



Research – Basic Empirical Research

Baseline eating disorder severity predicts response to an acceptance and commitment therapy-based group treatment



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ABSTRACT

The present study investigated whether more severe baseline eating pathology (e.g. baseline symptomatology, previous hospitalizations, and low weight in anorexia nervosa) moderated the effect of an Acceptance and Commitment Therapy (ACT)-based group treatment. Participants were 140 women who were admitted to an inpatient facility for eating disorders. Women were categorized as anorexia nervosa spectrum or bulimia nervosa spectrum at intake and completed measures of eating pathology. All participants received comprehensive treatment, and those in the treatment-as-usual plus ACT condition received twice weekly ACT group treatment. At post-treatment (i.e., at discharge from the facility), participants completed measures again. Severity of self-reported eating symptomatology moderated treatment such that those with more severe symptoms at baseline showed greater improvements in eating disorder symptomatology in the ACT condition than in the treatment-as-usual condition. Additionally, trends showed similar patterns for those with more previous hospitalizations and those on the anorexia nervosa spectrum who had lower body weights. The magnitude of differences was modest, but indicates that an acceptance-based treatment may be a beneficial for patients with more severe eating disorder pathology.

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1. Introduction

Eating disorders, particularly among adult patients with a long course of illness, are exceptionally difficult to treat. Patients presenting for admission to inpatient treatment centers frequently have a long course of illness, are more symptomatic (compared to patients presenting for outpatient treatment), and have previously been hospitalized (Vrabel, Rosenvinge, Hoffart, Martinsen, & Rø, 2008), all of which predict poor treatment outcome (Vandereycken, 2003). More than half of patients still meet criteria for an eating disorder up to 5 years following discharge from a residential treatment facility (Rø, Martinsen, Hoffart, & Rosenvinge, 2004; Vrabel et al., 2008) and nearly half have another hospitalization during that same follow-up period (Vrabel et al., 2008).

Cognitive Behavioral Therapy (CBT), particularly versions specific to eating disorder symptomatology, is the current treatment of choice for eating disorders. Among patients with bulimia nervosa (BN), CBT-BN (a targeted CBT treatment for BN) and CBT-E (an “enhanced” CBT for eating disorders which builds on CBT-BN by including optional modules for hypothesized maintenance factors

such as perfectionism, low self-esteem, and interpersonal deficits) both produce large reductions in binge eating, purging, and other compensatory behaviors (Fairburn et al., 2009; Fairburn, 2008; Treasure et al., 1994) that tend to be well maintained over time (Waller et al., 1996). Despite this, a large subset (30–50%) of patients remains symptomatic following treatment (Fairburn, 2008; Wilson, 2005). In the case of anorexia nervosa (AN), Family Based Therapy (FBT) is effective for adolescences with a relatively short duration of illness, but an effective treatment remains to be seen for adults (Lock, 2011; Fisher, Hetrick, & Rushford, 2010). Brief manualized CBT appears to have little efficacy for AN (McIntosh et al., 2005; Wilson, Grilo, & Vitousek, 2007); CBT-E appears to be only moderately more successful (Fairburn et al., 2009). In two recent studies of CBT-E, only 60% of underweight patients agreed to engage in treatment and, of those, 50–60% showed a response to treatment (Bryne, Fursland, Allen, & Watson, 2011; Fairburn et al., 2009).

Identifying patients who are likely to benefit from specific treatments can allow clinicians to choose the treatment approach most likely to be effective. Only recently has the field begun to examine how patients with more severe eating pathology may respond differentially to treatment. Grilo, Masheb, and Crosby (2012) reported that among patients with binge eating disorder (BED), those with low self-esteem, negative effect, and overvaluation of shape and weight at baseline improved more in CBT compared to medication (Grilo et al., 2012).

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However when examining CBT alone, [Castellini et al. \(2012\)](#) found that patients with BED who had a lower frequency of bingeing, lower impulsivity, and greater emotional stability improved more with CBT than patients with more severe pathology. [Butryn et al. \(2006\)](#) found that patients with BN who have greater weight suppression (difference between premorbid and pretreatment weight) showed poorer post-treatment outcomes. Other studies have found that baseline symptomatology, course of illness, prior hospitalizations, and weight at baseline put patients at high risk for treatment failure from existing treatment approaches ([Vandereycken, 2003](#); [Vrabel et al., 2008](#)). Much of the evidence suggests that CBT is most effective for patients with less severe eating pathology. Overall, although CBT has been shown to result in statistically significant reductions in eating pathology for some, there remains much room for improvement, particularly for patients with more severe pathology.

A growing body of research indicates that Acceptance and Commitment Therapy (ACT) may be an effective treatment option for patients with eating disorders. Several pilot studies of acceptance-based therapies such as dialectical behavioral therapy ([Safer, Telch, & Chen, 2009](#)), mindfulness-based cognitive therapy ([Kristeller, Baer, & Quillian-Wolever, 2006](#)), and functional contextual treatment ([Anderson & Simmons, 2008](#)) have demonstrated initial success in treating BED and BN. Similarly, a series of case reports have indicated that patients with treatment-resistant AN may benefit from ACT ([Berman, Boutelle, & Crow, 2009](#)). Though few, the studies conducted on ACT for eating disorders have been promising ([Berman et al., 2009](#); [Heffner & Eifert, 2004](#); [Juarascio, Forman, & Herbert, 2010](#); [Juarascio et al., 2013](#); [Timko, Zucker, & Merwin, 2012](#)).

ACT may particularly benefit those patients with more severe eating pathology. Given the ego-syntonic nature of eating disorder pathology, many patients, particularly those who are more severe, are reluctant to engage in treatment ([Fairburn, 2008](#); [Schmidt & Treasure, 2006](#)). Eating disorders are characterized by high experiential avoidance ([Cockell, Geller, & Linden, 2002](#); [Keyser et al., 2009](#); [Mizes & Arbitell, 1991](#); [Orsillo & Batten, 2002](#)), and the degree of experiential avoidance is cross-sectionally related to eating disorder symptom severity ([Butryn et al., 2012](#)). Cognitive rigidity, frequently seen in more severe cases of AN, has also been shown to be related to severity of disordered eating behaviors ([Masuda, Price, Anderson, & Wendell, 2010](#)). The focus on increasing psychological flexibility during an ACT-based treatment may help to decrease this rigidity, thereby allowing patients a greater ability to engage in values-based behavior change. Overall, there is a strong theoretical link between ACT-based treatment and eating disorders, particularly in more severe and treatment refractory cases. However, no studies have examined the moderating effect of eating disorder symptom severity on acceptance-based treatment outcomes.

2. Current study

The current study utilized data from a recently published report that investigated treatment-as-usual (TAU) compared to TAU+ACT for eating disorders at an adult residential facility ([Juarascio et al., 2013](#)). Patients at this facility tended to be in the more severe range of eating pathology, although the degree of severity varied widely in terms of length of illness, severity of disordered eating behaviors, and weight at admission. Prior research has found that most patients undergoing TAU at this facility experienced large improvements in disordered eating by post-treatment but remained partially symptomatic and often relapsed by six month-follow-up, leaving significant room for improvement ([Juarascio et al., 2013](#); [Lowe, Davis, Annunziato, & Lucks, 2003](#)). Thus, researchers added twice weekly ACT groups for

eating disorders to TAU and compared improvements in those receiving ACT+TAU to TAU alone. Standard ACT exercises were modified to make the protocol more specific to eating disorders (see [contextualscience.org](#) for manual). The initial report demonstrated that although both conditions showed large improvements from pre- to post-treatment, ACT+TAU trended towards faster and larger improvements in eating pathology ($p=.07$), shape concern ($p=.07$), and weight concern ($p=.09$; [Juarascio et al., 2013](#)). Using this database, we assessed how patients with more vs. less severe eating disorder symptomatology responded to ACT+TAU vs. TAU alone.

Moderators for the current study were chosen based on previous literature. Because patients with higher symptomatology may be at higher risk for treatment failure from standard behavioral treatments ([Vrabel et al., 2008](#)), we hypothesized that baseline symptom severity would moderate the effect of treatment condition, such that the advantage of ACT+TAU would be more pronounced among those endorsing more severe symptomatology. Furthermore, previous hospitalizations and weight at baseline have both been identified as risks for treatment-resistance and poor outcome ([Vandereycken, 2003](#)). We hypothesized that patients entering treatment with a prior hospitalization and lower weight at baseline (among AN patients) would show greater improvements in ACT+TAU compared to TAU.

3. Methods

3.1. Participants

The study took place at a residential treatment facility for women with eating disorders in the Mid-Atlantic region of the United States (The Renfrew Center in Philadelphia, Pennsylvania). All participants had a diagnosis of AN, BN, or eating disorder not otherwise specified in the AN or BN spectrum, based on the criteria from the Structured Clinical Interview for DSM Disorders (SCID; [First, Spitzer, Gibbon, & Williams, 2002](#)). There were no other exclusion criteria, and patients with co-morbid disorders were included in the study. A total of 140 women consented to take part in the study. The average age of the sample was 26.74 years ($SD=9.19$), with a range of 18–55. The sample was predominantly Caucasian (89.3%), with small proportions of other racial groups (African American=3.6%, Asian=2.1%, Hispanic=2.9%, Other=1.4%). The sample had a relatively long eating disorder history ($M=10.75$ years since onset, $SD=9.08$) with an average age of onset at 16.43 years ($SD=5.5$). We grouped individuals with EDNOS into AN-spectrum (i.e., < 85% of their ideal weight; $n=66$, 47.1%) or BN-spectrum (i.e., $\geq 85\%$ of ideal weight and exhibited binge eating and/or compensatory behaviors; $n=74$, 52.9%) diagnoses, based on recommendations from prior studies ([Fairburn & Walsh, 2002](#); [Walsh & Garner, 1997](#)).

Twenty women did not return pre-treatment questionnaires after providing informed consent because they were no longer interested in participating ($n=18$) or because they left the unit due to difficulty obtaining insurance coverage ($n=2$). Retention was high throughout the study, with 111 (92.5%) completing post-treatment questionnaire packets for eating disorder outcome variables (ACT+TAU=58, TAU=53). ACT+TAU participants attended 4.75 ($SD=2.51$, range 0–11) group sessions on average. Treatment completers, defined as those attending 3 or more group treatment sessions ($n=56$, of whom 52 completed post-treatment measures; 93%), were equivalent to non-group completers on demographic and baseline variables, with only length of stay differing between the two treatment conditions (group completers: 28.83 days, $SD=10.24$, non-group completers: 19.00, $SD=8.36$, $t(64)=2.86$, $p<.01$). The results described below used the completer samples (ACT+TAU: 52 patients who completed at least three groups and main outcome post-treatment measures, TAU: all 53 patients who completed main outcome post-treatment

measures), although similar results were observed for intent-to-treat analyses.

3.2. Measures

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994): The EDE-Q is a self-report version of the Eating Disorder Examination interview. It covers a 4-week time period (although at discharge, patients were instructed to report on the time frame since beginning treatment if this occurred less than 4 weeks prior to the post-treatment assessment), and it assesses the core features of eating disorders. Internal consistency and test-retest reliability are both excellent (Luce & Crowther, 1999). Cronbach's alphas for the global subscale was .91.

Prior hospitalizations: Prior hospitalizations were assessed via self-report on an intake questionnaire directly provided by The Renfrew Center.

Body mass index: Weight and height were assessed using a medical grade scale and a stadiometer.

3.3. Procedure

Due to use of a pre-existing residential treatment as a comparison condition, pure random assignment was not feasible. We therefore used a nonequivalent groups design where half of the participants received standard TAU and half received TAU + twice-weekly ACT groups. Given the threats to internal validity observed in non-equivalent group designs, a switching replication design was utilized to ensure, as best as possible, that observed differences in groups were due to the interventions (Cook, Campbell, & Day, 1979; Reichardt, 2005). Groups were run in three sequential phases and all participants entering the treatment center during a given phase were assigned to the same condition. The order of the sequence, i.e., TAU, ACT, TAU, was chosen through random assignment.

Assessments: Main assessments occurred at pre- and post-treatment. For a full list of assessment items administered and the assessment protocol, see Juarascio et al. (2013).

Treatment: Participants in the TAU condition received standard treatment at The Renfrew Center. Treatment at the residential facility is based on a comprehensive system designed to normalize eating patterns, stabilize or increase weight, and eliminate compensatory behaviors. The theoretical orientation of the program is eclectic and includes psychodynamic, feminist, interpersonal, and cognitive behavioral components. Although most of the group and individual treatments are eclectic, many of the more behavioral interventions inherent in the residential treatment program (i.e. regular weighing, normalization of eating, feared food exposures) are components of CBT-E (Fairburn, 2008).

Participants in the TAU+ACT condition received all TAU elements described above and also received twice-weekly ACT group treatment in lieu of regularly programmed staff-run leisure groups. The manualized group treatment was heavily based on exercises and discussions in existing ACT books including “Get out of your mind and into your life” (Hayes & Smith, 2005) and “Acceptance and Commitment Therapy” (Hayes et al., 2012), which were modified to focus on eating disorders. ACT treatment was conducted by master's-level therapists with prior experience in treatment for eating disorders and ACT. Additional information about the treatment manual, adherence, and competency can be found in Juarascio et al. (2013).

3.4. Analytic approach

To control for type 1 error, EDE global score, rather than individual subscale scores, was chosen as the primary dependent variable. Three

independent variables (baseline global EDE scores, prior hospitalizations, and pre-treatment weight) were chosen to assess baseline eating disorder severity. We chose these three variables to obtain a more comprehensive profile of baseline eating disorder severity. Correlations between the three independent variables ranged from nearly no relationship (e.g., prior hospitalization to baseline EDE global score, $r = .02$, $p = .85$) to a small relationship (e.g. baseline weight in AN patients and prior hospitalizations, $r = -.15$, $p = .27$), but no correlation was significant (all p 's $> .05$), further supporting the use of multiple methods of assessing baseline severity. Given the post-hoc nature of the current study, the sample size yielded low power to test the current hypotheses as this was not the primary goal of the original study. Where possible, we thus emphasize patterns and size of effects rather than formal statistical significance.

4. Results

Hypothesis 1. Severity would moderate the effect of treatment condition, such that the advantage of ACT+TAU will be more pronounced among those with greater eating pathology.

A regression analysis was conducted using EDE global score at baseline, condition, and the interaction between condition and baseline EDE global scores (centered at a mean of 4.39) as the IVs and EDE global score at post-treatment as the DV. All terms were entered simultaneously. Results revealed a significant effect of baseline EDE global scores ($B = .67$, $S.E. = .13$, $p < .01$), and trends for treatment condition ($B = -.40$, $S.E. = .22$, $p = .07$) and the interaction between treatment condition and baseline EDE global scores ($B = -.30$, $S.E. = .18$, $p = .09$). Overall, the patterns suggested that individuals with higher baseline global eating pathology showed stronger benefits in the ACT+TAU condition (see Fig. 1), but effect size was relatively small.

Hypothesis 2. Prior hospitalizations would moderate the effect of treatment condition, such that the advantage of ACT+TAU will be more pronounced among those with prior hospitalizations.

Patients were grouped into no previous hospitalizations ($n = 60$) and at least one previous hospitalization ($n = 43$). A repeated-measures ANOVA was conducted to assess the interaction between assessment point, condition, and prior hospitalizations. No significant results emerged for EDE global scores ($F(1, 98) = 2.76$, $p = .09$, $\eta_p^2 = .02$). However, the pattern of results closely mimicked those observed in Hypothesis 1, such that patients with prior hospitalizations trended towards larger improvements in the ACT+TAU condition than the TAU condition (see Fig. 2).

Hypothesis 3. For AN patients, pre-treatment weight would moderate the effect of treatment condition, such that the

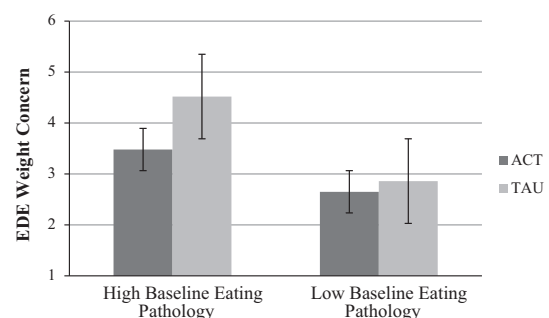


Fig. 1. Post-treatment scores on EDE weight concern subscale for individuals with high and low baseline eating pathology across treatment condition.

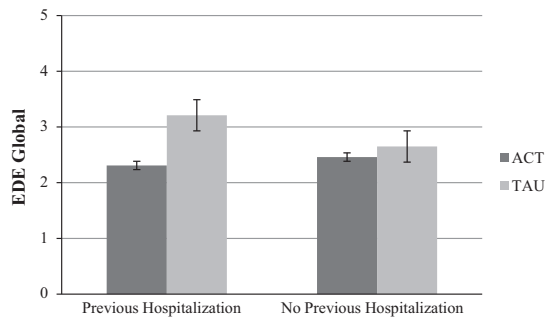


Fig. 2. Post-treatment scores on EDE Global subscale for individuals with and without prior hospitalizations across treatment condition.

advantage of ACT+TAU will be more pronounced among those with lower weights at pre-treatment.

A regression analysis was conducted in patients with AN spectrum disorders using weight at baseline, condition, and the interaction between condition and baseline weight (centered at a mean of 103.04 pounds) as the IVs and EDE global score at post-treatment as the DV. All terms were entered simultaneously. A trend was observed such that individuals with lower starting weights did better in the ACT+TAU condition ($B=.32$, $S.E.=.18$, $p=.09$). Exploratory analyses were conducted with BN spectrum patients to assess whether starting weight interacted with treatment condition to predict post-treatment EDE global scores. No significant interaction was observed among BN spectrum patients ($B=.006$, $S.E.=.04$, $p=.88$).

5. Discussion

The aim of this study was to test whether patients with more severe symptomatology at pre-treatment experienced greater improvements in eating disordered behavior when receiving an ACT-based treatment plus treatment-as-usual than treatment-as-usual alone in a residential eating disorder treatment facility. Consistent with hypotheses, participants with higher baseline pathology trended towards experiencing less severe symptoms at post-treatment in the ACT+TAU condition compared to those receiving only TAU. A similar pattern was seen for patients with prior hospitalizations for eating pathology, although again results were at the trend level. Effect sizes were small, though this is unsurprising given the small relative dose of ACT in the context of the residential treatment program. Additionally, AN patients with lower body weights had better treatment outcome at the trend level in the ACT+TAU condition. Together, these results supplement the prior study by Juarascio and colleagues that suggested ACT may be an effective treatment for eating disorders (Juarascio et al., 2013), by showing that ACT may be particularly powerful for patients with more severe symptomatology and treatment refractory eating pathology. The strategies in an ACT-based treatment, such as increasing psychological flexibility and willingness to experience discomfort, may help more severe patients increase their ability to tolerate the distress caused by treatment (e.g. gaining weight, refraining from compensatory behaviors that ease distress in the short term) and enhance willingness to engage with treatment more fully.

This study is one of the first to examine whether some individuals with eating disorders are more likely to benefit from ACT. A major strength of this study was the use of a full clinical eating disorder sample and a relatively large sample size. Despite the strengths of the study, a number of limitations also exist. Because the study is a post-hoc analysis of a pre-existing database,

it was not sufficiently powered for the current analyses. The post-hoc design also limited the types of severity measures to those used in the original study. All patients were receiving a full residential program and the ACT condition received only a small dose of the experimental treatment in addition to the comprehensive treatment package, which may potentially have diluted the effects of the ACT groups. Additionally, using an existing residential facility as a research site limited the ability to enact a number of research controls that would have improved the study design such as randomization to treatment condition.

The findings of the current study suggest that ACT may be an effective treatment for eating disorders and a viable treatment option for individuals with more severe symptomatology. However, the research on ACT for eating disorders remains in its infancy. Further research identifying who most will benefit from this type of treatment approach is warranted.

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