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An Open Trial of Acceptance-based Separated Family Treatment (ASFT) for Adolescents with Anorexia Nervosa

C. Alix Timko^{a,b}, Nancy L. Zucker^{c,d}, James D. Herbert^e, Daniel Rodriguez^f, and Rhonda M. Merwin^d

^aBehavioral and Social Sciences Department, University of the Sciences, Philadelphia, Pennsylvania, 600 S. 43rd St, Philadelphia, Pennsylvania, 19063

^bDepartment of Psychology, Towson University, 8000 York Rd., Towson, Maryland, 21252

^cDepartment of Psychology and Neuroscience, Duke University, Durham, North Carolina, 27710

^dDepartment of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, North Carolina

^eDepartment of Psychology, Drexel University, Philadelphia, Pennsylvania, 19104

^fDepartment of Urban Public Health and Nutrition, La Salle University, Philadelphia, Pennsylvania, 19141

Abstract

Family based-treatments have the most empirical support in the treatment of adolescent anorexia nervosa; yet, a significant percentage of adolescents and their families do not respond to manualized family based treatment (FBT). The aim of this open trial was to conduct a preliminary evaluation of an innovative family-based approach to the treatment of anorexia: Acceptance-based Separated Family Treatment (ASFT). Treatment was grounded in Acceptance and Commitment Therapy (ACT), delivered in a separated format, and included an ACT-informed skills program. Adolescents (ages 12–18) with anorexia or sub-threshold anorexia and their families received 20 treatment sessions over 24 weeks. Outcome indices included eating disorder symptomatology reported by the parent and adolescent, percentage of expected body weight achieved, and changes in psychological acceptance/avoidance. Half of the adolescents (48.0%) met criteria for full remission at the end of treatment, 29.8% met criteria for partial remission, and 21.3% did not improve. Overall, adolescents had a significant reduction in eating disorder symptoms and reached expected body weight. Treatment resulted in changes in psychological acceptance in the expected direction for both parents and adolescents. This open trial provides preliminary evidence for the

Corresponding author: C. Alix Timko, Child and Adolescent Psychiatry and Behavioral Sciences Children's Hospital of Philadelphia, CHOP North (3535 Market) - Room 1479, 34th St. and Civic Center Blvd., Philadelphia, PA 19104, Phone: 267.426.5467, TIMKOC@email.chop.edu.

C. Alix Timko is now in the Department of Child and Adolescent Psychiatry and Behavioral Sciences, Children's Hospital of Philadelphia, Philadelphia, PA

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feasibility, acceptability, and efficacy of ASFT for adolescents with anorexia. Directions for future research are discussed.

Keywords

Anorexia Nervosa; treatment; adolescent; acceptance and commitment therapy; family based treatment

Anorexia Nervosa (AN) is a serious eating disorder characterized by restriction of food intake and reduction of body weight below what is healthy or expected for someone of the same age and height. AN typically begins during adolescence (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011); early intervention during this critical period of development is key in order to promote adaptive development and prevent a chronic, unremitting course of the disorder (Treasure & Russell, 2011). To date, there is only one intervention with substantial empirical support for the treatment of AN in adolescents: Family Based Treatment (FBT; Lock & Le Grange, 2012; Lock et al., 2010). The effectiveness of FBT has established the importance of the family in treatment, and empowered parents who were historically blamed for the onset and/or maintenance of their child's condition (Loeb & Le Grange, 2009; Loeb, Lock, Greif, & Le Grange, 2012). Many, but not all, families do well in FBT, with almost half of adolescents who receive the intervention meeting criteria for remission following treatment (Lock et al., 2010). However, this also means that half of the adolescents treated with FBT achieve a suboptimal outcome. Given the medical complications, potential long-ranging effects of starvation on development, and the impact of AN on the family (Le Grange & Lock, 2005), it is critical that alternative treatments be developed so that families have options should FBT not be available or not be well-matched to a particular child or family. Newer conceptualizations of eating disorders have proposed that treatment may be expedited by focusing on maintaining factors of AN symptomatology, such as negative and positive reinforcement of restrictive eating (Corstorphine, 2006; Fairburn, Cooper, & Shafran, 2003; Schmidt & Treasure, 2006; Treasure & Schmidt, 2013; Treasure, Tchanturia, & Schmidt, 2005).

Maintenance factors in AN

Avoidance

Avoidance, in various forms, has received increasing attention as a key maintaining factor in AN (Merwin et al., 2011; Schmidt & Treasure, 2006; Wildes, Ringham, & Marcus, 2010). This includes avoidance of difficult situations (i.e., behavioral avoidance), attempts to suppress or otherwise avoid distressing thoughts, feelings, and sensations (experiential or emotional avoidance) or avoidance as a fundamental temperamental style (harm avoidance; Klump et al., 2004; Sancho, Arija, & Canals, 2008). Others have focused on the way in which eating disorder symptoms are negatively reinforced via avoidance of negative experiences (Treasure & Schmidt, 2013; Wildes et al., 2010).

Cognitive and Behavioral Rigidity

Cognitively, adolescents who are acutely ill may have difficulties in set-shifting (i.e., moving flexibly from one task to another), and tend to display weak central coherence (i.e., difficulties in seeing the whole picture as opposed to focusing on small details) (Allen et al., 2012). Both difficulties in set-shifting and weak central coherence can in turn contribute to a lack of behavioral flexibility (Treasure & Schmidt, 2013). Behavioral rigidity in adolescents with AN is reflected in the perfectionistic and obsessive-compulsive behaviors that are often observed (Friederich & Herzog, 2011), as well as rules and rituals surrounding food consumption, exercise, and study habits. Changing these behaviors can often be very difficult for adolescents with AN, as they can be both positively and negatively reinforcing. Whether such cognitive and behavioral rigidity is a side effect of malnutrition or is a premorbid trait, it can make it more difficult for adolescents to change their behavior. Furthermore, adolescents who are high in avoidance and who tend to be cognitively or behaviorally rigid may struggle more with re-nourishment as the interaction between avoidance and rigidity may further maintain the eating disorder (Merwin et al., 2011).

Accommodation of AN symptoms

In addition to intra-individual maintaining factors, AN, like any serious illness, greatly impacts family functioning in ways that may ultimately maintain symptoms. Parents' traditional style of parenting is impacted, and the family may find itself inadvertently accommodating the adolescent's symptoms (Loeb & Le Grange, 2009; Loeb et al., 2012; Murray, Loeb, & Le Grange, 2014). Though primarily documented in pediatric obsessive-compulsive disorder (Flessner et al., 2011; Storch et al., 2007), family accommodation can also occur in adolescent AN (Whitney & Eisler, 2005). In OCD, family accommodation can manifest as assisting with rituals, offering reassurance, complying with requests, and decreasing the adolescent's responsibilities within the family (Storch et al., 2007). In the case of AN, accommodation can be seen when family members engage maladaptively with the eating disorder symptoms. Such engagement can include: reassuring the adolescent that he/she is not fat, allowing food substitutions, altering family patterns or plans (e.g., not going out to dinner or to neighborhood parties), giving in to requests to go to school or to continue participation in activities despite a medically compromised state, and so on (Sepulveda, Kyriacou, & Treasure, 2009). Though the primary purpose of the family's efforts is to reduce the adolescent's and/or family's acute distress (Storch et al., 2007), an unintentional result can be reinforcement of the adolescent's behavioral and psychological avoidance and rigid rule following behavior, and consequently maintenance of the eating disorder symptoms. Moreover, symptom accommodation can serve an avoidant function for parents by regulating their own emotions (Futh, Simonds, & Micali, 2012), decreasing conflict in the home, or by resulting in a short-term decrease in eating disorder behavior (e.g., not asking about being fat or eating lower calorie foods). Avoidance and engagement in the same patterns of behavior can also preclude new learning from occurring in both the parents and the adolescent.

Acceptance-Based Separated Family Treatment (ASFT)

The past decade has witnessed a rapid increase in the application of models of cognitive behavior therapy that explicitly target avoidance, work to enhance cognitive and behavioral flexibility, and emphasize psychological acceptance. These models have been applied to a variety of disorders (Herbert & Forman, 2011), including eating disorders (Baer, Fischer, & Huss, 2006; Wanden-Berghe, Sanz-Valero, & Wanden-Berghe, 2011). Among these models is Acceptance and Commitment Therapy (ACT), which has accrued significant empirical support (Öst, 2008; Powers, Vörding, & Emmelkamp, 2009; Pull, 2009; Ruiz, 2012; Kahl, Winter, & Schweiger, 2012; Hayes, Barnes-Holmes, & Wilson, 2012; Hayes, Long, Levin, & Follette, 2013) and may be well-matched to the challenges of AN (Berman, Boutelle, & Crow, 2009; Juarascio, et al, 2013; Merwin, et al, 2011).

We developed a novel intervention for adolescent AN based on ACT principles that also incorporates elements of FBT, specifically parental re-nourishment of the adolescent and parent-facilitated exposure to feared foods and situations. *Acceptance-Based Separated Family Treatment* (ASFT; Merwin et al., 2013; Timko, Merwin, Herbert, & Zucker, 2013) is a family treatment designed to support parents during the processes of re-nourishment, to target symptom accommodation in parents, and to target maintenance factors of AN in the adolescent.

ASFT is delivered in separated format in which the same therapist meets with the parents and adolescents individually while focusing on the family unit. The decision to use this delivery format was based on prior research on differing configurations of family treatment (e.g., conjoint or separated) indicating that a separated format may be more appropriate for some families (Eisler et al., 2000; Eisler, Simic, Russell, & Dare, 2007; Le Grange, Eisler, Dare, & Russell, 1992). ASFT was designed for male and female adolescents between the ages of 12 and 18. The program is delivered in 20 sessions over the course of 24 weeks. The initial 16 sessions occur weekly and the final four sessions occur every other week. Up to two conjoint sessions can occur during the first 16 weeks and the last four sessions are conjoint. The adolescent component of the program is a novel intervention grounded in ACT. An existing parent treatment manual, *Off the C.U.F.F.* (OTC; Zucker, 2006), was modified to form the foundation of the parent portion of treatment.

Eating disorder behaviors (such as restricting and excessive exercising) are conceptualized as part of a broader class of behaviors (such as cutting and over-scheduling) that have become negatively and/or positively reinforced. As such, treatment is organized around an assessment of positive and negative reinforcers of eating disorder behavior at both the individual and family level. Sessions aim to decrease attachment to, and belief in, unhelpful cognitions, and to increase willingness to experience discomfort in order to pursue more adaptive life pursuits. These valued adaptive life pursuits are clarified as the intervention progresses. As in FBT, weight restoration is a primary goal and parents have responsibility for this task. By promoting approach-based coping and flexible responding to events as an alternative to avoiding unpleasant experiences or engaging in rigid behavior, ASFT is designed not only to promote physical health, but also to foster improvement in other domains of functioning and in overall well-being¹.

The primary aim of this study was to assess the feasibility, acceptability, and preliminary efficacy of ASFT in a sample of adolescents with AN at two sites. We hypothesized that adolescents would gain weight and would have a significant reduction in eating disorder behavior (both self-report and parentally-observed behavior) by the end of treatment. As ASFT specifically targets psychological avoidance, we also hypothesized that parents and adolescents would have a reduction in avoidance (or an increase in its opposite – psychological acceptance) by the end of treatment. We included a comprehensive assessment battery that focused not just on eating disorder symptomatology, but also included measures specific to the theory underlying ASFT, general psychopathology, family functioning (particularly in the area of communication), and quality of life. Here we report on primary outcomes, that is, weight, eating disorder symptoms, and changes in acceptance over the course of treatment.

Method

Participants

Participants were enrolled in an open trial across two sites. Site one was an academic medical center in a medium-sized Southern city (Durham, NC), and site two was a research clinic at a small health sciences university in a large Northeastern city (Philadelphia, PA).

Participant recruitment and screening—Participants were recruited through fliers posted throughout the community, advertisements on the Internet, letters sent to pediatrician's offices, school nurses, churches, local YMCAs, and via meetings with local inpatient and residential programs and local hospitals with eating disorder programs. Radio advertisements also ran in the Philadelphia area. Interested families called the appropriate site and completed a standardized screening. The screening was conducted by the site coordinator and was standardized across sites. During the screening process we reviewed the program and queried for inclusion and exclusion criteria. If a family appeared to meet criteria, an in-person intake was scheduled. During the intake, a medical history (including recent hospitalizations, weight history, and current goal weight range) was taken, and the adolescent completed the Eating Disorder Examination (Cooper & Fairburn, 1987). If the adolescent and family continued to meet inclusion criteria, they were enrolled in the treatment trial. See Figure 1 for a Consort diagram.

Inclusion and exclusion criteria—In order to qualify for the study, adolescents (12–18 years of age) had to be at or below 90% of their ideal body weight for height (or projected height if growth stunted) as determined by CDC growth curves. This is higher than required by DSM-IV criteria, but is consistent with the impact of starvation on development and the change in weight requirements in the DSM-5. Given the high rates of comorbid disorders (especially mood and anxiety disorders) among patients with AN (Godart, Flament, Perdereau, & Jeanment, 2002; Hughes, 2012; Mattar, Thiébaud, Huas, Cebula, & Godart, 2012; Swinbourne & Touyz, 2007), adolescents and caregivers who had comorbid diagnoses were included in the study provided they did not meet criteria for psychotic, bipolar,

¹Merwin et al. (2013) provides a detailed description of the treatment approach and individual data on the first 6 cases treated with this approach. These 6 cases are included in the current sample.

substance abuse disorders, pervasive developmental disorder, or have a contraindicated medical condition that required a higher level of care (i.e., intensive outpatient or inpatient treatment). Adolescents or caregivers with acute suicidality were also excluded. In order to participate in the study, adolescents could not be receiving any other treatment; however, if adolescents were taking medication they were allowed to participate as long as their dose was stable. All adolescents had to be under the care of a medical provider and be safe for outpatient treatment. At least one parent or primary caregiver had to be willing to participate in treatment and all primary caregivers were encouraged to attend as many sessions as possible. Regardless of which parent or caregiver participated in sessions, all available parents were provided with a copy of the OTC workbook and all attempts were made to collect data (for informational purposes) from both parents.

Participant Characteristics—The first cohort of participants consisted of 22 families who were recruited and treated over a 2-year period at site one; the second cohort consisted of 25 families who were recruited and treated in the subsequent 2 years at site two. The total sample at baseline was 47 families.

Adolescents were mostly female ($n = 41$, 89%) and white ($n = 43$, 93%). Approximately one third ($n = 17$, 34%) entered outpatient treatment immediately after hospitalization for medical stabilization; two entered immediately after inpatient psychiatric treatment, and one entered immediately after a residential stay. The remainder of adolescents entered the program via referrals from local health care providers. Three adolescents from the Philadelphia site were hospitalized during treatment for medical stabilization (typically due to bradycardia and orthostasis); they returned to the treatment protocol immediately after hospitalization. None of the adolescents at the Durham site were hospitalized for medical stabilization during the treatment program. There were no significant differences between the two sites at baseline in terms of adolescent weight (assessed as BMI z-score), age, eating disorder symptoms, or degree of expressed emotion (see below) reported by parents (all p 's > 0.05). The average age across sites was 14.02 ($SD = 1.58$). The average BMI at baseline assessment was 17.30 ± 1.43 (BMI z score $M = -0.91$, $SD = 0.74$).

Measures

Treatment Credibility—The Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000) is a 6-item questionnaire measuring both cognitive and affective elements regarding the effectiveness of treatment, specifically, the believability of the treatment rationale and how much individuals believe they will improve due to treatment. Four items are rated on a 1–9 scale and two items are rated on a 0%–100% scale; thus, scoring necessitates standardization of each item and summing the items in each scale.

Primary Outcome

Eating Disorder Examination (EDE; Cooper & Fairburn, 1987)—The Eating Disorder Examination is a widely utilized, standardized, semi-structured interview for the assessment of ED symptoms. This measure assesses four domains (restraint, eating, weight, and shape concerns) as well as the presence and severity of ED symptomatology. Adolescents completed the EDE at baseline and at end of treatment. Assessors were

graduate students or master's level clinicians trained fully in administration of the EDE. The self-report version of the EDE (Eating Disorder Examination-Questionnaire; EDE-Q; Fairburn & Beglin, 1994) was administered at mid-treatment and follow-up.

Body Mass Index (BMI)—Weight was taken before each session using the same scale and height was assessed approximately once a month using a stadiometer. Adolescent BMI, BMI z-score, and body weight percentile was calculated using a website from the Children's Research Nutrition Center (<http://www.bcm.edu/cnrc/bodycomp/bmiz2.html>).

Anorectic Behavior Observation Scale (ABOS; Vandereycken, 1992)—This 30-item self-report measure queries parents' observations of their child's disordered eating behavior.

Remission Status—For this study, we used criteria based on the recommendations of Couturier and Lock (2006) and considered full remission weight restoration of at least 95% of expected body weight (EBW) as determined by the pediatrician and EDE scores within one standard deviation of population norms (1.56; Le Grange et al., 2012). Partial remission was considered if the adolescent was above 90% of EBW regardless of their EDE scores. Expected Body Weight was determined at baseline by the adolescent's pediatrician based on prior growth curves and took into consideration any loss of linear height.

Other Measures

Family Questionnaire (FamQ; Wiedemann, Rayki, Feinstein, & Hahlweg, 2002)—The FamQ is a self-report measure of expressed emotion (EE), and has two subscales: criticism (EE-C) and emotional over-involvement (EE-EOI). The former scale represents the degree to which family members may attribute control of the disorder to the adolescent; whereas the latter represents the degree to which parents step in and take control for the child.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)—The DERS is a 36-item measure that assesses awareness and understanding of emotional experience, acceptance of emotions, ability to modulate emotional arousal, and effective action in the presence of intense emotions.

Action and Fusion Questionnaire-Youth (AFQ-Y; Greco, Lambert, & Baer, 2008)—The AFQ-Y is a 17-item measure that assesses the degree to which one engages in experiential avoidance. Only adolescents completed this measure.

Acceptance and Action Questionnaire (AAQ-2; Bond, et al., 2011)—The AAQ-2 is a 10-item self-report measure that assesses emotional avoidance and emotion-focused inaction. Only caregivers completed this measure.

Procedure

After families completed the intake, they were assigned a therapist. Three authors [CAT, NZ, RM] served as the primary therapists; graduate psychology students trained in ACT and

directly supervised by the authors also saw patients at each site. Supervision included review and discussion of audiotapes of sessions; manual adherence was determined by review of tapes and written documentation from each session highlighting key aspects of the manual. The authors regularly consulted with one another on cases and implementation of the manual. The authors are all licensed psychologists with experience in the treatment of adolescents with AN and in the delivery of ACT and OTC.

The initial two sessions were as close in time as possible (typically within the same week) in order to motivate parents and support them during the initial phase of re-nourishment. Treatment continued on a weekly basis until session 17 at which point sessions occurred every other week. The adolescent was weighed at the beginning of each treatment session. The order of which family member(s) met with the therapist first (i.e., adolescent vs. parent) was flexible, and determined based on the needs of the specific family. During the course of the study, it was found that for younger adolescents, adolescents who were less forthcoming, and for adolescents with extreme externalizing behavior, treatment was facilitated by meeting with the parents first.

Data analysis: Latent Growth Curve Modeling (LGCM)

Data analysis was conducted in two stages. We first used Latent Growth Curve Modeling (LGCM) to assess the change in repeated measures of the continuous study variables over time. LGCM is a Structural Equation Modeling (SEM) method that models repeated observed measures (measured variables) on factors (latent variables) representing random effects (η s) (Duncan & Duncan, 1995). A level factor is used to represent baseline, and trend factors are used to represent rate of change across time (i.e., each unit change in time is associated with a η change in a given process). Latent variables define the form of rate of change across time. In LGCM, factor loadings (i.e., correlations between the observed and latent variables) are fixed to define baseline and trend. For a linear trend, the factor loadings are set so they increase uniformly with each unit increase in time (6 months in the present study). The factor loading from the linear trend factor to the first observed measure is constrained to equal zero as the first observed measure is the baseline level. The second factor loading is constrained to equal one, indicating a unit increase in the rate of change in each process (e.g., eating disorder behavior) for a unit increase in time. The remaining factor loadings for the linear trend factor were constrained similarly to define a linear growth form (i.e., 2 and 3 for post-treatment and 3 month follow-up, respectively). In addition to linear trends, we fitted quadratic and cubic trends to identify the best fitting model to the data. For quadratic trends, the factor loadings are the linear factor loadings squared and for the cubic trend, the linear loadings are cubed.

Model fit criteria—Suggested criteria for model fit are non-significant model chi-square, CFI above .95, RMSEA below .05–.08, and a SRMR value below .08 (Loehlin, 2004; Muthén, 2001). The LGCM was conducted using Mplus 7 software (Muthén & Muthén, 1998–2012).

Missing data—To account for missing data, multivariate modeling used all available data. *Mplus* allows modeling with missing data using maximum likelihood estimation of the

mean, variance, and covariance parameters, when requested, using a Full Information Maximum Likelihood (FIML) estimating procedure which employs the Expectation Maximization (EM) algorithm, assuming data are missing at random (Muthén, 1998–2004a, 1998–2004b). However, this only accounted for missing data on the repeated measures, not the time invariant covariates. Thus, cases with missing data on the time invariant covariates were not included in the analysis.

Regression Analyses—After we used LGCM to determine whether or not change occurred over time and what pattern of change was observed, we conducted a series of hierarchical linear regressions in order to explore whether or not there were any specific predictors of change. Given the small sample size, we took two steps to maximize the data available. First, we used change scores from baseline to end-of-treatment as the dependent variable and controlled for baseline scores on the measure of interest (EDE-Global or ABOS) in the first step. When there is no comparison group and the question is focused on understanding the direction and predictors of change, using change scores is more informative than other methods of assessment. Furthermore, the use of change scores controlling for baseline assessment has been shown to be equivalent to using end-of-treatment scores controlling for baseline or the use of residualized scores (Dalecki & Willits, 1991). The second step we used to maximize the data was employing the mean imputation function of SPSS. This allowed us to retain a larger sample size given the number of independent variables included in the analysis.

For the regressions, we entered the baseline assessment in the first step (allowing us to control for baseline scores). Demographic data (age, BMI z-score at baseline, sex, and treatment site) were entered in the second step, treatment credibility and expectancy (as reported by parents and child) were entered in the third step, and both maternal and paternal levels of expressed emotion were entered in the fourth step. Change in eating disorder symptoms (global EDE and ABOS) at post-treatment were the dependent variables for the regressions.

Results

Credibility and Expectancy

Adolescents—There was no significant difference in the adolescent's report of treatment credibility ($t(30) = -0.32, p = .76, d = -0.11$) or expectancy across sites ($t(30) = -0.48, p = .63, d = -0.17$). Overall, adolescents did not feel the treatment was very credible ($M = -0.58, SD = 7.58$) or expect that it would be beneficial ($M = 0.12, SD = 9.47$); however, there was a wide range in ratings (see Table 1). As the credibility and expectancy measure taps into both affective and cognitive elements of treatment credibility, individuals are able to note both how much they felt treatment would help and how much they believed it would help. Adolescents rated these very similarly; overall they *felt* there would be a 66.25% improvement in their symptoms, and *thought* that there might be 69.06% improvement in symptoms.

Parents—There was no significant difference in maternal report of treatment credibility [$t(38) = 0.36, p = .72, d = 0.12$] or expectancy [$t(29.78) = 0.05, p = .96, d = 0.02$, equal

variances not assumed] across sites. As with the adolescents, there was a great deal of variability in parental expectations. Overall, mothers felt that there would be an 82.05% chance of symptom improvement and believed there would be a 79.74% chance of improvement in their child's eating disorder. There was also no difference in paternal report of treatment credibility [$t(23) = -0.21, p = .84, d = -0.09$] or expectancy [$t(23) = -0.93, p = .36, d = -0.38$] across sites. Again there was a great deal of variability in scores (see Table 2). Fathers reported feeling as if there would be a 75.2% improvement in their child's symptoms and thinking that there would be a 72.4% improvement.

Treatment Completion

Treatment completion was defined *a priori* as attending at least 18 of the 20 sessions. The majority of families who completed the baseline assessment completed treatment (66.0%, $n = 31$). Of those who did not complete treatment, 14.9% dropped out for non-clinical reasons, 8.5% experienced early symptom remission, and 10.6% were referred to a higher level of care. Following the recommendations of DeJong and colleagues (DeJong, Broadbent, & Schmidt, 2012), four different types of attrition or study withdrawal were identified: clinical (withdrawn from treatment by the clinician for therapeutic reasons such as a higher level of care), logistical (withdrawn due to practical or logistical reasons), progress (withdrawn early due to early symptoms remission with agreement between clinician and family), and patient initiated withdrawal (discontinuation of treatment by the family before mutually agreed upon goals, determined by patient report or missing three consecutive treatment sessions). In this study, five participants withdrew for clinical reasons. Of these, four were referred to a higher level of care and one discovered a serious medical condition that required immediate treatment. One participant withdrew due to logistical reasons (parental work schedule). Four participants had early symptoms remission defined as weight greater than 95% of EBW and no behavioral evidence of the eating disorder. The individuals stopped treatment prior to 18 sessions. Finally, six families had patient initiated withdrawal for the following reasons: complicated grief, desire for male therapist, desire for individual treatment, discovery of child abuse, adolescent "doing better" per parental report, and not wanting to work with a therapist trainee.

Adolescents—Analysis of variance was used to determine if there were any baseline differences between treatment completers and non-completers. In order to control for Type I error, a Bonferroni-Holm (Holm, 1979) correction was used. There was no difference between adolescents with early symptom remission, dropout, those referred to a higher level of care, or treatment completers in terms of BMI at baseline [$F(3, 43) = 0.37, p = 0.77, \eta_p^2 = 0.03$, observed power = .12]. Despite no differences, baseline BMI was controlled for in the following analyses of covariance. There were no significant differences between these groups in terms of treatment credibility and expectancy, adolescent age at baseline, baseline avoidance, or eating disorder symptoms. However, evaluation of effect sizes indicated that two of them were large, and pairwise comparisons may be warranted. Adolescents who were referred to a higher level of care tended to report lower treatment credibility scores ($M = -11.18, SE = 5.11$) than treatment completers ($M = 1.10, SE = 1.51; p = 0.03$ 95% CI: 1.35–23.21), $F(3, 27) = 2.17, p = .12, \eta_p^2 = 0.19$, observed power = .49. Likewise, adolescents referred to a higher level of care had lower expectancy scores ($M = -16.08, SE = 6.24$) than

those with early symptom remission ($M = 2.56$, $SE = 3.97$; $p = 0.02$, 95% CI: $-33.80 - -3.48$), and than those who completed treatment ($M = 1.54$, $SE = 1.84$, $p = 0.01$, 95% CI: $-30.95 - -4.28$), $F(3, 27) = 2.17$, $p = .12$, $\eta_p^2 = 0.19$, observed power = .49.

Mothers—Once again, we used a Bonferroni-Holm procedure (Holm, 1979) to control for Type I error. When maternal scores were examined, the only significant omnibus ANOVA was for maternal EE-C [$F(3, 42) = 4.55$, $p = .008$, $\eta_p^2 = 0.25$, observed power = .85]. Mothers of children referred to a higher level of care had higher scores on the criticism scale ($M = 28.75$, $SE = 2.35$) than those who dropped out of treatment ($M = 18.17$, $SE = 1.92$, $p = .001$, 95% CI: $4.45 - 16.72$), treatment completers ($M = 21.77$, $SE = 0.86$, $p = .008$, 95% CI: $1.93 - 12.04$) and those of adolescents who experienced early symptom remission ($M = 20.67$, $SE = 4.72$, $p = .004$, 95% CI: $3.12 - 15.38$). Although not significant, there was large effect size for maternal rating of treatment credibility [$F(3, 36) = 2.83$, $p = .052$, $\eta_p^2 = .19$, observed power = .63]. Families who were referred to a higher level of care had mothers who believed the treatment to be less credible ($M = -2.98$, $SE = 1.26$) than families who were treatment completers ($M = 0.77$, $SE = .50$, $p = .009$, 95% CI: $-6.50 - -0.997$). There was no difference in maternal credibility when compared to drop-outs ($M = -0.96$, $SE = 1.26$) or those with early symptom remission ($M = .28$, $SE = 1.03$).

Fathers—There were no significant differences between outcome groups for fathers' report of treatment credibility, expectancy, observation of anorectic behaviors, or EE (all $ps > .05$). Paternal expectancy had a large effect size [$F(3, 21) = 2.29$, $p = .11$, $\eta_p^2 = .25$, observed power = .50], indicating that pairwise comparisons may be appropriate. Families with an adolescent referred to a higher level of care had fathers with lower expectancies regarding treatment outcome ($M = -5.99$, $SE = 2.27$) than did families of treatment completers ($M = -.19$, $SE = 0.88$, $p = .027$, 95% CI: $-10.86 - -0.74$).

Adolescent Weight

To conduct the LGCM for adolescent weight, we used 6 of the 20 available BMI z-scores, baseline, and weeks 4, 8, 12, 16, and 20. This permitted us to fit different models (linear, quadratic, cubic) to the data without overtaxing the LGCM by using data from all 20 time points. A quadratic model fit the data well, $\chi^2_{(15, 46)} = 24.35$, $p = .06$, CFI = .97, RMSEA = .12, 90%CI = 0,.20, probability RMSEA $.05 = .11$, SRMR=.07. The quadratic model was significantly better than a simpler model with just a linear trend, $\chi^2_{(1)} = 16.64$, $p < .0001$. This finding suggests that weight increased steadily followed by a slowing in the acceleration of weight particularly after the 12th week. As can be seen in Figure 2, adolescents typically reached 95% of expected weight by week 12, which can account for the slowing of weight gain after this point.

Eating Disorder Symptomatology

Adolescent Report of ED Symptomatology—As the EDE was only administered at baseline and treatment completion, LGCM was not appropriate for the data. Instead, a series of paired t-tests were conducted. As this is a within-subject measure, dependence between means was corrected for using Morris and DeShon's (2002) equation 8. Overall, there was a significant change in eating disorder symptoms from baseline to end of treatment (See Table

1 for means and standard deviations and Figure 2 for a pictorial representation). The largest effect was for restriction as measured by the restraint sub-scale, followed by global scores, shape concerns, weight concerns, and eating concerns.

Finally, we examined whether or not there were any significant predictors of change in adolescent self-report of eating disorder behavior over the course of treatment. A hierarchical regression was conducted using change in Global scores of the EDE as the dependent variable. Baseline EDE-Global was entered in the first step, demographic variables (adolescent gender, BMI z-score at baseline, age at baseline, site) in the second step, credibility and expectancy scores for adolescent and parent were entered in the third step, and parental expressed emotion was entered into the final step. All four steps were significant, although the addition of variables in steps 2–4 did not significantly improve the fit of the model from model 1 [$F(1, 45) = 19.33, p < .01, R^2 = .30, \text{adj. } R^2 = .29$]. In the third step of the model, adolescent perception of credibility ($B = .11, SEB = .05, \beta = .64, p = .03, 95\% \text{ CI: } 0.01 - 0.21$) and expectancy ($B = .10, SEB = .04, \beta = -.69, p = .03, 95\% \text{ CI: } -0.18 - -0.01$) of treatment predicted change; however, examination of individual predictors in the fourth model [$F(15, 31) = 3.29, p = .002, R^2 = .61, \text{adj. } R^2 = .43$] revealed that only adolescent EDE scores at baseline ($B = -.33, SEB = .11, \beta = -.45, p < .01, 95\% \text{ CI: } -0.55 - -0.11$) predicted the degree of change by end-of-treatment.

Parental Observation of Anorectic Behavior

We tested ABOS separately for fathers and mothers using LGCM. The best model for both parents was a quadratic model. However, when we tested for parent differences (between mother and father) in the baseline levels, and linear and quadratic trends, there were none. Thus, we modeled ABOS with a single model for fathers and mothers combined. This model fit the data very well with a quadratic trend, $\chi^2_{(4, 86)} = 5.16, p = .27, \text{CFI} = .97, \text{RMSEA} = .06, 90\% \text{ CI} = 0.18$, probability $\text{RMSEA} = .05 = .38, \text{SRMR} = .08$. The quadratic model was significantly better than a simpler model with just a linear trend, $\chi^2_{(1)} = 5.65, p = .02$. This suggests that there was an initial decline in ABOS for both parents ($M_{\text{linear trend}} = -8.43, z = -5.41, p < .0001$), followed by a slowing of the decline ($M_{\text{quadratic trend}} = 1.27, z = 2.43, p = .01$).

In order to determine whether or not adolescent weight at treatment onset, perception of treatment credibility or expectancy, levels of expressed emotion, or site impacted symptom improvement, two separate hierarchical regressions were conducted (one for each parent). Maternal baseline ABOS was entered in the first step, demographic variables (gender, BMI, age, site) in the second step, credibility and expectancy scores for adolescent and parent were entered in the third step, and parental expressed emotion was entered into the final step. Only the third [$F(11, 35) = 2.5, p = .016, R^2 = .45, \text{adj. } R^2 = .28$] and fourth models [$F(15, 31) = 2.57, p = .013, R^2 = .55, \text{adj. } R^2 = .34$] were significant. Adding credibility and expectancy scores to the model in the third step greatly improved its fit [$R^2 = .27, F(6, 35) = 2.82, p = .024$]. Adding EE in the fourth step did not significantly improve the fit of the model [$R^2 = .11, F(4, 31) = 1.84, p = .15$]. Examination of individual predictors in the fourth model revealed that age ($B = 1.51, SEB = .71, \beta = .33, p = .04, 95\% \text{ CI: } 0.06 - 2.96$), maternal credibility ($B = -1.47, SEB = .65, \beta = -.50, p = .03, 95\% \text{ CI: } -2.79 - -0.15$), paternal

credibility ($B = 2.14$, $SEB = .56$, $\beta = .70$, $p < .01$, 95% CI: 1.01 – 3.28) and expectancy ($B = -1.49$, $SEB = .47$, $\beta = -.63$, $p < .01$, 95% CI: -2.45 – -0.53) were significant predictors of change. None of the other variables were significant predictors of change in anorectic symptoms observed by mothers.

The same analysis was conducted using change in paternal observation of anorectic behavior as the dependent variable. As with mothers, only the third [$F(11, 35) = 2.78$, $p = .01$, $R^2 = .47$, adj. $R^2 = .30$] and fourth models [$F(15, 31) = 2.41$, $p = .019$, $R^2 = .54$, adj. $R^2 = .32$] were significant. Adding credibility and expectancy scores to the model in the third step greatly improved its fit [$R^2 = .31$, $F(6, 35) = 3.37$, $p = .01$]. Adding EE in the fourth step did not significantly improve the fit of the model [$R^2 = .07$, $F(4, 31) = 1.20$, $p = .33$].

Examination of predictors in the fourth model revealed that only paternal expectancy ($B = -1.52$, $SEB = .52$, $\beta = -.59$, $p < .01$, 95% CI: -2.58 – -0.46) predicted change in anorectic symptoms as observed by fathers.

Remission status at Treatment End

Of the 47 adolescents completing baseline assessment, 23 (48.9%) met criteria for full remission at treatment end, 14 (29.8%) met criteria for partial remission, and 10 (21.3%) did not approach remission. Of those completing treatment, 67.7% ($n = 21$) reached full remission and 32.3% ($n = 10$) reached partial remission. On average, adolescents achieved 97.19% ($SD = 4.60$) of their ideal body weight with a range of 82%–100%.

Changes in Psychological Acceptance

As ACT specifically targets avoidance by aiming to reduce avoidance and increase acceptance, we hypothesized that this variable would change over the course of treatment.

Adolescents—Experiential avoidance in adolescents was assessed with the AFQ and change across treatment was assessed using LGCM. The best fitting model to the data was cubic; $\chi^2(3, 45) = 4.251$, $p = .236$, CFI = .98, RMSEA = .10 (90% CI=.00, .285), Probability RMSEA .05=.28, SRMR = .06. This model required constraining the linear trend variance, as well as the variances for the pre-, post-, and follow-up variables, to zero in order to eliminate negative variances (Heywood cases). Baseline AFQ total score was significantly different from zero (estimate=22.533, $z=12.632$, $p<.0001$). Further, the quadratic (estimate= -11.544, $z= -2.266$, $p=.023$), and cubic (estimate= 2.512, $z=2.404$, $p=.016$) trends were also significant. However, the linear trend was not significant, $p=.059$. Taken together, these results suggest that adolescents' experiential avoidance did not change from baseline to mid-treatment; however, there was a significant decrease in avoidance by post-treatment. By follow-up, a slight increase in avoidance relative to end-of-treatment (but lower than baseline) was observed. Thus, adolescents did have a reduction in experiential avoidance over the course of treatment.

Adolescents' acceptance was assessed via the non-acceptance subscale of the DERS with high scores indicating less acceptance; change across treatment was assessed with LGCM. The best fitting model to the data was cubic; $\chi^2(6, 46) = 38.362$, $p<.0001$, CFI = .339, RMSEA = .342 (90% CI=.244, .450), Probability RMSEA .05=.000, SRMR = .232.

However, based on the fit criteria, the model did not fit well. This model also required constraining variances (post-treatment and follow-up, along with the linear trend variance) to avoid negative variance. Baseline DERS non-acceptance was significantly different from zero (estimate=13.177, $z=12.176$ $p<.0001$). However, neither the linear nor quadratic trends were significant, indicating that acceptance, as assessed by this measure, did not increase over the course of treatment.

Parents—We tested a 2-group model dividing our sample by mother and father AAQ. Using LGCM, the mother model showed a mild cubic form, whereas the father model showed a mild quadratic form. However, none of the trend factors (i.e., linear or quadratic for the father model, and linear, quadratic, and cubic for the mother model) were significant. We then tested for differences at baseline (level factor), and the difference was not significant either, $p>.05$. Therefore, we modeled AAQ together for mothers and fathers. A linear model fit the data well, $\chi^2_{(7, 87)}=14.08$, $p=.05$, CFI=.95, RMSEA=.11, 90%CI=.003,.19, probability RMSEA .05=.11, SRMR=.33.

Upon inspecting the non-acceptance (subscale of the DERS) mean plots for mothers and fathers, a LGCM with a cubic trend was fit to the data. However, for neither mothers nor fathers were the linear, quadratic, or cubic trends significant. Nor was there a significant difference between mothers and fathers on baseline DERS non-acceptance. Thus, a model was fit to the combined mother and father data. A linear model fit this data well, $\chi^2_{(5, 86)}=2.64$, $p=.75$, CFI=1.00, RMSEA=.00, 90%CI=.00,.10, probability RMSEA .05=.11, SRMR=.83. These findings suggest that there was a significant increase in parental acceptance over time, $M_{\text{linear trend}} = -.61$, $z = -3.32$, $p=.001$.

Discussion

ASFT is a new, manualized, family-based treatment for adolescents with AN. ASFT combines parental re-nourishment of their child and parental facilitated exposure found in FBT with intervention principles and techniques derived from Acceptance and Commitment Therapy to target eating disorder symptoms and their maintaining variables. The treatment was both accepted and feasible for most participants with a dropout rate of 14.9%, which falls into the range of 4%–28% observed in published studies of family based treatment (DeJong et al., 2012). In this open trial, we found that a significant percentage of adolescents (48.9%) met criteria for full remission at the end of treatment; when only treatment completers were considered this reached 67.7%. Likewise, 29.8% met criteria for partial remission (32.3% when just treatment completers are considered). The criteria that we used for partial remission in this study were stricter than in prior research, with adolescents needing to be above 90% of EBW. Thus, adolescents who were partially recovered could have been weight restored (above 95% EBW) and reporting eating disorder thoughts and cognitions on the EDE or who were not yet fully weight restored but within population norms of the EDE would be included in this group. In general, adolescents gained weight over the course of treatment and experienced self-reported and observed reductions in eating disorder behavior with mean weight of 97.19% of EBW at end of treatment. Future research with longer follow-ups is necessary to determine if remission rates stay stable, to determine

relapse rates, and to assess whether or not those in partial remission are able to reach full remission.

ASFT resulted in a significant increase in weight, reduction in restriction and other anorectic behaviors, as well as a reduction in shape, weight, and eating concerns. Although the latter are not directly targeted by ASFT (as adolescents learn to eat even when experiencing eating disorder cognitions), improvement was nevertheless observed. Furthermore, experiential avoidance (a key variable hypothesized to play a role in the maintenance of AN and a specific target of ACT) reduced in adolescents over the course of treatment. Parents also reported a decrease in psychological avoidance and an increase in acceptance. The reduction in avoidance indicates that ASFT is affecting targeted variables and indicates that avoidance as a mediator of treatment outcome should be explored. No demographic variables predicted outcome, with the exception of adolescent age predicting change in maternal observation of anorectic behavior. As this was not consistent across mother and father observation or adolescent report – it should be interpreted with caution and explored in future research.

Interestingly, paternal perception of treatment credibility and expectancy of treatment outcome was a significant predictor of parental report of ED behavior at the end-of-treatment. Although the majority of research on the role of parental involvement in treatment usually focuses on the mother, this finding highlights the importance of paternal involvement in treatment and specifically in paternal belief that the treatment will result in positive outcome. The role of paternal caregivers, particularly early in treatment, should be explored in future research. Perhaps most importantly for the ASFT model, familial expressed emotion did not predict changes in anorectic behaviors by the end of treatment, despite prior research suggesting separated formats being more appropriate for families high in EE (Eisler et al., 2000; Eisler et al., 2007; Le Grange et al., 1992).

This study is the first to examine reasons and predictors for dropout in adolescents with AN with this level of transparency, including a novel exploration of treatment credibility as a predictor of both dropout and overall outcomes. Although a number of families dropped out of treatment, the reasons for attrition were varied. We report the complete picture of why families left treatment in order to inform hypotheses and strategies for retention. A number of families left treatment early, primarily due to a need for referral to a higher level of care or for reasons unrelated to treatment. A series of one-way ANOVAs indicated that the adolescents who were referred to a higher level of care believed treatment to be less credible and more likely to have few expectancies regarding positive treatment outcome. Mothers of adolescents referred to a higher level of care also reported less credibility of treatment and fathers reported a lower expectancy of positive outcome. To our knowledge, treatment credibility for FBT has not been reported, thereby precluding comparisons between ASFT and published data on the credibility of FBT. At this point in time, it is unknown whether or not participating in a research trial for a new treatment reduced credibility of treatment, whether families had a more accurate assessment of how ill the child was and suspected that outpatient treatment (regardless of type) would not be sufficient, or if it is something specific to ASFT. However, it appears that treatment credibility is a key variable that should be further studied in this population and more directly targeted for intervention early in treatment in an effort to prevent inpatient or residential treatment.

Treatment credibility and expectancy was assessed after the second session; therefore, any interventions to enhance credibility and expectancy need to be introduced in the first session or even prior to starting treatment. In addition to increasing psychoeducation regarding the seriousness of illness, it may be important to stress that re-nourishment and weight restoration on an outpatient basis is possible. It may be important for families who are doubtful regarding the credibility or outcome of treatment to be in touch with parents who have received treatment in the past – either through on-line forums, mentoring or partnership teams, or via support groups. Given the importance of paternal belief in treatment outcome, it may be particularly important for fathers to seek out or provide information and support regarding treatment. As many adolescents begin outpatient treatment at the referral of their pediatrician or post-hospitalization, it may also be important to work closely with a pediatrician or medical team who supports a family based approach in order to increase both treatment credibility and expectancy.

Although adolescents who were referred to a higher level of care did not differ in weight or eating disorder severity at baseline relative to treatment completers, drop-outs, or those with early symptom remission, it is possible that they differed in other clinically significant ways. Historically, adolescents with co-morbid psychiatric disorders are more likely to drop out of treatment early (Lock, Couturier, Bryson, & Agras, 2006). Given that parents higher in criticism (which characterized the mothers of the adolescents who dropped out) tend to have children with more severe symptoms (Wearden et al., 2000), this is plausible hypothesis that needs to be explored in future research with a larger sample.

An acceptance-based separated family approach appears generally effective for many adolescents with AN and their families. ASFT did decrease experiential avoidance and increase acceptance over the course of treatment, indicating that the intended mechanism of action was successfully targeted. It was also effective in reducing eating disorder symptoms and facilitating weight gain.

Strengths and Limitations

Although an open trial, there were a number of strengths to this study. We had clear *a priori* definitions of treatment completion, partial remission, and full remission. Our definitions of remission are comparable to those used by Lock, le Grange and colleagues (Le Grange et al., 2012; Lock et al., 2010). Our partial remission definition was narrower than in prior research. Due to the use of the EDE-Q instead of the EDE interview at follow-up, we were not able to determine if eating disorder symptoms (as reported by the adolescent) continued to decrease over time (Berg, Peterson, Frazier, & Crow, 2011). However, it is important to note that an acceptance-based approach would not necessarily assume that the frequency of shape, weight, or eating concerns would decrease for adolescents but rather that they would still be able to engage in healthy, value guided behavior even if these thoughts were experienced. A continued decline in parental observed anorectic behavior over the course of the three-month follow-up period suggests that this may have occurred.

Although we had a modest sample, it is comparable to prior published studies on AN and is large enough to draw some initial, tentative conclusions about the potential of ASFT for families with an adolescent with AN. We used linear growth curve modeling to better assess

mean level change across all participants while accounting for individual trajectories. Although preliminary, examining the form of change in weight and the various parent measures allowed us to better understand the effects of treatment on the behavioral and psychological processes targeted by the treatment. Further, LGCM in Mplus software allows for the use of all available data employing a FIML estimation method to estimate model parameters. Thus, for these analyses we were able to use all available data. Effect sizes for changes in adolescent reported eating disorder symptoms from baseline to end of treatment were modest to large and all post-treatment means were within population norms. In order to ease comparison of the within-group effect sizes, we adjusted the d score to take into account the dependence of baseline and end of treatment scores; thus, the effect sizes reported here can be compared between subject effect sizes.

Finally, using DeJong and colleagues' recommendations (DeJong et al., 2012), we reported on the variety of reasons why families did not continue with treatment. Overall, the majority of reasons were non-treatment related and a number of adolescents experienced early symptom remission. A key finding is that families who believed treatment to be less credible were also the ones who more likely to have an adolescent referred to a higher level of care.

Future Directions

Future development of ASFT should include parametric strategies to examine whether or not differing doses of treatment are more appropriate for certain adolescents. Much like a longer course of FBT is more appropriate for adolescents high in obsessiveness (Lock, Agras, Bryson, & Kraemer, 2005), it may be that shorter or longer dose of ASFT may be needed for certain adolescents. Adolescents with a significant amount of weight to gain or those who gain at a slower rate of weight gain may need a longer course of treatment. Future research on ASFT needs to determine for whom ASFT may be most appropriate. Specifically, it is necessary to compare ASFT to FBT in order to determine whether or not there are differing mechanisms of action for the two treatments and, most importantly, if ASFT may be appropriate for families who do not successfully complete FBT. Given that ASFT promotes flexibility and acceptance, it is hypothesized that adolescents with more obsessiveness may fare better in ASFT than in FBT. Since expressed emotion did not predict changes in eating disorder behavior, families high in expressed emotion may find ASFT more credible than FBT and may have better outcome. A direct comparison of these treatments is needed to test these hypotheses. Finally, ASFT may also be appropriate for adolescents who are weight restored, but continue to restrict fat intake, avoid feared foods, or avoid appropriate responsibility for their intake.

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Highlights

- We developed and an acceptance-based family treatment for adolescent anorexia.
- Full remission in 49% of cases and partial remission in 30% of cases.
- A significant reduction in self-reported and observed eating disorder behavior.
- Acceptance increased and avoidance decreased over the course of treatment.
- Paternal belief in treatment outcome was a significant predictor of outcome.

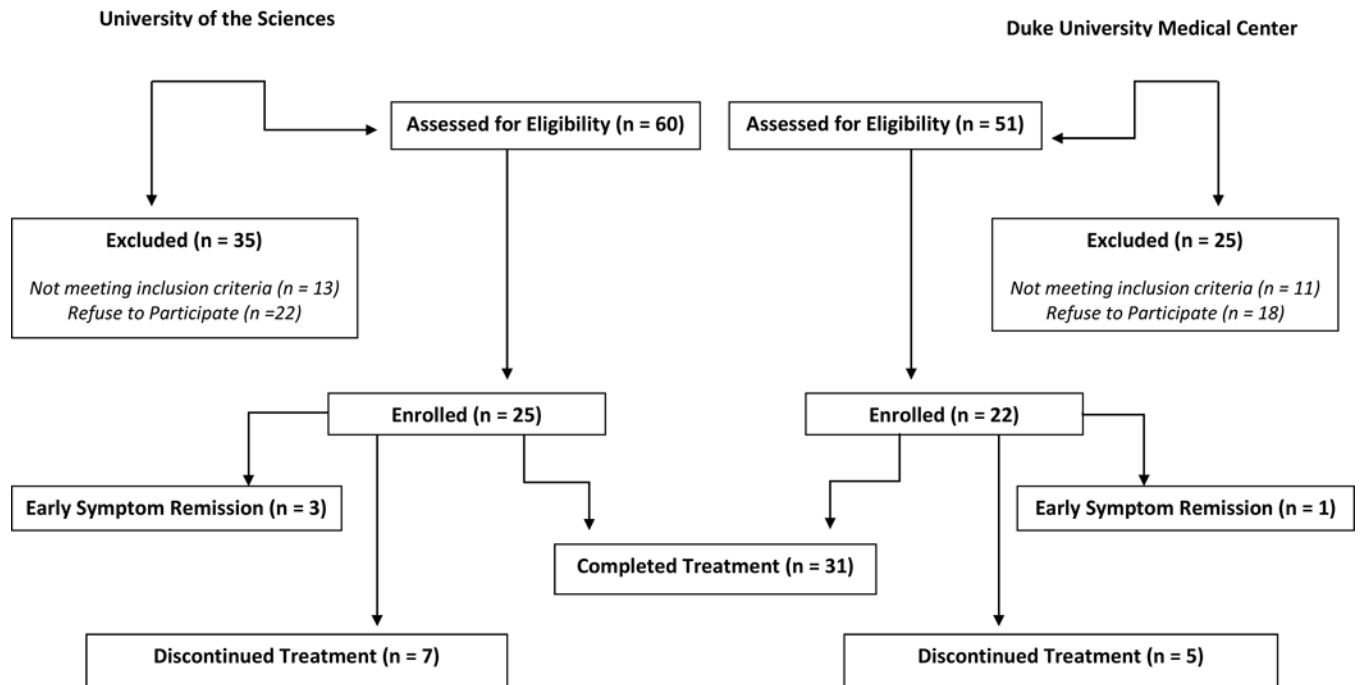


Figure 1.
Flow Diagram for both sites of the open trial. Reasons for discontinuing treatment are provided in more detail in Table 3.

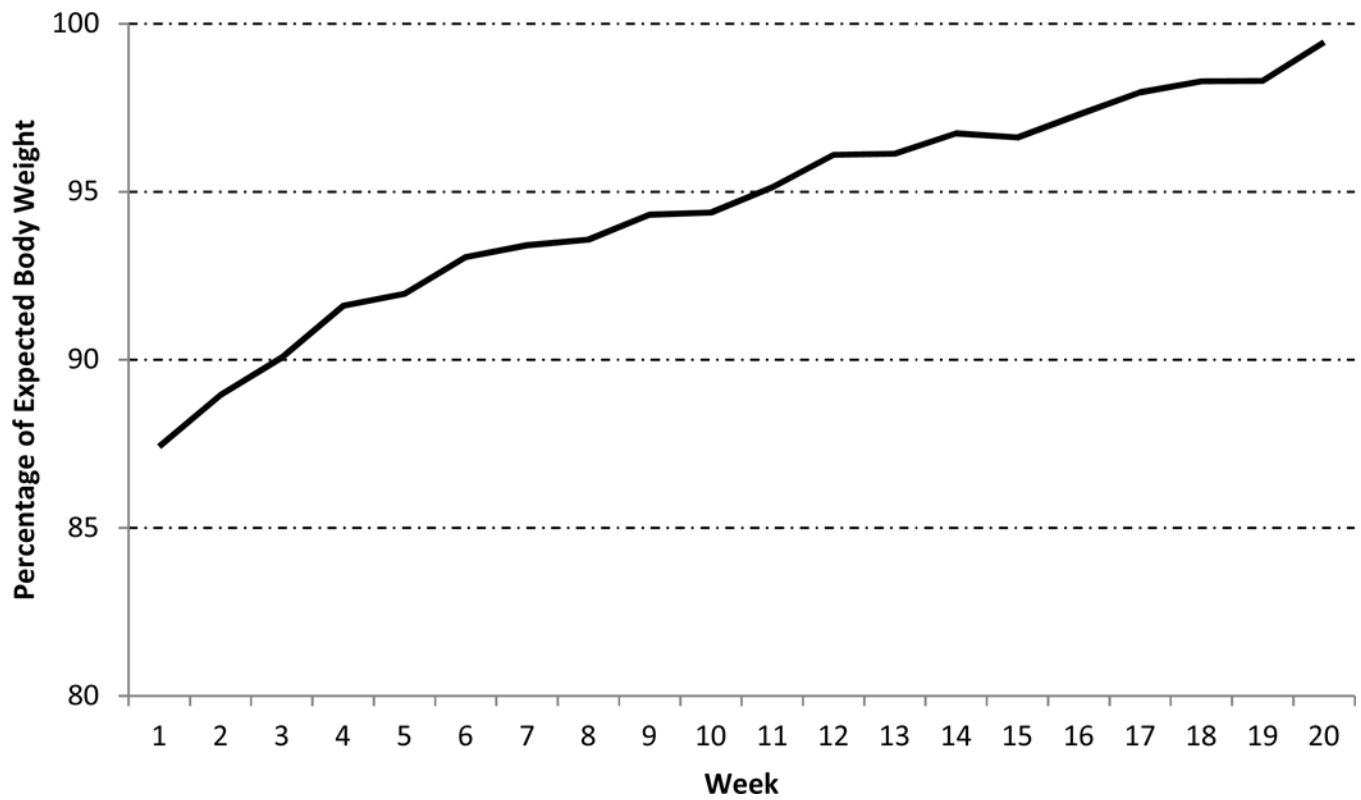


Figure 2.

Percentage of expected body weight of adolescents during each week of treatment. By session 11/12, adolescents typically hit about 95% of EBW. After this point in time, weight gain typically slowed.

Table 1

Adolescent Means and Standard Deviations on all Measures at all Timepoints

	Pre-Treatment N = 47			Mid-Treatment N = 35			Post-Treatment N = 32			Follow Up N = 11			df	t	d
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range			
Credibility	-.58	7.58	-17.04–7.76										30	0.32	-0.11
Expectancy	.12	9.47	-20.15–11										30	0.48	-0.17
BMI %ile	23.47	17.85	.50–75.90	40.29	21.63	.60–81.50	48.85	20.08	14–88.70						
AFQ	22.29	11.63	4–46	24.00	14.44	0–56	16.69	13.04	1–42	18.22	14.38	3–45			
DERS: NA	12.72	6.33	6–28	13.86	7.00	6–28	13.04	7.66	6–28	10.27	5.53	6–20			
EDE Restraint	2.22	1.56	0–5.80				.67	1.12	0–3.60				31	6.61**	1.22
EDE Eating	1.24	1.27	0–4.60				.71	1.25	0–4.40				31	2.35*	0.42
EDE Shape	2.49	1.94	0–6.00				1.68	1.80	0–5.75				31	3.04**	0.54
EDE Weight	2.08	1.87	0–5.80				1.21	1.52	0–5.40				31	2.89**	0.52
EDE Global	1.98	1.46	0–5.50				1.07	1.25	0–4.09				31	4.34**	0.78
EDE-Q Restraint				1.56	1.63	0–5.20				1.18	1.44	0–4	10	-0.65	-0.19
EDE-Q Eating				1.78	1.59	0–5.20				.87	1.17	0–3.60	10	1.05	0.49
EDE-Q Shape				3.14	2.34	0–6				1.79	1.80	0–4.75	10	1.08	0.36
EDE-Q Weight				2.25	2.09	0–6				1.46	1.68	0–4.20	9	0.17	0.06
EDE-Q Global				2.18	1.76	0–5.54				1.28	1.51	0–4.09	9	0.49	0.11

**
p < .01,*
p < .05

Note. AFQ-Y = Action and Fusion Questionnaire – Youth; DERS: NA = Non-Acceptance subscale of the Difficulties in Emotion Regulation Scale; EDE = Eating Disorder Examination; EDE-Q = Eating Disorder Examination-Questionnaire. Due to administration error, items –28 on the EDE-Q were calculated on a 4 point Likert type scale (0, 2, 4, and 6). Means and Standard Deviation shown for the EDE-Q at mid-treatment are for the entire sample. Paired sample t-tests were calculated only with the 11 adolescents who provided data at both time points; Means(SD) for those 11 adolescents at mid-treatment are as follows: EDE Restraint: 0.95(1.42); EDE Eating: 1.03(1.55); EDE Shape: 2.05(2.14); EDE-Q Weight: 1.52(2.12); EDE-Q global: 1.37(1.70).

Table 2

Parental Means and Standard Deviations on all Measures at all Timepoints

Maternal Scores												
Pre-Treatment N = 47			Mid-Treatment N = 35			Post-Treatment N = 32			Follow Up N = 17			
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Credibility	0.14	2.70	-7.15–3.85									
Expectancy	0.97	3.58	-7.58–6.42									
ABOS	28.41	9.08	4–46	18.97	11.71	0–52	16.13	11.35	0–39	12.37	11.16	0–40
AAQ	56.02	8.41	27–70	54.67	12.06	11–67	55.78	10.56	28–70	58.47	6.44	50–70
DERs: NA	10.64	3.71	6–21	10.82	5.03	6–30	9.59	3.32	6–18	8.76	2.84	6–16
EE: C	21.36	5.44	10–34	21.77	6.52	11–34	22.25	6.50	10–34	17.93	5.55	10–28
EE: EOI	27.13	5.29	16–35	25.69	5.63	14–37	24.67	5.34	14–33	22.60	4.64	15–31
Paternal Scores												
Pre-Treatment N = 38			Mid-Treatment N = 29			Post-Treatment N = 22			Follow Up N = 11			
	M	SD	Range	M	SD	Range	M	SD	Range	M	SD	Range
Credibility	-0.32	3.28	-10.15–3.85									
Expectancy	-0.76	4.23	-9.58–6.42									
ABOS	28.16	7.81	12–43	21.62	9.70	7–40	17.70	11.15	2–48	16.60	10.21	6–32
AAQ	56.13	9.20	33–70	56.97	9.84	34–69	55.14	9.41	33–67	56.18	10.51	33–70
DERs: NA	10.92	4.17	6–21	10.24	3.59	6–20	9.48	3.07	6–17	9.36	3.70	6–17
EE: C	21.16	5.47	12–34	21.00	6.29	12–38	19.30	6.72	10–36	18.00	6.37	11–34
EE: EOI	26.37	4.55	18–37	24.63	5.56	13–37	22.23	6.07	11–33	19.60	8.26	13–34

Note. ABOS = Anorectic Behavior Observation Scale; AAQ = Acceptance and Action Questionnaire; DERs: NA = Non-Acceptance sub-scale of the Difficulties in Emotion Regulation Scale; EE:C = Criticism scale of the Family Questionnaire; EE:EOI = Emotional Over-involvement scale of the Family Questionnaire.