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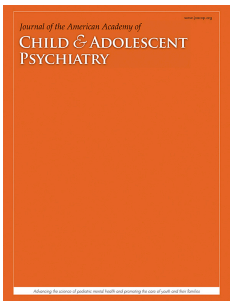

Randomized Clinical Trial of Parent-Focused Treatment and Family-Based Treatment for Adolescent Anorexia Nervosa

Daniel Le Grange, PhD, Elizabeth K. Hughes, PhD, Andrew Court, MBBS, FRANZP, Michele Yeo, FRACP, PhD, Ross D. Crosby, PhD, Susan M. Sawyer, FRACP, MD

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Randomized Clinical Trial of Parent-Focused Treatment and Family-Based Treatment for Adolescent Anorexia Nervosa

RH = Randomized Clinical Trial for AN

Daniel Le Grange, PhD; Elizabeth K. Hughes, PhD; Andrew Court, MBBS, FRANZP; Michele Yeo, FRACP, PhD; Ross D. Crosby, PhD; Susan M. Sawyer, FRACP, MD

Clinical guidance is available at the end of this article.

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Dr. Le Grange is with University of Melbourne, Australia; University of California, San Francisco; and The University of Chicago, IL (emeritus). Dr. Hughes is with University of Melbourne and Murdoch Childrens Research Institute, Australia. Drs. Court and Yeo are with Centre for Adolescent Health, Royal Children's Hospital. Dr. Crosby is with Neuropsychiatric Research Institute, Fargo, ND and University of North Dakota School of Medicine and Health Sciences, Fargo. Dr. Sawyer is with University of Melbourne, Centre for Adolescent Health, Royal Children's Hospital, and Murdoch Childrens Research Institute, Melbourne.

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Correspondence to Daniel Le Grange, PhD, Department of Psychiatry, University of California, San Francisco, 3333 California Street, Box 0503, LH Suite 245, San Francisco, CA 94143; email: daniel.legrange@ucsf.edu

ABSTRACT

Objective: There have been few randomized clinical trials (RCTs) for adolescents with anorexia nervosa (AN). Most of these posit that involving all family members in treatment supports favorable outcomes. However, at least two RCTs suggest that separate parent and adolescent sessions may be just as effective as conjoint treatment. This study compared the relative efficacy of family-based treatment (FBT) and parent-focused treatment (PFT). In PFT the therapist meets with the parents only, while a nurse monitors the patient.

Method: Participants (N=107) aged 12-18 years and meeting *DSM 4th Edition* criteria for AN or partial AN were randomized to either FBT or PFT. Participants were assessed at baseline, end of treatment (EOT), and at 6 and 12 months posttreatment. Treatments comprised 18 outpatient sessions over 6 months. Primary outcome was remission, defined as ≥95 percent of median body mass index and Eating Disorder Examination Global Score within 1 SD of community norms.

Results: Remission was higher in PFT than in FBT at EOT (43% vs. 22%; p=.016, OR = 3.03, CI = 1.23-7.46), but did not differ statistically at 6- (PFT 39% vs. FBT 22%; p=.053, OR = 2.48, CI = .989-6.22), or 12-month follow-up (PFT 37% vs. FBT 29%; p=.444, OR = 1.39, 95% CI = 0.60-3.21). Several treatment effect moderators of primary outcome were identified.

Conclusion: At EOT, PFT was more efficacious than FBT in bringing about remission in adolescents with AN. However, differences in remission rates between PFT and FBT at follow-up were not statistically significant.

Clinical trial registration information: A Randomised Controlled Trial of Two Forms of Family-Based Treatment and the Effect on Percent Ideal Body Weight and Eating Disorders Symptoms in Adolescent Anorexia Nervosa; http://www.anzctr.org.au/; ACTRN12610000216011.

Key words: Anorexia nervosa, adolescents, family-based treatment, parent-focused treatment, treatment outcome

INTRODUCTION

Anorexia nervosa (AN) is a serious psychiatric disorder with significant psychiatric and medical morbidity,[1] and a mortality rate that is among the highest of any psychiatric illness.[2] AN typically onsets in adolescence, where lifetime prevalence in 12–18-year-olds is more than 1%.[3] Successful treatment for the majority of patients remains stubbornly elusive, although current evidence underscores that families play a positive role in promoting successful outcomes for medically stable adolescents with AN.[4-6] One specific intervention, family-based treatment (FBT),[7] has received reasonably robust support and is at present the most efficacious outpatient intervention for adolescents with AN.[8] However, outcomes in FBT across recent randomized controlled trials (RCTs) remain modest. For instance, average rates of remission for those studies using the high bar of weight recovery (>95% median body mass index [mBMI]) and cognitive recovery (Eating Disorder Examination Global score within 1SD of community norms), are 34% at end-of-treatment (EOT),[5,6] 40% at 12-month follow-up,[5,6] and 33% at 4-year follow-up.[9] Preliminary findings from a recent study that adapted FBT for early non-responders demonstrated that remission rates at EOT can be enhanced beyond 50% when adding 3 intensive parent counseling sessions.[10] Of note though is that this study,[10] and the most recent large multi-site RCT for adolescent AN,[4] defined remission only in terms of weight recovery. Taken together, there remains considerable room to explore other avenues to improve outcomes for this patient population.

One such avenue is a separated model of family therapy. FBT is typically delivered in conjoint format, whereby everyone who lives with the patient attends treatment. In the first of two modestly sized RCTs to test a separated model, 18 adolescents with AN received either conjoint family therapy (CFT) or separated family therapy (SFT).[11] In SFT, the same therapist first meets with the adolescent, and then with the parents alone. A somewhat larger RCT followed this work in which 40 adolescents with AN were randomized to CFT or SFT.[12] SFT groups in both studies showed significant improvements. For example, Le Grange et al.

demonstrated a 20% gain in expected body weight (EBW) for SFT at EOT compared to 13% EBW for CFT,[11] and using the Morgan-Russell outcome criteria,[13] Eisler et al. achieved a good/intermediate outcome in 76% of patients in SFT compared to 47% in CFT.[12] While group differences in the Morgan-Russell outcome criteria were not statistically significant (p=.06), both studies demonstrated that adolescents from more critical families (high expressed emotion/EE) faired poorer in CFT than in SFT.[11, 12, 14] Notwithstanding the methodological limitations of these studies, they suggest that SFT can provide similar, and in some instances even superior, outcomes than in CFT.

The current RCT amplified the differences between the conjoint and separated models of treatment utilized in these earlier trials. In parent-focused treatment (PFT),[15] the separated model for the present study, the clinician works only with the parents in treatment sessions, while a nurse provides supportive oversight to monitor the adolescent's medical and mental status. Similar to prior parent training-based interventions for behavior and emotional problems in children,[16] in PFT parents are the primary participants in therapy. By extension, this model excludes the family meal, an intervention considered critical in the conjoint model of family therapy for adolescent AN.[7] Beyond its potential for improved outcomes, the structure and delivery of PFT may represent a more feasible and acceptable version of FBT for parents and therapists alike, with positive implications for dissemination and uptake.

The present study compared the relative efficacy of PFT and FBT in an adequately powered RCT for adolescent AN. Based on prior evidence, we hypothesized that PFT would be more efficacious than FBT as indicated by more participants achieving remission at EOT. In an exploratory moderator analysis, we investigated the potential benefits of these two treatments for different patient groups.

METHOD

Study Design

This single-site study randomized 107 participants to PFT or conjoint FBT. A detailed study protocol has been previously published.[17] An off-site biostatistician (R.C.) generated a randomization schedule that was stratified by eating disorder severity (low vs. high). High severity was defined as <80% mBMI, illness duration >12 months, and the presence of a co-occurring psychiatric disorder. Designated on-site personnel, independent of the current study, consulted the randomization schedule to allocate treatment prior to Session 1. The therapists were 5 psychologists and 3 social work clinicians who were all experienced in the treatment of adolescent AN, underwent an initial 2-day training workshop, and were required to treat at least one pilot participant with FBT and PFT before being allocated randomized participants for both treatments. Three registered nurses were responsible for the adolescent PFT sessions. Weekly supervision was provided by authors D.L.G. or K.L., providing supervision in both treatments and to all study therapists. The study setting was a specialist pediatric eating disorders program within a tertiary public hospital.[18] The Human Research Ethics Committee of the Royal Children's Hospital approved this study.

Sample Characteristics

This study was conducted between July 2010 and December 2015. All patients who presented to the specialist clinic during the recruitment period (July 2010 - July 2014) were assessed for eligibility (see Figure 1). Following referral to the outpatient program, a phone triage was completed with a parent by a clinical nurse consultant. If appropriate for the service, the adolescent and his/her parents attended a one-day assessment clinic for diagnosis and treatment planning, which included standardized measures (see below) along with clinical evaluations by a multi-disciplinary team. Adolescents admitted to the inpatient unit and referred for outpatient treatment underwent an assessment prior to discharge. Eligibility of hospitalized patients was based on weight at discharge rather than at hospitalization. Of the 269 adolescents assessed, 73 did not meet study criteria during the phone triage, and another 55 did not meet criteria at the clinical assessment. The study was described to eligible participants following the clinical

assessment. Written informed consent was obtained from parents and adolescents prior to randomization.

Inclusion criteria were *DSM-IV*[19] diagnosis for AN (excluding amenorrhea); age 12-18 years inclusive; living with at least one parent available to undertake treatment; and English proficiency by adolescents and parents at sixth-grade level. Given the anticipated publication of the *DSM-5*[20] during the study, with its proposed deletion of the weight cut-off for AN, inclusion criteria for weight was ≤90% mBMI for adolescents ≤75th percentile for height, and <95% mBMI for adolescents ≥75th percentile for height.[21] Exclusion criteria were medical instability as defined by the American Academy of Pediatrics,[22] current psychotic disorder; drug or alcohol dependence; acute suicidality; physical condition influencing eating or weight (e.g., pregnancy, cancer); previous FBT for AN; and psychotropic medication <8 weeks. Of the 141 eligible patients, 107 (76%) agreed to randomization.

[Insert Figure 1 about here]

Participant Safety

Medical stability was monitored by on-site pediatricians at least every 5 weeks for both treatments, and as clinically required during follow-up. Participants were hospitalized if they met criteria for medical instability[22] and were discharged once medically stable to continue their assigned study arm. Participants hospitalized for more than 21 consecutive days (n=0) or on more than 2 occasions (PFT=2, FBT=2) during the study treatment were withdrawn from the trial and offered appropriate on-site treatment or a referral to an external provider. Comorbid psychiatric conditions and psychotropic medications were managed by the study psychiatrist (A.C.).

Study Interventions

Both interventions were manualized[7,15] and delivered within 18 sessions over 6 months. For each family, one therapist (for FBT), or one therapist and one nurse (for PFT), were assigned for the duration of treatment.

Family-Based Treatment (FBT)[7] includes the entire family in treatment sessions. Treatment progresses through three phases, with the first phase (sessions 1–12) exclusively focused on supporting the parents in their efforts to assist their offspring to gain weight. The second session is an in vivo family meal. Phase 2 (sessions 13–16) aims to transition control over eating to the adolescent in a developmentally appropriate manner. Phase 3 (sessions 17–18) is brief and introduces adolescent developmental tasks once eating disorder symptoms have largely abated. The primary therapist weighs the patient at the start of each session (10 minutes) before having the rest of the family join for the remainder of the session (50 minutes).

Parent-Focused Treatment (PFT)[15] is an adaptation of FBT, yet distinct in significant ways. That is, PFT requires the adolescent to attend a brief session with the nurse (15 minutes) prior to their parents' session with the therapist. The nurse weighs the adolescent, shares this information with the adolescent, assesses medical stability, and provides brief supportive counseling. The nurse communicates the weight and any other pertinent information to the therapist, who then sees the parents for 50 minutes. The focus and content of the parent sessions are the same as in FBT. However, these sessions are conducted without any interaction with the adolescent or his/her siblings. The only direct contact between the therapist and adolescent is at the first session, when the therapist briefly introduces themselves, and at the end of the final session, when the therapist bids farewell to the family. There is no family meal session in PFT.

Assessments

Interviews were completed with adolescents and parents at baseline, EOT, and at 6 and 12 months posttreatment. Questionnaires were completed bi-weekly for the first 3 months of treatment and at each interview assessment. Independent and trained assessors, not involved in treatment delivery, administered all assessments. The primary outcome was remission at EOT, which was defined a priori as $\geq$95% mBMI and a Global Eating Disorder Examination (EDE)[23] score within 1SD of community norms.[17, 24-26]

The EDE[23] is a standardized investigator-based interview and determines the severity of eating disorder psychopathology. It is a gauge of current state, exclusively focused on the four weeks prior to the assessment. Weight was measured using calibrated digital scales while wearing a gown and after voiding. Height was measured using calibrated wall-mounted stadiometers. In addition to the EDE, weight, height, and demographic variables, the following measures were used to explore potential predictors and moderators of outcome: Child Depression Inventory (CDI),[27] Rosenberg Self-Esteem Scale (RSES),[28] Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS),[29] Yale-Brown-Cornell Eating Disorder Scale (YBC-EDS),[30] Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-Kid), [31] Symptom Checklist-90-Revised (SCL-90-R),[32] Five Minute Speech Sample (FMSS),[33] Therapy Suitability and Patient Expectancy (TSPE),[34] Helping Relationship Questionnaire (HRQ),[35] Parents Versus Anorexia (PVA),[36] Positive and Negative Affect Scale-Expanded (PANAS-X),[37] Borderline Personality Questionnaire (BPQ),[38] and the Family Environment Scale (FES).[39]

Statistical Analysis

Analyses for this study were conducted using SPSS version 19.0.0. A priori sample size calculation for this study was based upon the two prior studies comparing CFT and SFT.[6,8] A sample size of 50 participants per group would provide 80% power to detect a difference in excess of 20% between FBT and PFT in remission status at EOT assuming a dropout rate of 10%. A two-tailed alpha of .05 was used to evaluate all tests of significance. Treatment groups were compared at baseline on sociodemographic and clinical characteristics, as well as primary and secondary outcome measures using independent samples t-tests or Mann-Whitney U tests for continuous measures and chi-square or Fisher's Exact tests for categorical measures.

A total of 107 participants were randomized to PFT (n = 52) or FBT (n = 55). One participant who met inclusion criteria was hospitalized prior to study entry, and upon discharge was randomized to PFT despite no longer meeting inclusion criteria (<95% mBMI). This was

deemed a randomization error and not included in the intention-to-treat sample. Thus, the final sample for analysis was 106 (51 PFT; 55 FBT).

PFT and FBT groups were compared on completion of treatment (attended ≥ 9 sessions, i.e., 50%) and completion of assessments at EOT, 6- and 12-month follow-ups (defined as valid weight and completion of EDE) using chi-square analyses. All outcome analyses were based upon intention-to-treat. The primary outcome for this study was remission, defined as ≥ 95% mBMI and EDE Global Score ≤ 1.59.[17, 24-26] Those participants with missing body weight at EOT or follow-up were considered not remitted. In the event of valid weight but missing EDE data, the imputed value for the EDE Global score based upon multiple imputation (described below) was used to determine remission status. Treatment groups were compared on remission status separately at EOT, 6- and 12-month follow-up using logistic regression controlling for gender, age at baseline, and illness severity (as defined for randomization).

Missing data for continuous outcome measures at EOT and follow-up were imputed using multiple imputation based upon fully conditional Markov chain Monte Carlo[40] modeling. The final analyses were based upon the pooled results of five separate imputations. Treatment groups were then compared separately at EOT, 6- and 12-month follow-up using a general linear model for symmetric continuous outcomes, or a generalized linear model for non-symmetric data. Covariates for all models included baseline observation, gender, age at baseline, and illness severity. Sensitivity analyses were conducted using maximum likelihood imputation and last observation carried forward, with results compared across the three methods.

Exploratory analyses were conducted investigating predictors and moderators of remission status separately at EOT, 6-month follow-up, and 12-month follow-up. Analyses were based upon logistic regression, with models using treatment group, predictor, and treatment group-by-predictor interaction (i.e., test of moderation) to predict remission status. Treatment group and all categorical predictor/moderator variables were coded as -0.5 vs. 0.5, and all continuous predictors were centered around the grand mean prior to analyses.

RESULTS

Study Participants (N=106)

Average age of participants was 15.5 years (SD 1.5), mean percent mBMI = 81.9 (SD 6.1), and mean duration of illness was 10.5 months (SD 8.8) (range=2-48 months). A majority of participants were female (93/106; 87.7%), and from intact families (67/106; 63.2%). More than one third were hospitalized at presentation (36.8%), while only 7.5% (*n*=8) were on psychiatric medications. Table 1 presents baseline demographic and clinical characteristics. There were no significant differences between groups.

[Insert Table 1 about here]

Treatment and Assessment Completion

Ninety participants (84.9%) completed treatment (≥9 sessions/50% of dose). This included 44 (86.3%) in PFT and 46 (83.6%) in FBT, which did not differ between treatment groups (Fisher's Exact p = .790). Rates of assessment completion (valid weight and EDE) were 88.7% at EOT (88.2% PFT, 89.1% FBT), 69.8% at 6-month follow-up (64.7% PFT, 74.5% FBT), and 58.5% at 12-month follow-up (60.8% PFT, 56.4% FBT). Assessment completion rates did not significantly differ between treatment groups at any assessment point.

Primary and Secondary Treatment Outcomes

Table 2 presents primary and secondary outcomes at each time point by treatment group. Remission rates at EOT were significantly higher for PFT (43.1%) than FBT (21.8%) (Wald chi-square = 5.85; df = 1; p = .016; OR = 3.03; 95% CI = 1.23-7.46). Differences in remission rates at 6-month follow-up were also higher for PFT (39.2%) than FBT (21.8%), although this did not reach statistical significance (Wald chi-square = 3.75; df = 1; p = .053; OR = 2.48; 95% CI = .989-6.22). There were no differences in remission rates between PFT (37%) and FBT (29%) at 12-month follow-up (Wald chi-square = 0.59; df = 1; p=.444, OR = 1.39, 95% CI = 0.60-3.21) (See Figure 2). There were no significant differences between treatment groups on any secondary outcome measures, and all results were confirmed with sensitivity analyses (See Table 3).

[Insert Figure 2 and Tables 2 and 3 about here]

Treatment Effect Moderators of Primary Outcome

No baseline variable was identified as a treatment effect moderator at EOT. However, EDE Restraint (p = .046), EDE Eating Concern (p = .034), YBC-EDS Preoccupation (p = .006), YBC-EDS Rituals (p = .028), YBC-EDS Total (p = .016), and TSPE Adolescent Success (p = .043) were identified as treatment moderators at 6-month follow-up. EDE Restraint (p = .012), EDE Eating Concern (p = .039), EDE Shape Concern (p = .040), EDE Global (p = .019), YBC-EDS Preoccupation (p = .005), YBC-EDS Rituals (p = .005), YBC-EDS Total (p = .006), and duration of illness (p = .020) were identified as treatment effect moderators at 12-month follow-up. Participants with more severe eating disorder psychopathology (i.e., high EDE) did as well in either treatment, while those with more eating disorder-related obsessions and compulsions (i.e., high YBC-EDS) did better in FBT. Conversely, those with lower scores on these measures did markedly better in PFT (See Figure 3). At 6-month follow-up, adolescents with higher baseline expectation of treatment success (i.e., high TSPE) had higher rates of remission in PFT than those in FBT, while there was no difference in remission between treatments for adolescents with lower expectation of treatment. Participants with a shorter duration of illness did better at 12-month follow-up in FBT, while those with a longer duration did better in PFT.

[Insert Figure 3 about here]

Non-Specific Predictors of Primary Outcome

There were no non-specific predictors of remission at EOT. Baseline expressed emotion (father FMSS) (p = .024) emerged as a non-specific predictor of remission at 6-month follow-up. Duration of illness (p = .020) emerged as non-specific predictors of remission at 12-month

follow-up. Regardless of treatment type, individuals with lower paternal expressed emotion and shorter duration of illness all showed higher remission at follow-up.

Hospitalization During Treatment Phase

Nineteen (17.9%) participants were hospitalized during treatment, including 13 (23.6%) from FBT and 6 (11.8%) from PFT (Fisher's Exact p = .133). Eighty-three percent of hospitalizations were for medical reasons.

Treatment During Follow-Up

Sixty-one participants received treatment during the study follow-up: 32 for eating disorders, 18 for mental health concerns, or both (*n* = 11) (FBT =33 vs. PFT = 28; Fisher's exact p = .420). A total of 15 participants were readmitted to hospital during follow-up (FBT=10 vs. PFT=5; Fisher's exact p = .271).

Treatment Suitability and Patient Expectancy

Adolescent and parent TSPE ratings at Session 1, mid-treatment, and EOT did not differ between PFT and FBT. On a Likert scale (0-10), means (min/max) varied from 5.37 -7.56 for adolescents, 7.47 – 8.52 for mothers, and 7.57 – 8.31 for fathers (all *p*'s = NS).

DISCUSSION

The results of this study support the primary hypothesis that PFT is superior to FBT on remission at EOT. Indeed, there was a three-fold increase in the odds of remission in those who received PFT compared to FBT. However, differences between treatments were no longer statistically significant at 6- and 12-month follow-up. None of the proposed baseline variables significantly moderated treatment outcome at EOT; however, there was an indication that eating disorder psychopathology (EDE) and eating disorder-related obsessions and compulsions (YBC-EDS) moderated outcome at 6- and 12-month follow-up. There were no differences between treatment groups in terms of secondary outcome measures. Our findings amplify those of the only two previous RCTs for adolescent AN[11, 12] that compared conjoint and separated models of

family therapy. The larger current RCT underscores that a separated model can provide an alternative therapeutic platform for rapid weight restoration in adolescent AN.

This study has several strengths, including a relatively large sample size, manualized treatments, therapists trained and skilled in family-based interventions for adolescents, expert supervision, and independent assessors using standardized outcome measures. Furthermore, both treatment attrition and study dropout were quite low. There are also some limitations. In particular, both the loss of follow-up data by 12 months, as well as the specialist treatment program study site, may limit the generalizability of the findings. There also appears to be a difference in remission rates (weight + EDE) for FBT at EOT in the two Australian studies (22% for the present RCT and 25% for the Westmead RCT[6]), as opposed to the one US-based study utilizing this definition of remission (42%).[5] Although speculative, this disparity could be the result of demographic differences given the public and private healthcare environments of the Australian and US studies, respectively. Finally, the exploratory analyses of predictors and moderators did not adjust for multiple comparisons. Consequently, current findings should be interpreted with appropriate caution.

Findings from the present study demonstrate that a separated family therapy model (PFT) can be more efficacious in the treatment of adolescents with AN. In addition, this treatment modality may also have additional advantages over conjoint FBT that could potentially facilitate broader dissemination of family therapy for adolescent AN. For example, PFT may appeal to clinicians without formal family therapy training who are hesitant to work in a format that includes the patient, parents, other caregivers, and siblings.[15,41] PFT also does not include an in vivo family meal, which removes an intervention that some therapists view as a significant challenge.[42] Nor does PFT place expectations upon siblings (or the patient), which perhaps allows parents and the therapist to more actively engage in therapeutic work. Conversely, therapists committed to working directly with adolescents or full family systems may be discouraged by the idea of working with parents without engaging with the adolescent and

siblings. In addition, few providers might work in a setting in which a nurse could see the patient in lieu of the therapist. That said, physicians who provide medical clearance and monitoring alongside FBT may be able to function in this role by increasing the frequency of patient visits during a course of PFT.

Our exploratory analysis did not identify moderators at EOT, perhaps because the difference in remission between PFT and FBT was quite substantial at that time-point. However, a number of important baseline variables, most notably EDE and YBC-EDS, were shown to be associated with remission at both the 6- and 12-month follow-up time points. Of interest, at 12-month follow-up, FBT was the more potent intervention for adolescents who demonstrated particularly high levels of eating disorder-related obsessions and compulsions at baseline. This is in keeping with a prior study comparing FBT to adolescent-focused therapy,[43] but in contrast to another that suggested that obsessive-compulsive features were more responsive to systemic family therapy as opposed to FBT.[4] These seemingly contradictory findings may be more reflective of the exploratory nature of moderator analyses rather than substantive differences in these family interventions.

EE did not emerge as a moderator, unlike what appeared evident in the data from earlier SFT vs. CFT comparisons,[11,12] which might be explained by the publication of the FBT manual[7] since these early studies. In the FBT manual, the potential detrimental impact of high EE in treatment outcome is acknowledged, and clear therapeutic strategies to remedy high levels of EE are provided. In our study, however, low paternal EE predicted higher remission at 12-month follow-up, regardless of treatment group. Taken together, these findings add to our cautiously growing capacity to better match patients with treatment modality, an ability that remains largely elusive.

The current study is now the seventh RCT to employ family interventions for adolescent AN since Russell et al.'s seminal work almost 30 years ago.[44] Taken together, engaging families to support adolescents with eating disorders remains encouraging, especially considering the

absence of alternative treatments with comparable efficacy. Yet, when applying strict weight and cognition criteria, remission rates in FBT remain modest, both in terms of the proportion remitted at the EOT, as well as the maintenance of remission at 1- and 4-year follow-up. Given the impact of this severe disorder during adolescence and beyond, there remains an ongoing need to develop other innovative treatments or explore additional adaptations of FBT.

Clinical Guidance

- Parents are a great resource in the outpatient treatment of medically stable adolescents with anorexia nervosa (AN).
- Family-based treatment (FBT) is an efficacious intervention to mobilize parents to restore weight in this patient population.
- A separated model of FBT, called parent-focused treatment (PFT), can accomplish weight restoration perhaps more efficiently than FBT.
- PFT is "user friendly" in that the mental health provider mostly works with the parents, while the adolescent with AN is monitored by a nurse for medical stability and mental status.

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Figure 1. Consolidated Standards of Reporting Trials (CONSORT) diagram. Note: FBT = family-based treatment; PFT = parent-focused treatment.
Figure 2. Change in remission rates across treatments. Note: 6MO FU = 6-month follow-up; 12Mo FU = 12-month follow-up; EOT = end-of-treatment; FBT = family-based treatment; PFT = parent-focused treatment.
Figure 3. Moderator effect on remission at follow-up for Eating Disorder Examination (EDE), Yale-Brown-Cornell Eating Disorder Scale (YBC-EDS), therapy suitability and patient expectancy, and duration of illness. Note: Error Bars are standard error. FBT = family-based treatment; PFT = parent-focused treatment.

Table 1. Demographic and Clinical Characteristics at Baseline by Treatment Group

Characteristic	PFT (n = 51)	FBT (n = 55)	Total (N = 106)	PFT vs. FBT Significance
Female (n, %)	44 (86.3)	49 (89.1)	93 (87.7)	Fisher's Exact p = .770
Age, years (mean, SD)	15.7 (1.6)	15.4 (1.3)	15.5 (1.5)	t = -0.84; df = 104; p = .402
Australian born (n, %)	47 (92.2)	51 (92.7)	98 (92.5)	Fisher's Exact p = 1.00
University degree, mother (n, %)	15 (29.4)	22 (40.0)	37 (34.9)	Fisher's Exact p = .310
University degree, father (n, %)	13 (25.5)	16 (29.1)	29 (27.4)	Fisher's Exact p = .828
Intact family (n, %)	33 (64.7)	34 (61.8)	67 (63.2)	Fisher's Exact p = .841
Duration of illness, months (mean, SD)	10.0 (8.1)	11.0 (9.4)	10.5 (8.8)	t = 0.56; df = 104; p = .576
Psychiatric medication (n, %)	2 (3.9)	6 (10.9)	8 (7.5)	Fisher's Exact p = .273
Eating Disorder Examination Global (mean, SD)	2.09 (1.54)	2.20 (1.81)	2.15 (1.68)	t = 0.33; df = 104; p = .744
% Median BMI (mean, SD)	82.8 (6.2)	81. 1 (5.9)	81.9 (6.1)	t = -1.44; df = 104; p = .152
BMI (mean, SD)	16.7 (1.4)	16.3 (1.2)	16.5 (1.3)	t = -1,64; df = 104; p = .104
Hospitalized at presentation (n, %)	18 (35.3)	21 (38.2)	39 (36.8)	Fisher's Exact p = .841
Mood disorder (n, %)	15 (29.4)	9 (16.4)	24 (22.6)	Fisher's Exact p = .163
Anxiety disorder (n, %)	12 (23.5)	12 (21.8)	24 (22.6)	Fisher's Exact p = 1.00

OCD (n, %)	4 (7.8)	2 (3.6)	6 (5.7)	Fisher's Exact p = .425
Behavioral disorder (n, %)	0 (0.0)	2 (3.6)	2 (1.9)	Fisher's Exact p = .496
Suicide or self-harm risk (n, %)	4 (7.8)	7 (12.7)	11 (10.4)	Fisher's Exact p = .530

Note: BMI = body mass index; FBT = family-based treatment; OCD = obsessive-compulsive disorder; PFT = parent-focused treatment.

Table 2. Primary and Secondary Outcomes by Treatment Group[a]

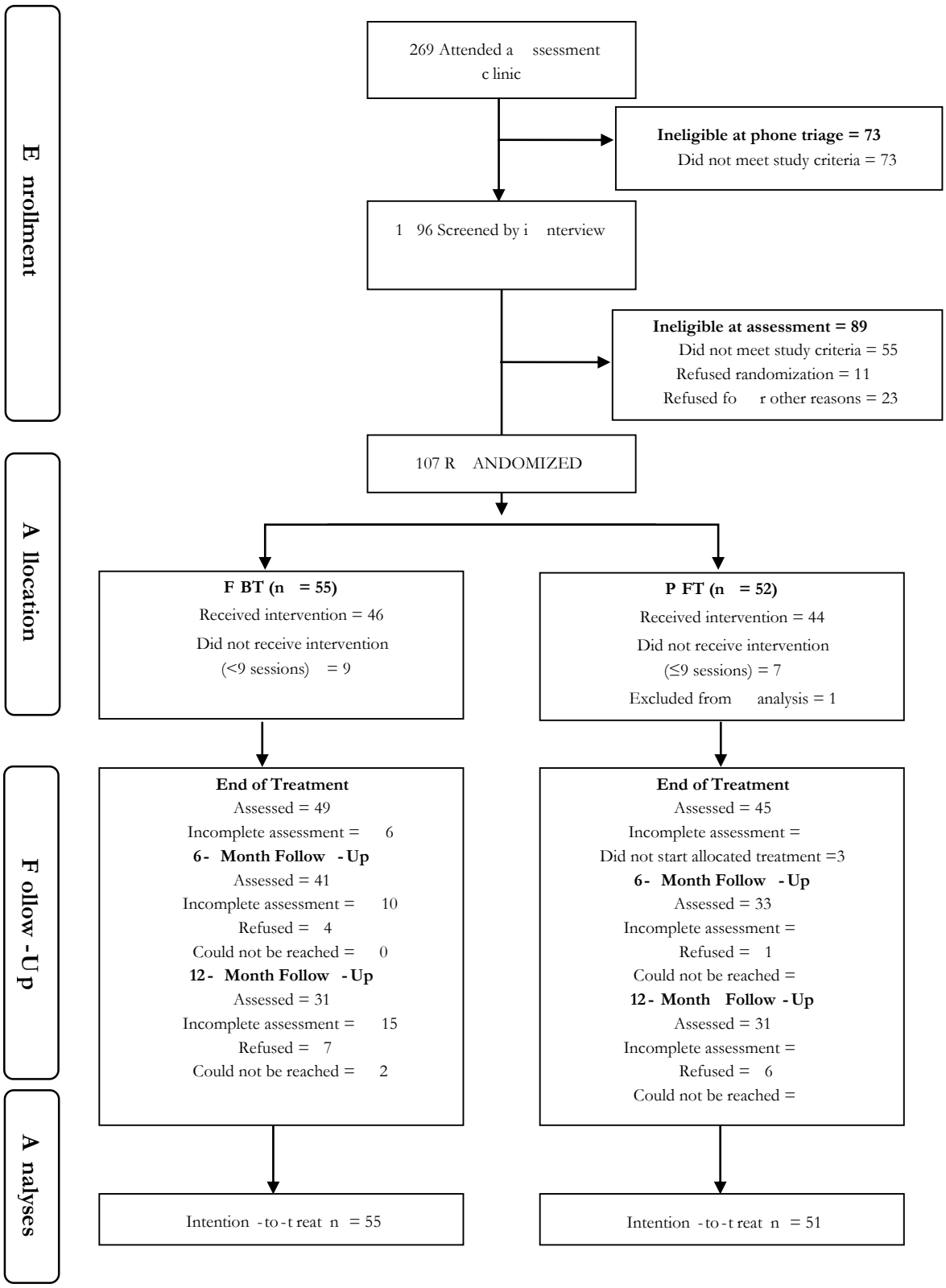
Primary Outcome	**End of Treatment**	**6-Month Follow-Up**	**12-Month Follow-Up**
Remission (n, %)			
PFT (n = 51)	22 (43.1%)	20 (39.2%)	19 (37.3%)
FBT (n = 55)	12 (21.8%)	12 (21.8%)	16 (29.1%)
Significance	*p = .016*	*p = .053*	*p = .444*
Secondary Outcomes			
EDE Global (mean, SD)			
PFT (n = 51)	0.81 (1.22)	0.74 (1.01)	0.81 (1.13)
FBT (n = 55)	1.10 (1.32)	0.98 (1.28)	1.04 (1.24)
Significance	*p = .255*	*p = .858*	*p = .965*
% mBMI (mean, SD)			
PFT (n = 51)	93.9 (10.4)	95.0 (11.4)	95.6 (10.0)
FBT (n = 55)	90.7 (8.7)	92.8 (9.9)	93.3 (9.7)
Significance	*p = .166*	*p = .456*	*p = .603*

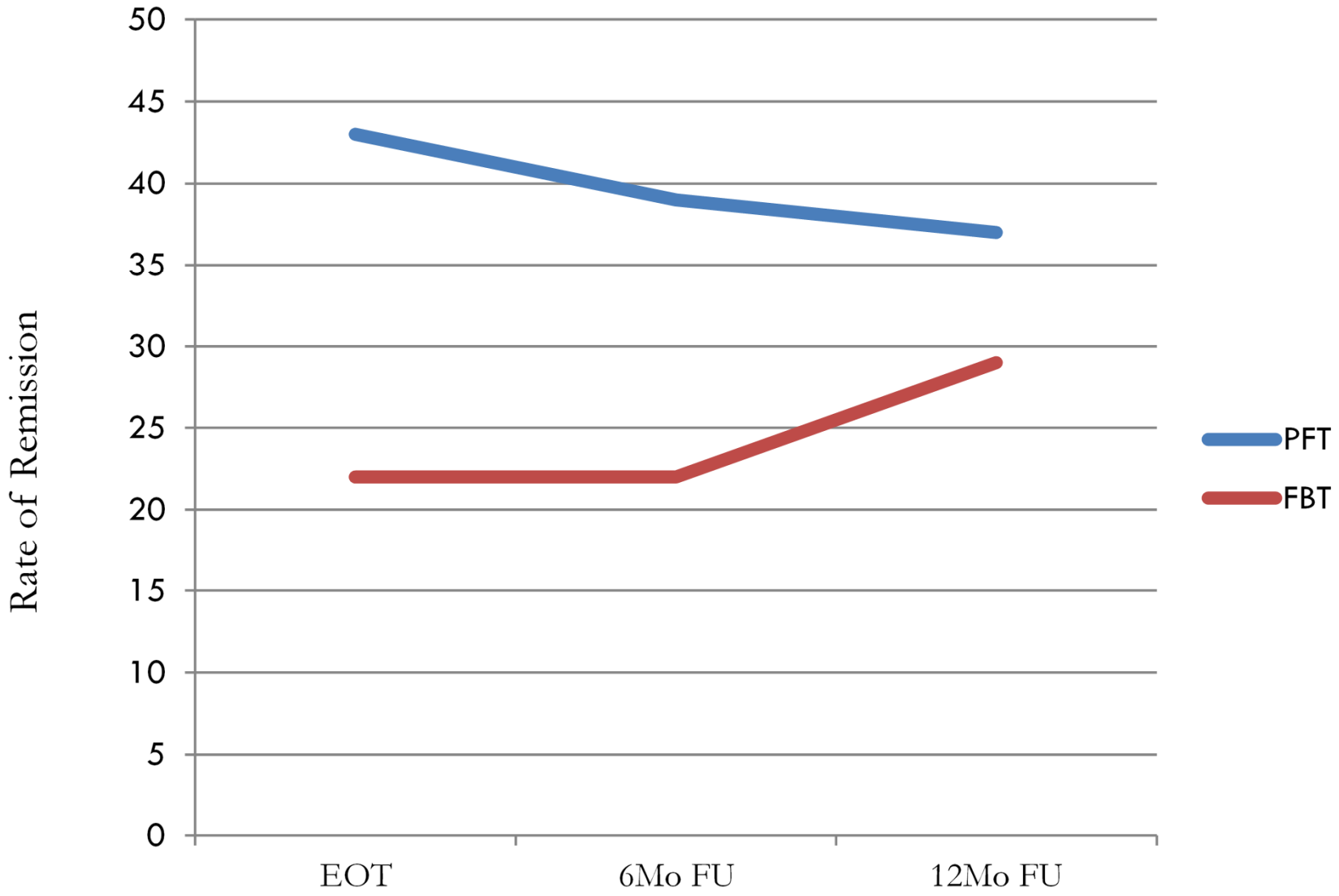
Note: EDE Global = Eating Disorder Examination global score; FBT = family-based treatment; mBMI = median body mass index; PFT = parent-focused treatment.
[a]Logistic regression, all *p*-values controlling for gender, age, and illness severity.

Table 3. Additional Outcomes by Treatment Group[a]			
Additional Outcomes	**End of Treatment**	**6-Month Follow-Up**	**12-Month Follow-Up**
EDE Restraint (mean, SD)			
PFT (n = 51)	0.63 (1.34)	0.53 (0.89)	0.55 (0.96)
FBT (n = 55)	0.92 (1.43)	0.85 (1.40)	0.77 (1.18)
Significance	*p = .256*	*p = .834*	*p = .930*
EDE Eating Concerns (mean, SD)			
PFT (n = 51)	0.54 (1.09)	0.56 (0.95)	0.65 (1.15)
FBT (n = 55)	0.67 (0.96)	0.61 (1.01)	0.79 (1.13)
Significance	*p = .293*	*p = .555*	*p = .730*
EDE Weight Concerns (mean, SD)			
PFT (n = 51)	0.89 (1.39)	0.85 (1.13)	0.94 (1.21)
FBT (n = 55)	1.27 (1.50)	1.22 (1.42)	1.10 (1.28)
Significance	*p = .297*	*p = .659*	*p = .704*
EDE Shape Concerns (mean, SD)			
PFT (n = 51)	1.16 (1.48)	0.94 (1.28)	1.11 (1.37)
FBT (n = 55)	1.58 (1.80)	1.31 (1.67)	1.42 (1.66)
Significance	*p = .424*	*p = .702*	*p = .764*
CDI Total (mean, SD)			
PFT (n = 51)	10.2 (10.3)	8.1 (7.4)	7.0 (5.5)
FBT (n = 55)	11.3 (9.1)	8.0 (8.0)	10.2 (9.0)
Significance	*p = .513*	*p = .788*	*p = .272*
RSE Total (mean, SD)			
PFT (n = 51)	29.1 (6.4)	29.7 (6.2)	30.7 (5.1)
FBT (n = 55)	28.0 (7.2)	29.9 (5.8)	29.4 (6.1)
Significance	*p = .465*	*p = .820*	*p = .290*
Days driven exercise (mean, SD)			
PFT (n = 51)	1.0 (4.1)	1.8 (3.4)	2.8 (4.2)
FBT (n = 55)	3.1 (7.5)	3.0 (6.4)	4.3 (7.1)
Significance	*p = .080*	*p = .987*	*p = .447*

Note: CDI = Child Depression Inventory; EDE = Eating Disorder Examination; FBT = family-based treatment; PFT = parent-focused treatment; RSE = Rosenberg Self-Esteem Scale.

[a] Logistic regression, all *p*-values controlling for gender, age, and illness severity.


Enrollment
269 Attended assessment clinic
Ineligible at phone triage = 73
Did not meet study criteria = 73
196 Screened by interview
Ineligible at assessment = 89
Did not meet study criteria = 55
Refused randomization = 11
Refused for other reasons = 23
107 RANDOMIZED
Allocation
FBT (n = 55)
Received intervention = 46
Did not receive intervention (<9 sessions) = 9
PFT (n = 52)
Received intervention = 44
Did not receive intervention (≤9 sessions) = 7
Excluded from analysis = 1
Follow-Up
End of Treatment
Assessed = 49
Incomplete assessment = 6
6-Month Follow-Up
Assessed = 41
Incomplete assessment = 10
Refused = 4
Could not be reached = 0
12-Month Follow-Up
Assessed = 31
Incomplete assessment = 15
Refused = 7
Could not be reached = 2
End of Treatment
Assessed = 45
Incomplete assessment =
Did not start allocated treatment =3
6-Month Follow-Up
Assessed = 33
Incomplete assessment =
Refused = 1
Could not be reached =
12-Month Follow-Up
Assessed = 31
Incomplete assessment =
Refused = 6
Could not be reached =
Analyses
Intention-to-treat n = 55
Intention-to-treat n = 51


Rate of Remission
50
45
40
35
30
25
20
15
10
5
0
EOT
6Mo FU
12Mo FU
PFT
FBT