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From Efficacy to Effectiveness: Comparing Outcomes for Youth with Anorexia Nervosa Treated in Research Trials Versus Clinical Care

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Abstract

This study examined outcomes for 84 youth with anorexia nervosa (AN) who received family-based treatment (FBT) in a research trial (randomized trial care [RTC]: $n = 32$) compared to fee-for-service care (specialty clinical care [SCC]: $n = 52$) at an outpatient eating disorder clinic. Weight was collected up to 12 months post-baseline. Survival curves were used to examine time to weight restoration as predicted by type of care, baseline demographic and clinical characteristics, and their interaction. There was not a significant main effect for type of care, but its interaction with initial %EBW was significant ($p = .005$), indicating that weight restoration was achieved faster in RTC compared to SCC for youth with a lower initial %EBW (i.e., ≤ 81), while rates of weight restoration were comparable for those with a higher initial %EBW (i.e., > 81). These data suggest that FBT is as effective as it is efficacious, except for youth with lower initial body weights. Therefore, clinicians may need to be particularly active in encouraging early weight gain for this subset of patients. Nevertheless, this study suggests that FBT is appropriate as a first-line treatment for youth with AN who present for clinical care.

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Keywords

adolescent anorexia nervosa; family-based treatment; efficacy; effectiveness; empirically supported treatment

Introduction

Identifying efficacious and effective treatments for children and adolescents with anorexia nervosa (AN) is essential to prevent severe and long-term consequences of this illness. However, only ten published randomized controlled trials have examined the efficacy of outpatient psychotherapies for youth with AN (Eisler et al., 2000: *N* = 40; Geist, Heinmaa, Stephens, Davis, & Katzman, 2000: *N* = 25; Gowers et al., 2007: *N* = 167; Herpertz-Dahlmann et al., 2014: *N* = 176; Le Grange, Eisler, Dare, & Russell, 1992: *N* = 18; Lock, Agras, Bryson, & Kraemer, 2005: *N* = 86; Lock et al., 2010: *N* = 121; Madden et al., in press: *N* = 82; Robin et al., 1999: *N* = 37; Russell, Szmukler, Dare, & Eisler, 1987: *N* = 57). Research suggests that family-based treatment (FBT)—a manualized treatment that emphasizes parental support of their child's eating-related behaviors—is an efficacious treatment for youth with AN (Lock et al., 2010). However, community-based clinicians who treat patients with eating disorders rarely use empirically supported treatments (ESTs) with adults (von Ranson & Robinson, 2006). Less is known about the use of ESTs with youth, but a recent study suggests that even when therapists utilize FBT, they make significant modifications in its implementation (Kosmerly, Waller, & Robinson, 2014) that may impact its effectiveness.

There are numerous factors contributing to the low use of ESTs in "usual care" settings (i.e., community-based non-research settings) (see Weisz, Weiss, & Donenberg, 1992 for a discussion). One reason is the lack of effectiveness studies, which provide evidence about a treatment's effect when delivered in routine practice settings by "usual" providers to "usual" patients. This gap is particularly pronounced in eating disorders treatment for youth. To date, five relatively small studies have examined the effectiveness of FBT for youth with AN (Couturier, Iserlin, & Lock, 2010: *N* = 14; Hughes et al., 2013: *N*s = 14 and 21; Loeb et al., 2007: *N* = 20; Paulson-Karlsson et al., 2009: *N* = 32; Turkiewicz, Pinzón, Lock, & Fleitlich-Bilyk, 2009: *N* = 9). While each utilized clinically-referred samples and practicing therapists, their generalizability to usual care is limited by the absence of a comparison condition, the provision of treatment at no cost (Couturier et al., 2010; Loeb et al., 2007; Turkiewicz et al., 2009) and the exclusion of boys (Couturier et al., 2010; Paulson-Karlsson et al., 2009; Turkiewicz et al., 2009). Another potential reason for the low use of ESTs in usual care is that these treatments perform more poorly in usual care than in research settings (Wampold et al., 2011; Weisz, Jensen-Doss, & Hawley, 2006). However, it is unclear which factors contribute to these diminished effects. Certainly, the process of being randomized to a particular condition and willingness to participate in a research trial is not reflective of how patients enter usual care, and therefore treatment effects from randomized comparisons may not generalize to a "real world" comparison of research and usual care settings. The relative lack of data examining FBT's effectiveness may contribute to therapist doubts about its appropriateness for youth with AN.

Therefore, the main goal of this study was to compare outcomes achieved in a research trial compared to those achieved in clinical care. Time to weight restoration, defined as reaching ≥95% of expected body weight (EBW) (based on age, gender, and height) was compared for youth with AN who received FBT in the context of a randomized trial versus a fee-for-service clinic, controlling for baseline patient differences. We were interested in how differences inherent to research and clinical service settings (e.g., treatment schedule, supervision, flexibility in implementation) impacted patient outcome. Although this analysis was unable to directly examine how outcomes were influenced by specific differences in settings, it provides a comparison of patient outcomes in light of these contextual differences. We hypothesized that patients would do well in both types of care but that those who received care within a research trial would achieve more rapid weight restoration, given generally better outcomes of ESTs when delivered within research settings (Wampold et al., 2011). We also examined other baseline predictors of outcome, as well as their interaction with type of care, in order to identify which patients benefit most from treatment, and whether this depended on type of care.

Method

Participants included 84 youth who 1) met DSM-5 criteria for AN, 2) were medically stable for outpatient treatment, and 3) engaged in FBT at The University of Chicago Eating Disorders Program between 1999 and 2011. Participants provided informed assent/consent, and all protocols were approved by The University of Chicago Institutional Review Board. All therapists had specialized training in FBT and were supervised by one of the treatment developers (DLG) in their delivery of randomized trial care (RTC: $n = 32$) (i.e., research trial treatment) or specialty clinical care (SCC: n = 52) (i.e., fee-for-service not-for-profit clinical treatment). Compared to patients in RTC, patients in SCC had to pay for treatment (versus no cost treatment), had limited contact with the research staff (versus frequent contact), and received non-randomized treatment (versus randomization to FBT) that was implemented with greater flexibility (versus stricter adherence with a fixed dose) (see Table 1 for a summary of differences between types of care).

Randomized Trial Care (RTC)

The RTC sample ($n = 32$) was drawn from a sample of youth ages 12–18 who were evaluated in the Chicago research clinic between 2005 and 2007 as part of a two-site clinical trial and randomized to FBT (provided by three psychologists) (Lock et al., 2010). Exclusion criteria included new or unstable psychotropic medication dosage (<8 weeks), current psychosis, alcohol or drug dependence, current physical condition known to influence eating or weight (e.g., diabetes mellitus, pregnancy), or previous receipt of either FBT or adolescent-focused therapy.

Specialty Clinical Care (SCC)

The SCC sample ($n = 52$) was drawn from youth who were evaluated in the fee-for-service clinic between 1999 and 2011. Of those who agreed to participate in an observational study (83.3%, $n = 363$), 124 (ages 9–18) met criteria for AN. Of these, 71 (57.3%) subsequently received treatment in the clinic, but 19 patients were excluded due to 1) receiving FBT from

the treatment developer (DLG) (*n* = 12) or 2) receiving non-FBT or combination treatment (*n* = 7), resulting in a final sample of 52 youth. Two RTC therapists treated the majority of youth in SCC (65.4%, *n* = 34); other therapists included psychologists, predoctoral psychology interns, social workers, and a psychiatry fellow.

Assessment

Basic demographic and clinical information was collected during the intake interview.

Weight and height—Patient weights (without shoes in light indoor clothing) were taken on a regularly recalibrated scale at baseline, sessions 1 through 6, and months 3, 6, 9, and 12. Height was also regularly measured. The outcome in this study was time to weight restoration, defined as ≥95% EBW using the 50th Body Mass Index percentile according to Center for Disease Control (CDC) norms for age and gender (CDC, 2002).

Eating Disorder Examination (EDE, version 12.0)—The EDE was administered as a diagnostic instrument, and its global score was used in this study to assess baseline eating disorder pathology (Fairburn & Cooper, 1993). It has good reliability and validity (Cooper, Cooper, & Fairburn, 1989; Rizvi, Peterson, Crow, & Agras, 2000; Rosen, Vara, Wendt, & Leitenberg, 1990). Internal consistency in this sample was high (Cronbach's alpha = .937).

Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS)—The KSADS is a widely used semi-structured interview that was used to assess comorbid psychiatric disorders (Biirmaher, Ehmann, & Axelson, 2009).

Beck Depression Inventory (BDI)—The BDI is a 21-item inventory that was used to measure the severity of baseline depressive symptoms (Beck, Steer, & Brown, 1996), which demonstrated good internal consistency in this sample (Cronbach's alpha = .904).

Statistical Analyses

IBM SPSS Statistics 22 was used for all analyses. In order to explore the extent to which the RTC sample was comparable to the SCC sample on baseline demographic and clinical characteristics, independent *t*- and chi-square tests were used. Differences in treatment dose (i.e., total sessions, treatment duration) across types of care were also examined with *t*-tests. Survival analyses were used to compare RTC and SCC on time to achieve 95% EBW (Cox & Oakes, 1984; Kalbfleisch & Prentice, 1980). Individuals who were missing data prior to the earliest event in the stratum (i.e., weight restoration achieved by the first participant within each type of care) (*n* = 4, 4.8%) were dropped from analyses. Individuals who did not achieve weight restoration by 12 months (*n* = 32, 38.1%) were treated as "censored" observations, indicating that treatment response did not occur prior to termination of the measurement period. A Cox proportional hazard model was then fitted using a log logistic distribution.

The following baseline variables were initially examined in separate models (including main effects for the variable and type of care, and their interaction) as predictors of time to weight restoration: age, %EBW, eating disorder pathology, duration of illness, psychiatric

comorbidity, prior hospitalization, psychotropic medication use, depressive symptoms, household income, and therapist training (psychologist v. other). Dichotomous predictors were coded as −.5 and +.5 (Kraemer & Blasey, 2004), and continuous predictors were mean-centered. All main effects and interactions that significantly predicted time to 95% EBW ($p < .05$) in their initial models were then simultaneously entered into a final model.

Results

Missing Data

Weight was available at months 3 (90.5%, $n = 76$), 6 months (77.4%, $n = 65$), 9 months (57.1%, $n = 48$), and 12 months (54.8%, $n = 38$). Missing weight data were related to treatment termination prior to 12 months. Compared to those with complete data through 12 months, youth who terminated treatment prior to 12 months without reaching weight restoration had lower initial % EBWs (79.1 v. 81.8, $t = 2.49$, $p = .015$), and they were more likely to come from a non-intact family (28.6% v. 9.5%; $\phi = -.24$, $p = .031$) and take psychotropic medication (57.1% v. 25.4%; $\phi = .29$, $p = .008$). These groups did not differ on age, gender, race, ethnicity, duration of illness, eating disorder symptom severity, history of hospitalization, household income, parental education, referral source, therapist training, previous outpatient treatment, psychiatric comorbidity, depressive symptoms, or type of care (ps > .10).

Five youth (6.0%) were missing data on baseline eating disorder symptom severity, and thirty-two (38.1%) were missing data on baseline depressive symptoms. For depressive symptoms, 84.5% of the missing data was due to non-administration of the BDI (i.e., a different measure of depression was substituted). These data were missing completely at random, based on a non-significant chi-square statistic ($\chi^2 = 32.50$, $p = .44$) for Little's Missing Completely at Random (MCAR) analysis (Little, 1988). Missing data were imputed using multiple imputation, specifying five iterations, based upon fully conditional Markov chain Monte Carlo modeling (Schafer, 1997).

Participant Characteristics

Pre-treatment participant characteristics are presented in Table 2. Participants were predominantly White (95.2%, $n = 80$) females (89.3%, $n = 75$) with a mean age of 14.4 years ($SD = 2.2$). Participants' mean baseline %EBW was 81.1 ($SD = 4.1$), and their average duration of illness was 12.1 months ($SD = 11.1$). There were a few differences between types of care, including higher overall psychiatric comorbidity in SCC (48.1%, $n = 25$; RTC: 9.4%, $n = 3$) ($\phi = -.40$, $p < .001$), as well as higher rates of comorbid anxiety ($\phi = -.30$, $p = .006$) and mood disorders ($\phi = -.25$, $p = .023$). Correspondingly, youth in SCC ($M = 19.7$ [mild range]) reported significantly greater depressive symptoms than those in RTC (M = 11.3 [minimal range]) ($t = 4.61$, $p < .001$). There were no other baseline differences between the two samples.

Delivery of Treatment across Types of Care

Youth in RTC received an average of 19.5 sessions ($SD = 6.6$; range: [1,24]) over 8.7 months ($SD = 3.9$; range: [0.3,13.0]). Youth in SCC received an average of 17.9 sessions

(*SD* = 16.5; range: [1,47]) over 8.1 months (*SD* = 5.3; range: [0.3,25.0]). Despite differences in delivery (i.e., fixed number of sessions with a fixed timeline in RTC but more flexible number and timing of sessions in SCC), there were no significant differences in treatment length or dose (*p*s > .10).

Time to Achieve Weight Restoration

Of the 84 participants, 48 (57.1%) achieved weight restoration within 12 months (RTC: *n* = 20, 62.5%; SCC: *n* = 28, 53.8%). Average time to weight restoration was 4.29 months (*SD* = 3.64). Across all initial models, the main effect for type of care was non-significant (*p*s > .10). There were significant initial effects for age (Wald chi-square = 6.973, *df* = 1, *p* = .008, OR = 0.834, 95% CI = 0.729–0.954), depressive symptoms (Wald chi-square = 3.938, *df* = 1, *p* = .047, OR = 1.027, 95% CI = 0.417–1.506), and initial %EBW by type of care (Wald chi-square = 8.662, *df* = 1, *p* = .003, OR = 1.287, 95% CI = 1.088–1.522). There were no other significant main effects or interactions (*p*s > .10). Nevertheless, psychiatric comorbidity was included as a covariate in the final model to control for baseline differences between the types of care.

The overall final model included main effects for type of care, age, initial %EBW, depressive symptoms, and psychiatric comorbidity, as well as the interaction between initial %EBW and type of care. The overall model significantly predicted time to weight restoration (Overall chi-square = 29.892, *df* = 6, *p* < .001). The main effects of age (*B* = −0.227, *SE* = 0.090, *p* = .012, OR = 0.797, 95% CI = 0.668–0.951) and depressive symptoms (*B* = 0.045, *SE* = 0.018, *p* = .012, OR = 1.046, 95% CI = 1.010–1.084) remained significant, such that weight restoration was achieved faster by youth who were younger and who had greater depressive symptoms. The interaction between type of care and initial %EBW also remained significant (*B* = 0.211, *SE* = 0.087, *p* = .015, OR = 1.234, 95% CI = 1.042–1.463). Post-hoc analyses using a median split (see Figure 1) revealed that for youth with an initial %EBW ≤ 81 (*n* = 43), time to weight restoration was significantly faster in RTC compared to SCC (*B* = −1.686, *SE* = 0.641, *p* = .008, OR = 0.185, 95% CI = 0.053–0.650). In contrast, for youth with an initial %EBW > 81 (*n* = 41), time to weight restoration was comparable across types of care (*B* = 0.531, *SE* = 0.571, *p* = .352, OR = 1.701, 95% CI = 0.556–5.207). The main effects of type of care, initial %EBW, and psychiatric comorbidity were not significant (*p*s > .10).

Discussion

This is the first study to directly compare outcomes for youth with AN treated in a randomized controlled trial versus non-randomized specialty clinical care within the same setting. Youth achieved similar outcomes across types of care, but this was only true for those with relatively higher initial %EBWs (i.e., > 81). Indeed, youth with relatively lower initial %EBWs (i.e., ≤ 81) did worse in SCC than RTC, suggesting that FBT was not as effective as it was efficacious for these patients. This subset of patients is likely also at greater risk for medical complications, making swift weight gain particularly critical. This study also found that younger age and greater depressive symptoms were associated with

decreased time to weight restoration, potentially due to lesser resistance from younger and more depressed youth to their parents' efforts at renourishment.

There were *relatively* few contextual differences between RTC and SCC, but this study suggests that even small contextual shifts may result in differential outcome for youth with a lower %EBW. Several factors could account for these youth's poorer outcomes. First, the relatively short wait (typically less than one week) from the initial phone contact to assessment in RTC likely capitalized on parental momentum and reinforced the urgency of treatment. Second, greater "observation" (e.g., contact with research staff, completing questionnaires, videotaped sessions) and the fixed treatment schedule in RTC may have increased both parental and therapist motivation. Additionally, the added pressure in RTC on achieving good outcomes in a fixed period of time may have encouraged therapist efforts to achieve early weight gain, which has been associated with better outcome (Le Grange, Accurso, Lock, Agras, & Bryson, 2014). In contrast, therapists in SCC had greater flexibility with how much treatment they could provide, and subsequently less pressure to achieve good treatment outcome within a specified timeframe. Third, there was only partial overlap in providers across conditions, and their supervision differed. RTC had the advantages of carefully selected therapists, more intensive supervision (i.e., additional hour of weekly group supervision), and treatment adherence monitoring (i.e., videotapes reviewed to ensure high treatment fidelity). All of these factors might have been particularly important for youth with relatively lower %EBWs, given the potential need for rapid initiation of treatment, greater motivation, and pressure to achieve early gains. Alternatively, youth in SCC with a relatively lower initial %EBW may simply represent more severe patients and/or less empowered parents, since these patients likely lost weight or maintained a low weight since the initial phone call, which typically occurs about six weeks prior to intake (versus one week in RTC).

Despite few baseline patient differences, psychiatric comorbidity was greater in SCC (48%) than RTC (13%). The comorbidity rate was greater in the randomized trial at large (26%) (Lock et al., 2010), but these data still suggest that families of patients with psychiatric comorbidity are less likely to participate in research trials, perhaps perceiving FBT as inappropriate in the context of multiple presenting problems. Understandably, clinicians' attitudes towards FBT are negatively impacted by concerns about sample representativeness, and patient clinical complexity may preclude them from utilizing FBT (Couturier et al., 2013); therefore, increasing the representativeness of research samples is critical.

This direct comparison of outcomes for youth who received FBT in clinical versus research care represents an important step towards effectiveness on the efficacy-effectiveness continuum. However, SCC was delivered in a specialty hospital-based eating disorder program, which cannot be characterized as routine and may not be generalizable to community-based settings. For instance, it is likely that fewer youth in our clinic received publicly-funded care than those in typical community-based care, which may have impacted treatment engagement. In addition, this study was unable to examine the unique impact of treatment differences (e.g., wait list, treatment schedule, therapist selection, supervision) on outcome, thus limiting our ability pinpoint why outcomes differed across types of care for a subset of patients. Finally, this study was limited by a modest sample size and its lack of

examination of psychological markers of remission. Nevertheless, the outcome in this study (weight restoration) is likely related to psychological improvement since weight gain is a strong predictor of improved eating disorder pathology (Accurso, Ciao, Fitzsimmons-Craft, Lock, & Le Grange, 2014). Despite its limitations, this study provides preliminary evidence for the clinical utility of FBT for AN outside of a research trial.

Overall, these findings are encouraging and suggest that FBT is indeed effective in clinical settings with the broader range of youth with AN who present for fee-for-service treatment. Implementing FBT as a first-line treatment in clinical care is therefore warranted. Nevertheless, this study indicated that treatment effects were diluted for youth with lower initial %EBWs, even a small step away from research to practice. Clinically, this implies that therapists may need to place particular emphasis on helping this subset of patients achieve early weight gain and potentially place a timeline on weight restoration. While this study provides preliminary data on the effectiveness of FBT in clinical care, future effectiveness and implementation research in community-based mental health settings is critical to advance the quality of clinical care for youth with AN.

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Abbreviations

AN	anorexia nervosa
FBT	family-based treatment
EST	empirically supported treatment
RTC	randomized trial care
SCC	specialty clinical care
%EBW	percent of expected body weight

References

Accurso EC, Ciao AC, Fitzsimmons-Craft EE, Lock JD, Le Grange D. Is weight gain really a catalyst for broader recovery?: The impact of weight gain on psychological symptoms in the treatment of adolescent anorexia nervosa. Behaviour Research and Therapy. 2014; 56:1–6. [PubMed: 24632109]

Birmaher B, Ehmann M, Axelson DA, Goldstein BI, Monk K, Kalas C, Brent DA. Schedule for affective disorders and schizophrenia for school-age children (K-SADS-PL) for the assessment of preschool children–a preliminary psychometric study. Journal of Psychiatric Research. 2009; 43:680–686. [PubMed: 19000625]

Beck, A.; Steer, R.; Brown, G. Manual for the Beck Depression Inventory-II. Psychological Corporation; 1996.

Centers for Disease Control and Prevention. CDC growth charts for the United States: Development and methods. Atlanta, GA: 2002.

Cooper Z, Cooper PJ, Fairburn CG. The validity of the eating disorder examination and its subscales. British Journal of Psychiatry. 1989; 154:807–812. [PubMed: 2597887]

Couturier J, Isserlin L, Lock J. Family-based treatment for adolescents with anorexia nervosa: A dissemination study. Eating Disorders. 2010; 18:199–209. [PubMed: 20419524]

Couturier J, Kimber M, Jack S, Niccols A, Van Blyderveen S, McVey G. Understanding the uptake of family-based treatment for adolescents with anorexia nervosa: Therapist perspectives. International Journal of Eating Disorders. 2013; 46:177–188. [PubMed: 22911878]

Cox, DR.; Oakes, D. Analysis of Survival Data. New York: Chapman & Hall/CRC; 1984.

Eisler I, Dare C, Hodes M, Russell G, Dodge E, Le Grange D. Family therapy for adolescent anorexia nervosa: the results of a controlled comparison of two family interventions. Journal of Child Psychology and Psychiatry. 2000; 41:727–736. [PubMed: 11039685]

Fairburn, CG.; Cooper, Z. The Eating Disorder Examination (12.0D). In: Fairburn, CG.; Wilson, GT., editors. Binge eating: Nature, assessment and treatment. New York, NY: Guilford Press; 1993. p. 317-360.

Geist R, Heinmaa M, Stephens D, Davis R, Katzman DK. Comparison of family therapy and family group psychoeducation in adolescents with anorexia nervosa. Canadian Journal of Psychiatry. 2000; 45:173–178.

Gowers SG, Clark A, Roberts C, Griffiths A, Edwards V, Bryan C, Barrett B. Clinical effectiveness of treatments for anorexia nervosa in adolescents Randomised controlled trial. The British Journal of Psychiatry. 2007; 191:427–435. [PubMed: 17978323]

Herpertz-Dahlmann B, Schwarte R, Krei M, Egberts K, Warnke A, Wewetzer C, Dempfle A. Day-patient treatment after short inpatient care versus continued inpatient treatment in adolescents with anorexia nervosa (ANDI): a multicentre, randomised, open-label, non-inferiority trial. The Lancet. 2014; 383:1222–1229.

Hughes EK, Le Grange D, Court A, Yeo M, Campbell S, Whitelaw M, Sawyer SM. Implementation of family-based treatment for adolescents with anorexia nervosa. Journal of Pediatric Health Care. 2013; 28:322–330. [PubMed: 24055072]

Kalbfleisch, JD.; Prentice, RL. The statistical analysis of failure time data. New Jersey: John Wiley & Sons; 1980.

Kosmerly S, Waller G, Robinson AL. Clinician adherence to guidelines in the delivery of family-based therapy for eating disorders. International Journal of Eating Disorders. 2014 Advance online publication. 10.1002/eat.22276

Kraemer HC, Blasey CM. Centering in regression analyses: A strategy to prevent errors in statistical inference. International Journal of Methods in Psychiatric Research. 2004; 13:141–151. [PubMed: 15297898]

Le Grange D, Accurso EC, Lock J, Agras S, Bryson SW. Early weight gain predicts outcome in two treatments for adolescent anorexia nervosa. International Journal of Eating Disorders. 2014; 47:124–129. [PubMed: 24190844]

Le Grange D, Binford R, Loeb KL. Manualized family-based treatment for anorexia nervosa: A case series. Journal of the American Academy of Child and Adolescent Psychiatry. 2005; 44(1):41–46. [PubMed: 15608542]

Le Grange D, Eisler I, Dare C, Russell GF. Evaluation of family treatments in adolescent anorexia nervosa: A pilot study. International Journal of Eating Disorders. 1992; 12:347–357.

Little RJ. A test of missing completely at random for multivariate data with missing values. Journal of the American Statistical Association. 1988; 83:1198–1202.

Lock J, Agras WS, Bryson S, Kraemer HC. A comparison of short-and long-term family therapy for adolescent anorexia nervosa. Journal of the American Academy of Child and Adolescent Psychiatry. 2005; 44:632–639. [PubMed: 15968231]

Lock J, Le Grange D, Agras WS, Moye A, Bryson SW, Jo B. Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa. Archives of General Psychiatry. 2010; 67:1025–1032. [PubMed: 20921118]

Loeb KL, Walsh BT, Lock J, Le Grange D, Jones J, Marcus SUE, Dobrow I. Open trial of family-based treatment for full and partial anorexia nervosa in adolescence: evidence of successful dissemination. Journal of the American Academy of Child & Adolescent Psychiatry. 2007; 46:792–800. [PubMed: 17581443]

Madden S, Miskovic-Wheatley J, Wallis A, Kohn M, Lock J, Le Grange D, Touyz S. A randomized controlled trial of inpatient treatment for anorexia nervosa in medically unstable adolescents. Psychological Medicine. (in press).

Meczekalski B, Podfigurna-Stopa A, Katulski K. Long-term consequences of anorexia nervosa. Maturitas. 2013; 75:215–220. [PubMed: 23706279]

Paulson-Karlsson G, Engström I, Nevonen L. A pilot study of a family-based treatment for adolescent anorexia nervosa: 18-and 36-month follow-ups. Eating Disorders. 2008; 17:72–88. [PubMed: 19105062]

Rizvi SL, Peterson CB, Crow SJ, Agras WS. Test-retest reliability of the Eating Disorder Examination. International Journal of Eating Disorders. 2000; 28:311–316. [PubMed: 10942917]

Robin AL, Siegel PT, Moye AW, Gilroy M, Dennis AB, Sikand A. A controlled comparison of family versus individual therapy for adolescents with anorexia nervosa. Journal of the American Academy of Child and Adolescent Psychiatry. 1999; 38:1482–1489. [PubMed: 10596247]

Rosen JC, Vara L, Wendt S, Leitenberg H. Validity studies of the Eating Disorder Examination. International Journal of Eating Disorders. 1990; 9:519–528.

Russell GF, Szmukler GI, Dare C, Eisler I. An evaluation of family therapy in anorexia nervosa and bulimia nervosa. Archives of General Psychiatry. 1987; 44:1047–1056. [PubMed: 3318754]

Schafer, JL. Analysis of incomplete multivariate data. London, UK: Chapman & Hall; 1997.

Turkiewicz G, Pinzón V, Lock J, Fleitlich-Bilyk B. Feasibility, acceptability, and effectiveness of family-based treatment for adolescent anorexia nervosa: A cross-cultural observational study in Brazil. Revista Brasileira de Psiquiatria. 2010; 32:169–172. [PubMed: 20414591]

von Ranson KM, Robinson KE. Who is providing what type of psychotherapy to eating disorder clients? A survey. International Journal of Eating Disorders. 2006; 39:27–34. [PubMed: 16231336]

Wampold BE, Budge SL, Laska KM, Del Re AC, Baardseth TP, Flűckiger C, Gunn W. Evidence-based treatments for depression and anxiety versus treatment-as-usual: A meta-analysis of direct comparisons. Clinical Psychology Review. 2011; 31:1304–1312. [PubMed: 21996291]

Weisz JR, Jensen-Doss A, Hawley KM. Evidence-based youth psychotherapies versus usual clinical care: A meta-analysis of direct comparisons. American Psychologist. 2006; 61:671–689. [PubMed: 17032068]

Weisz JR, Weiss B, Donenberg GR. The lab versus the clinic: Effects of child and adolescent psychotherapy. American Psychologist. 1992; 47:1578–1585. [PubMed: 1476328]

Highlights

- Clinic and research samples of youth with AN are largely similar.
- Younger age and greater depressive symptoms predicted faster weight restoration.
- Weight restoration was slower for clinical patients with a lower initial body weight.
- Research and clinical setting differences may account for differences in outcome.
- FBT generally appears to be effective in non-research clinical contexts.

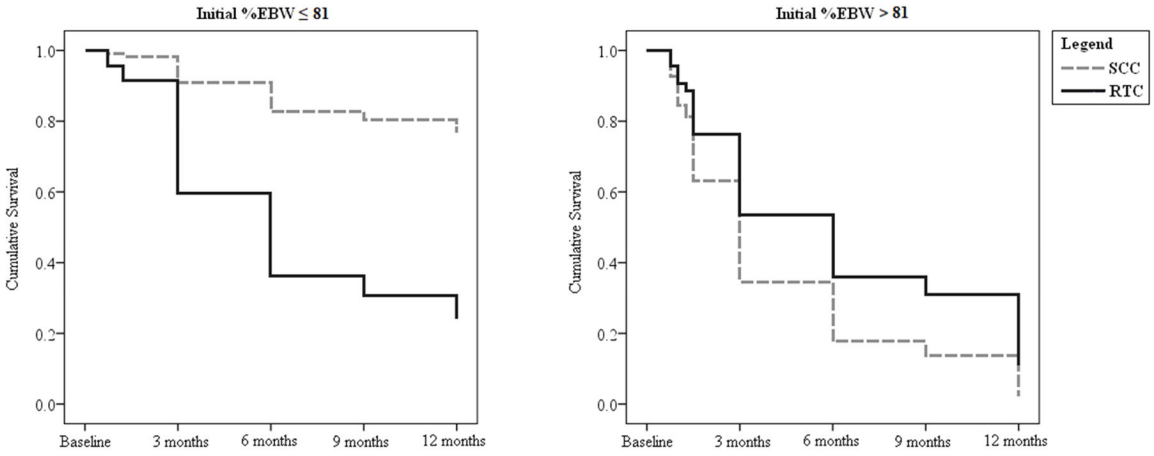

Figure 1.

Survival curves predicting time to weight restoration by type of care for youth with a lower initial percent of expected body weight (%EBW) (i.e., ≤ 81, *n* = 43) compared to those with an initial %EBW > 81 (*n* = 41).

Note: SCC: Specialty Clinical Care; RTC: Randomized Trial Care.

Table 1

Differences in types of care by setting, treatment, therapists, supervision, and patients.

		Specialty Clinical Care (SCC)	Randomized Trial Care (RTC)
Setting	*location*	Highly specialized eating disorders program located in an academic medical center	
	medical/psychiatric care	Provided by the team pediatrician and (if indicated) psychiatrist	
	payment	Fee-for-service with insurance (private or public) or self-pay	No-cost treatment
	waitlist	Longer (typically six weeks)	Shorter (less than one week)
	contact and assessments with research staff	Limited (usually only at baseline)	Frequent contact and assessments throughout treatment
	"observation"	Sessions not recorded	Sessions audio/videotaped
Treatment		Manualized FBT	
	implementation	Greater flexibility allowed in implementation	High adherence required in implementation
	assignment	Clinical recommendation to receive FBT	Random assignment to FBT
	dose	No defined endpoint	Fixed dose (24 sessions)
Therapists	*degree*	Doctorate (psychology)	Master's (social work, psychology) and doctorate (psychology and psychiatry)
Training & Supervision	*training/supervision*	Structured training/supervision in FBT provided by treatment developer (DLG), with cases discussed in clinical team rounds	
	oversight	Less intensive supervision with less oversight of treatment adherence	More intensive supervision with greater oversight of treatment adherence
Patients	*referral route*	Clinical and personal referrals	
	%EBW	< 90	< 87
	age	up to 18	12–18
	medication	no medication exclusion criteria	stable dose of medication

Table 2

Sample characteristics by type of care, *M* (*SD*) or *n* (%).

	SCC (*n* = 52)	RTC (*n* = 32)	Full Sample (*n* = 84)
Age	14.4 (2.5)	14.9 (1.8)	14.5 (2.2)
Male	5 (11.4%)	4 (12.5%)	9 (11.8%)
Race			
White	42 (95.5%)	30 (93.8%)	72 (94.7%)
Black	2 (4.5%)	0 (0.0%)	2 (2.6%)
Asian	0 (0.0%)	1 (3.1%)	1 (1.3%)
Other	0 (0.0%)	1 (3.1%)	1 (1.3%)
Latino ethnicity	7 (15.9%)	3 (9.4%)	10 (13.2%)
Intact family	38 (86.4%)	30 (93.8%)	68 (89.5%)
Parental education			
Some high school or college	7 (19.4%)	8 (25.0%)	15 (22.4%)
Bachelor's degree	13 (36.1%)	15 (46.9%)	28 (41.8%)
Master's or doctorate degree	15 (41.7%)	9 (28.1%)	24 (35.8%)
Household income	147,250 (176,721)	106,517 (78,888)	124,962 (132,603)
AN Binge/Purge subtype	6 (11.5%)	5 (15.6%)	11 (13.1%)
% Expected Body Weight	81.5 (4.4)	80.5 (3.7)	81.1 (4.1)
Global EDE score	2.0 (1.4)	1.7 (1.2)	1.9 (1.3)
Duration of illness, mo	12.5 (12.9)	11.6 (8.5)	12.1 (11.1)
Psychiatric comorbidity[a]	25 (48.1%)	4 (12.5%)	29 (34.5%)
Comorbid anxiety disorder[b]	14 (26.9%)	2 (6.3%)	16 (19.0%)
Comorbid mood disorder[c]	16 (30.8%)	4 (12.5%)	20 (23.8%)
BDI total[d]	19.7 (7.8)	11.3 (9.0)	14.9 (10.8)
Psychotropic medication use	14 (31.8%)	10 (31.3%)	24 (31.6%)
Previous outpatient treatment	32 (72.7%)	23 (71.9%)	55 (72.4%)
Previous psychiatric hospitalization	6 (13.6%)	6 (18.8%)	12 (15.8%)
Previous medical hospitalization	12 (27.3%)	9 (28.1%)	21 (27.6%)
Referral			
Clinical	23 (53.5%)	14 (43.8%)	37 (49.3%)
Personal (self)	17 (39.5%)	12 (37.5%)	29 (38.7%)
Personal (friend, colleague)	3 (6.8%)	6 (18.8%)	9 (12.0%)

Note: SCC: Specialty Clinical Care; RTC: Randomized Trial Care.

[a] Overall psychiatric comorbidity by type of care: $\phi = -.40$, $p < .001$.

[b] Comorbid anxiety disorder by type of care: $\phi = -.30$, $p = .006$.

[c] Comorbid mood disorder by type of care: $\phi = -.25$, $p = .023$.

[d] BDI total by type of care: $t_{74} = 4.61$, $p < .001$.