



Research Paper

A naturalistic study of emotion regulation-enhanced cognitive-behavioral group therapy for hoarding disorder in a community setting

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ABSTRACT

Background: Cognitive-behavioral group therapy for hoarding disorder (HD) is efficacious, but outcomes are modest and dropout rates are generally high. Clinical challenges in this population include high rates of comorbidity and difficulty regulating and tolerating negative emotions, which may reduce engagement with discarding exposures and lead to increased dropout.

Methods: In the current naturalistic study, we evaluated standard group cognitive-behavioral therapy enhanced with a three-session emotion regulation module in a large sample of individuals ($N = 115$) seeking treatment for HD at a community mental health clinic. We evaluated outcomes for distress tolerance, as well as hoarding symptoms and comorbid depression and anxiety symptoms.

Results: Distress tolerance was significantly improved at post-treatment, Hoarding symptoms, anxiety, and depression were also significantly decreased. Distress tolerance predicted more severe hoarding symptoms at baseline, but improvement in distress tolerance was not significantly associated with improvement in hoarding symptoms.

Limitations: The primary limitation was the absence of a control treatment condition, but HD is known to be a chronic condition which tends not to improve in waitlist control conditions.

Conclusions: Integrating emotion regulation strategies may provide an important pathway to improving treatment outcomes for hoarding disorder.

Mounting evidence of the substantial impairment and distress associated with hoarding disorder (HD) has spurred efforts to improve treatments for this debilitating problem. HD, characterized primarily by the inability to discard large quantities of possessions, is linked to unsanitary living conditions, social isolation, health problems, and the inability to work (Ayers et al., 2014; Bratiotis et al., 2013; Mathes et al., 2019; Tolin et al., 2008; Yap et al., 2020). Individuals with HD report a very poor quality of life, equivalent to those with schizophrenia (Ong et al., 2015; Saxena et al., 2011; Tolin et al., 2019).

Tolin, Frost, and Steketee (Muroff et al., 2014; Tolin et al., 2007) developed a specific cognitive-behavioral therapy (CBT) for HD, with treatment strategies derived from the cognitive-behavioral model. In this model, hoarding is conceptualised as a multi-faceted problem that results from information processing deficits, problems with emotional

attachment, rigid beliefs about saving possessions, and behavioral avoidance (Frost and Hartl, 1996). The key elements of the treatment include psychoeducation, motivational strategies, exposure to discarding and not acquiring, and cognitive restructuring. These strategies target maladaptive beliefs, and reduce behavioral avoidance. CBT for HD can be delivered either individually or in a group format. The treatment can also be delivered by non-professionals or peers in a structured 13–15 week support group, in which participants read the Buried in Treasures (BiT) self-help book (Tolin et al., 2007) and practiced cognitive-behavioral strategies. Frost et al. (2012) showed that the BiT workshop improved hoarding severity by 31% and was significantly more effective than a waitlist control group.

Although cognitive-behavioral interventions are moderately efficacious (Rodgers et al., 2021; Tolin et al., 2015), HD has traditionally been

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considered challenging to treat (Frost et al., 2010; Steketee et al., 2010). Recent reviews show that only a third of individuals evidence clinically significant improvements and that 25 to 50% of the participants discontinue treatment prematurely (Grisham, Norberg, and Yap, 2021). It is likely that there are even higher dropout rates when HD treatment is conducted in a ‘real-world’ clinical setting.

Targeting emotion dysregulation in hoarding disorder

Because many patients discontinue treatment or continue to suffer from hoarding symptoms at its conclusion, there is ample opportunity for innovations to improve current CBT approaches. Due to their strong, albeit insecure, emotional attachment to objects (Yap and Grisham, 2019, 2020) and an excessive fear of waste (Frost et al., 2018), individuals with HD find discarding or donating their possessions to be an extremely challenging task. During discarding exposures, clients practice throwing away increasingly valuable possessions. They learn to test out their feared predictions regarding losing their possessions and have to tolerate the negative emotions that occur, including anxiety, sadness, and guilt.

Experiencing these negative emotions may be particularly difficult for individuals with HD. Growing evidence suggest that individuals with HD experience negative emotions intensely and have difficulty tolerating these emotions (Crone and Norberg, 2018; Grisham et al., 2018; Norberg et al., 2020; Shaw et al., 2015; Timpano et al., 2014). Distress tolerance (DT) is defined as the ability to withstand negative emotional states; therefore low DT is characterised by the inability to accept and tolerate negative emotional states. Low DT has been proposed as a transdiagnostic factor that plays a key role in the maintenance of many psychopathological disorders, including obsessive-compulsive and related disorders (Barton et al., 2021; Leyro et al., 2010; Yap et al., 2018). Several studies have shown that DT is a specific predictor of hoarding symptom severity in both nonclinical and clinical samples (Coles et al., 2003; Grisham et al., 2018; Medley et al., 2013; Oglesby et al., 2013; Timpano et al., 2009, 2014; Worden et al., 2019). Because many individuals with HD experience intense distress and negative emotions during decision-making (Frost et al., 2016; Tolin et al., 2012), refusal to discard or make decisions about items may represent avoidance of negative emotions that are difficult to manage.

Given the potential malleability of distress tolerance (Timpano et al., 2009, 2011; Zeifman et al., 2020), we proposed that the effectiveness of group CBT for HD might be improved by enhancing individuals’ ability to understand and tolerate negative emotions. In support of this assumption, research has found that incorporating emotion regulation skills with trauma exposure treatment produces greater benefits (Bryant et al., 2013; Cloitre et al., 2010). Given the complex and highly comorbid nature of HD patients (Frost et al., 2011), as well as their relatively high rates of trauma (Chou et al., 2018; Kehoe and Egan, 2019; Mathes et al., 2018; Shaw, Witcraft and Timpano, 2016), the addition of emotion regulation skills to better manage and learn from discarding exposure could be particularly beneficial. These skills are transdiagnostic and thus could also reduce comorbid depression and anxiety symptoms in HD patients.

To date, two studies have evaluated the benefit of integrating emotion regulation skills training to CBT for HD. In the first, Tolin et al. (2019) incorporated two sessions that targeted distress tolerance through mindfulness-based skills to improve acceptance and tolerance of negative emotions. Forty-two percent of the treatment group fell below a score of 43 on the Saving Inventory - Revised (SI-R; Frost et al., 2004) at post-treatment, but the authors did not report how many of these individuals changed by a reliable amount from pre-treatment, and thus, we do not know if this treatment increased rates of clinically significant change. Furthermore, there was no assessment of distress tolerance and associated constructs (e.g., emotion regulation), and thus the impact of the program on distress intolerance is unclear. It is also important to note that only 31 of 46 participants completed treatment. Six

participants dropped out before or during treatment (3 each) and 9 (20%) were administrative withdrawal because of non-compliance.

In the second, Chou et al. (2020) delivered compassion-focused group treatment (CFT) to individuals who had previously received standard group CBT for HD. Sixty-two percent of individuals in the CFT group achieved a 14-point or greater reduction on the SI-R, but again, rates of clinically significant improvement were not reported. The dropout rate for the CFT group was 28%, which was substantially lower than the CBT group (63%). Chou et al. also reported a significant improvement in distress tolerance for the CFT group with a large effect size. However, the study was limited by its small sample size. Furthermore, they did not evaluate the extent to which improvements in distress tolerance were associated with improvements in hoarding severity.

The current study

In the current naturalistic effectiveness study, we wished to examine outcomes and dropout rates for our emotion-regulation enhanced group CBT for HD using a large sample of clients treated in a community mental health setting. Compared to controlled clinical trials (e.g., Tolin et al., 2019), rules tend to be more flexible and lenient in effectiveness studies (Chandler and Fogg, 2018; Moulding et al., 2017). Individuals also are less likely to be removed from a group because of repeated noncompliance, unless they are disruptive and this behavior cannot be addressed during the course of treatment. Inclusion and exclusion criteria may also be less conservative than in a controlled clinical trial.

The primary aim of the current study was to provide evidence regarding the effectiveness of emotion-regulation enhanced group CBT for a large sample of HD patients in a ‘real world’ clinical setting. We predicted that individuals with HD participating in a group CBT treatment program enhanced with three emotion regulation sessions would report significant decreases in hoarding symptoms, hoarding beliefs, and comorbid depression and anxiety symptoms from pre- to post-treatment. Our secondary prediction was that participants would report significant increases in self-reported distress tolerance given that distress tolerance was specifically targeted in the three emotion regulation sessions that were added to standard group CBT for HD. Finally, we predicted that greater improvements in distress tolerance would be associated with more improvement in HD severity.

Method

Participants

Participants were 115 individuals (85 women, 30 men) who received group emotion-regulation enhanced CBT for HD at a community mental health facility that provides free psychological treatment (see Table 1 for information related to age, employment status and marital status. The group was advertised online, in local newspapers, and via flyers

Table 1
Baseline Measures (N = 115).

Age (years)	<i>M (SD) = 60.87 (10.79)</i> Range = 35 – 83	
Gender	Female	85 (74%)
	Male	30 (26%)
Employment Status	Employed	25 (22.7%)
	Home duties/Volunteer	17 (15.4%)
	Retired	47 (42.7%)
	Student	6 (5.5%)
	Unemployed	15 (13.6%)
Marital Status	Married/Partnered	40 (35.4%)
	Single – Never Married	39 (34.5%)
	Divorced/Separated	28 (24.8%)
	Widowed	6 (5.3%)

Note. Values reported for gender, occupation and marital status are frequencies with valid percent of the total in parentheses.

distributed among local mental health practitioners. Interested participants completed a screening interview to assess inclusion criteria and provide information about the group. To be eligible for treatment, individuals needed to have a primary diagnosis of HD, be over 18 years old, and be free from active psychosis and substance use disorders.

Nine treatment groups were conducted with 11 to 14 participants in each group. Diagnostic status was ascertained using the Structured Interview for Hoarding Disorder (SIHR; Nordsletten et al., 2013; see Measures section) and the Clutter Image Rating (CIR; Frost et al., 2008; see Measures section). Hoarding mean severity scores at pre-treatment confirmed that participants had clinically significant hoarding problems at pre-treatment, with a mean SI-R total score that was comparable to other HD treatment studies (e.g., Frost et al., 2011; Frost et al., 2012; Moulding et al., 2017).

Measures

Structured Interview for Hoarding Disorder (SIHD; Nordsletten et al., 2013). The SIHD is a semi-structured instrument designed to assess DSM-5 diagnostic criteria for HD and consists of detailed questions and specifiers regarding each of the six DSM-5 criteria. Prior work indicates that the SIHD has excellent inter-rater reliability ($k = 0.87$ – 0.97), as well as high degrees of sensitivity (0.98) and specificity (Nordsletten et al., 2013).

Saving Inventory-Revised (SI-R; Frost et al., 2004). The SI-R is a self-report questionnaire comprising 23 items scored from 0 (no problem) to 4 (very severe) assessing the severity of clutter, difficulty discarding, and acquisition. The SI-R has good internal consistency ($\alpha = 0.92$) and test-retest reliability ($r = 0.86$), and it is sensitive to treatment response (Frost et al., 2004; Steketee et al., 2010). Higher scores reflect greater severity of HD and mean scores of 39 and above reflect clinically significant symptoms.

Clutter Image Rating Scale (CIR; Frost et al., 2008). The CIR is a pictorial measure of clutter using photographs of a kitchen, living room, and bedroom. Nine photographs that vary in levels of clutter from 1 to 9 are presented for each room. The participant selects one photograph per room that resembles the level of clutter in their home. The mean score across the three rooms are used as an index of clutter. The measure has good internal consistency ($\alpha = 0.84$), very good inter-rater reliability ($r = 0.94$), and is highly correlated with the SI-R (Frost et al., 2008).

Savings Cognitions Inventory (SCI; Steketee et al., 2003). The SCI is a 24-item self-report questionnaire scored from 1 (not at all) to 7 (very much) assessing beliefs and emotional attachment to possessions. It contains four subscales: emotional attachment, memory, control, and responsibility. The SCI has good internal consistency (total score: $\alpha = 0.96$) and convergent and discriminant validity (Steketee et al., 2003). Mean scores of 95 and above reflect clinically significant symptoms (Steketee and Frost, 2013).

Depression and Anxiety Stress Scale-21 (DASS-21; Lovibond and Lovibond, 1995). The DASS-21 is a 21-item self-report questionnaire scored from 0 (did not apply to me at all) to 3 (applied to me very much) assessing depression, anxiety, and stress over the past week. The total score represents a broader dimension of psychological distress, and each subscale has high internal consistency ($\alpha = 0.87$ to 0.94) and high concurrent validity (Antony et al., 1998).

Distress Tolerance Scale (DTS; Simons and Gaher, 2005). The DTS is a 15-item self-report questionnaire scored from 1 (strongly agree) to 5 (strongly disagree) measuring one's ability to tolerate psychological distress. It contains four subscales: tolerance, absorption, appraisal, and regulation. High scores indicate high distress tolerance, whereas low scores reflect low distress tolerance. The scale has been shown to have good internal consistency ($\alpha = 0.89$) and test-retest reliability ($r = 0.61$; Simons and Gaher, 2005).

Procedure

The study was approved by the University of New South Wales Human Research Ethics Committee. After obtaining written informed consent from all participants, a clinician administered the SIHD (Nordsletten et al., 2013) and the CIR (Frost et al., 2008) to ascertain diagnostic status. Participants filled in all self-report measures at pre, mid, and post-treatment.

Treatment. Treatment was provided by psychologists who were trained in treating HD (SI and JS) and postgraduate level psychology trainees. Clinicians were supervised by the first author (JG). All participants attended 15 group sessions in total, 12 (120 min) weekly group treatment sessions based on *Buried in Treasures: Help for Compulsive Acquiring, Saving, and Hoarding* (Tolin et al., 2007) and three additional sessions focused on building emotion regulation through tolerating distress. Similar to standard *Buried in Treasures* (e.g., Frost et al., 2012), the first six sessions focused on psychoeducation about HD and enhancing patients' motivation, sessions 7–8 focused on reducing acquisition, and sessions 9–11 introduced discarding exposures. Sessions 12–14 diverged from typical BiT by integrating emotion regulation skills for participants to use as they completed difficult discarding exposures. Session 15 focused on relapse prevention.

The emotion regulation module was adapted from several sources including: *Facing your Fears* distress tolerance treatment program (Saulsman and Nathan, 2012), *Emotion regulation in psychotherapy: A practitioner's guide* (Leahy et al., 2011), and *Skills Training Manual for Treating Borderline Personality Disorder* (Linehan, 2015). During this module, participants focused on learning to tolerate difficult sensations, dropping escape/avoidance behaviours, and acting in a way consistent with hoarding-related goals. They were provided with a model of emotion, including emotion myths and the purpose of emotions. They were taught several distress tolerance strategies, including distraction, mindfulness, and self-soothing. The clinicians emphasized that these were strategies to deal with moderate or high levels of distress in order to manage the emotions and continue working on their clutter. Clients also had homework assignments to practice emotion regulation and distress tolerance skills while working on sorting and discarding at home.

Data analytic plan

For the primary analyses, we used the Stata Statistical software, Release 14 (StataCorp, 2015). Hoarding symptoms, beliefs, and depression and anxiety symptoms were analysed by estimating latent growth curves via linear mixed models and structural equation models (McArdle, 2009). Growth curve models were estimated for each outcome separately, across all three time points. To examine the relationship between changes in distress tolerance and HD severity, bivariate growth curves were estimated, allowing for covariances between intercepts and slopes to be estimated. P-values <0.05 were considered significant. Estimates and 95% confidence intervals were reported.

With respect to these single trajectory results, we ran two latent growth curve models: linear change only and quadratic change. Next, to examine the potential impact of distress tolerance on hoarding symptom outcomes, we conducted bivariate analyses using DTS total and SI-R total as the variables in this analysis. This dual trajectory model was conducted to jointly estimate the trajectory of distress tolerance and hoarding symptom outcomes. In this model, two trajectories are estimated and only linear change was allowed in both trajectories. Mean estimates of intercept and slope for both variables were estimated, as were the correlations between the intercepts and between the slopes of DTS and SI-R. The error variances for DTS were constrained to equality and for SI-R. This did not result in a worsening of model fit. We ran separate models for the total scales, looking at whether change occurred over time and the variability of that change, independent of other outcomes to provide separate single trajectory results.

We also calculated clinically significant change using Jacobson and Truax's (1991) method (Criterion C). We first used the cut-offs (SI-R reduction of 14 points or greater and a post-treatment score of 42 or less) established by Gilliam et al. (2011) to compare the current findings with previously published findings. We then repeated the process using updated cut-offs (SI-R reduction of 20 points or greater and a post-treatment score of 38 or less) recommended by Norberg et al. (2021), which takes into account the reduced reliability of the SI-R over a long time period. We also used Norberg et al. (2021) expanded criteria to categorize individuals as recovered (i.e., has evidenced clinically significant change), improved but not recovered (i.e., evidenced reliable change in the positive direction), not changed, or deteriorated (i.e., evidenced reliable change in the negative direction).

Results

Patient characteristics and treatment flow

Across the nine groups, 115 individuals with HD participated in the group treatment and 103 completed the group (See Table 1 for baseline sample characteristics). Of the twelve participants who did not complete treatment, ten patients elected to discontinue for unknown reasons. One client was an administrative withdrawal in which the clinicians re-assigned her to a different group treatment program (Dialectical Behavior Therapy) due to her clinical presentation and another client discontinued due to a cancer diagnosis and treatment.

Treatment outcomes

With respect to our primary and secondary hypotheses regarding the change in symptom measures and distress tolerance from pre to post treatment, we examined the single trajectory results for total scores for the SI-R, SCI, DASS Anxiety, DASS Depression, DASS Stress, and DTS (Table 2). With respect to our primary hypothesis, all symptom outcomes (SI-R, SCI, DASS subscales) decreased and showed significant linear change. With respect to our secondary hypothesis, the DTS increased as predicted and also showed significant linear change.

Intercept and slope variances and their covariance were estimated. In most cases, there was a small negative correlation between intercept and slope, indicating that those starting higher (higher intercept) showed a more negative slope, though the covariance was not usually significant (Table 2). In all models, a random effect for group was included, but in some results, the variance was 0 (or non-existent), indicating that the variability due to group was very small.

Regarding our third hypothesis regarding change in DTS predicting change in hoarding symptoms, we used bivariate growth curves analysis. We specified growth curves for the SI-R total and correlated the intercept and slope with the intercept and slope of DTS. Results showed that there was a significant association between DTS and SI-R intercepts (-3.58), indicating that lower DTS scores at baseline are associated with higher SI-R scores at baseline. There was a negative covariance between

Table 2

Mean Scores and Results for Single Linear Latent Growth models Pre-, Mid-, and Post-treatment (Standard Deviation in Parentheses).

	Pre-treatment	Mid-treatment	Post-treatment	Linear models	
	(n = 115)	(n = 110)†	(n = 101)	Intercept	Slope
SIR-Total	62.24 (12.51)	52.17 (12.72)	43.23 (14.11)	61.82***	-9.10***
SCI Total	104.14 (29.43)	89.11 (29.86)	76.56 (27.23)	103.18**	-13.17***
DTS Total	2.81 (0.95)	3.05 (1.01)	3.17 (0.93)	2.84***	0.17**
DASS Total	52.71 (27.86)	45.34 (27.20)	38.70 (26.01)	51.02***	-6.04***
DASS Depression	19.54 (11.63)	17.19 (11.75)	14.40 (11.10)	18.94***	-2.25***
DASS Anxiety	12.51 (9.97)	10.17 (9.89)	8.59 (9.05)	11.92***	-1.64***
DASS Stress	20.66 (9.77)	17.98 (9.31)	15.68 (9.69)	20.27***	-2.19***

*p < 0.05, **p < 0.001, ***p < 0.0001, † 109 participants completed the SI-R and DASS at mid-treatment. Note. SIR = Saving Inventory Revised; SCI = Saving Cognitions Inventory; DTS = Distress Tolerance Scale; DASS = Depression Anxiety Stress Scales - 21 item version. All DASS scores were multiplied by 2 to allow for comparisons with DASS-42.

slopes (-0.399), suggesting that more improvement in DTS (more positive slope) is associated with more improvement in SI-R (more negative slope) but it was not significant (p = 0.108, CI: -0.887, 0.0088). The fit of this model was good. RMSEA was 0.000 with a 90% CI of 0.00-0.09. In addition, both the Tucker Lewis index (NNFI) and Comparative Fit Index were 1.0, indicating excellent fit. See Table 3 and Fig. 1 for the dual trajectory model for DTS and SI-R.

We then calculated clinically significant change, first using the Gilliam et al. (2011) criteria for clinically significant change in HD, followed by Norberg et al. (2021)'s more stringent criteria. Based on Gilliam et al. (2011)'s criteria, 67% of the sample met criteria for reliable change, with 41% evidencing clinically significant change. Based on Norberg et al. (2021)'s criteria, 24% of completers had recovered, 18% had improved but not recovered, and 58% did not show reliable change in their SI-R scores. No one deteriorated during treatment.

Discussion

The present naturalistic, open trial sought to evaluate the effectiveness of a HD treatment group program that integrated an emotion regulation module in a free community mental health setting. We attempted to increase participants' understanding of emotions, and their ability to regulate emotions and tolerate distress. The sample evidenced moderately severe hoarding symptoms, in line previously published clinical means (Frost et al., 2004; Tolin et al., 2011). With respect to our primary predictions, participants reported significant decreases in hoarding symptoms and beliefs, as well as significant decreases in their comorbid depression and anxiety symptoms from pre- to post-treatment. Using previously applied criteria, 67% of participants met criteria for reliable change, which is slightly higher than that achieved by Chou et al. (2020). We found that 97% of participants reported post-treatment SI-R scores below 43, which is 55% more participants than Tolin et al.

Table 3

Dual Trajectory model of Distress Tolerance Scale and Saving Inventory - Revised.

	Mean (SE)	Variance	Covariance	Covariance with SIR
DTS				
Intercept	2.84 (0.086)	0.580 (0.114)		-3.580 (1.014)
Slope	0.163 (0.043) *	0.026 (0.344)	-0.007 (0.048)	-0.399 (0.249)
MV Error		0.330 (0.045)		
SIR				
Intercept	62.019 (1.141)*	123.752 (19.523)		
Slope	-9.074 (0.606)*	23.166 (5.692)	-7.816 (8.171)	
MV Error		30.718 (4.235)		

* p < 0.0001.

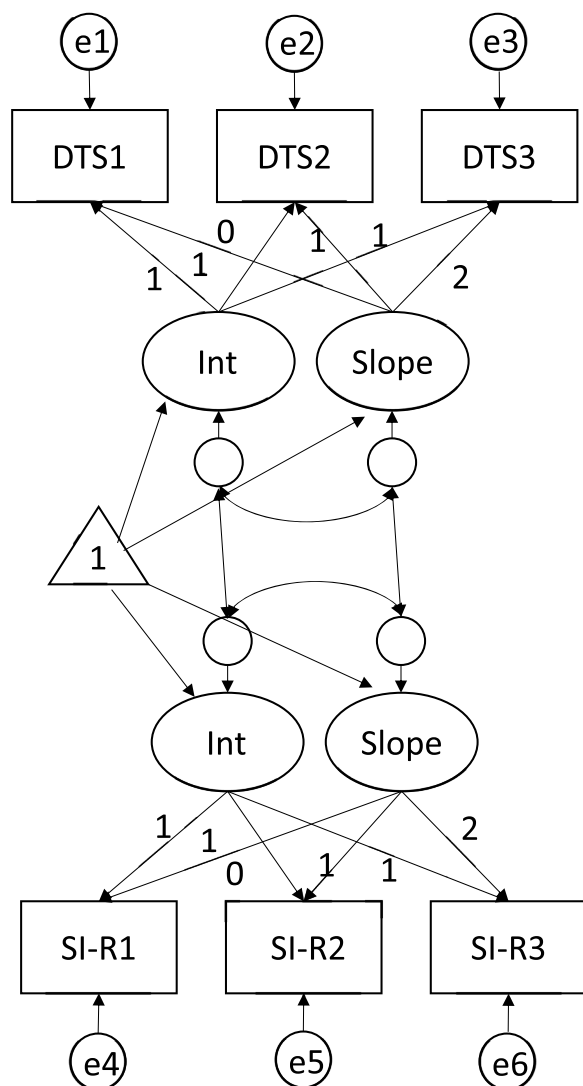


Fig. 1. The Dual Trajectory Model for Distress Tolerance Scale and the Saving Inventory – Revised.

(2019) reported for his emotion-regulation boosted CBT for HD. Forty-one percent evidenced clinically significant improvement using the cut-offs established by Gilliam et al.; however, this rate dropped to 24% when using updated recommended cut-offs by Norberg et al. (2021). When considering clients who also improved, but did not recover, the current intervention successfully helped 42% of treatment completers.

Our secondary prediction, that participants would report improvements in distress tolerance from pre- to post-treatment, was also confirmed. Because this was a naturalistic open trial, we cannot conclude whether the incorporation of additional emotion regulation skills led to this outcome, although it is promising that clients improved in this specific domain. However, our third hypothesis, that greater improvements in DT would be significantly associated with more improvement in HD severity was not confirmed. There was negative covariance between slopes of the DTS and SI-R, suggesting that more improvement in DTS was associated with more improvement in SI-R; however this association was not significant. Nonetheless, these preliminary findings regarding distress tolerance underscore the importance of comparing symptom and emotion regulation outcomes for this treatment to standard group CBT for HD in a randomised clinical trial.

Another promising outcome of the current study, which was

conducted in a local community mental health clinic with highly complex clients, was the relatively low dropout rate (8.7%) compared to some previous large-scale group CBT treatment studies. For example, Gilliam et al. (2011) reported a dropout rate of 44%, Mathews et al. (2018) had a dropout rate of 28.5%, and Tolin et al. (2019) reported a 33% dropout rate. However, Tolin et al. (2019) applied a strict noncompliance rule in their study, which involved being removed from treatment after a series of warnings for not completing homework or attending a session. If the authors had only counted participants who voluntarily dropped out, there would be a 10% rate of dropout, comparable to the current study. It is possible, however, that some of the Tolin et al. (2019) participants removed for noncompliance would have eventually dropped out voluntarily. The lack of any attrition in Moulding et al. (2017)'s 12-week group program is a clear outlier in the HD treatment outcome literature, and may have been partially attributable to the program having fewer sessions, good group cohesion, and/or their policy of requiring an upfront fee from clients before beginning treatment (R. Moulding, personal communication, May 19, 2021).

The primary limitation of the current study was the absence of a control treatment condition, so we are unable to conclude whether time or other general treatment factors (expectancy, group cohesion, etc.) accounted for the changes observed. We note that HD is known to be a chronic condition and has been shown not to improve in waitlist control conditions in previous studies (e.g., Tolin et al., 2019). We are also unable to conclude that distress tolerance improves more in ER-enhanced CBT for HD than in standard cognitive-behavioral treatment for HD. Furthermore, we do not have data on comorbid diagnoses as it was not feasible in this setting without funding to administer comprehensive structured interviews at intake. Nevertheless, a large proportion of group members had DASS scores indicating severe or extremely severe levels of depression (42% of participants) and/or severe or extremely severe levels of anxiety (34% of participants). We also note that clients at this community mental health service tended to be psychiatrically and medically complex, with high rates of comorbidity and variable, often minimal, financial resources. Data regarding ethnicity was also not collected.

Despite the limitations described, we believe the current study has important strengths. We have demonstrated promising outcomes with respect to client retention, hoarding symptoms, distress tolerance for ER-enhanced group CBT with a large treatment-seeking sample in naturalistic community-based mental health setting. A randomised-controlled trial comparing the ER-enhanced group treatment with standard CBT would provide important evidence regarding whether we may achieve superior outcomes in HD by targeting a key underlying vulnerability factor, emotion dysregulation.

We acknowledge, however, that a majority of clients in current study did not achieve clinically meaningful change, leaving ample room for improvement. Three skills training sessions may have been insufficient to address chronic, severe emotion dysregulation that is experienced by some HD clients. Future research should examine whether a more comprehensive emotion regulation module improves clinical outcomes. In addition, clinicians in this study were restricted in their ability to provide home sessions, which have been found to significantly improve treatment outcomes (Tolin et al., 2015). Finally, a growing literature documents that HD is intricately linked to interpersonal problems (Chen et al., 2021; Crone et al., 2019; David et al., 2021; Grisham et al., 2018; Norberg et al., 2018; Norberg et al., 2020, 2020; Yap et al., 2020; Yap and Grisham, 2021) and suggests that targeting interpersonal functioning might lead to further improvements in treatment outcomes. On the basis of this evidence, we have begun to develop and integrate additional therapy sessions that target the interpersonal challenges faced by some individuals with HD. Integrating both emotion regulation and interpersonal skills training into HD treatment may prove to be an important pathway for improving outcomes for this highly disabling disorder.

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Author statement

JG designed the study and wrote the original manuscript draft. JG and MN adapted emotion regulation content for inclusion in treatment program. SI and JS administered the group treatment and collected outcome measures. NB advised on statistical approach and conducted the primary statistical analyses. KY and MN performed secondary analyses and wrote sections of the final manuscript. All authors discussed the results and contributed to the final manuscript.

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UNSW Sydney provide financial support for the project via a Faculty Research Grant to the first author, but otherwise had no direct involvement in the study design, data collection, writing or decision to submit the article. There were no other financial sponsors.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Antony, M.M., Bieling, P.J., Cox, B.J., Enns, M.W., Swinson, R.P., 1998. Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychol Assess* 10 (2), 176–181. <https://doi.org/10.1037/1040-3590.10.2.176>.
- Ayers, C.R., Ly, P., Howard, I., Mayes, T., Porter, B., Iqbal, Y., 2014. Hoarding severity predicts functional disability in late-life hoarding disorder patients. *Int J Geriatr Psychiatry* 29 (7), 741–746. <https://doi.org/10.1002/gps.4057>.
- Barton, J.A.L., Johns, L., Salkovskis, P., 2021. Are self-reported difficulties in emotional regulation associated with hoarding? A systematic review. *J Obsessive Compuls Relat Disord* 30, 100660. <https://doi.org/10.1016/j.jocrd.2021.100660>.
- Bratiotis, C., Steketee, G., Davidow, J., Samuels, J., Tolin, D., Frost, R.O., 2013. Use of services by people who hoard objects. *Best Practices in Mental Health: An International Journal* 9 (2), 39–51.
- Bryant, R.A., Mastrodomenico, J., Hopwood, S., Kenny, L., Cahill, C., Kandris, E., Taylor, K., 2013. Augmenting cognitive behaviour therapy for post-traumatic stress disorder with emotion tolerance training: a randomized controlled trial. *Psychol Med* 43 (10), 2153–2160. <https://doi.org/10.1017/S0033291713000068>.
- Chandler, A., Fogg, R., 2018. Group cognitive-behavioural therapy for hoarding disorder: an interim analysis. *European Neuropsychopharmacology* 28 (6), 772. <https://doi.org/10.1016/j.euroneuro.2017.10.015>.
- Chen, W., McDonald, S., Wearne, T., Grisham, J., 2021. Investigating associations between hoarding symptoms and affective and cognitive empathy. *British Journal of Clinical Psychology* 60 (2), 177–193. <https://doi.org/10.1111/bjc.12280>.
- Chou, C.-Y., Tsoh, J.Y., Smith, L.C., Bain, L.D., Botcheva, L., Chan, E., Chan, J., Eckfield, M., Howell, G., Komaiko, K., Plumadore, J., Salazar, M., Uhm, S.Y., Vega, E., Vigil, O., Delucchi, K., Mathews, C.A., 2018. How is hoarding related to trauma? A detailed examination on different aspects of hoarding and age when hoarding started. *J Obsessive Compuls Relat Disord* 16, 81–87. <https://doi.org/10.1016/j.jocrd.2018.01.002>.
- Chou, C.Y., Tsoh, J.Y., Shumway, M., Smith, L.C., Chan, J., Delucchi, K., Tirsch, D., Gilbert, P., Mathews, C.A., 2020. Treating hoarding disorder with compassion-focused therapy: a pilot study examining treatment feasibility, acceptability, and exploring treatment effects. *British Journal of Clinical Psychology* 59 (1), 1–21. <https://doi.org/10.1111/bjc.12228>.
- Cloitre, M., Stovall-McClough, K.C., Noonan, K., Zorbas, P., Cherry, S., Jackson, C.L., Gan, W., Petkova, E., 2010. Treatment for PTSD Related to Childhood Abuse: a Randomized Controlled Trial. *American Journal of Psychiatry* 167 (8), 915–924. <https://doi.org/10.1176/appi.ajp.2010.09081247>.
- Coles, M.E., Frost, R.O., Heimberg, R.G., Steketee, G., 2003. Hoarding behaviors in a large college sample. *Behav Res Ther* 41 (2), 179–194. [https://doi.org/10.1016/S0005-7967\(01\)00136-X](https://doi.org/10.1016/S0005-7967(01)00136-X).
- Crone, C., Kwok, C., Chau, V., Norberg, M.M., 2019. Applying attachment theory to indecisiveness in hoarding disorder. *Psychiatry Res* 273, 318–324. <https://doi.org/10.1016/j.psychres.2019.01.055>.
- Crone, C., Norberg, M.M., 2018. Scared and surrounded by clutter: the influence of emotional reactivity. *J Affect Disord* 235, 285–292. <https://doi.org/10.1016/j.jad.2018.04.066>.
- David, J., Aluh, D.O., Blonner, M., Norberg, M.M., 2021. Excessive Object Attachment in Hoarding Disorder: examining the Role of Interpersonal Functioning. *Behav Ther.* <https://doi.org/10.1016/j.beth.2021.02.003>.
- Frost, R.O., Gabrielson, I., Deady, S., Dernbach, K.B., Guevara, G., Peebles-Dorin, M., Yap, K., Grisham, J.R., 2018. Scrupulosity and hoarding. *Compr Psychiatry* 86, 19–24. <https://doi.org/10.1016/j.comppsy.2018.06.011>.
- Frost, R.O., Hartl, T.L., 1996. A cognitive-behavioral model of compulsive hoarding. *Behav Res Ther* 34 (4), 341–350. [https://doi.org/10.1016/0005-7967\(95\)00071-2](https://doi.org/10.1016/0005-7967(95)00071-2).
- 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. *Behav Res Ther* 85, 13–22. <https://doi.org/10.1016/j.brat.2016.08.003>.
- Frost, R.O., Pekareva-Kochergina, A., Maxner, S., 2011. The effectiveness of a biblio-based support group for hoarding disorder. *Behav Res Ther* 49 (10), 628–634. <https://doi.org/10.1016/j.brat.2011.06.010>.
- Frost, R.O., Ruby, D., Shuer, L.J., 2012. The Buried in Treasures Workshop: waitlist control trial of facilitated support groups for hoarding. *Behav Res Ther* 50 (11), 661–667. <https://doi.org/10.1016/j.brat.2012.08.004>.
- Frost, R.O., Steketee, G., Grisham, J., 2004. Measurement of compulsive hoarding: saving inventory-revised. *Behav Res Ther* 42 (10), 1163–1182. <https://doi.org/10.1016/j.brat.2003.07.006>.
- Frost, R.O., Steketee, G., Tolin, D.F., 2011. Comorbidity in hoarding disorder. *Depress Anxiety* 28 (10), 876–884. <https://doi.org/10.1002/da.20861>.
- Frost, R.O., Steketee, G., Tolin, D.F., Renaud, S., 2008. Development and Validation of the Clutter Image Rating. *J Psychopathol Behav Assess* 30 (3), 193–203. <https://doi.org/10.1007/s10862-007-9068-7>.
- Frost, R.O., Tolin, D.F., Maltby, N., 2010. Insight-Related Challenges in the Treatment of Hoarding. *Cogn Behav Pract* 17 (4), 404–413. <https://doi.org/10.1016/j.cbpra.2009.07.004>.
- Gilliam, C.M., Norberg, M.M., Villavicencio, A., Morrison, S., Hannan, S.E., Tolin, D.F., 2011. Group cognitive-behavioral therapy for hoarding disorder: an open trial. *Behav Res Ther* 49 (11), 802–807. <https://doi.org/10.1016/j.brat.2011.08.008>.
- Grisham, J.R., Martyn, C., Kerin, F., Baldwin, P.A., Norberg, M.M., 2018a. Interpersonal functioning in Hoarding Disorder: an examination of attachment styles and emotion regulation in response to interpersonal stress. *J Obsessive Compuls Relat Disord* 16, 43–49. <https://doi.org/10.1016/j.jocrd.2017.12.001>.
- Grisham, J.R., Roberts, L., Cerea, S., Isemann, S., Svehla, J., Norberg, M.M., 2018b. The role of distress tolerance, anxiety sensitivity, and intolerance of uncertainty in predicting hoarding symptoms in a clinical sample. *Psychiatry Res* 267, 94–101. <https://doi.org/10.1016/j.psychres.2018.05.084>.
- Jacobson, N.S., Truax, P., 1991. Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *J Consult Clin Psychol* 59 (1), 12–19. <https://doi.org/10.1037/0022-006X.59.1.12>.
- Keheoe, E., Egan, J., 2019. Interpersonal attachment insecurity and emotional attachment to possessions partly mediate the relationship between childhood trauma and hoarding symptoms in a non-clinical sample. *J Obsessive Compuls Relat Disord* 21, 37–45. <https://doi.org/10.1016/j.jocrd.2018.12.001>.
- Leahy, R.L., Tirsch, D., Napolitano, L.A., 2011. *Emotion Regulation in psychotherapy: A practitioner's Guide*. Guilford Press.
- Leyro, T.M., Zvolensky, M.J., Bernstein, A., 2010. Distress tolerance and psychopathological symptoms and disorders: a review of the empirical literature among adults. *Psychol Bull* 136 (4), 576–600. <https://doi.org/10.1037/a0019712>.
- Linehan, M.M., 2015. *DBT® Skills Training Manual, 2nd ed.* Guilford Press.
- Lovibond, S.H., Lovibond, P.F., 1995. *Manual For the Depression Anxiety Stress Scales, 2nd. Ed.* Psychology Foundation.
- Mathes, B.M., Henry, A., Schmidt, N.B., Norberg, M.M., 2019. Hoarding symptoms and workplace impairment. *British Journal of Clinical Psychology* 58 (3), 342–356. <https://doi.org/10.1111/bjc.12212>.
- Mathes, B.M., Portero, A.K., Gibby, B.A., King, S.L., Raines, A.M., Schmidt, N.B., 2018. Interpersonal trauma and hoarding: the mediating role of aggression [journal article]. *J Affect Disord* 227, 512–516. <https://doi.org/10.1016/j.jad.2017.11.062>.
- Mathews, C.A., Mackin, R.S., Chou, C.-Y., Uhm, S.Y., Bain, L.D., Stark, S.J., Gause, M., Vigil, O.R., Franklin, J., Salazar, M., Plumadore, J., Smith, L.C., Komaiko, K., Howell, G., Vega, E., Chan, J., Eckfield, M.B., Tsoh, J.Y., Delucchi, K., 2018. Randomised clinical trial of community-based peer-led and psychologist-led group treatment for hoarding disorder. *BJPsych Open* 4 (4), 285–293. <https://doi.org/10.1192/bjo.2018.30>.
- McArdle, J.J., 2009. Latent Variable Modeling of Differences and Changes with Longitudinal Data. *Annu Rev Psychol* 60 (1), 577–605. <https://doi.org/10.1146/annurev.psych.60.110707.163612>.
- Medley, A.N., Capron, D.W., Korte, K.J., Schmidt, N.B., 2013. Anxiety sensitivity: a potential vulnerability factor for compulsive hoarding. *Cogn Behav Ther* 42 (1), 45–55. <https://doi.org/10.1080/16506073.2012.738242>.
- Moulding, R., Nedeljkovic, M., Kyrios, M., Osborne, D., Mogan, C., 2017. Short-Term Cognitive-Behavioural Group Treatment for Hoarding Disorder: a Naturalistic

- Treatment Outcome Study. *Clin Psychol Psychother* 24 (1), 235–244. <https://doi.org/10.1002/cpp.2001>.
- Muroff, J., Steketee, G., Frost, R.O., Tolin, D.F., 2014. Cognitive behavior therapy for hoarding disorder: follow-up findings and predictors of outcome. *Depress Anxiety* 31 (12), 964–971. <https://doi.org/10.1002/da.22222>.
- Norberg, M.M., Beath, A.P., Kerin, F.J., Martyn, C., Baldwin, P., Grisham, J.R., 2020a. Trait Versus Task-Induced Emotional Reactivity and Distress Intolerance in Hoarding Disorder: transdiagnostic Implications. *Behav Ther* 51 (1), 123–134. <https://doi.org/10.1016/j.beth.2019.05.010>.
- Norberg, M.M., Chasson, G.S., Tolin, D.F., 2021. A standardized approach to calculating clinically significant change in hoarding disorder using the Saving Inventory-Revised. *J Obsessive Compuls Relat Disord* 28, 100609. <https://doi.org/10.1016/j.jocrd.2020.100609>.
- Norberg, M.M., Crone, C., Kwok, C., Grisham, J.R., 2018. Anxious attachment and excessive acquisition: the mediating roles of anthropomorphism and distress intolerance. *J Behav Addict* 1–10. <https://doi.org/10.1556/2006.7.2018.08>.
- Norberg, M.M., David, J., Crone, C., Kakar, V., Kwok, C., Olivier, J., Grisham, J.R., 2020b. Determinants of object choice and object attachment: compensatory consumption in compulsive buying–shopping disorder and hoarding disorder. *J Behav Addict* 9 (1), 153–162. <https://doi.org/10.1556/2006.8.2019.68>.
- Norberg, M.M., Kwok, C., Crone, C., David, J., Kakar, V., Grisham, J.R., 2020c. Greater interpersonal problems differentiate those who excessively acquire and save from those who only excessively acquire possessions. *J Obsessive Compuls Relat Disord* 27, 100571. <https://doi.org/10.1016/j.jocrd.2020.100571>.
- Nordsletten, A.E., Fernández de la Cruz, L., Pertusa, A., Reichenberg, A., Hatch, S.L., Mataix-Cols, D., 2013. The Structured Interview for Hoarding Disorder (SIHD): development, usage and further validation. *J Obsessive Compuls Relat Disord* 2 (3), 346–350. <https://doi.org/10.1016/j.jocrd.2013.06.003>.
- Oglesby, M.E., Medley, A.N., Norr, A.M., Capron, D.W., Korte, K.J., Schmidt, N.B., 2013. Intolerance of uncertainty as a vulnerability factor for hoarding behaviors. *J Affect Disord* 145 (2), 227–231. <https://doi.org/10.1016/j.jad.2012.08.003>.
- Ong, C., Pang, S., Sagayadevan, V., Chong, S.A., Subramaniam, M., 2015. Functioning and quality of life in hoarding: a systematic review. *J Anxiety Disord* 32, 17–30. <https://doi.org/10.1016/j.janxdis.2014.12.003>.
- Rodgers, N., McDonald, S., Wootton, B.M., 2021. Cognitive behavioral therapy for hoarding disorder: an updated meta-analysis. *J Affect Disord* 290, 128–135. <https://doi.org/10.1016/j.jad.2021.04.067>.
- Saulsman, L., Nathan, P., 2012. Centre For Clinical Interventions: Facing your Feelings Workbook. <https://www.cci.health.wa.gov.au/Resources/Looking-After-Yourself/Tolerating-Distress>.
- Saxena, S., Ayers, C.R., Maidment, K.M., Vapnik, T., Wetherell, J.L., Bystritsky, A., 2011. Quality of life and functional impairment in compulsive hoarding. *J Psychiatr Res* 45 (4), 475–480. <https://doi.org/10.1016/j.jpsychires.2010.08.007>.
- Shaw, A.M., Timpano, K.R., Steketee, G., Tolin, D.F., Frost, R.O., 2015. Hoarding and emotional reactivity: the link between negative emotional reactions and hoarding symptomatology. *J Psychiatr Res* 63, 84–90. <https://doi.org/10.1016/j.jpsychires.2015.02.009>.
- Shaw, A.M., Witcraft, S.M., Timpano, K.R., 2016. The relationship between traumatic life events and hoarding symptoms: a multi-method approach. *Cogn Behav Ther* 45 (1), 49–59. <https://doi.org/10.1080/16506073.2015.1101150>.
- Simons, J.S., Gaher, R.M., 2005. The Distress Tolerance Scale: development and Validation of a Self-Report Measure. *Motiv Emot* 29 (2), 83–102. <https://doi.org/10.1007/s11031-005-7955-3>.
- StataCorp. 2015. *Stata Statistical program: Release 14*. StataCorp LP.
- Steketee, G., Frost, R.O., 2013. *Treatment For Hoarding Disorder: Therapist guide*, 2nd ed. Oxford University Press. <https://doi.org/10.1093/med:psych/9780199334940.001.0001>.
- Steketee, G., Frost, R.O., Kyrios, M., 2003. Cognitive aspects of compulsive hoarding. *Cognit Ther Res* 27 (4), 463–479. <https://doi.org/10.1023/A:1025428631552>.
- Steketee, G., Frost, R.O., Tolin, D.F., Rasmussen, J., Brown, T.A., 2010. Waitlist-Controlled Trial of Cognitive Behavior Therapy for Hoarding Disorder. *Depress Anxiety* 27 (5), 476–484. <https://doi.org/10.1002/da.20673>.
- Timpano, K.R., Buckner, J.D., Richey, J.A., Murphy, D.L., Schmidt, N.B., 2009. Exploration of anxiety sensitivity and distress tolerance as vulnerability factors for hoarding behaviors. *Depress Anxiety* 26 (4), 343–353. <https://doi.org/10.1002/da.20469>.
- Timpano, K.R., Keough, M.E., Traeger, L., Schmidt, N.B., 2011. General Life Stress and Hoarding: examining the Role of Emotional Tolerance. *Int J Cogn Ther* 4 (3), 263–279. <https://doi.org/10.1521/ijct.2011.4.3.263>.
- Timpano, K.R., Shaw, A.M., Coughle, J.R., Fitch, K.E., 2014. A multifaceted assessment of emotional tolerance and intensity in hoarding. *Behav Ther* 45 (5), 690–699. <https://doi.org/10.1016/j.beth.2014.04.002>.
- Tolin, D.F., Das, A., Hallion, L.S., Levy, H.C., Wootton, B.M., Stevens, M.C., 2019a. Quality of life in patients with hoarding disorder. *J Obsessive Compuls Relat Disord* 21, 55–59. <https://doi.org/10.1016/j.jocrd.2018.12.003>.
- Tolin, D.F., Frost, R.O., Steketee, G., 2007. An open trial of cognitive-behavioral therapy for compulsive hoarding. *Behav Res Ther* 45 (7), 1461–1470. <https://doi.org/10.1016/j.brat.2007.01.001>.
- Tolin, D.F., Frost, R.O., Steketee, G., Gray, K.D., Fitch, K.E., 2008. The economic and social burden of compulsive hoarding. *Psychiatry Res* 160 (2), 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. *Depress Anxiety* 32 (3), 158–166. <https://doi.org/10.1002/da.22327>.
- Tolin, D.F., Meunier, S.A., Frost, R.O., Steketee, G., 2011. Hoarding among patients seeking treatment for anxiety disorders. *J Anxiety Disord* 25 (1), 43–48. <https://doi.org/10.1016/j.janxdis.2010.08.001>.
- Tolin, D.F., Stevens, M.C., Villavicencio, A.L., Norberg, M.M., Calhoun, V.D., Frost, R.O., Steketee, G., Rauch, S.L., Pearson, G.D., 2012. Neural mechanisms of decision making in hoarding disorder. *JAMA Psychiatry* 69 (8), 832–841. <https://doi.org/10.1001/archgenpsychiatry.2011.1980>.
- Worden, B., Levy, H.C., Das, A., Katz, B.W., Stevens, M., Tolin, D.F., 2019. Perceived emotion regulation and emotional distress tolerance in patients with hoarding disorder. *J Obsessive Compuls Relat Disord* 22. <https://doi.org/10.1016/j.jocrd.2019.100441>.
- Yap, K., Eppingstall, J., Brennan, C., Le, B., Grisham, J., 2020. Emotional attachment to objects mediates the relationship between loneliness and hoarding symptoms. *J Obsessive Compuls Relat Disord* 24. <https://doi.org/10.1016/j.jocrd.2019.100487>. Article 100487.
- Yap, K., Grisham, J.R., 2019. Unpacking the construct of emotional attachment to objects and its association with hoarding symptoms. *J Behav Addict* 8 (2), 249–258. <https://doi.org/10.1556/2006.8.2019.15>.
- Yap, K., Grisham, J.R., 2020. Object attachment and emotions in hoarding disorder. *Compr Psychiatry*, 152179. <https://doi.org/10.1016/j.comppsy.2020.152179>.
- Yap, K., Grisham, J.R., 2021. Object attachment in hoarding disorder and its role in a compensatory process. *Curr Opin Psychol* 39, 76–81. <https://doi.org/10.1016/j.copsyc.2020.07.022>.
- Yap, K., Mogan, C., Moriarty, A., Dowling, N., Blair-West, S., Gelgec, C., Moulding, R., 2018. Emotion regulation difficulties in obsessive-compulsive disorder. *J Clin Psychol* 74 (4), 695–709. <https://doi.org/10.1002/jclp.22553>.
- Zeifman, R.J., Boritz, T., Barnhart, R., Labrish, C., McMain, S.F., 2020. The independent roles of mindfulness and distress tolerance in treatment outcomes in dialectical behavior therapy skills training. *Personality Disorders: Theory, Research, and Treatment* 11 (3), 181–190. <https://doi.org/10.1037/per0000368>.