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A preliminary investigation of acceptance and commitment therapy for

 adolescent obsessive-compulsive disorder

Andrew B. Armstrong, M.S., Kate L. Morrison, & Michael P. Twohig, Ph.D.

Utah State University

Corresponding Author Information:

Michael P. Twohig Ph.D.

Utah State University, Department of Psychology

2810 Old Main Hill, Logan, Utah  84322-2810

Phone: (435) 797-1402

Fax: (435) 797-1448

Email: michael.twohig@usu.edu

Abstract

There is growing support for the use of acceptance and commitment therapy (ACT) as a treatment for adults with obsessive compulsive disorder (OCD), but no research has been published on the use of ACT for adolescent OCD. This preliminary study investigated ACT for youth with OCD utilizing a multiple baseline across participants design. Three adolescents, ages 12 or 13, were treated with 8 to 10 sessions of ACT (without in session exposure exercises). The primary dependent variable was daily self-monitoring of compulsions. Results showed a 40% mean reduction in self-reported compulsions from pretreatment to posttreatment, with results maintained at three month follow-up, for a total reduction of 43.8%. Pretreatment to posttreament reductions in CY-BOCS ratings of OCD severity were 50%, 12.5%, and 22%; pretreatment to follow-up reductions were 54%, 12.5%, and 61%. Treatment procedures were rated by participants and parents as highly acceptable. Implications and future directions are discussed.

KEYWORDS. Acceptance and commitment therapy, adolescents, OCD, treatment

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Obsessive-compulsive disorder (OCD) is a debilitating anxiety disorder that affects two to three percent of children and adolescents (Rapoport et al., 2000). The DSM-IV does not differentiate between adult and childhood OCD (APA, 2000); however, developmental differences in content of obsessions, topography of compulsions, and level of insight have been reported (Steketee & Barlow, 2002). Childhood-onset OCD is associated with high rates of comorbidity with other psychiatric disorders with lifetime comorbidity rates ranging from 75% to 84% (Geller et al., 1997). Additionally, family functioning both contributes to and is affected by childhood OCD (Peris et al., 2012; Piacentini, Bergman, Keller, & McCracken, 2003) and parents and families often participate in the child’s compulsions (Peris et al., 2010; Storch et al., 2007). Childhood-onset OCD tends to be a persistent diagnosis (­Skoog & Skoog, 1999), lasting into adulthood for 33% to 50% of untreated children and adolescents (Goodman, Rudorfer, & Maser, 2000).

Cognitive behavioral therapy (CBT) that includes exposure and response prevention (ERP) is the recommended first-line treatment, either by itself or in combination with SSRI medication (APA, 2007; American Academy of Child and Adolescent Psychiatry, 2012). CBT and combined (CBT+SSRI) treatments have been classified as “probably efficacious” (Franklin et al., 2011). Although CBT is recommended as a first line treatment, few randomized controlled CBT trials have been conducted with youth, and they have shown moderate levels of symptom remission: 39% responders in an intent-to-treat sample (POTS, 2004), and 84% responders in a completer analysis (Barrett, Healy-Farrell, & March, 2004). Storch and colleagues (2007) found intensive family based CBT for pediatric OCD to be more effective (90% responders) compared to weekly sessions (65%). Open trials have shown 45-67% symptom reduction (de Haan, Hoodgum, Buitelaar, Keijsers, 1998; Franklin, Kozak, Cashman, Coles, Rheingold, & Foa, 1998; March, Mulle, & Herbel, 1994; Piacentini, Bergman, Jacobs, McCracken, & Kretchman, 2002). ERP with youth may be accompanied by the additional challenges of noncompliance to exposure and/or homework, difficulty reporting subjective units of distress (SUDS) ratings, family conflict, and/or families that undermine treatment (Peris et al., 2012; Thienemann, Martin, Cregger, Thompson, & Dyer-Friedman, 2001). However, CBT has been found by parents to be an acceptable treatment when compared to medication for treatment of their child’s anxiety disorder (Brown, Deacon, Abramowitz, Dammann, & Whiteside, 2007). Because there still appears to be a fair portion of youth who do not respond or respond minimally to CBT (Freeman et al., 2009; Thienemann et al., 2001), additional approaches are warranted in the treatment of adolescent OCD.

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is an empirically-based psychological intervention that is showing promise in the treatment of adult OCD and may hold promise for treating adolescent OCD too. Instead of focusing on first-order change of internal experience (i.e., reduction in obsessions and anxiety), ACT focuses on second-order changes through targeting the function of these internal experiences and promotes behavior change in service of increasing quality of life (Twohig, 2009). A core target of ACT is *experiential avoidance*, defined as “the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them” (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996, p. 1154). This may take the form of passive avoidance, in which certain stimuli and situations are avoided altogether, or active avoidance, in which individuals engage in ritualistic behaviors to lessen distress (Hannan & Tolin, 2005). Individuals with OCD may be motivated to avoid obsessions because the thoughts are treated as literal and powerful, a process of verbal entanglement known in ACT as *cognitive fusion* (Hayes et al., 1999).

In ACT, processes such as acceptance, values, and mindfulness are utilized to foster willingness to experience obsessions and related anxiety, see them for what they are, and to act in ways consistent with individual values (Hannan & Tolin, 2005; Hayes et al., 1999; Twohig, 2009). Because ACT is a values-based intervention that draws heavily on use of metaphors it may be a good fit for youth in that adolescence is a developmental period marked by values exploration and an increased capacity for abstract thinking (Greco, Blackledge, Coyne, & Ehrenreich, 2005). Further, metaphorical interventions are “less instructive and consequently more difficult to obey (or disobey)” (Greco, Blackledge, et al., 2005, p. 309). Tolin (2009) emphasized the importance of providing OCD patients with a sensible way of understanding the condition, and that ACT interventions, such as metaphors and experiential exercises, can be a “highly effective form of psychoeducation” (p. 46). In their recommendations for using ACT with youth, Murrell, Coyne, and Wilson (2005) advised clinicians to incorporate age-appropriate activities and avoid dictating the form of behavioral goals. It may also be helpful to use diagrams or drawings to help adolescent clients discriminate between internal and external events (Greco et al., 2005).

Trials using ACT for adult OCD have shown it to be effective and acceptable (Twohig, Hayes, & Masuda, 2006a; Twohig et al., 2010). A recent randomized clinical trial (N=79) compared 8 one-hour sessions of ACT (without in session exposure) to progressive relaxation training (PRT; Twohig et al., 2010). Intent to treat analyses showed that ACT was more effective than PRT on the Y-BOCS at posttreatment and follow-up. Clinical response rates were 56% at posttreatment and 66% at follow-up for the ACT condition compared to 18% at both time points for the PRT condition. Acceptability in the ACT condition was high (4.38 on a 5 point scale) and treatment refusal (2.4%) and drop-out (9.8%) were low. Evidence also exists supporting the use of ACT plus behavioral procedures for treating trichotillomania (Woods, Wetterneck, & Flessner, 2006), and ACT alone to treat chronic skin picking (Twohig, Hayes, & Masuda, 2006b), and compulsive pornography use (Twohig & Crosby, 2010).

Experimental investigation of ACT for youth is in an early stage of development compared with adult ACT research. Successful randomized trials of ACT for adults have been published for a variety of problems (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Yet, just two randomized controlled trials with children have been published: ACT versus multidisciplinary treatment for chronic pain (Wicksell, Melin, Lakander, & Olsson, 2009) and ACT versus treatment as usual for adolescent depression (Hayes, Boyd, & Sewell, 2011). Given that CBT for adolescent OCD is not universally effective, and that ACT has a growing body of data for adult OCD, tests of its applicability to adolescent OCD appears warranted. Because this is the first test of ACT for adolescent OCD, the protocol will purposefully exclude exposure exercises for experimental reasons.

**Method**

**Participants**

Participants were recruited via fliers, newspaper advertisements, and articles in the community and campus newspapers. Inclusion criteria included: being between 12 and 17 years of age, and meeting diagnostic criteria for OCD as measured by the Anxiety Disorders Interview Schedule for Children-Fourth Edition(ADIS-IV) (Silverman & Albano, 1996). Exclusion criteria included: concurrently participating in other psychotherapies; starting a new psychotropic medication within the last 30 days, or planning on starting or changing psychotropic medication during the course of the investigation; experiencing a psychotic disorder (as defined by the ADIS-IV); or having a cognitive disability that would have precluded their ability to participate in the study. Of the 13 adolescents whose parents who contacted the research team, five were too young to participate and two had concerns other than OCD. Six prospective participants passed the initial telephone screening and were scheduled for intake sessions; of these, three youth met criteria and were enrolled. Of those not enrolled, one was planning to move out of state before study completion and one did not meet criteria for OCD. The third was invited to enroll but did not return the researcher’s phone calls.

Participant 1 (P1) was a 12-year-old female who reported obsessions about illness and death from contamination. She had been previously diagnosed with ADHD and took Fluoxetine (the dosage did not change throughout the course of the study). She reported frequent obsessions about her physical well-being, including concerns that her heart would stop or that she would stop breathing. She frequently worried that her food contained mouse droppings (mouse feces had been found in the kitchen on a few occasions, but over a year had passed since any evidence of mice was seen). Her associated compulsions were frequent hand washing (approximately 15 to 20 times per day) and seeking reassurance from her mother (approximately 20 times per day). She sought daily reassurance about her physical well-being (e.g., “Am I breathing?”, “Will my heart stop?”, “Am I dying?”) and about her washing rituals (e.g. “Should I wash my hands?”, “Should I keep washing?). P1’s mother usually replied with reassurance.

Participant 2 (P2) was a 13-year-old male who reported contamination obsessions. He did not take medication or have any comorbid diagnoses. Because he feared becoming ill, P2 disliked contact with “germy” items such as money, rental movies, and items from the thrift store. He also avoided sticky substances (e.g., honey, syrup, glue) because he did not like his hands to feel sticky or clammy. He frequently washed hands (approximately 20 to 25 times a day) to avoid illness and to rid his hands of feeling clammy.

Participant 3 (P3) was a 12-year-old male who reported obsessions about dying, especially a fear of dying in his sleep; he did not take medication or have any comorbid diagnoses. Fear of dying took on many forms. For example, he worried that dirt or poison would enter his body through his mouth or through small cuts on his skin; he was convinced that contamination would be fatal. He frequently worried that household electronics would cause a deadly fire. He engaged in a variety of compulsions aimed at keeping himself and others safe (approximately 60 times per day). For example, he frequently checked to be sure sinks were turned off for fear that they could overflow and flood the house. He engaged in many “keep safe” behaviors just before bedtime, as part of a nightly ritual. For example, fears of suffocating led him to fluff his pillow until it “felt right.” P3 explained that the purpose of the entire bedtime routine was to keep him safe. As part of the bedtime routine he would walk to bed with his eyes closed after turning off the light, cough three times, lie down then sit back up repeatedly, and stare out the window in a particular way. The main feature of his bedtime ritual was nightly praying. Prayers were said aloud; he would ask to be kept safe while sleeping. While praying, he repeated phrases until the words “felt right.” After getting into bed, he engaged in a lengthy process of tucking himself into his blanket in a way that would neither cause him to suffocate or catch hypothermia. Frequently he would leave his bed to repeat his entire prayer ritual. At intake, P3’s bedtime routine lasted an average of approximately one hour.

**Measures**

**Diagnostic**

**Anxiety Disorders Interview Schedule for Children-Fourth Edition (ADIS-IV)** (Silverman & Albano, 1996). The ADIS-IV is a clinician administered structured interview based on DSM-IV criteria. Excellent test–retest reliability has been reported, with kappas ranging from .80 to .92 (Silverman, Saavedra, & Pina, 2001). Evidence for concurrent validity has been demonstrated in the strong correspondence between individual ADIS-IV anxiety diagnoses and subscales from the Multidimensional Anxiety Scale for Children (March, Parker, Sullivan, Stallings, & Conners, 1997).

**OCD Severity**

**Self-monitoring of compulsions.** The primary outcome measure was self-reported daily frequency of compulsions. Self-monitoring of anxiety symptoms has been used routinely in single-subject research with adolescents (e.g., Ollendick, 1995). Further, self-monitoring of compulsions has been used effectively in other OCD research (e.g., Twohig et al., 2006a).

In this investigation, participants reported daily data to the researcher via the internet. Every evening, participants were sent an automated email reminder which contained a link to a form in which they entered their ID number and the number of compulsions for that day. These data were automatically compiled.

For P1, frequency of hand washing was the primary compulsion tracked; because of P1’s frequent reassurance seeking, her mother was also asked to tally the daily number of questions asked. P2 reported daily frequency of hand washing. P3 tracked “keep safe” behaviors, defined as any compulsion in which he engaged in effort to keep himself or others safe. His mother was also asked to time the duration of P3’s bedtime routine, starting when P3 entered his room to go to bed, and ending when his mother could no longer hear any sound coming from the bedroom.

**Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS)** (Scahill et al., 1997). The CY-BOCS is the standard measures of adolescent obsession and compulsion severity. Severity of obsessions and compulsions are measured separately (scores range from 0 to 20) for a total severity score (0 to 40). A total CY-BOCS score of 16 is commonly used as a clinical cutoff (POTS, 2004). Strong internal consistency reliability has reported for the CY-BOCS total score (α=0.87, Scahill et al., 1997; α=0.90, Storch et al., 2004) and also for the obsession (α=0.80) and compulsion (α=0.82) severity scores (Storch et al., 2004). The CY-BOCS has been found to have high convergent validity with other measures, with higher correlations to other measures of obsessions and compulsions than to measures of general anxiety (Scahill et al., 1997; Storch et al., 2004).

**Assessment of related issues**

**Children’s Depression Inventory (CDI)** (Kovacs, 1985). The CDI assesses cognitive, affective and behavioral symptoms of depression in youth. The measure consists of 27 self-report items in which one sentence is chosen from a group of three. Items are given a severity rating of 0, 1, or 2, which are summed to a total score. A cutoff score of 19 has been found to identify depressed children (Doerfler, Felner, Rawlinson, Raley, & Evans, 1988). Adequate test-retest reliability has been demonstrated (ICC=.82) (Finch, **Saylor, Edwards, & McIntosh,** 1987).

**Multidemisional Anxiety Scale for Children (MASC)** (March et al., 1997). The MASC contains 39 self-report items which assess anxiety across four domains (physical symptoms, social anxiety, harm avoidance, and separation anxiety). Superior test-retest reliability has been demonstrated (ICC=.93 at three months; March et al., 1997). MASC total score significantly correlated with the Revised Children's Manifest Anxiety Scale (RCMAS) (r=.63, p<.01), demonstrating convergent validity (March et al., 1997).

**Psychological process of change**

**Avoidance and Fusion Questionnaire for Youth (AFQ-Y)** (Greco, Lambert, & Baer, 2008). The AFQ-Y is a 17-item measure of experiential avoidance and cognitive fusion in youth modeled after the Acceptance and Action Questionnaire (AAQ) (Hayes et al., 2006). Internal consistency of the AFQ-Y is high (α=.90) (Greco et al., 2008). Moderate correlations in expected directions were found between the AFQ-Y and measures of related constructs such as acceptance and mindfulness, thought suppression, anxiety, problem behavior, and quality of life. Although change with treatment in AFQ-Y scores has not been assessed, available findings support convergent and construct validity of the measure (Greco et al., 2008).

**Acceptability**

***Treatment Evaluation Inventory–Short Form* (TEI-SF)** (Kelley, Heffer, Gresham, & Elliot, 1989). The TEI-SF is a nine-item self-report measure of treatment acceptability. Two items regarding developmental disabilities do not apply to this population and were omitted. The original TEI-SF instrument has high internal consistency (α = .85) and a reliable factor structure (Kelly et al., 1989). Participants rate each item on a five-point likert scale with higher scores indicating greater treatment acceptability.

**Procedure**

 **Assessment.** At an initial pretreatment assessment session attended by parents and children, Institutional Review Board approved parental consent and youth assent forms were signed. The ADIS-IV and CY-BOCS were administered via interview by the clinician, and participants completed the CDI, MASC, and AFQ-Y. Parents were given a one-page summary of ACT, including a brief explanation of the methods involved in the therapy. During this initial assessment session, participants were given instructions for how to report totals to the research nightly via Google Forms. The AFQ-Y was completed weekly for all participants throughout the baseline phase via Google Forms, and it was administered in person at the start of each treatment session as an ongoing process measure. One week after the final treatment session, participants completed all the pretreatment measures (minus the ADIS-IV) with the addition of the TEI-SF. Three months after posttreatment assessment, follow-up data were gathered using the same process. Pretreatment means of self-monitoring data were calculated using all data points from baseline, posttreatment means using the final seven days of monitoring after the final session, and follow-up means using the seven data points gathered during the follow-up assessment.

**Treatment delivery**

An eight-week ACT protocol for treating childhood OCD developed by was developed based on the previously tested adult protocol (Twohig et al., 2006a; Twohig et al., 2010). Eight treatment sessions were planned; if sufficient reductions in compulsions were not observed at session eight, participants were to be given one to two additional sessions. This flexible approach was taken because eight sessions have been shown to be sufficient for adult populations; we wanted the flexibility to provide extra therapeutic time if necessary to assist adolescent participants. P1 and P2 each attended eight sessions; based on compulsion data and participant input, 10 sessions were conducted with P3. Consistent with a nonconcurrent multiple baseline across participants design, treatment for the three participants began at different real times and was preceded by variable lengths of time in the baseline phase. Baseline durations were combined for Participants 1 and 2 to minimize the overall baseline durations.

Sessions were held weekly and lasted 50 minutes. Sessions were conducted by the first author, one-on-one with the participants. Parents were invited to join the final five minutes of each session (with the child present) to discuss progress and ask questions regarding the child’s condition and therapeutic practices. Parents were not asked to play a large role in helping their child implement the therapy outside of sessions. If necessary, parents reminded children to report their data online. Each of the six ACT processes was targeted during the course of therapy. Following is a brief description of interventions used to target each process. For experimental reasons, no in-session exposure exercises occurred.

**Content of treatment sessions**

*Acceptance.* Acceptance, framed for participants as “willingness,” was targeted during every treatment session. Early in therapy, participants were asked for examples of efforts to manage obsessions. Though some strategies (e.g. rituals) may have been useful in reducing obsessions temporarily, these efforts had not been effective in bringing about long-term reduction of obsessions. Participants were encouraged to “drop the rope” in the tug of war with their unworkable control agenda. Acceptance was targeted repeatedly with metaphors and exercises. For example, in the *school teacher* metaphor, participants imagined a school teacher dealing with an interrupting student. Similar to “dealing with” intrusive thoughts, the teacher smiles, acknowledges the student, and returns to teaching the lesson. A key ACT metaphor, *passengers on the bus* (Hayes et al., 1999, p 157-158), was introduced during session four, and reference was made to it often throughout the course of treatment. In the bus metaphor, participants envision themselves as the driver of a bus filled with disruptive passengers who attempt to convince the driver to steer off-course. Instead of making efforts to manage the unruly passengers, participants were encouraged to drive toward their destinations “along with” the noisy passengers.

*Cognitive defusion.* Participants were asked to practice “stepping back” from obsessive thoughts and to view them as “just thoughts.” During the second session, each participant drew a picture of him- or herself, then wrote specific obsessions and compulsions on the part of the body where the “O” or “C” occurs (e.g. “contamination fears” inside the head, “washing” on the hands). The drawings facilitated discussions about tasks minds are good at (e.g., solving problems in the external world) versus tasks at which minds are often not helpful (e.g., controlling inner events). Personalized metaphors were offered to illustrate ways in which minds can get in the way. For P2, who was passionate about playing guitar, internal events were compared to music in that they often do their “own thing,” sometimes playing in the background, sometimes playing in the foreground. P3 compared his obsessions to a ghost who made a lot of noise but could not actually hurt him. For each participant, session four included the *milk, milk, milk* exercise (Hayes et al., 1999, p 154-159), in which words (e.g., “milk”) are said aloud repeatedly, weakening the participant’s attachment to the word’s literal meaning. The exercise was repeated several times, using personalized terms with each participant (i.e., “am I breathing?” for P1, “sticky” for P2, “dying” for P3). We also typed words and phrases into a text-to-speech computer program, which “spoke” the words repeatedly in various silly voices, which was intended to decrease participants’ literal attachment to obsessions.

*Self as context.* Work on *self as context* is meant to help participants notice that one’s self is not the same as the obsessions. If participants can see their thoughts as separate from them (“I am not my obsessions”), attachment to internal events can diminish. For example, P3 decided to refer to his “OCD mind” as “Bob the Bossy Brain.” When obsessive thoughts showed up, P3 would think or say aloud “there goes Bob again.” A *television set* metaphor was useful in illustrating self as context. The participant was invited to envision her- or himself as a TV set—the *location* where shows are viewed—not as the channels or the *content* of the shows that appear on the TV.

*Present moment awareness*. To help participants be present with obsessions and associated anxiety, mindfulness skills were taught and practiced. For example, watching thoughts as images on a movie screen was practiced during session seven and assigned as homework. A breathing exercise in which participants were asked to count breaths was another mindfulness technique employed.

*Values.* Participants were asked to reflect on personal core values. Values were explained as “compass points” and as “big picture goals.” Connecting to the discussion from an earlier session about “what minds do,” participants reflected on “what hearts do” (i.e., keep you alive, literally and metaphorically). To help them generate their own values, participants were asked specific questions written on cards (e.g., “What does freedom mean to you?” and “What makes a good life?”). Participants wrote responses on slips of paper, and placed the slips in a heart-shaped box. Next, participants drew a bulls-eye on the board. As the therapist read each value from the box aloud, the participant made a mark on the bulls-eye – the closer to the middle, the more consistent the participant’s behavior with that specific value. With each value, the participant was asked to consider how OCD tries to block the pursuit of that value. For example, P3 had written “doing what I want” on one of his slips. He said he would like to be able to go to sleepovers with friends but fear of ritualizing had kept him from the activity. As homework, participants wrote brief epitaphs, for example, P2 wrote “he was a kind person who liked to play guitar.” A discussion about pursuing these values over focusing on obsessions and compulsions occurred during the following sessions.

*Committed action.* Beginning in session three, participants were asked to make behavioral commitments to accomplish during the week. With guidance from the therapist, participants chose to target the duration, frequency, and/or time of day of specific compulsive behaviors. Behavioral changes were to be opportunities to engage values and practice therapy skills (e.g., noticing urges to ritualize as “just thoughts”). In selecting behavioral targets, it was important to take contextual factors into account. For example, in the case of participants 1 and 2, not all instances of hand washing were problematic compulsions (e.g., before eating or after using the restroom). The question “when does hand washing *work* and when does it not?” became crucial in creating behavioral targets. Behavioral goals were generally formulated collaboratively. At times the therapist was more directive, as in P3’s case. During the sixth session, P3 revealed that a key phrase in his nightly prayers was “help the bad [obsessive] thoughts go away.” The therapist asked him to replace the phrase with something like “help me control my muscles,” to which P3 agreed.

In two cases, P1 and P3, parents were encouraged to take on small behavioral commitments to change their responses to their child’s reassurance seeking. When P1 asked for a reassurance (e.g., “Are there mouse droppings in my food?”), her mother was not to answer the question, but to simply remind P1 of the goal to ask for fewer reassurances. In the case of P3, who frequently asked his mother for safety reassurances at bedtime, a therapy-consistent response was established with P3’s input. Each time P3 asked for a reassurance, his mother reminded him about the “annoying passengers on the bus.”

**Treatment integrity**

The therapist’s adherence to the ACT intervention was assessed by an independent graduate student researcher who was trained to competence in coding procedures and ACT processes (Twohig et al., 2010). Three sessions per participant, or approximately 35% of total sessions, were coded. Sessions were scored in one-minute intervals, and psychological processes were coded according to a partial-interval recording procedure. A psychological process was endorsed for a given interval if the therapist targeted that process at any time within the minute. “General assessment” was coded when the therapist asked about participants’ obsessions and/or compulsions, assessed progress, or inquired about participants’ implementation of treatment components. Participant verbalizations were not coded. Additionally, ACT-inconsistent treatment elements (i.e., cognitive challenging and stimulus management) were included as coding categories. At the conclusions of each session, the rater gave the therapist a score for “adherence to the ACT model” and “overall therapist competency” (scores were based on a scale of 1 to 5, with 5 indicating the highest level).

Across all intervals coded, processes were targeted as follows, demonstrating adherence to ACT processes: acceptance/willingness = 23%, cognitive defusion = 17%, self-as-context = 2%, present moment awareness = 9%, values = 10%, committed action = 17%. General assessment was coded in 31% of intervals. No ACT-inconsistent elements were endorsed in any session. Averaged across all coded sessions, “therapist competency” was rated as *M* = 4.2 and “adherence to the ACT model” was rated as *M* = 4.3.

**Results**

Figure 1contains the daily compulsion frequencies for all participants as well as weekly scores on the AFQ-Y, the process of change in this treatment. P1’s frequency of daily reassurance seeking, and the length of P3’s nightly bedtime routine are illustrated separately.

**Participant 1.** During her nine days of baseline, P1 had a mean rate of hand washing of 13.4 (*SD* = 4.4). Baseline levels of hand washing ranged from 6 to 21. P1’s frequency of hand washing declined sharply once treatment began, followed by a pattern of slight improvement and moderate variability throughout treatment. P1’s posttreatment mean was 7.3 (*SD* = 1.1) reflecting 45.5% a decrease from baseline. Her posttreatment and follow-up (8.6, *SD* = 2.5) both indicate a near absence of *compulsive* hand washing as she indicated 7 hand washes a day were necessary for her.

Following baseline, large decreases in reassurance seeking were reported. P1’s baseline mean for reassurance seeking was 17.5 (*SD* = 6.7). Reassurance seeking declined substantially, for a posttreatment mean of 5.0 (*SD* = 0.82) and a follow-up mean of 11.6 (*SD* = 1.3). During session four, P1’s mother was encouraged to respond to reassurance seeking by reminding P1 of her goal to ask fewer questions. During days 61 to 67 P1 was away from home visiting relatives; P1 did not seek any reassurances from her mother over the phone during this time.

Improvements in P1’s daily compulsion rates were also reflected by her 50% improvement in CY-BOCS scores from pre- to posttreatment. Her pretreatment CY-BOCS score (raw score = 26) indicates considerable impairment, whereas her score at posttreatment (raw score = 13) fell below the clinical range. This reduction was maintained at three-month follow up (raw score = 12).

P1’s MASC scores for total anxiety were *T* = 66 at pre-, *T* = 40 at posttreatment, and *T* = 55 at follow-up. P1’s CDI scores at pretreatment (raw score = 10), posttreatment (raw score = 13), and follow-up (raw score = 10) were below the clinical depression cutoff of 19.P1’s AFQ-Y scores declined during the treatment process, then rose at follow-up. Her AFQ-Y score was 31 at pretreatment, 14 at posttreatment, and 29 at follow-up.

P1’s total TEI-SF score of 25 (out of 30) and her mother’s total of 27 (out of 35) indicate a high level of treatment acceptability. P1 and her mother both marked “agree” in response to the items “I liked the procedures used in this treatment” and “Overall, I have a positive reaction to this treatment.” On the item “I find this treatment to be an acceptable way of dealing with OCD” P1 marked “strongly agree” and her mother marked “agree.”

*Participant 2*. Baseline lasted 11 days for P2. Levels of hand washing during baseline ranged from 19 to 26 (*M* = 22.3, *SD* = 2.6). P2’s compulsion frequency on the day of session one represented an increase compared to his final day of baseline, but was commensurate with his baseline mean. Hand washing levels decreased gradually and steadily after treatment began. As during baseline, P2’s data during the treatment phase showed a low degree of variability. P2’s posttreatment mean rate of hand washing was 12.6 (*SD* = 2.5), a 43.5% decrease from baseline. His hand washing rate at follow-up was 11.6 (*SD* = 1.3) indicates near absence of *compulsive* washing as he indicated 10 washes a day were necessary and functional for him.

P2’s CY-BOCS score was 14 at posttreatment and follow-up, representing a 12.5% improvement compared to his pretreatment score (raw score = 16). While this is a relatively small decrease, this participant moved from just at the clinical range to just below it. Overall, these are low scores on the CY-BOCS indicating relatively low impairment.

P2’s MASC score for total anxiety was *T* = 65 at pretreatment, *T* = 60 at posttreatment, and *T* = 50 at follow-up. P2’s CDI scores at pretreatment (raw score = 3), posttreatment (raw score = 3), and follow-up (raw score = 1) were well below the clinical depression cutoff of 19. P2’s AFQ-Y process ratings were 18 at pretreatment, 18 at posttreatment, and 19 at follow-up with little fluctuation (+/- 3) throughout the treatment process.

P2’s total TEI-SF score of 24 (out of 30) and his mother’s total of 30 (out of 35) indicate a high level of treatment acceptability. P2 and his mother marked “agree” or “strongly agree” on all items, including “agree” in response to the statement “I believe this treatment is likely to result in permanent improvement.”

*Participant 3*. During his 26 days of baseline, P3 had a mean rate of “keep safe” behaviors of 55.5 (*SD =* 17.4). Compulsion rates climbed fairly steadily during baseline, and ranged from 20 to 88. After treatment began, there was an initial drop in compulsion frequency. Compulsions then began a gradually climb until midway through treatment. Following session five, compulsions began to decrease steadily. Throughout baseline and treatment phases, P3’s data displayed a moderate degree of variability. Beginning with session three, P3 made specific behavioral commitments to reduce compulsions. For example, he would focus on reducing particular elements of his bedtime ritual (e.g., fluffing his pillow, checking the sink). Session six included in-session mindfulness exercises (i.e., breathing, visualizing thoughts as if on a screen); practicing these exercises at home, especially when experiencing obsessions, was a part of assigned homework thereafter. Between sessions eight and nine P3 spent one night at his grandparent’s home, something he had been unwilling to do for over a year because of his OCD. At the end of treatment, P3’s mean rate of compulsions had dropped to 37.6 (*SD* = 13.6), a 32.2% decrease from baseline. P3’s compulsion rate continued to decrease after treatment; he averaged 29.3 (*SD* = 5.2) daily “keep safe” behaviors at follow up

During baseline, P3’s bedtime duration mean was 51.0 minutes (*SD* = 22.2). Baseline durations were moderately variable and ranged from 30 minutes to nearly two hours. Bedtime duration peaked (at 125 minutes) one week after treatment began, then decreased and remained fairly stable after that time. At session three, P3’s mother was encouraged to respond to reassurance seeking by reminding him of the *bus metaphor*. The posttreatment mean for bedtime routine duration was a more reasonable 26.4 minutes (*SD* = 4.8), a 48.2% reduction from baseline. At three month follow-up, P3’s rate had dropped to 18.6 minutes (*SD* = 3.8).

P3’s pretreatment CY-BOCS score (raw score = 23) and his posttreatment score (raw score = 18) were both in the clinical range. At three month follow-up, P3’s CY-BOCS score (raw score = 9) was in the subclinical range.

P3’s MASC score for total anxiety was *T* = 75 at pretreatment, *T* = 73 at posttreatment, and *T* = 70 at follow-up. P3’s CDI scores at pretreatment (raw score = 11), posttreatment (raw score = 8), and follow-up (raw score = 8) were below the clinical depression cutoff of 19. P3’s AFQ-Y process ratings were 26 at pretreatment, 23 at posttreatment, and 27 at follow-up, with little fluctuation throughout the treatment process.

P3’s total TEI-SF score of 24 (out of 30) and his mother’s total of 27 (out of 35) indicate a high level of treatment acceptability. Both P3 and his mother marked “agree” in response to “Overall, I have a positive reaction to this treatment.” P3 and his mother both marked “neutral” in response to the statement “I believe this treatment is likely to result in permanent improvement.”

**Discussion**

This study provides preliminary evidence for the feasibility and utility of an 8-10 session ACT protocol in treating adolescent OCD. In the context of a multiple-baseline across participants design, three youth showed large decreases on the main dependent variable, frequency of primary compulsions (*M* = 40.0% reduction from pre to post, and *M* = 43.8% reduction from baseline to three-month follow up). For the two participants whose parents tracked a secondary behavior, large decreases were also observed (*M* = 59.8% reduction from pre to post*,* and *M* = 67.5% reduction from baseline to three-month follow up).

It is notable that participants tracked *total* daily instances of behaviors, not just instances that were considered compulsions. Therefore, “zero” was not the treatment target for any of the behaviors, except for in the case of P1’s reassurance seeking. Though the behavior did not quite reach zero, P1’s 71.4% decrease in reassurance seeking was the most dramatic improvement in compulsion frequency observed in the study. For P1 and P2, who both tracked hand washing, posttreatment frequencies indicated near absence of compulsions. During treatment we examined each instance of hand washing in a typical day and determined which instances were compulsive and which were reasonable. For P1, approximately seven occasions during a typical day were determined to be reasonable; P2 determined that approximately 10 times per day would be reasonable. Hand washing frequencies at posttreatment were in these ranges for both P1 (M = 7.3) and P2 (M = 12.3) and these gains were maintained at follow-up. P3 did not intend “keep safe” behaviors to reach zero either; a major part of his routine was prayer, a behavior P3 wanted to decrease but not eliminate. His posttreatment mean frequency of “keep safe” behaviors (37.6) was associated with an average bedtime routine of 26.4 minutes, a notable improvement from the average bedtime length during baseline (51.0 minutes). P3’s CY-BOCS ratings decreased by five points between pre-treatment and post-treatment, and by another 9 points at follow-up. No additional treatment was received between post-treatment and follow-up; factors such as strong parental support and good treatment adherence may have contributed to the larger decrease in symptoms during this period.

Reductions in CY-BOCS scores were observed for all participants, indicating lowering of severity of OC symptoms. Pretreatment to posttreatment CY-BOCS symptom reductions for participants were 50%, 12.5%, and 22%, respectively. Symptom reductions as reflected by the CY-BOCS for P2 and P3 were small compared to the same metric in CBT studies (45-67%) (de Haan et al., 1998; Franklin et al., 1998; March et al., 1994; Piacentini et al., 2002. Notably, P2 and P3’s pre- to posttreatment reductions in compulsion frequencies (43.5% and 32.2%, respectively) were larger than CY-BOCS symptom reductions. It may be that self-reported compulsion frequency is a more sensitive measure of change in functioning than CY-BOCS ratings, especially when dealing with less severe cases of OCD. Compulsion frequencies drop as time spent on compulsions is reduced, whereas decreases in CY-BOCS scale scores do not necessarily reflect reductions in time spent on obsessions or compulsions (Geller, 2010). Compared to pretreatment, CY-BOCS reductions at three month follow-up were 54%, 12.5%, and 61%, respectively, and these changes were reported alongside continued reductions in self-reported compulsion frequencies. For P1 and P3, these reductions were in a similar range as reductions reported in CBT studies, and exceed the range (25-40%) considered to reflect clinically significant CY-BOCS symptom reduction (Geller, 2010).

Improvements in AFQ-Y scores indicated increased levels of acceptance, lowered levels of cognitive fusion, and a greater degree of values-consistent behavior. Changes in process were observed alongside improvements in compulsion frequency for two of three participants. For these two participants, process change and symptom change were temporally related in the manner that was expected. The fact that movement in ACT processes preceded compulsion reductions in these cases is consistent with ACT’s model of change, although much more work needs to be done in this area.

As in previous ACT for OCD work (Twohig et al., 2010), participants and parents indicated a high degree of acceptability of the ACT protocol. Each parent and adolescent denied that treatment procedures caused discomfort. Each parent and adolescent marked “agree” or “strongly agree” in response to all TEI-SF statements regarding the acceptability of treatment procedures. Treatment acceptability is a key issue for all therapy approaches with children and families, and perhaps more so in OCD treatment than in other contexts. In general, challenges in youth OCD treatment include noncompliance to treatment demands (in and out of sessions), disengaged families, and/or families that undermine treatment (Treadwell & Tolin, 2007). The fact that parents and adolescents found ACT acceptable provides some hope for addressing these concerns.

Arguments have been raised that there are minimal differences between ACT and traditional CBT (Hofmann, Sawyer, & Fang, 2010; Tolin, 2009). This is an empirical question that is slowly being answered (Forman et al., 2012; Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Lappalainen et al., 2007; Wicksell et al., 2011; Zettle & Rains, 1989). It is worthwhile to note that the similarities of a treatment can be compared at differing levels. While the techniques that are used may appear similar, they may be targeting different processes of change. ACT has specified psychological flexibility as its mechanism of change. While many of the ACT processes are acceptable and encouraged within CBT, not all traditional CBT techniques (e.g, cognitive challenging, focus on thought/emotion reduction) fit within the theoretical underpinnings of ACT. Nevertheless, this is an area that should continue to be researched.

In addition to the positive aspects of this investigation, there are limitations. First, for logistical reasons, assessments were conducted by the therapist instead of another researcher. Most of the assessment tools used in the study were self-report or parent-report measures (CDI, MASC, AFQ-Y); however, the ADIS and CY-BOCS were completed in an interview format by the assessor. In future studies, the assessments should not be administered by the therapist, but rather by another researcher who has been trained to competency. Second, the intervention in the study was limited to a maximum of 10 sessions. Presumably, if the treatment was to be delivered in a longer-term format, including booster sessions, additional gains may be expected. Future ACT for youth OCD protocols may benefit from more extensive measurement of values, inclusion of more experiential elements, and enriched coverage of “self as context” processes.

Additional case studies and pretest-posttest small group research may be logical next steps. Eventually,a randomized clinical trial could help confirm these findings and allow for greater claims to be made regarding external validity. Randomly assigning participants to ACT, ERP, or ACT+ERP would be especially helpful in answering important experimental and clinical questions.

 Because the research questions of this study were focused on individual adolescents’ response to the ACT intervention, parental involvement was limited to assisting with data collection and briefly “checking in” at the conclusion of each session. Given that parents often participate in the child’s compulsions (Storch et al., 2007) and that higher levels of family dysfunction predict poorer treatment outcomes (Peris et al., 2012; Skoog & Skoog, 1999), more exploration of parental involvement may be a useful component of future studies.

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Author note: This project was completed in partial fulfillment of Andrew Armstrong’s Ph.D. at Utah State University. Andrew Armstrong (andrewbarmstrong@yahoo.com) is now at Central Washington University's Student Medical and Counseling Clinic. Kate Morrison and Michael Twohig (michael.twohig@usu.edu) are at Utah State University. ACT for Youth with OCD treatment manual available by request.

Table 1

*Summary of Treatment Sessions*

|  |  |
| --- | --- |
| Session | Treatment Components |
| 1 | * Assess contexts in which OC symptoms occur
* Discuss differences between obsessions and compulsions
* Homework: Record obsessions and what was done in response; Write about what OCD is costing
 |
| 2 | * Draw picture of self, label location of obsessions and compulsions
* “Creative hopelessness” – list efforts to control obsessions and discuss workability of those efforts
* *Tug of war* metaphor
* Homework: Practice dropping the rope (let go of unworkable control agenda)
 |
| 3  | * “Control as the problem” – *Polygraph*, *Fall in love,* and *Chocolate cake*
* Introduce acceptance – *Finger trap* exercise
* Homework: Behavioral commitment
 |
| 4 | * Cognitive defusion – *Milk, milk, milk* exercise (in vivo and text-to-speech on computer); *Grocery store* metaphor
* Acceptance – *Passengers on the bus* metaphor
* Homework: *Milk* exercise; Behavioral commitment
 |
| 5 | * Cognitive defusion – *Take your mind for a walk* exercise
* Acceptance – *Two scales* metaphor, *Obsessions on paper* exercise
* Homework: Behavioral commitment
 |
| 6 | * Values – *Heart shaped box* and *Bull’s eye* exercises
* Acceptance – *Annoying party guest* metaphor
* Revisit committed action
* Homework: *Epitaph* exercise; Behavioral commitment
 |
| 7 | * Present moment – *Counting breaths*, *visualizing thoughts on a screen* mindfulness exercises, *Kindergarten teacher* metaphor
* Self-as-context – *TV set*, *Chessboard* metaphors
 |
| 8 | * Present moment – *Soldiers on parade* mindfulness exercise
* Review all processes using *Passengers on the bus* metaphor
* Discuss end of treatment
* Plan for posttreatment data collection
 |
| 9 & 10(if needed) | * Further in-session practice with acceptance and mindfulness
* Review all processes
* Relapse prevention
* Plan for posttreatment data collection
 |



Figure 1. P1, P2, and P3’s daily compulsion frequencies (solid trendline) and weekly ACT process data (dotted trendline). Daily frequency of P1’s reassurance seeking, and length of P3’s bedtime routine in minutes, including three month follow-up. Dotted horizontal lines represent daily levels of handwashing considered non-compulsive by P1 (6) and P2 (10).