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Preliminary test of group acceptance and commitment therapy on obsessive-compulsive disorder for patients on optimal dose of selective serotonin reuptake inhibitors

Farzaneh Rohani[a], Morad Rasouli-Azad[a,*], Michael P. Twohig[b], Fatemeh Sadat Ghoreishi[c], Eric B. Lee[b], Hossein Akbari[d]

[a] Department of Clinical Psychology, Faculty of Medicine, Kashan University of Medical Sciences, Kashan, Islamic Republic of Iran
[b] Utah State University, United States
[c] Department of Psychiatry, Faculty of Medicine, Kashan University of Medical Sciences, Kashan, Islamic Republic of Iran
[d] Department of Biostatistics and Public Health, Faculty of Health, Kashan University of Medical Sciences, Kashan, Islamic Republic of Iran

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ABSTRACT

The aim of this study was to investigate the effects of adding group acceptance and commitment therapy (ACT) to adults diagnosed with obsessive compulsive disorder (OCD) who were already on an optimal dose of selective serotonin reuptake inhibitors (SSRIs).

Forty-six Iranian women, on SSRIs, were randomized to group ACT + SSRI or continued SSRI conditions. SSRI dosages stayed stable during the study. Assessments included the Structured Clinical Interview (SCID-I), Yale-Brown Obsessive-Compulsive Scale Self report (Y-BOCS-SR), Beck Depression Inventory-II (BDI-II), Ruminative Response Scale (RRS), and Acceptance and Action Questionnaire (AAQ-II). The results showed significant reductions on the Y-BOCS-SR and BDI-II in both conditions at posttreatment with significantly greater reductions in the ACT + SSRI condition at follow-up. The RRS and AAQ-II saw significant improvements in the ACT + SSRI condition at posttreatment and follow-up compared to the SSRI condition. Results provide cross-cultural support for group ACT as a treatment for OCD and as a successful adjunct to SSRI treatment.

1. . Introduction

Obsessive-Compulsive Disorder (OCD) is a debilitating condition for many individuals. It involves recurrent obsessions that are quelled through recurrent compulsive actions. This pattern of behavior often negatively effects quality of life (Cicek, Cicek, Kayhan, Uguz, & Kaya, 2013). Selective Serotonin Reuptake Inhibitors (SSRIs) are effective pharmacological treatments for OCD (Soomro, Altman, Rajagopal, & Oakley Browne, 2008). Nevertheless, meta-analyses indicate that behavioral therapies and behavioral therapies plus SSRIs are more effective than SSRIs alone (Romanelli, Wu, Gamba, Mojtabai, & Segal, 2014). Behavioral therapies that include exposure and response prevention (ERP) with or without an emphasis on cognitive procedures are the most supported treatments for OCD (Olatunji, Davis, Powers, & Smits, 2013). In addition, Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2012), a modern version of CBT, is also showing success in the treatment of OCD (Bluett, Homan, Morrison, Levin, & Twohig, 2014). There is also some evidence suggesting that ACT for anxiety or OCD works through predicted processes of change (Arch, Wolitzky-Taylor, Eifert, & Craske, 2012; Twohig, Vilardaga, Levin, & Hayes, 2015; Wolitzky-Taylor, Arch, Rosenfield, & Craske, 2012). Thus, ACT for OCD continues to be worthy of further study.

A relationship between OCD and psychological flexibility, the key process of change in ACT, has been demonstrated with a meta-analysis finding a correlation of $r = .36$ between psychological flexibility and OCD severity. Additionally, data from a handful of studies has shown associations between improved psychological flexibility and OCD severity (see Bluett et al., 2014; Haaland et al., 2017). In the largest western trial of ACT for OCD to date, eight sessions of ACT, without in-session exposure exercises, was compared to progressive muscle relaxation (Twohig et al., 2010). Results showed that ACT was more effective than the control condition, with 46–56% (depending on analysis) of participants responding at posttreatment and 46–66% at follow up, compared to 13–18% at posttreatment and 16–18% at follow up for the control condition. Much of the research on ACT for OCD has occurred within one research group, limiting the generalizability of the results. However, recently, multiple researchers out of Iran have

* Corresponding author.
E-mail address: mrasoliazad@yahoo.com (M. Rasouli-Azad).

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systematically studied ACT for OCD in their country.

The work in Iran—by multiple research groups—started with the treatment of five adults with OCD using 10 individual sessions of ACT (Izadi, Asgari, Neshatdust, & Abedi, 2012). Individual tracking of data showed notable decreases in compulsions for all five participants and average scores on the Yale Brown Obsessive Compulsive Inventory (Y-BOCS, (Goodman et al., 1989) were 30 at pre, 15 at post, and 15 at follow-up. Another small study by the same lead author included three treatment-resistant adults with OCD who were treated using 14 individual sessions of ACT (Izadi & Abedi, 2013). Individual tracking showed pretreatment, posttreatment, and follow up scores of 32, 20, and 19.7 on the Y-BOCS. In a large randomized trial, 90 adults with OCD were randomized to one of three treatments: group ACT, clomipramine (a tricyclic antidepressant), or group ACT + clomipramine (Baghooli, Dolatshahi, Mohammadkhani, Moshtagh, & Naziri, 2014). Results were as follows for pretreatment, posttreatment, and follow-up on the Y-BOCS: ACT 24, 14, and 11; clomipramine 25, 17, 14; ACT + clomipramine 25, 15, 13. Between condition effect sizes for ACT vs clomipramine were as follows, posttreatment (d = .87) and follow-up (d = .42), and the combined condition at posttreatment (d = .28) and follow-up (d = .35). This study was replicated testing a selective serotonin reuptake inhibitor (SSRI; Vakili, Gharraee, Habibi, Lavasani, & Rasoolian, 2014). Thirty-two adults were assigned to ACT, SSRI, or ACT + SSRI conditions. The ACT alone condition performed similarly to the combined condition and both demonstrated large effects over the SSRI condition (ds = 1.14 and 1.28, respectively). Mean Y-BOCS scores at pretreatment and posttreatment were as follows: ACT 23 and 14, SSRI 25 and 19, and ACT + SSRI 24 and 13. Finally, sixty adults were randomized to group ACT, group time perspective therapy, group narrative therapy, or wait-list conditions (Esfahani, Kjbaf, & Abedi, 2015). ACT was the most effective condition with mean Y-BOCS scores at pretreatment, posttreatment, and follow-up as follows: ACT 28, 13, and 15; time perspective therapy 31, 28, 31; narrative therapy 23, 18, 18, and waitlist 27, 27, 27. These results show large effects for ACT over the time perspective therapy at posttreatment (d = 4.88) and follow-up (d = 5.50), narrative therapy at posttreatment (d = 1.64) and follow-up (d = .93), and wait-list at posttreatment (d = 3.84) and follow-up (d = 3.17). In summary, researchers out of Iran have demonstrated consistent and positive findings for ACT across a variety of conditions and have shown that ACT for OCD can be adapted cross-culturally.

To continue to investigate the utility of ACT for OCD, the following study will examine the effects of group ACT on a sample of adults who are already on a stable and optimal dose of SSRIs. The study will compare group ACT + continued SSRIs vs continued SSRIs. This study adds to the current literature on ACT and concurrent SSRI while replicating aspects of a previous study (Vakili, Gharaee, & Habibi, 2015), while adding follow-up data. It also includes data on rumination, which is a central component in major depressive disorder, which occurs in 41% of those with OCD (American Psychiatric Association, 2013), and is the largest predictor of poor treatment response in OCD (Knopp, Knowles, Bee, Lovell, & Bower, 2013). Data on psychological flexibility was also collected, offering information on processes of change in therapy.

2. Method

2.1. Participants

The sample was recruited from six different mental health centers in Kashan, Iran. All participants were at optimal target doses of Fluoxetine, Fluvoxamine, Citalopram, or Sertraline. Optimal does was achieved by starting patients at low doses (Fluoxetine 20 mg, Fluvoxamine 50 mg, Citalopram 10 mg, and Sertraline 50 mg) and increasing every 3 or 4 days until maximum results with least side-effects. Inclusion criteria consisted of: (a) having a primary diagnosis of OCD (identified from the Structured Clinical Interview for DSM-IV, Axis I Disorders [SCID; First, Spitzer, Gibbon, & Williams, 1995]); (b) being over 17 years old; (c) having at least a high school education; (d) being female. Of note, Islamic customs make mixed-sex group therapy participation difficult, therefore a single sex group was run, as is common in this culture. Exclusion criteria included: (a) a BDI-II score over 29; (b) current diagnosis of bipolar disorder; (c) current psychotic episode; (d) current suicide ideation; (e) a change in SSRI dose in the last 4 weeks; (f) participation of psychological treatment in the last month; and (h) planned changes in SSRI during the 16-week trial. A psychiatrist screened 111 individuals for the study. Of those, 67 were then assessed by a clinical psychologist who excluded 21 individuals based on inclusion and exclusion criteria. This resulted in 46 participants who were randomly assigned, using a random number chart, to one of two treatment conditions. Participant mean age was 27.91 (7.26), mean duration of OCD symptoms was 20.28 (14.18) months, 45.7% had a college degree, 82.6% were unemployed and not a current student, and 47.8% were married. See Table 1 for more detailed demographic information by condition. All participants in the ACT condition completed treatment. Two participants in the ACT condition did not complete posttreatment assessments and an additional 5 did not complete follow-up. Four participants in wait-list did not complete posttreatment and an additional 3 did not complete follow-up assessments. This resulted in 32 participants with complete data for the 16-week trial. See Fig. 1 for a flowchart of participants in the study.

Table 1
Demographics by Treatment Condition.

	ACT + SSRI (n = 23)	SSRI (n = 23)	t or $\chi 2$	p
Age M (SD)	29.13 (7.48)	26.70 (6.98)	1.14	.26
Duration of OCD (months)	22.26 (14.27)	18.30 (14.12)	.95	.35
Percent with College Degree	43.48%	57.83%	.57	.90
Percent Married	52.20%	43.50%	.35	.56
Percent Student or with Occupation	26.10%	8.70%	2.42	.12

2.2. Procedure

All participants were provided information about the two study conditions and provided informed consent to participate in the study. Eligible patients were randomly assigned to either continued SSRI management or SSRI + group ACT. All participants provided demographic information at pretreatment. In addition, an assessment battery was completed by participants at pretreatment, posttreatment, and a two-month follow-up that included the measures listed in the measures section. The SCID was only collected at pretreatment. The SCID has demonstrated appropriate psychometric characteristics in the Iranian community (Sharifi et al., 2009).

2.2.1. Continued SSRI management

The SSRI management condition consisted of the continued use of SSRIs at the same levels prior to entering the study. Clients continued to be monitored by the mental health center's psychiatrist. The dose of SSRIs did not change during the 16-week trial. No psychological treatment was provided during the trial period. Following the completion of the study, all participants in the SSRI management condition participated in the same treatment provided to those in the ACT condition.

2.2.2. Adjunctive Acceptance and Commitment Group Therapy (ACT)

The ACT condition consisted of SSRI management in addition to eight sessions of group therapy split into three small groups using an ACT treatment manual that closely followed the one used by Twohig

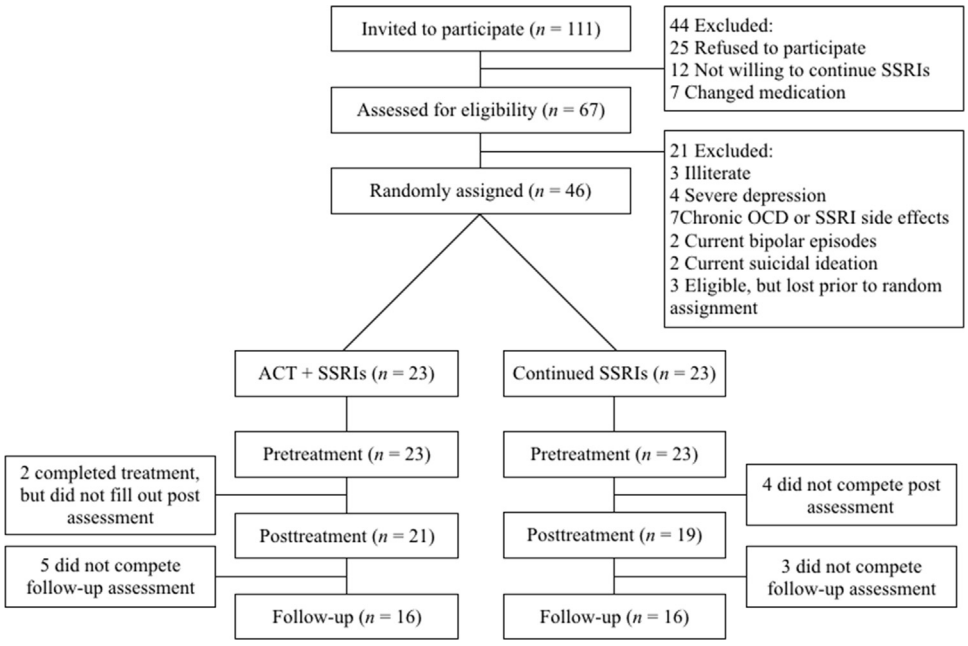

Fig. 1. Participant Flowchart.

et al. (2010). Groups were run by an ACT-trained therapist with three years of ACT and group therapy experience. All sessions were audiotaped and were reviewed weekly by a supervisor to establish internal validity. All sessions had essential objectives that included: homework and discussion of events between session, centering exercises, metaphors and in-session exercises adapted to Iranian culture, and group discussion. Each session had a main objective based on ACT theory. In order, these included: creative hopelessness, control as the problem and introduction to acceptance, acceptance, defusion, self as context, contact with present moment, values, and committed action.

2.3. Measures

2.3.1. Yale-Brown Obsessive Compulsive Scale, Self-Report

(Y-BOCS-SR; Steketee, Frost, & Bogart, 1996). The Y-BOCS-SR is a ten-item, self-report questionnaire designed to assess OCD severity. The sum of all items yields a total score (range = 0–40), with scores of 16 or greater generally denoting clinically significant levels of OCD symptoms. The scale has demonstrated good psychometric properties (Steketee et al., 1996). The Y-BOCS-SR demonstrated acceptable reliability in the current study (Cronbach's α = .73).

2.3.2. Beck Depression Inventory-II

(BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a commonly used, self-report measure of depression. The measure consists of 21 items that are summed to produce a total score (range = 0–63). Total scores are classified into the following categories: minimal (0 − 13), mild (14 − 19), moderate (20 − 28), and severe (29 − 63) (Beck et al., 1996). The BDI-II has demonstrated good psychometric properties in Iranian samples. The alpha coefficient of the Iranian version is .86 (RAJABI & KARJO, 2013). The BDI-II demonstrated acceptable reliability in the current study (Cronbach's α = .70).

2.3.3. Acceptance and Action Questionnaire

(AAQ-II; Bond et al., 2011). The AAQ-II is a 10-item, self-report measure of psychological flexibility. Items are summed to produce a total score (range = 10–70), with higher scores representing greater psychological flexibility. The AAQ-II has demonstrated good psychometric properties in Iranian samples. The alpha coefficient of the Iranian version is ranges from .71 to .89. (Abasi, Fti, Molodi, & Zarabi, 2013). The AAQ-II demonstrated good reliability in the current study (Cronbach's α = .81).

2.3.4. Ruminative Response Scale

(RRS; Nolen-Hoeksema & Morrow, 1991). The RRS is a 22 item, self-report measure of ruminative coping responses to depressed mood and other negative symptoms. Items are summed to produce a total score (range = 22–88) with higher scores denoting higher levels of ruminative coping style. The RRS has demonstrated good psychometric properties (Wu, Zhang, Liu, Zhou, & Wei, 2015). The RSS demonstrated good reliability in the current study (Cronbach's α = .85).

2.4. Data analysis

Kolmogrov-Smirnov and Levene's methods were used to test for distribution normality and equality of variances ($p < .05$) and parametric tests were utilized for statistical analysis. Demographic data were analyzed employing chi-square and independent two-sample student's *t*-tests. Mixed models repeated measures (MMRM) analyses were utilized to examine Time by Condition and main Time and Condition effects between the ACT/SSRI and SSRI treatment conditions on outcome measures at pretreatment, posttreatment, and follow-up. This method allows for analysis of the full intent-to-treat sample and all available data points as any missing data points are modeled and included in the analysis. Missing data were modeled in this fashion for 14 participants (30.43% of the sample). All participants completed pretreatment assessment, 14 did not complete follow-up, and of those, six also did not complete posttreatment. Additional MMRM analyses were utilized to examine within- and between-group changes for each outcome measure. Analyses were also computed using repeated measures ANOVA and results were the same with the exception that the between conditions results for the Y-BOCS were significant. We are choosing to only report the intent to treat analyses using MMRM as it is the most representative way to present between group time series analyses when there is missing data.

3. Results

Independent sample *t*-test and Chi-square analysis showed no significant pretreatment differences ($ps > .05$) between the treatment conditions for any demographic feature, indicating homogeneity between groups. See Table 1 for detailed demographic comparison results.

Table 2
Means and Standard Deviations at Pretreatment, Posttreatment, and Follow-Up by Condition.

Measure	ACT + SSRI (n = 16)			SSRI (n = 16)		
	Pre	Post	Follow-up	Pre	Post	Follow-up
YBOCS	22.62	13.50	6.50	21.25	17.56	14.62
	(3.07)	(5.53)	(4.31)	(4.18)	(4.33)	(4.08)
BDI-II	19.31	9.13	5.12	17.75	10.25	7.68
	(4.62)	(5.88)	(5.90)	(5.03)	(4.81)	(4.58)
RRS	54.06	34.63	27.31	50.75	39.43	33.87
	(10.11)	(8.88)	(7.26)	(9.49)	(9.74)	(9.50)
AAQ-II	21.56	37.06	42.93	24.12	25.62	29.12
	(6.13)	(6.58)	(5.05)	(4.75)	(5.40)	(3.86)

Note. MMRM analyses modeled data for participants who did not complete post and follow-up assessments. This table reports only non-missing data. YBOCS = Yale Brown Obsessive Compulsive Scale, Self Report; BDI-II = Beck Depression Inventory–II; RRS = Ruminative Response Scale; AAQ-II = Acceptance and Action Questionnaire–II.

Table 2 displays descriptive statistics for each variable by treatment condition at pretreatment, posttreatment, and follow-up, and Fig. 2 displays plots for the same data.

3.1. OCD symptom severity

MMRM analysis indicated a significant Time × Condition interaction for Y-BOCS-SR scores, $F_{(2,\ 33.057)} = 33.35$, $p < .001$, Cohen's $d = 2.01$. Between-group comparisons indicated no significant difference between the treatment conditions at posttreatment $t(38.778) = -1.347$, $p = .186$, $d = 1.08$, however, significant differences were found at follow up $t(35.765) = -6.583$, $p < .001$, $d = 1.53$. Within-group comparisons indicated a significant difference for the ACT/SSRI condition from pre- to posttreatment $t(20.011) = -10.052$, $p < .001$, $d = 2.19$ and from posttreatment to follow up $t(15.840) = -7.511$, $p < .001$, $d = 1.67$. Significant differences were also found for the SSRI condition from pre- to posttreatment $t(18.134) = -8.315$, $p < .001$, $d = 1.90$ and from posttreatment to follow up $t(17.132) = -4.611$, $p < .001$, $d = 1.10$. These findings indicate that both treatment conditions had a large, significant impact on reducing OCD symptoms over the treatment period that continued through follow-up; however, the ACT + SSRI condition saw significantly larger improvements at follow-up than the SSRI condition. Moreover, from baseline to follow-up there was, on average, a 71.3% improvement in Y-BOCS-SR scores in the ACT + SSRI condition compared to a 31.2% improvement in the SSRI condition.

3.2. Depression symptom severity

BDI-II scores demonstrated a nonsignificant Time × Condition interaction, $F_{(2,\ 36.810)} = 36.810$, $p = .089$, Cohen's $d = .53$. However, there was a significant main effect of Time, $F_{(2,\ 36.810)} = 99.022$, $p < .001$, $d = 3.28$, but no main effect of Condition, $F_{(1,\ 40.654)} = 2.820$, $p < .001$, $d = .53$. Between group comparisons indicated no significant difference between the treatment conditions at posttreatment $t(38.778) = -1.347$, $p = .186$, $d = .42$, however, a significant difference was found at follow up $t(37.593) = -2.411$, $p = .021$, $d = .79$. Within-group comparisons indicated a significant difference for the ACT + SSRI condition from pre- to posttreatment $t(20.374) = -8.463$, $p < .001$, $d = 1.83$ and from posttreatment to follow up $t(15.874) = -3.852$, $p = .001$, $d = .95$. Significant differences were also found for the SSRI condition from pre- to posttreatment $t(19.247) = -6.454$, $p < .001$, $d = 1.42$ and from posttreatment to follow up $t(17.659) =$

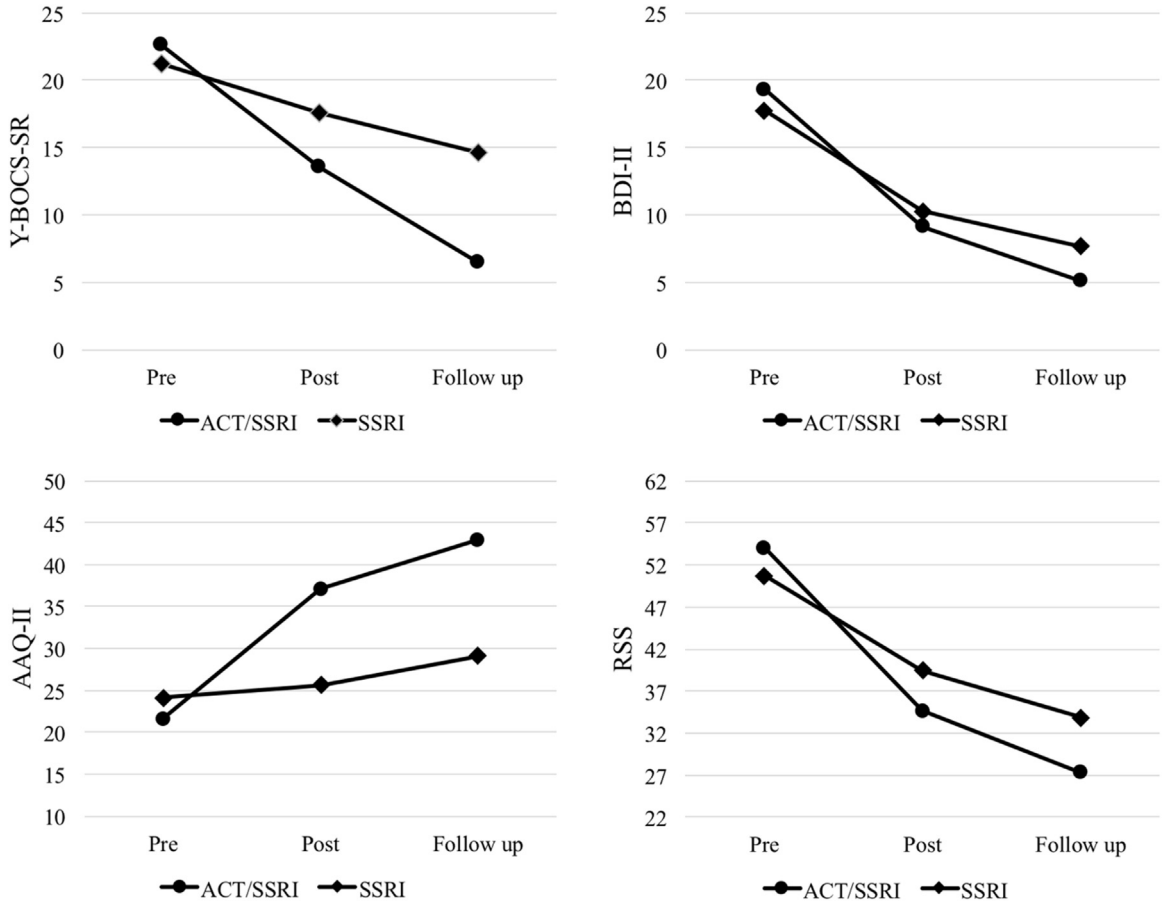

Fig. 2. Outcome Measures at Pretreatment, Posttreatment, and Follow-Up by Condition.

−2.524, $p = .021$, $d = .61$. These findings indicate that both treatment conditions had a similar, large impact on reducing depression symptoms over the treatment period that continued through follow-up; however, there was a small, yet significant difference between the groups at follow-up indicating that the ACT + SSRI condition saw greater symptom improvement than the SSRI condition.

3.3. Ruminative thoughts

RRS scores demonstrated a significant Time × Condition interaction, $F_{(2,\ 40.282)} = 6.706$, $p = .003$, Cohen's $d = .82$. Between group comparisons indicated significant differences between the treatment conditions at posttreatment $t(42.046) = -2.823$, $p = .007$, $d = .88$ and follow up $t(37.880) = -3.217$, $p = .003$, $d = 1.06$. Within-group comparisons indicated a significant difference for the ACT + SSRI condition from pre- to posttreatment $t(21.345) = -11.051$, $p < .001$, $d = 2.37$ and from posttreatment to follow up $t(17.414) = -4.502$, $p < .001$, $d = 1.07$. Significant differences were also found for the SSRI condition from pre- to post-treatment $t(19.659) = -5.865$, $p < .001$, $d = 1.32$ and from posttreatment to follow up $t(17.596) = -4.292$, $p < .001$, $d = 1.03$. These findings indicate that both treatment conditions had a large, significant impact on reducing ruminative coping responses over the treatment period that continued through follow-up; however, the ACT + SSRI condition saw significantly larger improvements than the SSRI condition at post-treatment that were maintained at follow-up.

3.4. Psychological flexibility

AAQ-II scores demonstrated a significant Time × Condition interaction, $F_{(2,\ 38.706)} = 40.395$, $p < .001$, Cohen's $d = 2.04$. Between group comparisons indicated significant differences between the treatment conditions at posttreatment $t(38.752) = 6.849$, $p < .001$, $d = 2.16$ and follow up $t(33.741) = 9.565$, $p < .001$, $d = 3.24$. Within-group comparisons indicated a significant difference for the ACT + SSRI condition from pre- to post-treatment $t(21.563) = -9.890$, $p < .001$, $d = 2.13$ and from posttreatment to follow up $t(17.886) = -3.859$, $p = .001$, $d = .91$. Significant differences were not found for the SSRI condition from pre- to post-treatment $t(18.704) = .896$, $p = .382$, $d = .20$, but were found from posttreatment to follow up $t(16.610) = 4.102$, $p = .001$, $d = .97$. These findings indicate that while both treatment conditions had significant impact on increasing psychological flexibility from pre-treatment to follow-up, the ACT + SSRI condition saw much larger and more immediate improvements than the SSRI condition. Moreover, at follow-up there was, on average, a 49.8% increase in AAQ-II scores in the ACT + SSRI condition compared to a 17.2% increase in the SSRI condition.

4. Discussion

The present study demonstrated the impact of group ACT on a sample who was at an optimal dose of SSRI versus continued SSRI management. Specifically, both treatments lowered Y-BOCS-SR and BDI-II scores from pre-to post-treatment, with ACT + SSRI lowering them significantly greater at follow-up. Secondary outcomes showed that ACT + SSRI also reduced ruminative thought (as a mutual component between obsessions and depression) more than SSRI. Psychological flexibility also changed more in the ACT + SSRI condition.

There are a number of important findings from this study. Most notably, this study adds to the, now rather large, literature on ACT and OCD. As covered in review papers (Bluett et al., 2014), there has been 1 randomized trial and many single subject designs testing the effects of ACT for OCD in the United States. Iranian researchers have continued this work with two open trials (Izadi & Abedi, 2013; Izadi et al., 2012), two randomized trials comparing ACT plus antidepressants to antidepressants (Baghooli et al., 2014; Vakili et al., 2015), and one randomized trial comparing ACT to two active control conditions and a waitlist (Esfahani, Kjbaf, & Abedi, 2015). The current study adds to this support while offering some additional information. The results of all the ACT for OCD studies are supportive of ACT over comparison conditions, and achieving posttreatment and follow-up Y-BOCS-SR scores that are in acceptable ranges. This mass of data across researchers lends credibility to ACT as a method to address OCD.

This study replicates the findings that ACT + an antidepressant is more effective than the antidepressant alone (Baghooli et al., 2014; Vakili et al., 2015), while even replicating the findings with SSRIs (Vakili et al., 2015). It adds to the Vakili et al. (2015) study in that follow-up was collected. The follow-up results showed ACT continued to show gains well beyond SSRIs two months after treatment. This also add to the Iranian work showing that group ACT for OCD is effective. This is important in that it highlights that these skills can be taught to a larger group of individuals at one time. This is not surprising because many studies testing ACT are completed with groups (A-Tjak et al., 2015). It also adds to the literature on the effects of ACT on depression and ruminative thought.

Another notable finding is that the significance between ACT + SSRI and SSRI alone was not present until 2-month follow-up. Posttreatment scores for ACT + SSRI were fairly typical for an OCD treatment trial. The notable finding is that ACT + SSRI Y-BOCS scores were low at follow-up. It is unclear what lead to this continued drop in scores after treatment ended. While an increase between posttreatment and follow-up has not been seen in ACT for OCD, neither has this continued decrease from posttreatment to follow-up. Continued decreases like this have been seen in other ACT trials, such as work with substance use and abuse (Luoma, Kohlenberg, Hayes, & Fletcher, 2012). Unique features of this study that could positively affect follow-up and should be investigated include group treatment, female only sample, the sequencing of SSRI and ACT, or the exclusion of those with high BDI scores. The impact of these variables could be investigated in future studies.

There were several limitations in this study. First, the population of interest was limited to females. While this would be uncommon in a western society, the cultural rules and conventions in Iran make mixed-sex therapy difficult as participants are less likely to share content of obsessions with members of the opposite sex. On the one hand, it limits generalization, on the other hand, it demonstrates a cultural adaption of a therapy to a particular group. Second, the sample size was small. Combined with the Vakili study there is notable support for these general findings. Third, follow-up duration for clinical outcomes was only two months. Even though follow-up was not collected in the other ACT + SSRI trial, a much longer duration would be preferable. Repeated measurements of follow-up at 3, 6 and 12 months would be useful. Fourth, the primary outcome was measured only by self-report. While, the self-report version of the Y-BOCS has very good psychometric properties and high correlations with clinician ratings of OCD severity, a more objective measure is preferable to the self-report method used in this study and should be employed in future trials. Fifth, assessments and random assignment occurred after all participants were already on SSRIs. Thus, this study really shows the additive effects of psychotherapy to medication versus continued medication. This is still important because adding psychotherapy to medication is common in the treatment of OCD, and it is useful to know it improves outcomes over continued medication. Still, knowing the combined effects versus the stand-alone effects of medication answers additional questions, such as medication alone and the combination. Even though pretreatment Y-BOCS scores are consisted with pretreatment scores in other published outcome studies, pretreatment scores in the range of 22 is mild in terms of OCD severity as the Y-BOCS has a maximum score of 40. Sixth, participants only needed to be on stable dosages of SSRIs for 4 weeks prior to enrolling in the study. Thus, they could still be experiencing gains from the new medication during the study. Because participants were randomly assigned, the effects should have been balanced across

conditions. Finally, the obsessive-compulsive complaints of participants were mainly contamination-washing symptoms. This is partially a product of the female only participants. Sexual and religious obsessions are more prevalent in males, and females are more involved in contamination/cleaning obsessions (Mathis et al., 2011). Even with these limitations, this study notably adds to the literature on the treatment of OCD in many ways.

Authors note

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References

Abasi, E., Fti, L., Molodi, R., & Zarabi, H. (2013). *Psychometric properties of Persian version of acceptance and action questionnaire-ii*.

Arch, J. J., Wolitzky-Taylor, K. B., Eifert, G. H., & Craske, M. G. (2012). Longitudinal treatment mediation of traditional cognitive behavioral therapy and acceptance and commitment therapy for anxiety disorders. *Behaviour Research and Therapy, 50*(7), 469–478.

Association, A. P. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

A-Tjak, J. G., Davis, M. L., Morina, N., Powers, M. B., Smits, J. A., & Emmelkamp, P. M. (2015). A meta-analysis of the efficacy of acceptance and commitment therapy for clinically relevant mental and physical health problems. *Psychotherapy and Psychosomatics, 84*(1), 30–36. http://dx.doi.org/10.1159/000365764.

Baghooli, H., Dolatshahi, B., Mohammadkhani, P., Moshtagh, N., & Naziri, G. (2014). Effectiveness of acceptance and commitment therapy in reduction of severity symptoms of patients with obsessive–Compulsive disorder. *Advances in Environmental Biology,* 2519–2525.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Beck depression inventory-II. San Antonio, *78*(2), pp. 490-498.

Bluett, E. J., Homan, K. J., Morrison, K. L., Levin, M. E., & Twohig, M. P. (2014). Acceptance and commitment therapy for anxiety and OCD spectrum disorders: An empirical review. *Journal of Anxiety Disorders, 28*(6), 612–624. http://dx.doi.org/10.1016/j.janxdis.2014.06.008.

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., & Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*(4), 676–688. http://dx.doi.org/10.1016/j.beth.2011.03.007.

Cicek, E., Cicek, I. E., Kayhan, F., Uguz, F., & Kaya, N. (2013). Quality of life, family burden and associated factors in relatives with obsessive–compulsive disorder. *General Hospital Psychiatry, 35*(3), 253–258.

Esfahani, M., Kjbaf, M. B., & Abedi, M. R. (2015). Evaluation and comparison of the effects of time perspective therapy, acceptance and commitment therapy and narrative therapy on severity of symptoms of obsessive-compulsive disorder. *Journal of the Indian Academy of Applied Psychology, 41*(3), 148.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. (1995). The structured clinical interview for DSM-III-R personality disorders (SCID-II). Part I: Description. *J. Person. Disord. 9*(2), 83–91.

Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., & Charney, D. S. (1989). The Yale-Brown Obsessive Compulsive Scale: I. Development, Use, and Reliability. *Archives of General, 46*(11), 1006–1011. http://dx.doi.org/10.1001/archpsyc.1989.01810110048007.

Haaland, Å. T., Eskeland, S. O., Moen, E. M., Vogel, P. A., Haseth, S., Mellingen, K., & Hummelen, B. (2017). ACT-enhanced behavior therapy in group format for Trichotillomania: An effectiveness study. *Journal of Obsessive-Compulsive and Related Disorders, 12*, 109–116.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2012). *Acceptance and commitment therapy: The process and practice of mindful change* (2nd ed.). New York, NY US: Guilford Press.

Izadi, R., & Abedi, M. R. (2013). Alleviation of obsessive symptoms in treatment-resistant obsessive-compulsive disorder using acceptance and commitment-based therapy. *KAUMS Journal (FEYZ), 17*(3), 275–286.

Izadi, R., Asgari, K., Neshatdust, H., & Abedi, M. (2012). The Effect of acceptance and commitment therapy on the frequency and severity of symptoms of obsessive compulsive disorder. *Zahedan Journal of Research in Medical Sciences, 14*(10), 107–112.

Knopp, J., Knowles, S., Bee, P., Lovell, K., & Bower, P. (2013). A systematic review of predictors and moderators of response to psychological therapies in OCD: Do we have enough empirical evidence to target treatment? *Clinical Psychology Review, 33*(8), 1067–1081.

Luoma, J. B., Kohlenberg, B. S., Hayes, S. C., & Fletcher, L. (2012). Slow and steady wins the race: A randomized clinical trial of acceptance and commitment therapy targeting shame in substance use disorders. *Journal of Consulting and Clinical Psychology, 80*(1), 43–53. http://dx.doi.org/10.1037/a0026070.

Mathis, M. A. D., Alvarenga, P. D., Funaro, G., Torresan, R. C., Moraes, I., Torres, A. R., & Hounie, A. G. (2011). Gender differences in obsessive-compulsive disorder: A literature review. *Revista Brasileira Délelőtt Psiquiatria, 33*, 390–399.

Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta Earthquake. *Journal of Personality and Social Psychology, 61*(1), 115.

Olatunji, B. O., Davis, M. L., Powers, M. B., & Smits, J. A. J. (2013). Cognitive-behavioral therapy for obsessive-compulsive disorder: A meta-analysis of treatment outcome and moderators. *Journal of Psychiatric Research, 47*(1), 33–41. http://dx.doi.org/10.1016/j.jpsychires.2012.08.020.

RAJABI, G., & KARJO, K. S. (2013). Psychometric properties of a Persian-language version of the beck depression inventory–second edition (BDI-II-Persian).

Romanelli, R. J., Wu, F. M., Gamba, R., Mojtabai, R., & Segal, J. B. (2014). Behavioral therapy and serotonin reuptake inhibitor pharmacotherapy in the treatment of obsessive–compulsive disorder: A systematic review and meta-analysis of head-to-head randomized controlled trials. *Depression and Anxiety, 31*(8), 641–652.

Sharifi, V., Assadi, S. M., Mohammadi, M. R., Amini, H., Kaviani, H., Semnani, Y., & Shooshtari, M. H. (2009). A persian translation of the structured clinical interview for diagnostic and statistical manual of mental disorders: Psychometric properties. *Comprehensive Psychiatry, 50*(1), 86–91.

Soomro, G. M., Altman, D. G., Rajagopal, S., & Oakley Browne, M. (2008). Selective serotonin re-uptake inhibitors (SSRIs) versus placebo for obsessive compulsive disorder (OCD). *The Cochrane Library*.

Steketee, G., Frost, R., & Bogart, K. (1996). The Yale-Brown obsessive compulsive scale: Interview versus self-report. *Behaviour Research and Therapy, 34*(8), 675–684.

Twohig, M., Hayes, S., Plumb, J., Pruitt, L., Collins, A., Hazlett-Stevens, H., & Woidneck, M. (2010). A Randomized Clinical Trial of Acceptance and Commitment Therapy Versus Progressive Relaxation Training for Obsessive-Compulsive Disorder. *Journal of Consulting and Clinical Psychology, 78*(5), 705–716. http://dx.doi.org/10.1037/a0020508.

Twohig, M. P., Vilardaga, J. C. P., Levin, M. E., & Hayes, S. C. (2015). Changes in psychological flexibility during acceptance and commitment therapy for obsessive compulsive disorder. *Journal of Contextual Behavioral Science, 4*(3), 196–202.

Vakili, Y., Gharaee, B., & Habibi, M. (2015). Acceptance and Commitment Therapy, Selective Serotonin Reuptake Inhibitors and Their Combination in the Improvement of Obsessive-Compulsive Symptoms and Experiential Avoidance in Patients With Obsessive-Compulsive Disorder. *Iranian Journal of Psychiatry and Behavioral Sciences, 9*(2).

Vakili, Y., Gharraee, B., Habibi, M., Lavasani, F., & Rasoolian, M. (2014). The comparison of acceptance and commitment therapy with selective serotonin reuptake inhibitors in the treatment of obsessive-compulsive disorder. *Zahedan Journal of Research in Medical Sciences, 16*(10), 10–14.

Wolitzky-Taylor, K. B., Arch, J. J., Rosenfield, D., & Craske, M. G. (2012). Moderators and non-specific predictors of treatment outcome for anxiety disorders: A comparison of cognitive behavioral therapy to acceptance and commitment therapy. *Journal of Consulting and Clinical Psychology, 80*(5), 786.

Wu, K., Zhang, Y., Liu, Z., Zhou, P., & Wei, C. (2015). Coexistence and different determinants of posttraumatic stress disorder and posttraumatic growth among Chinese survivors after earthquake: Role of resilience and rumination. *Frontiers in Psychology, 6*.