improvement in outcomes in the present study, which is the opposite of what the ACT model predicts (Hayes et al., 2006). However, it is possible the general measure of psychological inflexibility (AAQ-II) used in our study was insufficiently precise to detect changes in psychological inflexibility related to hoarding (Krafft, Ong, Twohig, & Levin, 2018; Ong, Lee, Levin, & Twohig, 2019). Furthermore, the duration of assessment (one week) might have been too short to provide a clear picture of the dynamic relationship between psychological flexibility and symptoms over time, which is likely bidirectional (Ong et al., 2020). Future research needs to take measurement and longitudinal considerations into account to more accurately examine the role of psychological inflexibility as a process of change in treatment for HD.

We also note our college student sample with elevated hoarding symptom is not representative of a typical clinical HD sample who tend to be older (means range from 49 to 74 years) and exhibit extremely high levels of hoarding severity at baseline ( $> 4$  SDs above mean; Tolin et al., 2015). The difference in demographic profile might explain the medium to large effect sizes in our study for several reasons. First, younger age is related to significantly better outcomes with respect to hoarding severity (Tolin et al., 2015). Second, probability of onset of at least moderately severe hoarding increases with age, reaching a plateau between 36 and 40 years (Tolin et al., 2010). Thus, the current intervention could have been rendered more efficacious by its introduction prior to development of more severe—and potentially entrenched—hoarding

patterns. Third, homework adherence in our sample was high, which is less common in clinical samples and might also have contributed to stronger outcomes (Simpson et al., 2011). Fourth, our sample unlikely demonstrated the deficits in cognitive functioning common in HD samples (e.g., visual memory, problem solving, attention, organization; Mackin et al., 2016; Woody, Kellman-McFarlane, & Welsted, 2014). Although some evidence indicates people with HD have stronger abstract reasoning skills (Mackin et al., 2016), the students in our sample were probably more responsive to the interventions than a clinical sample would have been given their better overall cognitive abilities.

That acceptance training and psychoeducation each resulted in significant decreases in hoarding measures underscores the need to use additive component designs to determine which elements of HD treatment are most cost-effective, necessary, and sufficient. Laboratory-based component studies—such as this one—are one way to do so without recruiting significant resources. At present, cognitive-behavioral protocols for HD comprise multiple elements, including motivational interviewing, home visits, cognitive restructuring, skills training, exposure, and contingency management, and tend to require many sessions (range = 13 to 35) relative to treatment for other mental health conditions (Muroff, Steketee, Bratiotis, & Ross, 2012; Tolin et al., 2015; Worden, Bowe, & Tolin, 2017). While the generalizability of laboratory-based data from nonclinical samples warrants empirical testing, the advantage of these designs is their ability to clarify relevant procedures and processes of change in a controlled environment that may inform subsequent treatment development. Moreover, identifying the most vital ingredients using component studies has the potential to ultimately streamline treatment of hoarding and alleviate therapeutic burden on clients and clinicians. Although current findings indicate relevance of acceptance and psychoeducation to subclinical

hoarding symptoms, more research needs to be done to evaluate the effectiveness of these approaches in HD samples.

### **Limitations**

Because both study conditions were active, we were unable to estimate the contribution of demand characteristics or placebo effects to the improvements demonstrated in our study. For example, the high face validity of items on the SI-R and SCI might have facilitated biased self-reporting. It is also possible self-reported changes were not correlated with actual changes in behavior outside of the lab; future research would be strengthened by multimethod forms of assessment (e.g., self-report, informant-report, behavioral observation). Therefore, current findings must be replicated to ascertain the efficacy of acceptance-based interventions for hoarding symptoms.

Without a manipulation check, the degree to which participants successfully grasped acceptance skills after receiving a 75-minute acceptance training is unclear. We also did not measure processes of change besides psychological flexibility. Thus, we could not determine how the interventions led to the observed improvements. The components shared by both interventions were talking to someone about struggles with hoarding as well as gaining insight into hoarding as a potential problem. For a nonclinical sample, these elements could have been sufficient to galvanize change. Mediation tests in a larger sample using an experimental design over a longer period of time might help to illuminate relevant processes of change.

The homogeneity of our sample (mostly European American/White, younger students) precludes generalizability of our findings to other populations. Ultimately, in addition to component studies, using a protocol that more closely resembles a full course of psychotherapy and a diverse clinical sample would afford a more ecologically valid test of whether acceptance-

based approaches do in fact constitute a feasible and effective treatment for HD.

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Table 1

*Results from Mixed Effects Models for Saving Inventory—Revised, Saving Cognitions Inventory, and Acceptance and Action Questionnaire—II with Time (Days) and Condition as Predictors*

	SI-R	SCI	AAQ-II
Intercept	49.44*** (1.99)	88.08*** (4.52)	28.77*** (1.95)
Condition <sup>a</sup>	-3.71 (2.99)	-4.73 (6.75)	-2.53 (2.80)
Days	-9.90*** (2.24)	-14.82** (4.68)	-2.06 (1.33)
Days <sup>2</sup>	1.12*** (0.30)	1.65** (0.63)	0.24 (0.18)
Condition × Days	2.81 (3.12)	4.15 (6.64)	-0.45 (1.87)
Condition × Days <sup>2</sup>	-0.37 (0.42)	-0.44 (0.90)	0.07 (0.25)
Number of observations	137	135	138
Number of participants	47	47	47

\*\*\*  $p < .001$ . \*\*  $p < .01$ . \*  $p < .05$ .

<sup>a</sup> Reference group is psychoeducation.

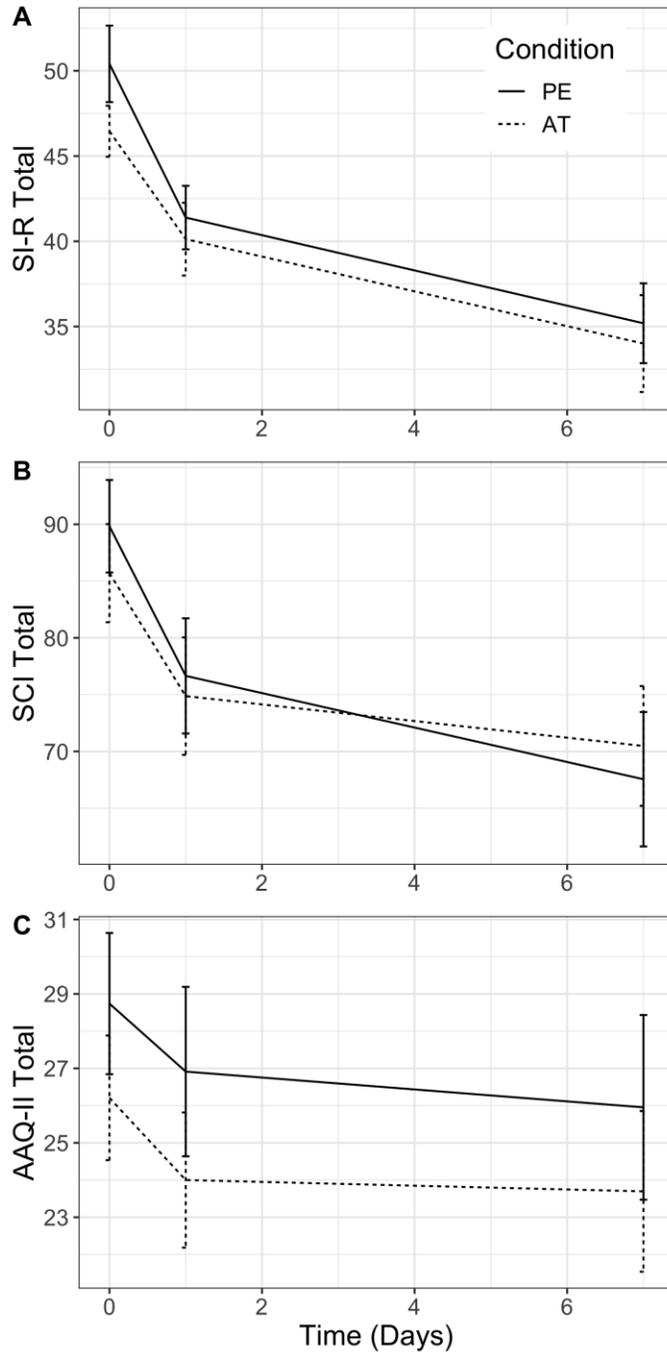
*Note.* SI-R = Saving Inventory—Revised; SCI = Saving Cognitions Inventory; AAQ-II = Acceptance and Action Questionnaire—II. Standard errors are reported in parentheses.

Table 2

*Means and Standard Deviations for Saving Inventory—Revised, Saving Cognitions Inventory, and Acceptance and Action Questionnaire—II Scores at Pretest, Posttest, and One-Week Follow-Up*

	Pre		Mean (SD)/n		Follow-up	
			Post			
	SI-R Total					
Overall	48.3 (9.1)	46	40.7 (9.7)	47	34.6 (12.2)	44
PE	50.4 (10.5)	22	41.4 (8.9)	23	35.2 (10.7)	21
AT	46.5 (7.3)	24	40.1 (10.5)	24	34.0 (13.6)	23
	SCI Total					
Overall	87.8 (20.0)	46	75.8 (24.3)	46	69.1 (25.6)	43
PE	89.8 (19.5)	23	76.7 (24.3)	23	67.5 (26.5)	20
AT	85.7 (20.7)	23	74.9 (24.8)	23	70.5 (25.3)	23
	AAQ-II Total					
Overall	27.4 (8.6)	47	25.4 (9.9)	47	24.8 (10.8)	44
PE	28.7 (9.1)	23	26.9 (10.9)	23	26.0 (11.4)	21
AT	26.2 (8.2)	24	24.0 (8.9)	24	23.7 (10.4)	23

*Note.* PE = psychoeducation; AT = acceptance training; SI-R = Saving Inventory—Revised; SCI = Saving Cognitions Inventory; AAQ-II = Acceptance and Action Questionnaire—II.



*Figure 1.* Means and standard error bars for Saving Inventory—Revised (SI-R; Panel A), Saving Cognitions Inventory (SCI; Panel B), and Acceptance and Action Questionnaire—II (AAQ-II; Panel C) scores from baseline to one-week follow-up for acceptance training and psychoeducation respectively.