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Acceptance and Commitment Therapy for Women Diagnosed with Binge Eating Disorder:

A Case-Series Study

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Abstract

Binge eating disorder (BED) is an eating disorder marked by a recurrence of eating unusually large amounts of food in one sitting along with feeling a loss of control over eating and experiencing marked distress. Outcomes from two adult women with BED who voluntarily participated in 10 weekly sessions of Acceptance and Commitment Therapy are presented. Binge eating was self-monitored daily prior to and throughout treatment. The average frequency of weekly binge eating across both participants at pre-treatment was 5.7 times, which decreased to 2.5 per week at post-treatment, and 1.0 per week at follow-up. The improvements were particularly significant for Participant 1, who no longer met criteria for BED at post-treatment and follow-up. Similarly, both participants demonstrated improvements in body image flexibility throughout the course of study. A discussion of the results is presented along with implications for clinical practice and future directions in research.

Acceptance and Commitment Therapy for Women Diagnosed with Binge Eating Disorder:
A Case-Series Study

Binge eating disorder (BED) is an eating disorder marked by a recurrence of eating unusually large amounts of food, feeling a loss of control over eating, marked distress about binge eating, and the absence of compensatory behavior(s). BED most commonly occurs among individuals between the ages of 20 and 30 (Striegel-Moore & Franko, 2003), with a lifetime prevalence for females and males at 3.5% and 2.0%, respectively (Hudson, Hiripi, Pope, & Kessler, 2007). BED is twice as common as bulimia nervosa (BN) and anorexia nervosa (AN) combined and is strongly associated with obesity, psychosocial distress, and elevated psychiatric and medical comorbidity (Hudson et al., 2007). Interpersonal problems, such as hostile family interactions, submissiveness, and social avoidance, are also associated with the onset and maintenance of BED (Ansell, Grilo, & White, 2012; Blomquist, Ansell, White, Masheb, & Grilo, 2012).

A well-established treatment of choice for BED is Cognitive Behavioral Therapy (CBT; Grilo, Masheb, Wilson, Gueorguieva, & White, 2011; Wilson, Wilfley, Agras, & Bryson, 2010). Conventional CBT models of disordered eating often focus on irrational thoughts and feelings and negative evaluations about weight, body size, and body shape (M. Cooper, 1997). From this conceptual account, binge eating is occasioned by distorted thinking related to food and weight combined with negative affect. As such, a major treatment goal of conventional CBT is to promote normal eating habits and to eliminate binge eating through undermining dysfunctional cognitions (Fairburn, Marcus, & Wilson, 1993). More recently, a new version of CBT, called enhanced CBT (Z. Cooper & Fairburn, 2011; Fairburn, 2008), was developed to target transdiagnostic psychopathological processes, such as clinical perfectionism, mood intolerance,

low self-esteem, and interpersonal difficulty in the context of eating disorder treatment. While many individuals who complete CBT for binge eating show improvement, some continue to engage in binge eating at follow-up assessments (Baer, Fischer, & Huss, 2005; Fairburn, 2008; Grilo et al., 2011; Wilfley et al., 2002; Wilson et al., 2010). Additionally, issues regarding patient preference and second line treatments suggest that there is room for additional treatments for BED.

Newer varieties of CBT have emerged in recent years that include acceptance, mindfulness, and values in their theory and practice (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes, Villatte, Levin, & Hildebrandt, 2011). This acceptance and mindfulness movement is, in part, a response to growing empirical evidence demonstrating that psychological health can be fostered by adaptive emotion and behavior regulation processes (e.g., how people respond and relate to their internal and external experiences; Aldao, Nolen-Hoeksema, & Schweizer, 2010; Gross, 1998; Kashdan & Rottenberg, 2010). Conversely, many forms of psychopathology, including eating pathology, are theorized to arise when individuals excessively and rigidly engage in maladaptive regulation strategies, such as rigid emotional control and experiential avoidance (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). From this conceptual standpoint, binge eating is viewed as a behavioral attempt to escape or distract from difficult thoughts and emotions (Hayaki, 2009; Polivy & Herman, 2002). Unfortunately, such efforts are typically futile long term, and they are often followed by greater psychological distress, other negative effects on quality of life, and perpetual cycles of binge eating (Hilbert & Tuschen-Caffier, 2007).

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2012), an acceptance- and mindfulness-based CBT, may be particularly suitable for individuals diagnosed with BED because it directly targets ineffective emotion and behavior regulation processes in

order to promote daily functioning. Specifically, ACT is designed to promote full and vital living with openness to difficult thoughts and feelings in the service of values-directed actions. This goal is accomplished by undermining pervasive efforts to regulate unwanted emotional experiences (including problematic eating behaviors or other nonfunctional methods to regulate internal experiences) and by promoting alternative behaviors of experiencing the present moment openly and freely. Specific to disordered eating and body image, ACT targets an individual's entanglement with difficult body image, such as the avoidance of situations that provoke body image-related thoughts and feelings (e.g., social situations where food is served) and the degree to which body image-related psychological experiences negatively impact the person (Sandoz, Wilson, Merwin, & Kate Kellum, 2013). In addition, ACT does not focus primarily on body image but the extent to which one engages in values-consistent activities regardless of negative body image. In ACT literature, these alternative and adaptive behavioral patterns in the context of disordered eating and body dissatisfaction are termed body image flexibility (Hill, Masuda, & Latzman, 2013; Sandoz et al., 2013).

Extant findings, although limited, suggest that ACT may be a useful treatment option for disordered eating problems (Juarascio et al., 2013; Manlick, Cochran, & Koon, 2013; Masuda & Hill, 2013), including BED. A number of case studies have revealed that ACT delivered on an individual, outpatient basis improves the daily functioning of individuals with full or sub-threshold AN (Berman, Boutelle, & Crow, 2009; Heffner, Sperry, Eifert, & Detweiler, 2002; Masuda, Muto, Hayes, & Lillis, 2008). A preliminary randomized controlled trial of individual ACT demonstrated a reduction of co-morbid eating pathology in treatment-seeking clients (Juarascio, Forman, & Herbert, 2010). In addition, completion of a one-day ACT workshop was associated with increased body image acceptance and decreased eating pathology in females with

body image concerns (Pearson, Follette, & Hayes, 2012). ACT workshops have also helped to improve quality of life and reduced binge eating episodes in individuals with obesity (Lillis, Hayes, Bunting, & Masuda, 2009; Lillis, Hayes, & Levin, 2011). Finally, the reductions in binge eating in individuals with obesity were mediated by changes in psychological inflexibility, an underlying maladaptive regulation process targeted in ACT (Lillis et al., 2011).

In order to extend the current knowledge, it is necessary to accumulate empirical evidence of ACT for BED. One way to accomplish this goal is to track daily self-reported binge eating and ACT-specific processes of change in people being treated for BED. The present study employed a case-series design in which two adult females diagnosed with BED reported the frequency of binge eating behaviors on a daily basis as well as and a measure of body image flexibility on a weekly basis. Additionally, standardized assessments at pre-treatment, midpoint, post-treatment, and 3-month follow-up were administered to track broader disordered eating concerns and psychological functioning.

Method

Participants

Participants were recruited using flyers posted around the university campus, including the university counseling center. Recruitment flyers advertised free therapy for body image concerns and disordered eating problems (e.g., food intake restriction, binge eating, purging, and excessive exercise) and provided details about research participation, commitment, and assessment procedures. Two individuals enrolled in the study. Both participants were White American women and completed a screening assessment, including a diagnostic assessment of eating disorders, conducted by the second author. Both participants' weight measurements met criteria for obesity, according to Body Mass Index (BMI) computed using self-reported height

and weight. They also met DSM-5 criteria for BED (American Psychiatric Association, 2013) assessed by the Structured Clinical Interview for DSM-IV-TR Axis I Disorder (First, Spitzer, Gibbon, & Williams, 2002).

Assessments of comorbid psychological conditions were not formally conducted, except for the diagnosis of borderline personality disorder and schizophrenia by the Structured Clinical Interviews (First, Gibbon, Spitzer, & et al., 1997; First et al., 2002): neither participant met diagnostic criteria for these disorders. Screening interviews revealed that both participants denied suicidal ideation or intent or substance use problems at intake. Both participants had previously received psychotherapy for depression. Finally, neither of the participants reported using any psychotropic medications at intake nor throughout the course of the study (see Table 1 for additional demographic information).

Measures

Self-monitoring of problematic eating. Participants identified “binge eating” as their target behavior to be monitored. Binge eating was operationally defined as “an episode of eating large amounts of food (e.g., an amount of food that is larger than most people would eat in a similar period) rapidly and impulsively accompanied by a sense of lack of control over eating.” In the present study, participants were instructed to email the second author at the end of each day with the frequency of binge eating for the day.

Self-report ACT-specific process of change variables. The participants completed the Body Image-Acceptance and Action Questionnaire (BI-AAQ; Sandoz et al., 2013) weekly as a self-reported process of change measure. The BI-AAQ is a 12-item self-report measure designed to assess psychological flexibility specific to body image. Specifically, the scale measures the extent to which one is entangled with difficult body image, the degree to which one *avoids* or *is*

affected by body image-related negative psychological experiences and the extent to which the person engages in values-consistent activities despite negative body image. All items are rated on a 7-point Likert-like scale ranging from 1 (*Never true*) to 7 (*Always true*) and are reverse-scored. Total scores for BI-AAQ range from 12 to 84, with higher scores representing higher body image flexibility. The BI-AAQ has shown good internal consistency (Cronbach's alpha = .92), as well as concurrent, criterion-related, and incremental validity in an undergraduate population (Sandoz et al., 2013).

Global disordered eating. The Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn, 2008) is a 36-item self-report measure that assesses a broad range of eating disorder symptoms over the previous 28 days, including the severity of dietary restraint and concerns about eating, shape, and weight (e.g., "Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight?"). The global score is derived from the sum of all scale items. The EDE-Q is fully supported by internal consistency and test-retest reliability (Luce & Crowther, 1999), as well as concurrent (Fairburn & Bèglin, 1994) and discriminant (Wilson, Nonas, & Rosenblum, 1993) validity estimates. The EDE-Q has adequate psychometric properties in both clinical and community samples (Fairburn & Bèglin, 1994; Luce & Crowther, 1999; Wilfley, Schwartz, Spurrell, & Fairburn, 1997). In a recent study using the EDE-Q, internal consistency was high, with Cronbach's alphas of .95 for the global score (Aardoom, Dingemans, Slof Op't Landt, & Van Furth, 2012).

Additionally, three binge eating related behavioral items in the EDE-Q were used to assess the participants' monthly binge eating. The three items were "times of eating unusually large amount in past 28 days," "times of overeating with the sense of having lost control over eating in past 28 days," and "days of such episodes in past 28 days."

Disordered eating cognition. The Mizes Anorectic Cognitions Questionnaire-Revised (MAC-R; Mizes et al., 2000) is a 24-item self-report questionnaire that measures three dimensions of disordered eating cognitions: strict weight regulation and fear of weight gain (e.g., “No matter how much I weigh, fats, sweets, breads, and cereals are bad food because they always turn into fat”), self-control as the basis of self-esteem (e.g., “I am proud of myself when I control my urge to eat”), and weight and eating behavior as the basis of approval from others (e.g., “My friends will like me regardless of how much I weigh”). The 24 items on the MAC-R are rated on a 5-point Likert-like scale, with responses ranging from “strongly disagree” to “strongly agree.” Total scores range from 24 to 120, with higher scores indicating greater disordered eating related cognitions. Despite its original focus on clients with AN (Mizes, 1990), the MAC-R was found to be an adequate measure for assessing disordered eating cognitions endorsed by patients diagnosed with other eating disorders (Mizes et al., 2000). In a previous study with clinical samples of various eating disorders (Mizes et al., 2000), an alpha coefficient for the MAC-R was .90.

Emotional eating. Emotional eating was measured by the Emotional Eating Scale (EES; Arnow, Kenardy, & Agras, 1995). The EES is a 25-item self-report measure. Each item consists of an emotion term (i.e., “angry,” “lonely,” “irritated”). Using a 5-point scale ranging from 0 (*No desire*) to 4 (*Overwhelming urge*), the individual rates the extent to which experiencing that emotion occasions eating behavior. Scores range from 0 to 44 on the EES anger subscale, 0 to 36 on the anxiety subscale, and 0 to 20 on the depression subscale, with greater scores suggesting greater emotional eating. Previous studies have revealed that the EES has adequate internal consistency in clinical samples with obesity, with Cronbach’s alphas of .78, .78, and .72 for anger/frustration, anxiety, and depression subscales, respectively (Arnow et al.,

1995) and non-clinical samples with Cronbach's alphas of .87, .84, and .80 for the anger/frustration, anxiety, and depression subscales respectively (Waller & Osman, 1998).

Clinical impairment due to disordered eating. Functional impairment due to disordered eating was measured by the Clinical Impairment Assessment 3.0 (CIA 3.0; Bohn et al., 2008). The CIA 3.0 is a 16-item, self-report measure designed to assess psychosocial impairment due to disordered eating features in the past 28 days (Bohn et al., 2008). Items are rated on a 4-point Likert-like scale, ranging from 0 (*Not at all*) to 3 (*A lot*). A CIA 3.0 global score is calculated as a severity index, ranging from 0 to 48 with greater scores suggesting greater impairment. The CIA 3.0 has demonstrated high levels of internal consistency with a Cronbach's alpha of .97 (Bohn et al., 2008).

Procedure

Initial contact was made by telephone or electronic mail at which time the initial assessment was scheduled. All measures were completed during this initial session. Participants were asked to monitor binge eating for up to three weeks prior to treatment. Both participants then completed the 10-week ACT intervention. The second author served as the therapist for both participants. They completed the same measures administered at pre-treatment at mid-point. After completing the 10-week treatment portion of the study, participants were asked to monitor their binge eating for one additional week and complete the study measures again. They were again asked to monitor their target behaviors for one week and complete all measures at the 3-month follow-up.

Treatment Overview

The manualized ACT protocol consisted of 10 weekly 50-minute individual therapy sessions. The number of sessions was set at 10 to investigate the effectiveness of a time-limited

ACT intervention. Each session typically began with a brief mindfulness exercise, followed by the treatment agenda set for the session. At the beginning of each session, the therapist checked in with participants regarding episodes of binge eating that had occurred since the last therapy session. Binge eating was a primary focus of the study within the context of improving overall functioning and well-being. Despite its manualized nature, the contents and pace of sessions were individually adapted on an ongoing basis to best accommodate each participant while also maintaining the functional adherence to ACT (e.g., focus on increase in daily functioning and behavior activation; openness to difficult inner experiences).

The first session focused on the establishment of an ACT-consistent treatment contract and rapport building. The establishment of an ACT-consistent treatment contract was particularly important because the route to healthier functioning via ACT may be different than what participants were expecting. More specifically, at pre-treatment, participants tended to emphasize the elimination of perceived problems (e.g., binge eating, emotional triggers and other negatively evaluated emotions) exclusively. Rather than dismissing the participants' agenda, we found it effective if the therapist gently brought to their attention the promotion of full and vital living as a treatment goal and discussed binge eating and emotional triggers within the context of pursuing a full and vital living. For example, once the participants identified binge eating and its emotional triggers (e.g., negative affect) as events to be eliminated through therapy, the therapist gently asked them why binge eating and emotional triggers were considered to be problems in the first place. Subsequently, the therapist suggested the possibility that these events were viewed as being problematic, in part, because they interfered with everyday living. Once the participants became cognizant of the functional link between their presenting concerns and daily

functioning, the therapist then gently suggested the promotion of everyday vital and full living as an additional treatment goal.

Therapist (T): ... so let me see if I understand you correctly... You are saying that bingeing and the difficult feelings that trigger bingeing are the major problems, and you would like us to work together to make them go away.

Participant (P): I'm not sure if I can get rid of all of them completely, but that's my hope.

T: This may sound silly, but have you thought about what makes bingeing and these feelings problematic for you?

P: (the participants appeared confused). I don't want them, and, I mean, I'm not supposed to do it.

T: (Pause). I was wondering if it is fair to say that these are problems because they've become a big part of your life. Maybe they keep you from being how you would like to be and doing what you would like to do. By being caught up with them, you miss out on a lot of things – perhaps things that reflect what is true and important to you.

P: That's true (the client nodded).

T: I was wondering if our work together could be partly about reclaiming your life... in addition to working on binge eating and the negative feelings that trigger binge eating. Sometimes we think that in order to get our life back, we first need to get these problems under control. But maybe, we can start working on reclaiming our lives before getting rid of all of our issues.

(Pause). What if I say that your urges and binges don't define you? You are more than a binge, more than an urge. I can see wanting to control aspects of this. The thing is, some things are more or less under our control, and others are not. It may be important for us to be clear which of these aspects are going to be easy to change.

Shifting perspective: Sessions 2-4. Although participants viewed binge eating as the problem, they did not necessarily recognize how this behavior was maintained functionally or how it impacted daily activities. The first step in ACT was to assess whether the participants engaged in these problematic behaviors in order to down-regulate unwanted internal events (e.g., feelings of anger, frustration, and loneliness). After determining this was the case, the second step was to help the participants become aware of the functional link and the long-term negative effects of these regulation efforts. Therapeutically, we found that the awareness of functional links between internal triggers and problematic eating facilitated the awareness of the short-term and long-term effects of binge eating.

To help illustrate the futile nature of efforts to down-regulate unwanted internal experiences, experiential exercises, such as the Chinese finger trap (Hayes, Strosahl, & Wilson, 1999, p. 105) and popular ACT metaphors, such as “the person in a hole” (Hayes et al., 1999, p. 101-102) were employed. The Chinese finger trap exercise is designed to increase awareness that efforts to control unwanted internal events often exacerbate the situations further, rather than actually decreasing the struggle. In this exercise, participants were asked to put their index fingers into the finger trap and to try to get them out by using the common strategy for getting out of the trap – pulling hard to break free. Both participants experienced that the more they struggled to get out, the more constricting the trap became. After this experience, the therapist suggested that a seemingly counterintuitive alternative to freeing themselves from the struggle would be to lean into the struggles as they pushed their fingers into the trap. In fact, pushing their fingers into the trap created the space for them to become free from the trap. A crucial part of this exercise for the participants was to see the parallel between their experiences with this exercise and their struggles with binge eating. For example, one participant noted, “When I’m

pulling, it's an immediate reaction, but when I slow down, I can better evaluate the situation and try something else. It's like when I feel stressed. I immediately have to eat to reduce that feeling – to try to assert control over this stressful situation.” In addition, the exercise gently suggests the possibility of letting go of efforts to down-regulate or act on unwanted emotions through binge eating.

After discussing the cyclical nature of using binge eating without awareness as ways of avoiding difficult internal events, the therapist introduced the “person in a hole” metaphor by suggesting that the struggle was not unique to the participant's experience. The “person in a hole” metaphor (Hayes et al., 1999, p. 101-102) illustrates how struggling with internal events can exacerbate difficult internal experiences while also lessening quality of life. The metaphor describes a scenario in which someone has fallen into a hole and tries to free themselves by digging a way out. Despite good intentions and a genuine desire to get out, the more feverishly the person digs, the deeper in the hole they find themselves.

Therapist (T): But I'm not singling you out. We all do this in one way or another. Watching TV, or drinking, or whatever, but then later the emotion is still there, or we might also experience some form of guilt or remorse. It may be a temporary way of dealing with stress, but the more we do it, the more we rely on it. Then that thing that we did to help de-stress becomes a source of stress (Pause). We're all in similar situations. It's like some person who's blindfolded and in the middle of a field [continues with the entire metaphor about falling in hole (representing emotion) and trying to dig out (representing attempts to regulate emotion)]... And sometimes we can't tell that our shovels aren't working because we're digging so hard, and we want it to work. I think you've been trying the logical thing. If you have emotions you don't like, you try to get rid of them or push them away. And it's supposed to work, right? But our experience tells us something

different. So, maybe the first step can be to stop digging and drop the shovel. If you're the therapist and you tell someone that the first step is to let go, how do you think they're going to respond?

Participant (P): They're scared, so they might not want to.

T: So maybe you'd ask them to see how well digging has been working.

P: That makes sense to me. If bingeing is my tool, my shovel, in order to get out of the hole, I'm going to have to drop the shovel and try something else. But it's scary.

T: Sure, it is hard to let go. This is your friend. It's always been there for you.

P: Yes. It's always been there for me. Always available.

T: I wonder if it can still be your friend, you just don't have to rely on it.

P: (a long pause) Yeah. I don't have to rely on it.

During these sessions, participants assessed the different ways in which they had tried to “dig” their way free from difficult thoughts and feelings and how effective those strategies had been. Both participants identified binge eating as strategies they used to distract themselves from or avoid unpleasant internal events. In addition to not being able to fully eliminate unwanted thoughts and feelings, participants often experienced feelings of guilt, shame, sadness, self-loathing, and frustration after binge eating.

Acceptance and mindfulness: Sessions 5-7. Once the participants became aware of the futility of efforts to control unwanted internal events, the next step was to teach acceptance and mindfulness skills (e.g., increased awareness of and contact with internal events as they are, fully, without making efforts to eliminate them) as behavioral alternatives to control efforts.

A series of brief mindfulness exercises were introduced beginning with the first session in order to build the skill of gently and nonjudgmentally paying attention to specific objects or

internal experiences as they are without trying to alter or get rid of them (Kabat-Zinn, 1990). For example, in a brief mindfulness exercise, participants intentionally monitored physiological sensations and/or the act of breathing for 1 or 2 minutes. During the exercise, the participants were instructed to notice how their attention drifted away from breathing and other physical sensations and to bring their focus back to the present moment when they noticed that their attention had drifted away.

In one particular exercise, participants also practiced a mindful eating exercise using a raisin (Safer, Telch, & Chen, 2009, p.102-103), which was based on an exercise described by Kabat-Zinn (1990). The purpose of the mindful eating exercise was to help participants increase their awareness in the context of eating. Increased awareness was particularly important because the behavior of eating often evoked intense unwanted emotions and thoughts. In this exercise, the participants were first asked to notice what emotional and/or situational triggers often preceded binge eating. It was then suggested that they were able to choose whether or not to engage in binge eating rather than immediately engaging in harmful eating habits as if on autopilot. The therapist then suggested the importance of “slowing down” and gently becoming aware of the experience of eating. Participants were asked to notice if this awareness allowed them to choose a valued action in that moment. Once participants received the clinical rationale, they were given a raisin and asked to imagine that they had never seen one before. They held the raisin and looked at it with curiosity, noticing the physical features of the raisin. Then participants were instructed to smell the raisin and eat it very slowly, noticing how it felt in their mouths, how it tasted, how it felt to bite into it, and how it felt to chew and swallow the raisin (see video clip 1; the videos were scripted for the purpose of the present manuscript).

Although this exercise was designed to help individuals develop compassionate awareness of the experience of eating, it has the potential to evoke painful thoughts, emotions, or memories. For example, Participant 2 reported that eating in front of others (including the therapist) evoked a sense of shame and fear of being negatively evaluated, as well as painful memories of being teased by others for eating. Specifically, she noted that eating a raisin in front of the therapist, “Reminded me of the looks my co-workers made when I was eating lunch in the break room. They are not my friends, but they looked at me, and then giggled. I didn’t hear what they were saying, but it was just so awful.” Her eyes then began to tear. As such, it was extremely important for the therapist to gently process these experiences. With Participant 2, the session after the exercise focused on the validation of these experiences and on making a conscious behavioral choice in the midst of difficult emotional experiences, prior to teaching mindfulness skills.

In general, practicing mindfulness helped participants notice difficult thoughts and emotions, and experience them more openly and fully. It also allowed participants to recognize through experience the transient nature of thoughts and feelings; even difficult inner experiences will come and go and do not last forever. Specifically related to problematic eating, mindfulness practice helped participants to notice the thoughts and emotions that often preceded binge eating. They then learned to be open to experiencing those internal events (i.e., acceptance) rather than using food to escape or avoid them.

Other exercises that helped participants notice their thoughts were conducted using index cards (Hayes et al., 1999, p. 162). Participants identified thoughts, emotions, and situations that often triggered problematic eating and wrote them on index cards. The therapist then held up each thought card, one at a time, at varying distances from the participants’ faces, at first very

close then gradually moving further away. This exercise helped illustrate the benefits of relating to internal experiences differently by creating distance from them and looking *at* thoughts rather than *from* them (see video clip 2). Next, the therapist held up a particularly difficult thought card and had the participant push against the card. The participant and therapist struggled against each other, illustrating the internal struggle that the participant often had with the difficult thought. As an alternative, the therapist placed the card on the participant's lap and asked if it would be possible for her to have the thought without having to fight with it (see video clip 3). Finally, the participant was asked to carry her cards with her for a week and look at them periodically, noticing the thought that was written and her reactions to it. These activities helped to facilitate awareness of antecedents to problematic eating while also promoting defusion from difficult internal events.

Commitment to valued living: Sessions 8-10. The final three sessions (8 – 10) focused on helping the participants clarify values and commit to acting in ways consistent with those values. The goal was not only to help reduce problematic eating, but also to increase participants' self-empowerment to pursue life goals and to live fuller, more effective lives. This pursuit likely means working toward life goals even while experiencing difficult thoughts and feelings (“carrying one's cards”) instead of investing time and energy into avoiding or getting rid of them. The concept of values was introduced as “chosen life directions” and “what you want to stand for in life.” Participants were asked to identify important areas of their lives (e.g., romantic relationships, friendships, education, civil rights activism) and how they could live lives that were in agreement with these values. The “passengers on the bus” metaphor (Hayes et al., 1999, p. 157-158) was used to help participants recognize that the loud and obnoxious passengers (difficult thoughts, feelings, memories, or bodily sensations) did not have to dictate where the

participants drove their buses. As the bus drivers of their lives, participants had the power to move in their chosen life directions, regardless of what the passengers said. During these sessions, participants were also assisted in identifying potential barriers to their committed actions and different ways they could approach problematic situations while still being willing to commit to and act in accordance with their identified values.

Fidelity. A randomly selected sample of 20% of the videotapes of the intervention sessions were scored by the fourth author, a doctoral student supervised by the second author in ACT research and practice. The sample of videotapes were scored for their coverage of ACT treatment components using a validated, reliable ACT treatment scoring system (Plumb & Vilardaga, 2010). Minor modifications were incorporated in order to be applicable to a study on binge eating. The ACT treatment components that were rated included creative hopelessness/workability, willingness/acceptance, defusion, goals/values, committed action, and present moment awareness. Each component was rated on a scale from 1 to 5. Items were scored as a 1 if the component never occurred in that session, as a 2 if the component occurred at least once but not in an in-depth manner, as a 3 if it occurred several times during the session and was covered at least once in a moderately in-depth manner, as a 4 if it occurred frequently and was covered in-depth, and as a 5 if it occurred with high frequency and was covered in considerable depth. The therapist was also rated with regard to overall adherence to ACT principles as well as the overall competence of the therapist. Sessions 3 and 10 were rated for Participant 1, and sessions 4 and 7 were rated for Participant 2.

At least one of the rated ACT components was covered frequently in a very in-depth manner (i.e., received a rating of “5”) in each of the rated sessions. The means for each component over the rated sessions were as follows: creative hopelessness/workability = 4.00 (*SD*

= .82), willingness/acceptance = 4.25 ($SD = .96$), defusion = 3.5 ($SD = 1.29$), values/goals = 2.25 ($SD = .50$), committed action = 2.25 ($SD = .50$), and present moment focus = 4.25 ($SD = .50$).

Therapist overall adherence to the manual was also rated highly ($M = 4.75$; $SD = .50$) as well as therapist overall competence ($M = 4.25$; $SD = .50$).

The therapist was also rated on use of techniques antithetical to an ACT intervention, including challenging cognitions, experiential avoidant change strategies, using a cognitive therapy rationale, and encouraging the idea that thoughts and feelings cause actions. Each of these items was rated as a 1 across participants, indicating that none of these interventions were observed in any rated sessions.

Results

The primary dependent variable was participants' daily self-monitored binge eating. The baseline phase, treatment phase, and follow-up phases of treatment are presented in Figure 1. Additionally, problematic eating and related outcome variables at pre-treatment, mid-point, post-treatment, and 3-month follow-up are presented in Tables 2 and 3.

Participant 1

The average number of self-reported binge eating for Participant 1 was 3.0 times per week during the pre-treatment period (see Table 2), which is consistent with the criteria for BED. Within the first two weeks of the intervention, the average number of binge eating decreased to approximately 1.5 times per week. Throughout the course of the 10-week ACT intervention, Participant 1 engaged in a total of only five episode of binge eating. Her average number of binge eating episodes during the ACT intervention was .5 per week. Participant 1 did not report any episodes of binge eating at 3-month follow-up.

The reduction in binge eating paralleled improvement in body image flexibility. Participant 1's pre-treatment level of body image flexibility (BI-AAQ) was 41. This score is more than one standard deviation below the mean of a non-clinical college sample ($M = 66.2$; $SD = 15.8$; Sandoz et al., 2013). The pre-treatment score suggested that her negative body image interfered with her daily activities to a significant degree at pre-treatment. At the midpoint of therapy, her body image flexibility score increased to 67, which fell within the average range of a non-clinical sample, and it remained within the average range at post-treatment. Her average body image flexibility score throughout the course of the ACT intervention was 57.8 and 53 at 3-month follow-up. Participant 1's scores on disordered eating related measures administered at pre-treatment, mid-point, post-treatment, and 3-month follow-up were generally consistent with the findings of the primary outcome and process measures.

Participant 2

Participant 2's daily report revealed that the average weekly number of binge eating was approximately 8 at pre-treatment, which was consistent with the diagnostic criteria for BED. During the 10 weeks of the ACT intervention, the average number of binge episodes decreased to approximately 4.6 times per week, which still met the minimum number of binge episodes required for a BED diagnosis (i.e., approximately twice per week). At the 3-month follow-up period, the average number of binge episodes was approximately 3 times per week.

Participant 2's body image flexibility levels throughout the course of the study revealed a similar clinical picture. Her body image flexibility score was 28 at pre-treatment, which was more than two standard deviations below the mean for a non-clinical sample. Her body image flexibility score improved slightly throughout the course of the ACT intervention, with a weekly average of 35.5, and the improvement was somewhat maintained at follow-up (33). Similarly,

Participant 2's scores on disordered eating related measures suggested that her disordered eating concerns decreased but remained relatively elevated throughout the study. Notably, the participant greatly reduced the amount of time spent overeating with a sense of having lost control over eating throughout the course of study. She endorsed engaging in episodes of consuming unusually large amounts of food at a clinically significant level; however, the number of episodes that were accompanied by a perceived loss of control over eating was 20% at midpoint compared to 100% of the time at pre-treatment. This ratio remained at lower levels at post-treatment and follow-up. When asked about the change at post-treatment and follow-up, Participant 2 attributed it to a decrease in the amount of food she consumed during a "binge" episode. While she still considered her food consumption during "binge" episodes to be "unusually large," the amount she consumed in an episode appeared to have become smaller since the midpoint of therapy. For example, a "binge" for this participant after midpoint might include eating two cheeseburgers and an order of french-fries from a fast food restaurant. While it is more food than she thought appropriate for a meal, it does not meet the traditional definition of a binge episode.

In summary, both participants experienced a decrease in the frequency of their binge episodes throughout the course of the intervention, and these decreases were largely maintained at the 3-month follow-up (see Table 3). The average number of binge eating episodes per week across both participants at pre-treatment was 5.7, which decreased to 2.0 per week at post-treatment, and 1.3 per week at follow-up. The improvements were particularly significant in Participant 1, who no longer met criteria for BED at post-treatment and 3-month follow-up. Similarly, improvements in body image flexibility were observed across both participants

throughout the course of study. At pre-treatment, the mean body image flexibility score was 34.5. During the course of ACT intervention, the mean score was 46.7, followed by 43.0 at follow-up.

Discussion

The current study sought to investigate the effectiveness of a 10-week ACT individual intervention for two women diagnosed with BED and offers guidance for clinicians on the use of ACT for this disorder. The average amount of weekly binge eating across both participants decreased at post-treatment, and the reduction remained at follow-up. One participant no longer met criteria for BED at post-treatment. The other participant remained symptomatic at post-treatment and follow-up, although there was reduction of binge eating in frequency and the volume of food consumed during a binge at both assessment points. Increases in body image flexibility were observed in both participants throughout the course of study, and improvements in body image flexibility corresponded to reductions in disordered eating.

The present ACT intervention was also consistent with literature on emotion regulation and its role in disordered eating, which suggests that binge eating functions as a method of attempting to escape or distract oneself from difficult thoughts and emotions (Hayaki, 2009; Polivy & Herman, 2002). In practice, various ACT techniques were used to undermine the rigid use of these regulation strategies so that they did not interfere with daily functioning, while also helping to shift participants' focus to pursuing values-consistent living. At follow-up, both participants reported that they enjoyed and benefited from focusing on valued living rather than binge eating exclusively. They found it useful to incorporate skills for broader functioning in order to undermine maladaptive regulation strategies.

With regard to experiential exercises, both participants reported that the exercises were helpful in learning how to relate to negative internal experiences in more adaptive ways. They

also suggested that they would have liked to engage in more of these types of exercises throughout treatment. Specifically, both participants reported that they would have liked to do the card exercise earlier in the protocol in order to continue to build their mindfulness and acceptance skills of difficult thoughts and emotions throughout therapy.

As mentioned previously, when and how to use a particular ACT technique depends on a given client and the skills and awareness that the client already possesses. For example, if the client is already aware that she engages in binge eating in response to unwanted private experiences, techniques designed to highlight the awareness of the unworkability of binge eating, such as a Chinese finger trap exercise, are suitable. If the client does not have such awareness, a brief functional assessment may be helpful to build the awareness of the functional association between private experience, problematic behaviors, and their long-term and short-term consequences.

Similarly, it is crucial for the therapist to have a keen awareness of the difference between the intended function of a given technique and the actual effect of that technique. In other words, the functional and contextual adherence to the ACT protocol, as opposed to content-focused protocol adherence, is crucial for treatment effectiveness. For example, the mindfulness exercise with the raisin used in the present study can be anxiety-provoking for some clients, despite the exercise's intended function to promote gentle awareness in the context of eating. Simply delivering the exercise in a topographically accurate manner is not the goal of therapy. Rather, the goal is to influence the process that the exercise is designed to influence (e.g., full and gentle awareness of the experience of eating and the awareness of the self who notices the experience). If a given exercise does not produce the intended effect, it is important for the therapist to look for the reasons why it did not work and adjust therapy accordingly.

The current study adds to the growing area of research that suggests using mindfulness and acceptance therapies may be particularly beneficial for disordered eating concerns (Baer et al., 2005; Juarascio et al., 2010; Kristeller, Wolever, & Sheets, in press; Wisner & Telch, 1999). Specifically, the central strategies of ACT may be particularly useful when working with individuals who engage in binge eating because they target greater functioning while promoting alternatives for relating to distressing internal events. As such, ACT and other mindfulness and acceptance therapies may be beneficial interventions for BED; however, more research is needed (Masuda & Hill, 2013).

The current study also has several limitations. First, the decision to use 10 sessions as a format was not empirically determined and instead based on the formats of other acceptance- and mindfulness-based interventions. For example, while Participant 1 reported that the length of therapy was adequate, Participant 2 reported that she began to understand the nature of therapy around session 8 and 9, and that therapy was too short for some clients with disordered eating concerns. Because longer treatment has been found to be associated with better treatment outcomes in psychosocial treatments of BED (Thompson-Brenner et al., 2013), future research should investigate the adequate length and format of ACT for BED. Second, the current study was conducted using a small sample size ($N = 2$), and both participants came from the same geographic location and were current students at the university. As such, the results of this study may not generalize to other individuals who struggle with binge eating. Finally, all data collected was self-report in nature, and participants may have felt pressured to respond in desirable ways.

Despite these limitations, the current study suggests that ACT may be a useful treatment option for individuals who struggle with binge eating. The study also suggests that focusing on

the whole individual living a valued life and learning to be open to difficult emotions and cognitions may be important processes to be targeted in the treatment for binge eating.

Table 1**Participant Characteristics**

Participant	1	2
Sex	F	F
Age	42	22
Ethnicity	White American	White American
Sexual Orientation	Heterosexual	Heterosexual
BMI	40.7	32.6
Relationship Status	Single	In a romantic relationship
Occupation	Student	Student

Note. BMI = Body Mass Index

Table 2

Global Disordered Eating and Binge-Eating Related Episodes Throughout the Course of the ACT Intervention

	Average self-reported weekly problematic eating behaviors			EDEQ-Global				Times of eating unusually large amounts in past 28 days				Time of overeating with the sense of having lost control over eating			Days of binge episodes in past 28 days				
	Baseline (2-3 wks)	Treatment (10-11 wks)	3m F/U (1 wk)	pre	mid	post	3m F/U	pre	mid	post	3m F/U	pre	mid	post	3m F/U	pre	mid	post	3m F/U
P 1	3.00	0.45	0.00	2.88	1.19	0.88	0.64	8	8	6	2	6	2	1	0	8	8	6	5
P 2	8.33	4.55	3.00	3.62	2.94	1.97	2.03	14	15	3	12	12	3	0	2	12	3	3	11

Note. 3m F/U stands for 3-month follow-up.

^a EDEQ-Global stands for Eating Disorder Examination-Questionnaire.

Table 3

Disordered Eating Related Outcomes Throughout the Course of the ACT Intervention

	Disordered Cognition (MAC-R)				Diminished Functioning due to DE concerns (CIA)				Emotional Eating: Anger (EES)				Emotional Eating: Anxiety (EES)				Emotional Eating: Depression (EES)			
	pre	mid	post	3m F/U	pre	mid	post	3m F/U	pre	mid	post	3m F/U	pre	mid	post	3m F/U	pre	mid	post	3m F/U
P 1	62	50	48	44	21	6	1	2	16	1	0	3	15	2	1	0	16	6	3	5
P 2	74	81	69	73	28	15	9	13	11	12	6	1	9	7	6	10	10	11	9	9

Note. MAC-R stands for Mizes Anorectic Cognitions Questionnaire-Revised.

^a CIA stands for Clinical Impairment Assessment.

^b DE stands for disordered eating.

^c EES stands for Emotional Eating Scale.

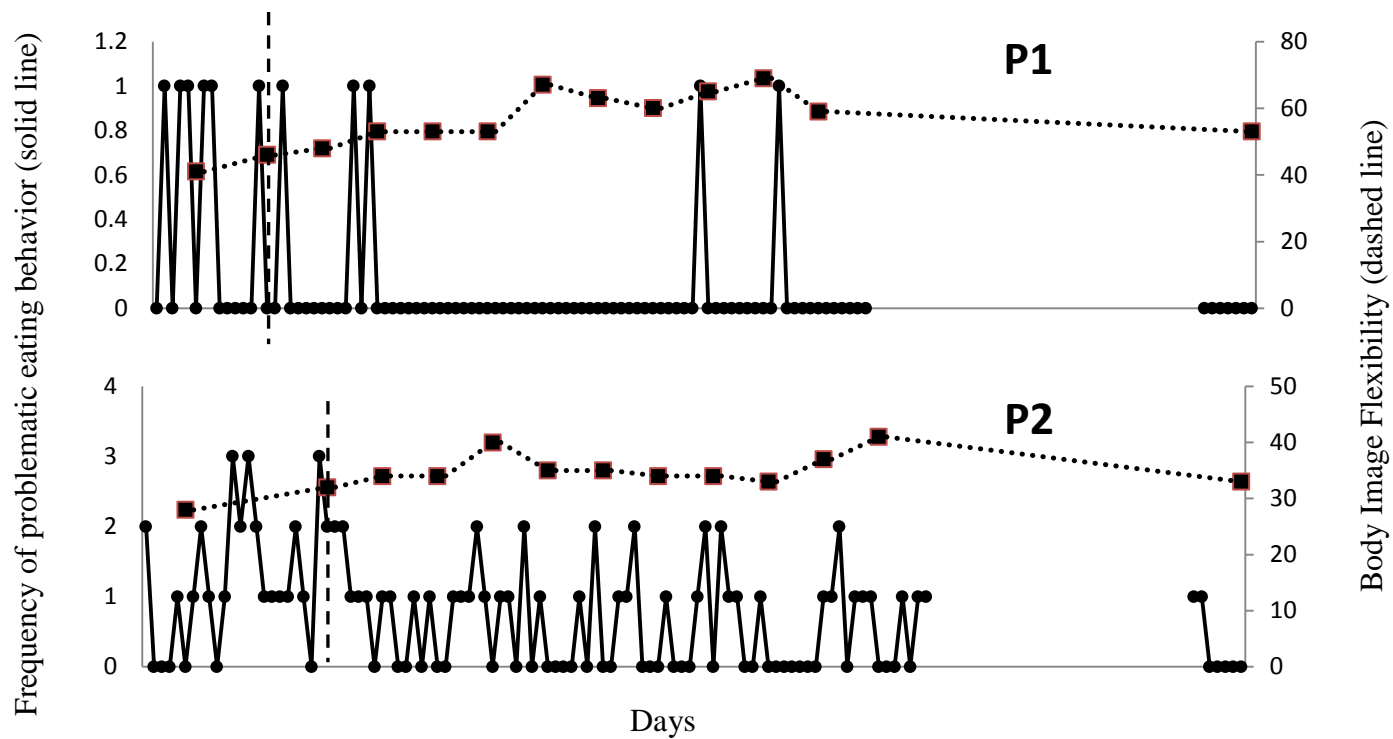


Figure 1. Daily frequency of disordered eating and weekly body image flexibility in baseline, treatment, and follow-up phases

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