An Iranian Study of Group Acceptance and Commitment Therapy versus Group Cognitive Behavioral Therapy for Adolescents with Obsessive-Compulsive Disorder on an Optimal Dose of Selective Serotonin Reuptake Inhibitors

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Abstract

Conducted in Iran, participants included 69 adolescents with obsessive-compulsive disorder (OCD) who were on a stable selective serotonin reuptake inhibitor (SSRI) dose and were randomly assigned to one of three conditions: group acceptance and commitment therapy (ACT)+SSRI, group cognitive behavioral therapy (CBT)+SSRI, or continued SSRI treatment. Assessment occurred at pre-, post-treatment, and three-month follow-up and included the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS), Children's Depression Inventory (CDI), Avoidance and Fusion Questionnaire for Youth (AFQ-8), Valued Living Questionnaire (VLQ), and Child and Adolescent Mindfulness Measure (CAMP). ACT+SSRI and CBT+SSRI conditions demonstrated significant reductions in OCD severity that were maintained at follow-up compared to the continued SSRI condition. All conditions demonstrated significant reductions in depression that were maintained at follow-up. The ACT+SSRI condition demonstrated significant improvement in psychological flexibility, mindfulness, and valued living that were maintained at follow-up compared to the CBT+SSRI and continued SSRI conditions. Findings indicate that ACT+SSRI is comparably effective as CBT+SSRI at treating adolescent OCD. However, ACT+SSRI appears to differ from CBT+SSRI on changes in psychological flexibility, mindfulness, and valued living, indicating potential differences in mechanism of change.

Keywords: Acceptance and Commitment Therapy, Cognitive-Behavioral Therapy, Adolescent, Obsessive-Compulsive Disorder, Randomized Controlled Trial

An Iranian Study of Group Acceptance and Commitment Therapy versus Group Cognitive Behavioral Therapy for Adolescents with Obsessive-Compulsive Disorder on an Optimal Dose of Selective Serotonin Reuptake Inhibitors

Obsessive-compulsive disorder (OCD) is a chronic disorder involving recurrent and unwanted obsessions and corresponding repetitive compulsions aimed at managing the obsessions (Kaplan, 2016). One-third to one-half of adults with OCD had symptoms of OCD in childhood (Flament & Cohen, 2000). Prevalence of this disorder is between 0.06% and 2% among children and adolescents (Franklin, Foa, & March, 2003), and 2% to 3% in adults (Heyman et al., 2001; Rasmussen & Eisen, 1992). A systematic review of the prevalence of childhood OCD in Iran showed a range of 1% to 11.9%, which is notably higher than comparison countries (Zarafshan, Mohammadi, & Salmanian, 2015). The most common obsessions in adolescents are those related to contamination, harming a loved one or others, and symmetry, order, or exactness. The most common compulsions are washing, cleaning, checking, counting, ordering/arranging rituals, and touching (Kircanski, Peris, & Piacentini, 2011). In Islamic countries, due to the important role of cleanliness and washing in religious rituals for ablution (such as Vozo and Ghosl), washing compulsions are most common. Sexual and religious obsessions are more prevalent among adolescents than children and adults (Geller et al., 2001).

The comorbidity of OCD and other psychiatric disorders is high, with estimates ranging from 75% to 85% (Geller et al., 1998). Early onset OCD is comorbid with a wide range of psychiatric disorders such as anxiety and mood disorders, attention-deficit/hyperactivity disorder (ADHD), and tic disorders (Barrett, Healy-Farrell, Piacentini, & March, 2004). Clinical observations show considerable functional impairment in social, family, and academics in

adolescents with OCD (Storch et al., 2010; Valderhaug & Ivarsson, 2005). These findings suggest that OCD in youth is prevalent, has a poor prognosis without treatment, and negatively affects those diagnosed. Even though antidepressants are a first-line treatment in Iran, psychotherapy in general is accepted and often preferred. Thus, effective psychosocial treatments are needed.

Cognitive-behavioral therapy (CBT) involving exposure and response prevention (ERP) alone or in combination with selective serotonin reuptake inhibitors (SSRIs) is the first line of treatment for OCD in children and adolescents (Geller & March, 2012). However, treatment is not effective for all. For example, a meta-analysis found response rates of 70% for CBT, 66% for CBT plus SSRI, and 49% for SSRI alone; but remission rates were lower at 53% for CBT, 49% for CBT plus SSRI, and 24% for SSRI alone (Öst, Riise, Wergeland, Hansen, & Kvale, 2016). The same meta-analysis found dropout rates of 12.7% for CBT and 23.5% for SSRI. Moreover, 7.4% declined participation (Öst et al., 2016). Unwanted side-effects are a concern for SSRIs (Murphy, Segarra, Storch, & Goodman, 2008). Additionally, symptoms recur when the intake of medicine stops in 95% of patients (Catapano et al., 2006; Dougherty, Rauch, & Jenike, 2002). Thus, while excellent treatments for OCD exist, they are not effective for all and additional lines of inquiry are needed.

Acceptance and Commitment Therapy (ACT) is beginning to show promise in the treatment of adult OCD (Bluett, Homan, Morrison, Levin, & Twohig, 2014; Rohani et al., 2018; Twohig & Levin, 2017). Currently, five randomized trials have been conducted with ACT for OCD (Rohani et al., 2018; Twohig & Levin, 2017), with averaged Yale-Brown Obsessive Compulsive Scale (Y-BOCS) scores of 24.2 (range 22-28) at pre-treatment, 13.2 (range 12-13) at post-treatment, and 10.7 (range 6-15) at follow-up. All of these studies utilized the same manual

that purposefully excluded in-session exposure exercises (Twohig et al., 2010). Exposure exercises are consistent with the ACT model (Twohig et al., 2015), but the original manual was written to test the effects of the ACT model without including techniques that were already known to be useful. A recent study also showed that ACT+ERP was equally effective to ERP with 70% and 68% responding in each condition (Twohig et al. 2018). Finally, while the work is limited, there is evidence that psychological flexibility, the target process of change in ACT, is present in OCD (Bluett et al., 2014) and predictive of changes in the treatment of OCD (Twohig, Vilardaga, Levin, & Hayes, 2015). There is growing evidence of the positive impact of willingness to experience obsessions being predictive of positive outcomes in traditional exposure therapy (Reid et al., 2017).

Very few experimental studies have been conducted on the effect of ACT on adolescents (Halliburton & Cooper, 2015; Swain, Hancock, Dixon, & Bowman, 2015). ACT is a values-based intervention drawing on metaphors and allegories that can be tailored to adolescents (Greco, Blackledge, Coyne, & Ehrenreich, 2005). Data in this area consists of two preliminary studies utilizing multiple baselines designs with children and adolescents with OCD (Armstrong, Morrison, & Twohig, 2013; Barney, Field, Morrison, & Twohig, 2017). Each study had three participants and used very similar protocols that were 8-10 sessions long. The amount of parental support varied by child age. One study was run with individuals below 12 years of age and one had adolescents 12 or older. Both studies had moderate effects with a general decrease in self-reported obsessions and compulsions as well as validated measurements: Child Y-BOCS scores of 27 at pre-treatment and 14 at post-treatment for children, and 21 at pre-treatment, 15 at post-treatment, and 11 at follow-up for the adolescents. While these initial findings are promising, more research is needed on the effects of ACT for adolescents with OCD.

In this study we examined the effectiveness of ACT for adolescents with OCD. In order to compare the effects of ACT to a gold-standard treatment, ACT was compared with traditional CBT. All participants in this study were on a stable dose of SSRI prior to starting ACT or CBT, thus a continued SSRI condition served as a control condition for effects beyond participating in this study. This is consistent with the health practices of Iran where antidepressants are the first line of treatment. Finally, great emphasis was placed on assessments of processes of change to determine whether ACT+SSRI affected its proposed processes of change, and whether it did so greater than alternative conditions.

Method

Participants

This research was approved by the Ethics Committee of Kashan University of Medical Sciences with the number of IR.KAUMS.REC.1395.124. Participants were referred by mental health professionals, school counselors, psychiatric clinics, and the specialized psychology clinic of Kargarnezhad Psychiatric Hospital in Kashan, Iran. All patients were on an optimal dose of a SSRI for at least 3 months, which included: clomipramine (Anafranil), fluoxetine (Prozac), fluvoxamine (Luvox), and sertraline (Zoloft). Optimal dose was achieved by starting patients at low doses (clomipramine 25 mg, fluoxetine 20 mg, fluvoxamine 50 mg, sertraline, 50 mg) and increasing every 3–4 days until maximum results were achieved with the fewest side effects. Patients stayed at their optimal doses throughout the study. The inclusion criteria required participants to: (a) meet DSM-5 criteria for OCD; (b) have a CYBOCS total score of 16 or higher; and (c) be between the ages of 12 and 18. The exclusion criteria required participants to: (a) not meet criteria for a comorbid psychiatric disorder with higher treatment priorities (e.g., psychosis, severe depression); (b) not have a neurodevelopmental disorder (e.g. autism-spectrum

disorders, mental disability, ADHD); (c) not meet criteria for drug abuse; (d) not have recently started a new psychotropic medication or planned on changing psychotropic medications during the course of the study; and (e) not have received a psychological intervention in the past year. All of the 92 referred participants were screened and assessed by a child and adolescent psychiatrist and a clinical psychologist, and 23 were excluded from the study. Of those excluded, 16 did not meet inclusion or exclusion criteria, four declined participation in the research, and three were excluded for other reasons (e.g., did not attend the screening session or lived too far from the study location). The remaining 69 participants were randomly divided into ACT+SSRI ($n = 22$), CBT+SSRI ($n = 22$), or continued SSRI treatment ($n = 25$) conditions using a table of random numbers. See Figure 1 for a complete participant flowchart. Demographic information was collected during the intake interview and are displayed in Table 1. On average, participants were 14.96 years old ($SD = 1.47$, range = 12–18) and relatively evenly divided by sex (55.1% male).

Therapists

Therapists were two professional clinical psychologists, both of whom had been supervised and trained in ACT and CBT (two to four years of training in ACT and CBT). The therapists received weekly supervision from two clinical psychologists throughout the research study. All of the sessions were audio recorded and were reviewed weekly by the supervisors who assessed the internal consistency of the interventions.

Method

The participants were assigned to condition by a researcher unaware of the therapeutic interventions. The intervention conditions received one hour of ACT+SSRI or CBT+SSRI group therapy on a weekly basis. The ACT+SSRI condition consisted of a 10-session protocol while

the CBT+SSRI condition consisted of a 12-session protocol. Treatment was provided to participants at no cost. Participants were separated into male and female treatment groups as is common in treatment studies in Islamic cultures (i.e., schools are single sexed). Each group was composed of five to seven adolescents. All participants were assessed at pre-, post-treatment, and three months following post-treatment. Additional measures were used that will be reported in later publications. Evaluators were unaware of the treatment condition. Participants in the continued SSRI group were offered their choice of ACT or CBT treatment following the waitlist period. In addition, all participants were receiving SSRIs, that remained at a stable and unchanged dose, throughout the study.

Interventions

Cognitive-Behavioral Therapy. The CBT protocol was derived from the March and Mulle (1998) therapeutic manual for children and adolescents. The 12, one-hour sessions focused on psychoeducation, cognitive training, creating an exposure hierarchy and list of avoidance situations, ERP, and relapse prevention. Sessions 1 to 4 were dedicated to psychoeducation, which consisted of introducing the treatment, defining OCD, identifying OCD-related problems, cognitive training, and creation of an exposure hierarchy. Sessions 5 to 10 consisted of the implementation of ERP. Finally, sessions 11 and 12 were used to provide relapse prevention training and integrate lessons from the previous sessions. Each session involved reviewing the previous session, stating the goal for the session, and assigning homework between sessions. Cognitive restructuring was used as a means of coping with fear during sessions. Parents were invited to the final five minutes of each session. They received a report of participant progress, material covered in session, and were asked to restrict reassurance behavior in response to their child's obsessions.

Acceptance and Commitment Therapy. The ACT protocol was derived from the Armstrong et al. (2013) therapeutic manual for adolescents. The ten, one-hour sessions focused on building rapport, psychoeducation, and training skills related to ACT processes. Sessions 1 to 3 focused on processes known as *creative hopelessness* and *control as the problem* which examine the behaviors that the participant engages in to reduce their obsessions and the short- and long-term costs and benefits of doing so. Ultimately, the aim is for participants to recognize that many of their attempts to control unwanted internal events (e.g., thoughts, emotions, obsessions) are detrimental to their well-being in the long-term and to consider acceptance as an alternative to their control strategy. Sessions 4 and 5 focused on the processes of defusion and acceptance. Sessions 6 and 7 focused on examining and better establishing personal values and allowing unwanted internal events to be present while moving toward meaningful values-constant behavior. Sessions 8 and 9 focused on present moment awareness and self-as-context processes. Finally, session 10 consisted of reviewing all previous sessions and relapse prevention training. Each session involved reviewing the previous session and setting goals to engage in values-consistent behavior between sessions (committed action). Parents were invited to the final five minutes of each session. They received a report of participant progress, material covered in session, and were asked to respond to reassurance seeking behaviors in ACT consistent ways.

Measures

Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; Scahill et al., 1997). The CY-BOCS is a semi-structured interview used to assess OCD symptom severity. The scored portion used in the present study consists of 10 items rated on a five-point Likert scale. The sum of these items yields a total score (range = 0–40), with scores of 16 or more denoting clinically significant levels of OCD symptoms (Pediatric, 2004). Higher scores denote greater severity.

The CY-BOCS has demonstrated good internal consistency for the total score and obsession and compulsion subscales ($\alpha = .87-.90$, $.80$, and $.82$, respectively) in child and adolescent samples (Scahill et al., 1997; Storch et al., 2004). The Persian version of the CY-BOCS was used in the current study. The psychometric properties of this version have been validated in a study that is currently being prepared for publication. The CY-BOCS demonstrated good reliability in the current study ($\alpha = .86$).

Children's Depression Inventory (CDI; Saylor, Finch, Spirito, & Bennett, 1984). The CDI is a 27-item self-report measure of depression. It is based on the Beck Depression Inventory (Beck, Steer, & Brown, 1996) and tailored for children and adolescents 7 to 17 years old (Kovacs, 1985). Items consist of three short phrases that describe thoughts and feelings during the past two weeks that participants are instructed to choose from. These items are scored from 0 to 2 and summed into a total score (0–54). Higher scores denote greater levels of depression. Severity cutoff scores are as follows: 15–19 = mild, 20–24 = moderate, and 25 and greater = severe. The CDI has displayed good psychometric properties in clinical child and adolescent samples (Kovacs, 1985). The Persian version of the CDI was used in the current study and has demonstrated good test retest reliability ($r = .82$), internal consistency ($\alpha = .83$), and convergent validity with the Beck Depression Inventory (Dehshiri, Najafi, Shikhi, & Habibi Askarabd, 2009). The CDI demonstrated satisfactory internal consistency in the present study ($\alpha = .73$).

The Avoidance and Fusion Questionnaire for Youth (AFQ-Y8; Greco, Warren Lambert, & Ruth A Baer, 2008). The AFQ-Y8 is an eight-item self-report measure of psychological flexibility. Items are rated on a five-point Likert scale (0 = *completely disagree* to 4 = *completely agree*) that are summed into a total score (0–32). Higher scores denote lower levels of psychological flexibility. The psychometric properties have been established in a

validation study (Laurie A. Greco, Warren Lambert, & Ruth A. Baer, 2008). The Persian version of AFQ-8 was used in the current study and has demonstrated the same single-factor model as the original English version (Shabani, Mohsenabadi, Zanjani, 2018). The AFQ-Y8 demonstrated adequate internal consistency in the present study ($\alpha = .77$).

The Valued-Living Questionnaire (VLQ; Wilson, Sandoz, Kitchens, & Roberts, 2010). The VLQ is a self-report measure of personal values and engagement in these values. It consists of two ten-item sections scored on a ten-point Likert scale. Part one measures the importance of ten broadly defined value domains (e.g., family relationships, employment, recreation). Part two measures the level in which one's behaviors have been consistent with each value domain in the past week. A composite score is calculated by multiplying the importance score by the consistency score for each value domain and then summing these products. The VLQ has demonstrated acceptable psychometric properties (Wilson, Sandoz, Kitchens, & Roberts, 2010). The Persian version of the VLQ was used in the current study. The psychometric properties of this version have been validated in a study that is currently being prepared for publication. The VLQ demonstrated good internal consistency in the present study ($\alpha = .87$).

Child and Adolescent Mindfulness Measure (CAMM; Greco, Baer, & Smith, 2011). The CAMM is a 10-item self-report measure of mindfulness. Items are rated on a five-point Likert scale (0 = *Never True* to 4 = *Always True*) that are summed into a total score (0–40). Higher scores denote greater levels of mindfulness. The Persian version of the CAMM was used in the current study. In a study that is currently being prepared for publication by authors, CAMM has demonstrated the same single-factor model as the original English version and satisfactory internal consistency ($\alpha = .73$). The CAMM demonstrated satisfactory internal consistency in the present study ($\alpha = .73$).

Therapeutic Alliance Scale for Children-Revised (TASC-R; Shirk & Saiz, 1992). The TASC-R is a 12-item self-report measure of therapeutic alliance for adolescents 12 to 18 years old. Items are rated on a four-point Likert scale (1 = *Not at all* to 4 = *Very much*) that are summed into a total score (12–48). Higher scores denote greater levels of therapeutic alliance. The TASC-R has displayed good psychometric properties (Creed & Kendall, 2005; Kazdin, Whitley, & Marciano, 2006). The TASC-R was translated into Persian for use in the current study. This version has not been validated as of yet. The TASC-R demonstrated good internal consistency in the present study ($\alpha = .80$).

The Credibility/Expectancy Questionnaire-Parent Version (CEQ-P; Nock, Ferriter, & Holmberg, 2007). The CEQ-P is a six-item self-report measure of beliefs about the credibility of therapies and expectations of therapy. The parent version was developed for parents of children and adolescents receiving therapy and is based on the original adult participant version (Borkovec & Nau, 1972; Devilly & Borkovec, 2000). Four items are rated on a nine-point Likert scale (1 = *Not a lot of sense/no improvement*; 9 = *A lot of sense/very much improvement*) and two items are scored on an 11-point scale (0% to 100%) that are recoded to a nine-point scale by converting values from 40 to 60 to a single value (i.e., 5). The scale includes two, three-item subscales (i.e., credibility and expectancy) that are individually summed (9–27). Higher scores denote greater levels of belief in credibility and beneficial expectations of therapy. The CEQ-P has displayed good psychometric properties (Nock et al., 2007). The CEQ-P was translated into Persian for use in the current study. This version has not been validated as of yet.

Data Analysis

Data were analyzed using SPSS 19 by a statistician who was blind to condition status. Multilevel modeling (MLM) was used to assess outcomes across pre-treatment, post-treatment,

and three-month follow-up in an intent-to-treat sample containing all participants. This method allows for all available data to be used to model change across the assessment periods, even when there is missing data. The three assessment periods were set to 0, 1, and 2, respectively as temporal variables. Time, condition, and a time $\times$ condition interaction were entered as fixed effects and participant ID was entered as a random effect, allowing for participant intercepts to vary by individual.

Results

Demographic and clinical characteristics of participants are displayed in Table 1. There were no significant difference between the groups at pre-treatment on any demographic or clinical characteristic ($ps > .05$), indicating sufficient randomization. Means and standard deviations for outcome variables at pre-treatment, post-treatment, and three-month follow-up by group are displayed in Table 2. At pre-treatment, participants reported clinically significant levels of OCD severity, mild depression, and typical levels of anxiety for a clinical sample. Results of the MLM analyses are displayed in Table 3. Slopes (change) from pre- to post-treatment and from post-treatment to three-month follow-up are displayed for each condition with Holm-corrected p -values to correct for multiple tests. All reported effect sizes are Hedge's g and were calculated from the means and standard deviations at each time-point, not the estimated marginal means computed by the MLM analyses.

Therapist Adherence and Competence

The Therapist Adherence Scale was developed for a prior study (Hancock et al., 2016) and used in the present study to measure therapist adherence to treatment protocol. A rater with a mastery of both treatment protocols measures the effective implementation of different components of the treatment protocols independent of the treatment groups. For the present study

the rating was based on 20 audiotapes selected randomly. This scale is rated on a five-point Likert scale (1 = *Ineffective* to 5 = *Extremely effective*). The average adherence rating was 4.34 (0.33) in the CBT+ SSRI condition and 4.39 (0.36) in the ACT+ SSRI condition, which shows effective adherence in both conditions. There was no statistically significant difference between the conditions, $t(18) = -0.32, p = .75$.

Therapist competence was assessed using the competence subscale of the ACT/CBT Therapist Adherence and Competence Scale (DUACRS; McGrath, Forman, & Herbert, 2012). The therapists' competence was assessed for the following five skills: "knowledge of treatment," "skill in delivering treatment," "relationship with client," "appropriate application of treatment components within the context of session," and "overall performance." Each skill was rated based on the five-point Likert scale (1 = *Poor* to 5 = *Excellent*). The average competence rating was 4.09 (0.55) in the CBT+SSRI condition and 4.20 (0.65) in the ACT+SSRI condition, which shows high competence in both conditions. There was no statistically significant difference between the conditions $t(18) = -0.40, p = .68$.

Therapeutic Alliance, Treatment Credibility, and Treatment Expectancy

Therapeutic alliance was assessed following the second session of treatment using the TASC-R. The average therapeutic alliance rating was 33.74 (7.22) in the CBT+SSRI condition and 32.90 (7.28) in the ACT+SSRI condition, which is high therapeutic alliance in both conditions. There was no statistically significant difference between the conditions $t(37) = -0.36, p = .72$.

Parent ratings of credibility and expectancy of therapy was assessed following the first session using the CEQ-P. The average credibility rating was 22.63 (4.27) for the CBT+SSRI condition and 23.09 (4.11) for the ACT+SSRI condition. The average expectancy rating was

20.72 (4.22) for the CBT+SSRI condition and 21.22 (4.10) for the ACT+SSRI condition. There were no statistically significant differences between the conditions for credibility, $t(42) = 0.35$, $p = .72$ or expectancy, $t(42) = 0.39$, $p = .69$.

Treatment Attrition

Of the 69 participants, 64 (92.8%) completed the intervention: 90.9% in the ACT+SSRI group, 86.4% in the CBT+SSRI group, and 100% in the continued SSRI group. There was no significant difference between the attrition rates in the ACT+SSRI and CBT+SSRI conditions ($\chi^2(1) = 0.12$, $p = .73$). The average attendance of sessions was 9.1 (1.1) out of 10 in the ACT+SSRI condition and 10.5 (1.8) out of 12 in the CBT+SSRI condition.

Treatment Outcomes

OCD symptoms. The MLM analysis of CY-BOCS total scores revealed a statistically significant main effect for condition, $F(2, 57.02) = 11.55$, $p < .001$, time, $F(2, 111.90) = 127.12$, $p < .001$, and time $\times$ condition interaction, $F(4, 111.78) = 5.47$, $p < .001$. Post hoc analyses indicated that CY-BOCS scores did not significantly differ in the ACT+SSRI and CBT+SSRI conditions across time (slope = -0.22, $SE = 0.81$), $t(66.60) = -0.27$, $p_{\text{holm}} = .79$; however, both conditions demonstrated significantly lower CY-BOCS scores across time compared to the continued SSRI condition, CBT+SSRI: (slope = -3.05, $SE = 0.78$), $t(64.83) = -3.92$, $p_{\text{holm}} < .001$, ACT: (slope = -3.27, $SE = 0.77$), $t(63.71) = -4.24$, $p_{\text{holm}} < .001$. Comparisons of the CBT+SSRI and ACT+SSRI conditions revealed no significant differences at post-treatment, (slope = 0.40, $SE = 1.16$), $t(165.47) = 0.35$, $p_{\text{holm}} = 1.00$ or follow-up, (slope = -0.25, $SE = 1.25$), $t(172.03) = -0.20$, $p_{\text{holm}} = 1.00$.

Participants in the CBT+SSRI condition on average reported large, statistically significant reductions (33.3%) in CY-BOCS scores from pre- to post-treatment, $t(39) = 7.22$, $p < .001$.

.001, $g = 2.22$ and large, statistically significant reductions (17.7%) from post-treatment to follow-up, $t(33) = 3.23$, $p = .003$, $g = 1.07$. Similarly, participants in the ACT+SSRI condition on average reported large, statistically significant reductions (29.4%) in CY-BOCS scores from pre- to post-treatment, $t(40) = 5.69$, $p < .001$, $g = 1.72$ and large, statistically significant reductions (21.8%) from post-treatment to follow-up, $t(35) = 3.21$, $p = .003$, $g = 1.04$. Finally, participants in the continued SSRI condition on average reported small, statistically nonsignificant reductions (15.2%) in CY-BOCS scores from pre- to post-treatment, $t(48) = 0.88$, $p = .38$, $g = .25$ and medium, statistically nonsignificant reductions (9.4%) from post-treatment to follow-up, $t(45) = 1.97$, $p = .055$, $g = 0.57$.

Depression symptoms. The MLM analysis of CDI total scores revealed no significant main effect for condition, $F(2, 62.01) = 3.03$, $p = .055$, a statistically significant main effects for time, $F(2, 118.17) = 111.60$, $p < .001$, and a statistically significant time $\times$ condition interaction, $F(4, 118.05) = 5.42$, $p < .001$. Post hoc analyses indicated that CDI scores did not significantly differ in the ACT+SSRI and CBT+SSRI conditions across time (slope = -0.61, $SE = 0.62$), $t(66.19) = -0.99$, $p_{\text{holm}} = .343$. Additionally, neither the ACT+SSRI or CBT+SSRI condition demonstrated significantly lower CDI scores across time compared to the continued SSRI condition, CBT+SSRI: (slope = -.82, $SE = 0.59$), $t(64.43) = -1.38$, $p_{\text{holm}} = .343$, ACT+SSRI: (slope = -1.44, $SE = 0.59$), $t(63.32) = -2.44$, $p_{\text{holm}} = .053$. However, at follow-up, the ACT+SSRI condition demonstrated a statistically significant difference in CDI scores compared to the continued SSRI condition, (slope = -3.74, $SE = 0.93$), $t(174.16) = -4.01$, $p_{\text{holm}} = .001$ while the CBT+SSRI condition did not, (slope = -2.23, $SE = 0.95$), $t(174.67) = -2.35$, $p_{\text{holm}} = .236$.

Participants in the CBT+SSRI condition on average reported large, statistically significant reductions (31.3%) in CDI scores from pre- to post-treatment, $t(39) = 7.32$, $p < .001$,

$g = 2.25$ and large, statistically significant reductions (20.1%) from post-treatment to follow-up, $t(33) = 3.33, p = .002, g = 1.10$. Similarly, participants in the ACT+SSRI condition on average reported large, statistically significant reductions (30.4%) in CDI scores from pre- to post-treatment, $t(40) = 5.42, p < .001, g = 1.64$ and large, statistically significant reductions (32.2%) from post-treatment to follow-up, $t(35) = 4.70, p < .001, g = 1.52$. Finally, participants in the continued SSRI condition on average reported medium, statistically significant reductions (15.2%) in CDI scores from pre- to post-treatment, $t(48) = 2.60, p = .012, g = .72$ and medium, statistically significant reductions (13.2%) from post-treatment to follow-up, $t(45) = 2.37, p = .022, g = 0.68$.

Valued Living. The MLM analysis of VLQ composite scores revealed a statistically significant main effect for condition, $F(2, 65.87) = 18.72, p < .001$, time, $F(2, 121.72) = 6.74, p = .002$, and time $\times$ condition interaction, $F(4, 121.61) = 7.31, p < .001$. Post hoc analyses indicated that VLQ scores significantly increased across time in the ACT+SSRI condition compared to the CBT+SSRI condition, (slope = 5.93, $SE = 1.31$), $t(66.26) = 4.52, p_{\text{holm}} < .001$ and continued SSRI condition, (slope = 7.28, $SE = 1.24$), $t(63.38) = 5.86, p_{\text{holm}} < .001$; however no significant difference was demonstrated between the CBT+SSRI and continued SSRI condition, (slope = 1.35, $SE = 1.25$), $t(64.50) = 1.08, p_{\text{holm}} = .285$. Comparisons of the CBT+SSRI and ACT+ SSRI conditions revealed significant differences at post-treatment, (slope = 8.86, $SE = 1.94$), $t(170.68) = 4.56, p_{\text{holm}} < .001$ and follow-up, (slope = -0.25, $SE = 1.25$), $t(172.03) = -0.20, p_{\text{holm}} = 1.00$.

Participants in the CBT+SSRI condition on average reported statistically nonsignificant increases (3.5%) in VLQ scores from pre- to post-treatment, $t(39) = 0.65, p = .521, g = .199$ and statistically nonsignificant increases (1.3%) from post-treatment to follow-up, $t(33) = 0.30, p =$

.764, $g = .101$. Conversely, participants in the ACT+SSRI condition on average reported large, statistically significant increases (19.9%) in VLQ scores from pre- to post-treatment, $t(40) = 4.39$, $p < .001$, $g = 1.33$ and statistically nonsignificant reductions (1.3%) from post-treatment to follow-up, $t(35) = .33$, $p = .743$, $g = .107$. Finally, participants in the continued SSRI condition on average reported statistically nonsignificant reductions (2.9%) in VLQ scores from pre- to post-treatment, $t(48) = 0.59$, $p = .556$, $g = .165$ and statistically nonsignificant reductions (2.0%) from post-treatment to follow-up, $t(45) = .46$, $p = .647$, $g = 0.13$.

Psychological Flexibility. The MLM analysis of AFQ-Y8 composite scores revealed a statistically significant main effect for condition, $F(2, 48.74) = 19.20$, $p < .001$, time, $F(2, 104.33) = 40.70$, $p < .001$, and time $\times$ condition interaction, $F(4, 104.20) = 9.12$, $p < .001$. Post hoc analyses indicated that AFQ-Y8 scores significantly decreased across time in the ACT+SSRI condition compared to the CBT+SSRI condition, (slope = -1.80, $SE = .79$), $t(65.88) = -2.29$, $p_{\text{holm}} = .026$. Additionally, AFQ-Y8 scores in continued SSRI condition were significantly higher over time than the ACT+SSRI condition, (slope = -4.55, $SE = .74$), $t(63.04) = -6.11$, $p_{\text{holm}} < .001$ and the CBT+SSRI condition, (slope = -2.75, $SE = .75$), $t(64.14) = -3.65$, $p_{\text{holm}} = .001$. Comparisons of the CBT+SSRI and ACT+SSRI conditions indicated no significant differences at post-treatment, (slope = -2.12, $SE = 1.21$), $t(174.57) = -1.76$, $p_{\text{holm}} = .885$ or follow-up, (slope = -2.87, $SE = 1.31$), $t(176.98) = -2.18$, $p_{\text{holm}} = .445$.

Participants in the CBT+SSRI condition on average reported large, statistically significant decreases (27.2%) in AFQ-Y8 scores from pre- to post-treatment, $t(39) = 3.89$, $p < .001$, $g = 1.20$ and small, statistically nonsignificant decreases (9.9%) from post-treatment to follow-up, $t(33) = 1.21$, $p = .236$, $g = .400$. Conversely, participants in the ACT+SSRI condition on average reported large, statistically significant decreases (37.1%) in AFQ-Y8 scores from pre-

to post-treatment, $t(40) = 5.72, p < .001, g = 1.73$ and medium, statistically significant reductions (16.5%) from post-treatment to follow-up, $t(35) = 2.05, p = .048, g = .662$. Finally, participants in the continued SSRI condition on average reported statistically nonsignificant increases (4.4%) in AFQ-Y8 scores from pre- to post-treatment, $t(48) = .67, p = .505, g = .187$ and medium, statistically significant reductions (14.7%) from post-treatment to follow-up, $t(45) = 2.40, p = .021, g = .689$.

Mindfulness. The MLM analysis of CAMM composite scores revealed a statistically significant main effect for condition, $F(2, 61.12) = 42.43, p < .001$, time, $F(2, 120.51) = 6.08, p = .003$, and time $\times$ condition interaction, $F(4, 120.40) = 10.67, p < .001$. Post hoc analyses indicated that CAMM scores significantly increased across time in the ACT+SSRI condition compared to the CBT+SSRI condition, (slope = 5.16, $SE = .73$), $t(64.69) = 7.07, p_{\text{holm}} < .001$ and continued SSRI condition, (slope = 5.98, $SE = .69$), $t(62.06) = 8.71, p_{\text{holm}} < .001$. However, CAMM scores in the CBT+SSRI condition did not significantly differ over time from the continued SSRI condition, (slope = .83, $SE = .70$), $t(63.06) = 1.19, p_{\text{holm}} = .237$. Comparisons of the CBT+SSRI and ACT+SSRI conditions indicated significant differences at post-treatment, (slope = 4.40, $SE = 1.24$), $t(178.99) = 3.55, p_{\text{holm}} = .011$ and follow-up, (slope = 10.16, $SE = 1.35$), $t(178.99) = 7.52, p_{\text{holm}} < .001$.

Participants in the CBT+SSRI condition on average reported statistically nonsignificant increases (4.8%) in CAMM scores from pre- to post-treatment, $t(39) = 1.08, p = .288, g = .331$ and statistically nonsignificant decreases (7.0%) from post-treatment to follow-up, $t(33) = 1.46, p = .153, g = .485$. Conversely, participants in the ACT+SSRI condition on average reported large, statistically significant increases (15.9%) in CAMM scores from pre- to post-treatment, $t(40) = 3.86, p < .001, g = 1.17$ and large, statistically significant increases (12.0%) from post-treatment

to follow-up, $t(35) = 3.34, p = .002, g = 1.08$. Finally, participants in the continued SSRI condition on average reported statistically nonsignificant decreases (2.2%) in CAMM scores from pre- to post-treatment, $t(48) = .41, p = .684, g = .114$ and statistically nonsignificant reductions (3.7%) from post-treatment to follow-up, $t(45) = .70, p = .490, g = .200$.

Discussion

This study compared the effectiveness of ACT+SSRI, CBT+SSRI, or continued SSRI for adolescents (12-18 years of age) in Iran who were already receiving standard pharmacotherapy intervention. Results showed that ACT+SSRI and CBT+SSRI were equally effective at reducing OCD, as measured by the C-YBOCS at post-treatment and follow-up, and that they were more effective than continued medication. Additionally, drop-out was low in both active conditions: 8.1% ACT+SSRI and 13.6% CBT+SSRI. As depression is commonly comorbid with OCD it was assessed in this study. Results showed that depression scores dropped significantly from pre- to post-treatment, and to follow-up in ACT+SSRI and CBT+SSRI. Only pre-treatment to followed decreases were seen in the continued SSRI condition. Three ACT-consistent process of change measures were utilized in this study. In AFQ-8, the ACT+SSRI condition saw large significant decreases from pre- to post-treatment and continued significant change to follow-up. The CBT+SSRI condition showed significant decreases from pre- to post-treatment. No significant changes were seen in the continued SSRI condition. In VLQ, ACT+SSRI caused a significant improvement in the composite score from the pre- to post-treatment and follow-up over CBT+SSRI and the continued SSRI condition. Similar results were found for mindfulness with ACT+SSRI showing greater positive changes over CBT+SSRI and the continued SSRI condition. However, this trend was not stable after three months of follow-up. According to the

CAMM results, ACT+SSRI led to a greater improvement than CBT+SSRI and the continued SSRI groups in at post-treatment and the 3-month follow-up.

There are many clinical and empirical implications to this study. This study was the first RCT to examine ACT for adolescents with OCD. Results were consistent with a recently completed trial of exposure with response prevention (ERP) vs ACT+ERP for adults with OCD (Twohig et al, 2018). These studies showed strong and equivalent effects on OCD. Clinically, this suggests that while CBT is still the most supported intervention for adolescent OCD, that ACT can be a reasonable treatment option. This suggestion is also consistent with recent meta-analyses of ACT and CBT for anxiety disorders (Bluett et al., 2014).

A notable, and different finding is that the process of change measures all showed greater changes in ACT+SSRI than comparison conditions. All three process of change measures were consistent with the ACT model and not the purported processes of change in CBT. Nevertheless, the finding that psychological flexibility, values, and mindfulness changed more in ACT+SSRI than CBT+SSRI is notable. This is inconsistent with the recent trial of ACT+ERP vs ERP where no differences were seen between conditions (Twohig et al., 2018). Coupled with previous studies, this suggests that ACT and CBT for adolescent OCD may work through different and shared processes of change (Arch, Wolitzky-Taylor, Eifert, & Craske, 2012; Forman et al., 2012; Swain, Hancock, Hainsworth, & Bowman, 2015).

Another interesting finding from this study is that ACT was useful without including in-session exposure exercises. In the original ACT for OCD trial, ACT was done without in-session exposures to test whether it could be effective without already known effective procedures (i.e., exposure and response prevention). This was never meant to be the best clinical manner in which to implement ACT; rather, it was an experimental test. In ACT, exposure involves increasing the

person's tendency for experiencing internal incidents as they are and performing behavioral commitment exercises that may necessarily include exposure to obsessive-compulsive situations outside of the sessions. Still, many researchers have continued to test that method of delivery and have found success (Twohig & Levin, 2017); although many others have also found implementing exposures from an ACT model to also be useful (e.g., Twohig et al., 2018).

Another notable finding from this study is that ACT is useful with adolescents. The literature on ACT and adolescents lags greatly behind the literature on ACT with adults. There are many reasons for this, but some are concerned that ACT may be too complicated to teach to younger audiences. These findings suggest that ACT can successfully be taught to younger audiences and affect the wanted processes of change. After a recent RCT of ACT vs CBT for mixed anxiety disorders, this is the largest trial of ACT for adolescents ever completed (Hancock et al., 2016). This study greatly increases our data on the utility of ACT for younger populations.

As with all studies, there are also limitations that should be addressed in future studies. First, all scales utilized in this study were originally developed for a western population. While many have been translated and validated for this population in this study, they will be less aligned than measures created for the target population. Second, the protocols used in this research did not involve the same number of sessions, and the CBT protocol (12 sessions) had two more sessions than ACT (10 sessions). In any case, the present study findings indicated the similar effectiveness of the two protocols. Third, the therapists' allegiance was not assessed in this research, but therapists were involved in both intervention groups. They also had almost the same levels of experience of ACT and CBT and were supervised equally. Relatedly and fourth, treatment integrity was assessed for each therapy type (ACT and CBT), but therapy sessions were not assessed for crossover of techniques. Fifth, all participants entered the study on SSRIs.

While this is uncommon for a western RCT, this is a common occurrence in studies out of Iran where the full sample is already prescribed medication as part of the country's medical practice (Rohani et al., 2018). This affects generalizability in that the effects should be seen as ACT or CBT plus SSRIs. Because the participants were on a stable dose prior to starting ACT or CBT, we can still see the comparative effects of those interventions

In conclusion, this research provided evidence of ACT+SSRI as an effective treatment for adolescent OCD, even though it appears ACT+SSRI and CBT+SSRI are equally effective for the treatment of OCD in adolescents. Moreover, it seems ACT+SSRI can improve OCD without the need for the traditional exposure as this has been found in a handful of trials (e.g., Twohig et al. 2010), and thus it seems to be a proper alternative to the treatments for OCD in adolescents who do not respond to the exposure-based treatments. The present findings can pave the way for the future research and further development of ACT for children and adolescents with OCD.

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References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5™ (5th ed.)*. Arlington, VA, US: American Psychiatric Publishing, Inc.
- 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.
- Armstrong, A. B., Morrison, K. L., & Twohig, M. P. (2013). A preliminary investigation of acceptance and commitment therapy for adolescent obsessive-compulsive disorder. *Journal of Cognitive Psychotherapy*, 27(2), 175-190.
- Barney, J. Y., Field, C. E., Morrison, K. L., & Twohig, M. P. (2017). TREATMENT OF PEDIATRIC OBSESSIVE COMPULSIVE DISORDER UTILIZING PARENT-FACILITATED ACCEPTANCE AND COMMITMENT THERAPY. *Psychology in the Schools*, 54(1), 88-100.
- Barrett, P., Healy-Farrell, L., Piacentini, J., & March, J. (2004). Treatment of OCD in children and adolescents. *Handbook of interventions that work with children and adolescents: prevention and treatment*, 187-216.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory (2nd ed.)*. San Antonio, TX: Psychological Corporation.
- 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.

- Borkovec, T. D., & Nau, S. D. (1972). Credibility of analogue therapy rationales. *Journal of Behavior Therapy and Experimental Psychiatry*, 3(4), 257-260.
- Catapano, F., Perris, F., Masella, M., Rossano, F., Cigliano, M., Magliano, L., & Maj, M. (2006). Obsessive-compulsive disorder: A 3-year prospective follow-up study of patients treated with serotonin reuptake inhibitors: OCD follow-up study. *Journal of Psychiatric Research*, 40(6), 502-510.
- Creed, T. A., & Kendall, P. C. (2005). Therapist alliance-building behavior within a cognitive-behavioral treatment for anxiety in youth. *Journal of consulting and clinical psychology*, 73(3), 498.
- Dehshiri, G., Najafi, M., Shikhi, M., & Habibi Askarabd, M. (2009). Investigating primary psychometric properties of children's depression inventory (CDI). *J Fam Res*, 5(2), 159-177.
- Devilley, G. J., & Borkovec, T. D. (2000). Psychometric properties of the credibility/expectancy questionnaire. *Journal of Behavior Therapy and Experimental Psychiatry*, 31(2), 73-86.
- Dougherty, D. D., Rauch, S. L., & Jenike, M. A. (2002). Pharmacological treatments for obsessive compulsive disorder. *A guide to treatments that work*, 2, 387-410.
- Flament, M. F., & Cohen, D. (2000). Child and adolescent obsessive-compulsive disorder: a review. *Obsessive-compulsive disorder*, 147-183.
- Forman, E. M., Chapman, J. E., Herbert, J. D., Goetter, E. M., Yuen, E. K., & Moitra, E. (2012). Using session-by-session measurement to compare mechanisms of action for acceptance and commitment therapy and cognitive therapy. *Behavior Therapy*, 43(2), 341-354.

- Franklin, M., Foa, E., & March, J. S. (2003). The pediatric obsessive-compulsive disorder treatment study: rationale, design, and methods. *Journal of Child and Adolescent Psychopharmacology*, 13(2, Supplement 1), 39-51.
- Geller, D., Biederman, J., Jones, J., Park, K., Schwartz, S., Shapiro, S., & Coffey, B. (1998). Is juvenile obsessive-compulsive disorder a developmental subtype of the disorder? A review of the pediatric literature. *Journal of the American Academy of Child & Adolescent Psychiatry*, 37(4), 420-427.
- Geller, D. A., Biederman, J., Faraone, S., Agranat, A., Cradock, K., Hagermoser, L., . . . Coffey, B. J. (2001). Developmental aspects of obsessive compulsive disorder: findings in children, adolescents, and adults. *The Journal of nervous and mental disease*, 189(7), 471-477.
- Geller, D. A., & March, J. (2012). Practice parameter for the assessment and treatment of children and adolescents with obsessive-compulsive disorder. *Focus*, 10(3), 360-373.
- Greco, L. A., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: development and validation of the Child and Adolescent Mindfulness Measure (CAMM). *Psychological assessment*, 23(3), 606.
- Greco, L. A., Blackledge, J. T., Coyne, L. W., & Ehrenreich, J. (2005). Integrating Acceptance and mindfulness into treatments for child and adolescent anxiety disorders. In *Acceptance and mindfulness-based approaches to anxiety* (pp. 301-322): Springer.
- Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: development and evaluation of the Avoidance and Fusion Questionnaire for Youth. *Psychological Assessment*, 20(2), 93.

- Halliburton, A. E., & Cooper, L. D. (2015). Applications and adaptations of Acceptance and Commitment Therapy (ACT) for adolescents. *Journal of Contextual Behavioral Science*, 4(1), 1-11. doi:<https://doi.org/10.1016/j.jcbs.2015.01.002>
- Hancock, K. M., Swain, J., Hainsworth, C. J., Dixon, A. L., Koo, S., & Munro, K. (2016). Acceptance and Commitment Therapy versus Cognitive Behavior Therapy for Children With Anxiety: Outcomes of a Randomized Controlled Trial. *Journal of Clinical Child & Adolescent Psychology*, 1-16.
- Heyman, I., Fombonne, E., Simmons, H., Ford, T., Meltzer, H., & Goodman, R. (2001). Prevalence of obsessive—compulsive disorder in the British nationwide survey of child mental health. *The British Journal of Psychiatry*, 179(4), 324-329.
- Kaplan, B. J. (2016). Kaplan and Sadock's Synopsis of Psychiatry. Behavioral Sciences/Clinical Psychiatry. *Tijdschrift voor Psychiatrie*, 58(1), 78-79.
- Kazdin, A. E., Whitley, M., & Marciano, P. L. (2006). Child–therapist and parent–therapist alliance and therapeutic change in the treatment of children referred for oppositional, aggressive, and antisocial behavior. *Journal of Child Psychology and Psychiatry*, 47(5), 436-445.
- Kircanski, K., Peris, T. S., & Piacentini, J. C. (2011). Cognitive-behavioral therapy for obsessive-compulsive disorder in children and adolescents. *Child and Adolescent Psychiatric Clinics*, 20(2), 239-254.
- Kovacs, M. (1985). The children's depression inventory (CDI). *Psychopharmacol. Bull.*, 21, 995-998.

- Reid, A. M., Garner, L. E., Kirk, N., Gironda, C., Krompinger, J. W., Brennan, B. P., ... & Cattie, J. (2017). How willing are you? Willingness as a predictor of change during treatment of adults with obsessive-compulsive disorder. *Depression and anxiety*, 34(11), 1057-1064.
- March, J. S., & Mulle, K. (1998). *OCD in children and adolescents: A cognitive-behavioral treatment manual*: Guilford Press.
- Murphy, T. K., Segarra, A., Storch, E. A., & Goodman, W. K. (2008). SSRI adverse events: how to monitor and manage. *International Review of Psychiatry*, 20(2), 203-208.
- Nock, M. K., Ferriter, C., & Holmberg, E. (2007). Parent beliefs about treatment credibility and effectiveness: Assessment and relation to subsequent treatment participation. *Journal of Child and Family Studies*, 16(1), 27-38.
- Öst, L.-G., Riise, E. N., Wergeland, G. J., Hansen, B., & Kvale, G. (2016). Cognitive behavioral and pharmacological treatments of OCD in children: A systematic review and meta-analysis. *Journal of Anxiety Disorders*, 43, 58-69.
doi:<https://doi.org/10.1016/j.janxdis.2016.08.003>
- Pediatric, O. (2004). Cognitive-behavior therapy, sertraline, and their combination for children and adolescents with obsessive-compulsive disorder: the Pediatric OCD Treatment Study (POTS) randomized controlled trial. *JAMA*, 292(16), 1969.
- Rasmussen, S. A., & Eisen, J. L. (1992). The epidemiology and clinical features of obsessive compulsive disorder. *Psychiatric Clinics of North America*.
- Rohani, F., Rasouli-Azad, M., Twohig, M. P., Ghoreishi, F. S., Lee, E. B., & Akbari, H. (2018). Preliminary test of group acceptance and commitment therapy on obsessive-compulsive disorder for patients on optimal dose of selective serotonin reuptake inhibitors. *Journal of*

Obsessive-Compulsive and Related Disorders, 16, 8-13.

doi:<https://doi.org/10.1016/j.jocrd.2017.10.002>

Saylor, C. F., Finch, A., Spirito, A., & Bennett, B. (1984). The Children's Depression Inventory: A systematic evaluation of psychometric properties. *Journal of Consulting and Clinical Psychology*, 52(6), 955.

Scahill, L., Riddle, M. A., McSwiggin-Hardin, M., Ort, S. I., King, R. A., Goodman, W. K., . . . Leckman, J. F. (1997). Children's Yale-Brown obsessive compulsive scale: reliability and validity. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(6), 844-852.

Shabani, MJ., Mohsenabadi, H., Zanjani, Z. (2018). Psychometric Properties of the Persian Version of the Avoidance and Fusion Questionnaire for Adolescents (AFQ-Y8). *Journal of Mazandaran University of Medical Sciences*, 28, 91-101.

Shirk, S. R., & Saiz, C. C. (1992). Clinical, empirical, and developmental perspectives on the therapeutic relationship in child psychotherapy. *Development and Psychopathology*, 4(4), 713-728.

Storch, E. A., Larson, M. J., Muroff, J., Caporino, N., Geller, D., Reid, J. M., . . . Murphy, T. K. (2010). Predictors of functional impairment in pediatric obsessive-compulsive disorder. *Journal of Anxiety Disorders*, 24(2), 275-283.

Storch, E. A., Murphy, T. K., Geffken, G. R., Soto, O., Sajid, M., Allen, P., . . . Goodman, W. K. (2004). Psychometric evaluation of the Children's yale–brown obsessive-compulsive scale. *Psychiatry research*, 129(1), 91-98.

- Swain, J., Hancock, K., Dixon, A., & Bowman, J. (2015). Acceptance and Commitment Therapy for children: A systematic review of intervention studies. *Journal of Contextual Behavioral Science*, 4(2), 73-85. doi:<https://doi.org/10.1016/j.jcbs.2015.02.001>
- Swain, J., Hancock, K., Hainsworth, C., & Bowman, J. (2015). Mechanisms of change: Exploratory outcomes from a randomised controlled trial of acceptance and commitment therapy for anxious adolescents. *Journal of Contextual Behavioral Science*, 1(4), 56-67.
- Twohig, M. P., Abramowitz, J. S., Bluett, E. J., Fabricant, L. E., Jacoby, R. J., Morrison, K. L., . . . Smith, B. M. (2015). Exposure therapy for OCD from an acceptance and commitment therapy (ACT) framework. *Journal of Obsessive-Compulsive and Related Disorders*, 6, 167-173. doi:<https://doi.org/10.1016/j.jocrd.2014.12.007>
- Twohig, M. P., Hayes, S. C., Plumb, J. C., Pruitt, L. D., Collins, A. B., Hazlett-Stevens, H., & Woidneck, M. R. (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. doi:10.1037/a0020508
- Twohig, M. P., & Levin, M. E. (2017). Acceptance and commitment therapy as a treatment for anxiety and depression: A review. *Psychiatric Clinics of North America*, 40(4), 751-770. doi:10.1016/j.psc.2017.08.009
- 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.
- Valderhaug, R., & Ivarsson, T. (2005). Functional impairment in clinical samples of Norwegian and Swedish children and adolescents with obsessive-compulsive disorder. *European Child and Adolescent Psychiatry*, 14(3), 164-173.

- Wilson, K. G., Sandoz, E. K., Kitchens, J., & Roberts, M. (2010). The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework. *The Psychological Record*, 60(2), 249-272.
- Zarafshan, H., Mohammadi, M. R., & Salmanian, M. (2015). Prevalence of anxiety disorders among children and adolescents in Iran: a systematic review. *Iranian journal of psychiatry*, 10, 1-7.

Table 1
Demographic and Clinical Characteristics of Participants at Intake

Variable	Total (n = 69)	ACT + SSRI (n = 22)	CBT + SSRI (n = 22)	Continued SSRI (n = 25)	<i>F</i> value or χ^2	<i>p</i>
Male - n (%)	38 (55.10)	12 (54.54)	12 (54.54)	14 (56.00)	.01	.99
Age	14.96 (1.47)	14.95 (1.43)	14.95 (1.78)	14.96 (1.24)	<.001	1.00
Age of OCD onset	12.42 (1.87)	12.45 (1.71)	12.59 (2.06)	12.40 (1.89)	.21	.82
CDI	17.15 (3.50)	17.45 (3.68)	17.77 (2.63)	16.36 (3.96)	1.06	.35
CY-BOCS	24.33 (4.15)	23.86 (4.06)	24.68 (4.57)	24.44 (3.97)	.22	.80
AFQ-8	18.45 (4.13)	18.45 (4.01)	18.86 (4.60)	18.08 (3.94)	.21	.82
VLQ	37.71 (7.06)	38.02 (7.38)	37.27 (7.45)	37.81 (6.70)	.06	.94
CAMM	24.16 (3.86)	24.77 (3.84)	23.86 (3.40)	23.88 (4.31)	.40	.67
OCD subtypes						
Contamination	48	16	14	18	.54	.76
Symmetry/exactness	31	10	9	12	.24	.89
Safety/harm	19	6	5	8	.51	.78
Doubt/checking	39	11	13	15	.56	.76
Scrupulosity/sexual	42	12	14	16	.54	.76
Hoarding	23	7	7	9	.13	.94

Note. ACT = Acceptance and Commitment Therapy; AFQ-Y8 = Avoidance and Fusion Questionnaire for Youth; CAMM = Child and Adolescent Mindfulness Measure; CBT =

Cognitive Behavioral Therapy; CDI = Children's Depression Inventory; CY-BOCS = Children's Yale-Brown Obsessive Compulsive Scale; VLQ = Valued Living Questionnaire.

Table 2

Means and Standard Deviations of Outcome Measures at Each Time-Point by Condition

	ACT + SSRI			CBT + SSRI			Continued SSRI		
	Pre-Treatment (n = 22)	Post-Treatment (n = 20)	3-Month Follow-up (n = 17)	Pre-Treatment (n = 22)	Post-Treatment (n = 19)	3-Month Follow-up (n = 16)	Pre-Treatment (n = 25)	Post-Treatment (n = 25)	3-Month Follow-up (n = 22)
CY-BOCS	23.86 (4.06)	16.85 (3.91)	13.18 (2.86)	24.68 (4.57)	16.47 (2.04)	13.56 (3.24)	24.44 (20.72)	20.72 (3.71)	18.77 (2.98)
CDI	17.45 (3.69)	12.15 (2.46)	8.24 (2.59)	17.77 (2.64)	12.21 (2.15)	9.75 (2.21)	16.36 (3.97)	13.88 (2.65)	12.05 (2.63)
AFQ-Y8	18.45 (4.01)	11.60 (3.72)	9.59 (1.70)	18.86 (4.60)	13.74 (3.68)	12.38 (2.83)	18.08 (3.94)	18.92 (4.85)	16.14 (2.62)
VLQ	38.02 (7.38)	47.48 (6.50)	46.85 (4.78)	37.27 (7.45)	38.60 (5.31)	39.09 (4.01)	37.81 (6.70)	36.73 (6.14)	36.01 (4.27)
CAMM	24.77 (3.84)	29.45 (4.01)	33.47 (3.18)	23.86 (3.40)	25.05 (3.67)	23.31 (3.30)	23.88 (4.31)	23.36 (4.65)	22.50 (3.69)

Note. ACT = Acceptance and Commitment Therapy; AFQ-Y8 = Avoidance and Fusion Questionnaire for Youth; CAMM = Child and Adolescent Mindfulness Measure; CBT = Cognitive Behavioral Therapy; Children's Depression Inventory; CY-BOCS = Children's Yale-Brown Obsessive Compulsive Scale; VLQ = Valued Living Questionnaire.

Table 3

Estimated Slopes, Standard Errors (SE), Degrees of Freedom (df), and Holm-Corrected p-Values from Pre- to Post-Treatment and Post-Treatment to Follow-Up by Condition

	ACT + SSRI			CBT + SSRI			Continued SSRI		
	Slope (SE)	df	<i>p</i>	Slope (SE)	df	<i>p</i>	Slope (SE)	df	<i>p</i>
CY-BOCS									
Pre-Post	6.95 (.98)	118.78	<.001	8.17 (1.00)	121.07	<.001	3.72 (.89)	114.51	.001
Post-FU	3.30 (1.05)	119.18	.028	2.64 (1.08)	119.45	.160	1.66 (.93)	118.19	.454
CDI									
Pre-Post	5.24 (.82)	119.12	<.001	5.55 (.83)	121.41	<.001	2.48 (.74)	114.84	.016
Post-FU	3.80 (.87)	120.07	<.001	2.30 (.90)	120.37	.153	1.72 (.77)	118.96	.275
AFQ-Y8									
Pre-Post	6.76 (1.09)	119.32	<.001	5.05 (1.10)	121.61	<.001	-.84 (.99)	115.09	1.00
Post-FU	2.08 (1.16)	120.68	.885	1.33 (1.20)	121.00	1.00	2.51 (1.03)	119.49	.260
VLQ									
Pre-Post	-9.37 (1.70)	119.07	<.001	-1.26 (1.72)	121.36	1.00	1.08 (1.54)	114.79	1.00
Post-FU	.38 (1.81)	119.93	1.00	-.29 (1.87)	120.22	1.00	.69 (1.61)	118.84	1.00
CAMM									
Pre-Post	-4.68 (1.19)	119.94	.003	-1.19 (1.21)	122.08	1.00	.52 (1.09)	115.99	1.00
Post-FU	-4.02 (1.27)	122.65	.044	1.73 (1.31)	123.03	1.00	.85 (1.13)	121.22	1.00

Note. ACT = Acceptance and Commitment Therapy; AFQ-Y8 = Avoidance and Fusion Questionnaire for Youth; CAMM = Child and Adolescent Mindfulness Measure; CBT = Cognitive Behavioral Therapy; CDI = Children's Depression Inventory; CY-BOCS = Children's Yale-Brown Obsessive Compulsive Scale; VLQ = Valued Living Questionnaire.

Figure 1. Participant flowchart.

Figure 2. Results of multilevel modeling analyses. Estimated marginal means with standard error bars are displayed for primary outcomes by condition at pre-treatment, post-treatment, and three-month follow-up.