

## RESEARCH ARTICLE

# Short-Term Intensive Family Therapy for Adolescent Eating Disorders: 30-Month Outcome<sup>†</sup>

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## Abstract

Family therapy approaches have generated impressive empirical evidence in the treatment of adolescent eating disorders (EDs). However, the paucity of specialist treatment providers limits treatment uptake; therefore, our group developed the intensive family therapy (IFT)—a 5-day treatment based on the principles of family-based therapy for EDs. We retrospectively examined the long-term efficacy of IFT in both single-family (S-IFT) and multi-family (M-IFT) settings evaluating 74 eating disordered adolescents who underwent IFT at the University of California, San Diego, between 2006 and 2013. Full remission was defined as normal weight ( $\geq 95\%$  of expected for sex, age, and height), Eating Disorder Examination Questionnaire (EDE-Q) global score within 1 SD of norms, and absence of binge-purging behaviours. Partial remission was defined as weight  $\geq 85\%$  of expected or  $\geq 95\%$  but with elevated EDE-Q global score and presence of binge-purging symptoms ( $< 1/\text{week}$ ). Over a mean follow-up period of 30 months, 87.8% of participants achieved either full (60.8%) or partial remission (27%), while 12.2% reported a poor outcome, with both S-IFT and M-IFT showing comparable outcomes. Short-term, intensive treatments may be cost-effective and clinically useful where access to regular specialist treatment is limited. Copyright © 2015 John Wiley & Sons, Ltd and Eating Disorders Association.

## Keywords

intensive family therapy; family therapy; eating disorders; anorexia nervosa; multi-family therapy

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## Introduction

Eating disorders (EDs) rank among the most pernicious of all psychiatric disorders, demonstrating marked medical complications alongside poor rates of treatment outcome and high rates of relapse (Bulik, Berkman, Brownley, Sedway, & Lohr, 2007; Steinhausen, 2002). However, despite adult populations being plagued by ‘unacceptable treatment outcomes’ (Bulik et al., 2007), a burgeoning body of evidence suggests that early intervention may afford more promising outcomes for those with EDs (Steinhausen, 2002). As such, much contemporary research and treatment interventions have been oriented towards enhancing outcomes in adolescent presentations of EDs, the most common time of onset (Neubauer, Weigel, Daubmann, Wendt, Rossi, Lowe, & Gumz, 2014).

With respect to adolescent presentations of anorexia nervosa (AN), specifically, eating disorder-focused family therapy [FT-AN; sometimes referred to as family-based treatment (FBT) or Maudsley therapy] has garnered a particularly impressive evidence base over

the last decade (Eisler, Wallis, & Dodge, 2015), with an array of empirical evidence documenting that between 50% and 70% of adolescents are typically weight restored within 12 months of commencing treatment (Downs & Blow, 2013; le Grange & Eisler, 2009), with swifter and more robust rates of weight restoration when compared with other adolescent-focused treatments (Couturier, Kimber, & Szatmari, 2013; Lock, Le Grange, Agras, Moye, Bryson, & Jo, 2010). Furthermore, FT-AN also demonstrates favourable cognitive remission throughout treatment, with up to 40% being remitted of cognitive symptomatology within 12 months of commencing treatment (Lock et al., 2010). Accordingly, FT-AN has been found to be effective in reducing the frequency and duration of costly hospital admissions (Madden, Miskovic-Wheatley, Wallis, Kohn, Lock, Le Grange, et al., 2014), limiting the overall cost of treatment, with long-term follow-up further suggesting that rates of relapse and readmission are curtailed significantly (Couturier, Kimber, & Szatmari, 2013; le Grange, Lock, Accurso, Agras, Darcy, Forsberg, & Bryson, 2014). Specialist outpatient services using

FT-AN have been shown to reduce the need for hospital treatment 2–3 fold (House, Schmidt, Craig, Landau, Simic, Nicholls, et al., 2012).

One of the most significant barriers to the uptake and efficacy of these specialty treatments lies in the limited number of trained providers beyond the academic institutions in which these treatments were developed (Murray & Le Grange, 2014). For instance, many families report that access to specialized family therapy treatments is made significantly more difficult by the limited number of specialist treatment centres in particular geographical regions (Brown, 2010; Parent & Parent, 2008). Similarly, clinical practitioners report that geographical location and limited access to specialist supervision restrict their adoption of specialized family therapy, with clinicians feeling less equipped to conduct specialist family treatments in remote areas without regular access to training and supervision (Couturier, Kimber, & Szatmari, 2013). Indeed, the challenges facing families in accessing specialized family therapy in remote regions have been noted in the USA (Brown, 2010), Canada (Couturier, Kimber, & Szatmari, 2013), and Australia (Wallis, Alford, Hanson, Titterton, Madden, & Kohn, 2012) alike.

In light of this limited access to treatment for some families, recent clinical endeavours have sought to develop short-term and intensive treatment interventions, allowing for temporary immersion into brief treatment programmes with a view to swiftly mobilize treatment processes (Rockwell, Boutelle, Trunko, Jacobs, & Kaye, 2011; Wallis et al., 2012). In order to explore a creative solution to this gap in service provision, our group adopted the principles of FT-AN (Eisler, Le Grange, & Lock, in press) and constructed a week-long intensive family therapy (IFT) outpatient programme, allowing families from remote regions to attend the otherwise unavailable treatment programmes in the USA, albeit over a shorter period than typically recommended if local treatment were available (Rockwell et al., 2011). In fact, IFT originally started with the overarching goal to fill not only the need to extend treatment to families in areas where there was no access to specialist family therapy services but also to offer ancillary services for treatment-resistant cases (Knatz, Kaye, Marzola, & Boutelle, 2015).

In keeping with recent Cochrane Review guidelines (Fisher, Hetrick, & Rushford, 2010), the escalating costs of specialist treatment, and the development of multi-family therapy (MFT) as a clinically viable alternative to FBT (Dare & Eisler, 2000; Eisler et al., 2015), our intensive programme evolved to incorporate MFT principles. While building on established family therapy principles, MFT also leverages alternate mechanisms of therapeutic change in ensuring symptom remission, relying more centrally on group processes that maximize families' own resources while reducing feelings of helplessness, isolation, and shame (Dare & Eisler, 2000; Eisler, 2005; Scholz, Scholz, Gantchev, & Thömke, 2005; Simic & Eisler, 2015). Empirical evidence suggests that MFT is helpful for families and features lower rates of dropout than other forms of family therapies (Eisler et al., 2015; Hollesen, Clausen, & Rokkedal, 2013; Salaminou, Campbell, Kuipers, & Eisler, in press), although the long-term efficacy of MFT remains to be fully explicated.

To date, preliminary data suggest that short-term family intervention programmes may result in weight gain between

admission and follow-up, although little evidence has tracked the trajectory of eating disorder symptomatology throughout these intensive treatment adaptations (Dare & Eisler, 2000; Rockwell et al., 2011). In addition, the absence of long-term follow-up data has precluded a thorough assessment of the efficacy of short-term IFT, suggesting that despite promising preliminary findings, more rigorous investigations ought to document the efficacy of the short-term IFT of adolescent EDs.

Thus, we sought to investigate the long-term efficacy of our short-term IFT programme developed at the University of California, San Diego. Our short-term intensive treatment programme consisted of two iterations of a 1-week intensive family-based treatment programme: one for single families (S-IFT) (Rockwell et al., 2011) and another for multiple families (M-IFT) (Knatz et al., 2015). This study represents the first long-term follow-up of short-term intensive treatments and also represents the first comparison of single-family versus multi-family therapy of adolescent EDs. Thus, the present study sought (i) to evaluate the outcome of adolescent patients who participated in the IFT programmes, as well as the acceptability and feasibility; (ii) to compare the S-IFT/M-IFT models; and (iii) to compare the outcome of adolescent patients with AN and adolescent patients with eating disorder not otherwise specified (EDNOS)-restricting subtype. We hypothesized that both S-IFT and M-IFT would result in sustained physiological and psychological symptom remission, and would be deemed acceptable to families undergoing treatment.

## Method

### Participants

One hundred and eighteen families that participated in IFT (S-IFT + M-IFT) between November 2006 and June 2013 at the University of California, San Diego, were considered for inclusion in this report. All families completed the full treatment, although because of medical instability, one patient had to be briefly hospitalized and then completed IFT. We used the following criteria to exclude participants for this analysis: (i) meeting DSM-IV-TR (American Psychiatric Association, 2000) criteria for bulimia nervosa (BN); (ii) sub-threshold variants of BN (i.e., EDNOS with binge-purging behaviours); and (iii) lack of written informed consent. Fourteen families were excluded because of diagnostic criteria, and 12 were excluded for consent reasons. Thus, 92 families were contacted to participate in this study. Of the 92, 11 (11.9%) declined to participate and 7 (7.6%) were unable to be contacted. We collected data on 74 (80.5%) of the families contacted. The study was conducted according to the Institutional Review Board regulations of the University of California, San Diego.

### Treatment

#### Single-family intensive family therapy

The single-family intensive family therapy (S-IFT) previously described by our team (Rockwell et al., 2011) is a 1-week brief intervention for individual families with an adolescent with AN (Table 1). The S-IFT treatment team comprised psychiatrists, psychologists, nurses, and social workers, with a total of 40 hours of intensive treatment delivered over the course of the week. In

**Table 1** Differences and similarities of single-family (S-IFT) and multi-family intensive family therapy (M-IFT)

	S-IFT	M-IFT
Duration/weekly hours	5 days/40	5 days/40
Families involved	1	Up to 6
Group setting	–	+
Multiple family meals	–	+
Psychiatrists, psychologists, nurses, and social workers	+	+
Anxiety-raising sessions, family meal sessions with coaching, and intensified attempts to mobilize parental authority	+	+
Behavioural contracting	+	+
Psycho-education	+	+
Parent-to-parent consultation	–	+
Medical consultation	+	+
Broader systemic work (e.g., family sculpt and inter-family role plays)	–	+

terms of the clinical content of S-IFT, this treatment may be most centrally characterized by an array of intensified FT-AN practices, including repeated anxiety-raising sessions, repeated family meal sessions with coaching, and intensified attempts to mobilize parental authority. However, S-IFT also included behavioural contracting and psycho-education. The contracting sessions were focused on developing a behavioural contract to reinforce adolescents' positive behaviours related to food and eating-related challenges. Additionally, families attended three 1-hour psycho-education sessions led by a psychiatrist with extensive experience in the treatment of ED, with the goal of empowering parents and adolescents providing them with a better understanding of ED symptoms. Treatment providers were trained in FBT (Lock & le Grange, 2005) and received ongoing supervision from a certified FBT supervisor (K.B.). All families received psychiatric and medical consultations.

### Multi-family intensive family therapy

Our multi-family intensive family therapy (M-IFT) programme has previously been described by our team (Knatz et al., 2015) and features up to six families with adolescents with heterogeneous ED presentations. Differences and similarities with S-IFT are presented in Table 1. The treatment centres on the principles of parent-led symptom reduction and includes three sequential phases: observation, intervention, and reinforcement/planning. In keeping with the MFT literature (Eisler, 2005; Scholz, Asen, Gantchev, Schell, & Süß, 2002; Scholz et al., 2005; Simic & Eisler, 2015), a less direct therapeutic stance was taken where therapists acted as facilitators and families were encouraged to connect with one another to share feedback. To this end, our M-IFT programme consisted of a reflexive blend of FT-AN, structural, systemic, strategic, narrative, and psychodrama-based family therapy practices. Additionally, the group format was designed in order to enhance families' opportunities for learning, allowing parent-to-parent consultation and promoting family cohesion in the context of a supportive and reflexive environment, which also help reduce the families' sense of isolation and stigma. Behavioural contracting and psycho-education sessions were structured as described earlier. Treatment providers were trained in FBT (Lock & le Grange, 2005)

and MFT for AN and received ongoing supervision from a certified FBT supervisor (K.B.) as well as less frequent supervision from an expert in MFT (I.E.) (Voriadaki, Simic, Espie, & Eisler, 2015). All families received psychiatric and medical consultations.

## Measures

### Eating disorder symptoms

A semi-structured interview adapted from the Eating Disorder Examination (Fairburn, Cooper, & O'Connor, 2008) was used to collect details about past participants' self-reported height and weight, eating disorder symptomatology, treatments, and medications. We inquired about illness trajectory since time of discharge from the IFT programme as well as symptoms within the 3 months prior to the time of interview. Additionally, the interview asked participants about their opinion on the usefulness of IFT. In case of a positive answer, the interviewees were required to specify what components of IFT they considered particularly helpful choosing from the following: (i) psycho-education; (ii) group format (in case of M-IFT); and (iii) behavioural contracts and their combination.

All interviews were conducted over the phone from July to November 2013 by the same interviewer. The interviews were conducted with parents for individuals who were still adolescents (less than 18 years old at the time of the follow-up,  $N=39$ ) and either parents ( $N=22$ ) or past participants for individuals over the age of 18 years ( $N=13$ ).

Additionally, parents and past participants of all ages were also asked to complete an online self-report Eating Disorder Examination Questionnaire (EDE-Q). The EDE-Q (Fairburn & Beglin, 1994) is a 28-item self-report questionnaire with high internal consistency (Cronbach's alpha global scale = 0.93; Mond, Hay, Rodgers, Owen, & Beaumont, 2004) that provides a measure of the range and severity of eating disorder features in a total score and four subscales: Restraint, Eating Concern, Shape Concern, and Weight Concern. A parent version (P-EDEQ) (Loeb, 2008) was also used depending on participants' age. In case of overlap or disagreement between adults and parents' reports, the former were included in the analysis.

To allow a comparison of our findings with those in the existing literature, we adopted outcome criteria commonly used for FBT studies (Eisler & Dare, 2000; le Grange, Crosby, Rathouz, & Leventhal, 2007; Le Grange, Lock, Agras, Moye, Bryson, Jo, & Kraemer, 2012; Lock et al., 2010), thus categorizing outcome as follows: (i) Full remission: a minimum of 95% expected body weight (%EBW) for sex, age, and height as calculated using the Centers for Disease Control and Prevention weight charts (Kuczmarski, Ogden, Guo, Grummer-Strawn, Flegal, Mei, Wei, Curtin, Roche, & Johnson, 2002), EDE-Q global score within 1 SD of published community norms (1.59; Mond, Hay, & Owen, 2006), and absence of binge-purging behaviours (as assessed per EDE-Q items and clinical interview) in the previous 28 days. (ii) Partial remission: weight either greater than 85% or higher than 95% EBW but with elevated EDE-Q global mean score and binge-purging symptoms occurring less than once per week. (iii) Poor outcome: failure to achieve a minimum of 85% EBW or presence of binge-purging episodes during the previous 28 days with a frequency of once a week or more. Remission was evaluated in our sample using interview data (height,

weight, and binge–purge behaviours) and the EDE-Q global score. If the EDE-Q was not completed ( $N=19$ ), we utilized the interview data to determine outcome based on weight, height, and binge/purge behaviours.

## Demographics

From chart review, we collected past participants' gender, ethnicity, place of origin, diagnosis, treatment setting, age, age of onset, duration of illness, medication use, number of previous hospitalizations and residential treatments, and family history of both EDs and psychiatric disorders. Weight and height as measured by a nurse upon admission were also garnered from chart review to calculate %EBW (le Grange, Doyle, Swanson, Ludwig, Glunz, & Kreipe, 2012).

## Statistical analysis

Preliminary lost case analysis evaluated any differences in baseline variables between those who agreed to participate and those who declined using Mann–Whitney–Wilcoxon test and Fisher's exact test to analyse continuous and categorical variables, respectively. Moreover, a sensitivity analysis evaluated whether those who were lost at follow-up could significantly influence outcome. We evaluated the relationship between diagnosis, age at intervention, duration of illness, age of onset, and length of follow-up with outcome diagnosis using binary logistic regression. Changes in %EBW over time in the overall sample were analysed with a

paired-sample  $t$ -test. Furthermore, we evaluated changes in %EBW over time, and outcome differences between diagnosis (AN vs EDNOS) and programmes (S-IFT vs M-IFT) using Mann–Whitney–Wilcoxon test and Fisher's exact test. Differences in treatment received after discharge across outcome categories were investigated using the Fisher's exact test.

## Results

### Participant characteristics at baseline

As shown in Table 2, patients' mean age at entry into treatment was 14.8 (SD=2.7) years, with 42.4% residing in California ( $N=39$ ), 52.2% residing in other states within the USA ( $N=48$ ), and 5.4% residing outside of the USA ( $N=5$ ).

Of the overall sample who participated in the follow-up ( $N=74$ ), 59.5% ( $N=44$ ) met DSM-IV-TR diagnostic criteria for AN; of these, 88.6% met criteria for AN-restricting subtype ( $N=39$ ), while 11.4% for AN-binge/purge subtype ( $N=5$ ; Table 2). The remaining 40.5% of the sample met DSM-IV-TR criteria for EDNOS-restricting type ( $N=30$ ). The overall mean %EBW at entry into the programme was 86.36 (SD=8.74), and mean illness duration was 1.86 years (SD=1.97 years), with 31.1% of participants reporting previous ED-related hospitalizations before coming to UCSD ( $N=23$ ). The EDNOS subgroup was mainly composed of females (83.3%,  $N=25$ ) with mean duration of illness of 1.7 (SD=1.49) years, mean age of 14.5 (SD=3) years, and mean age of onset of 12.9 (SD=2.2) years.

**Table 2** Participant characteristics at time of entry into intensive family therapy (IFT) and lost case analysis

	Total sample ( $N=92$ , 100%)	Participating in follow-up study ( $N=74$ , 80.5%)	Not participating in follow-up study ( $N=18$ , 19.5%)	$p$ -value
Gender, female, $N$ (%)	85 (92.4)	68 (91.9)	17 (94.4)	1
Ethnicity, Caucasian, $N$ (%)	83 (91.2)	68 (91.9)	15 (88.2)	1
Place of origin, $N$ (%)				0.06
Local area	39 (42.4)	31 (41.9)	8 (44.4)	
USA	48 (52.2)	41 (55.4)	7 (38.9)	
Out of the USA	5 (5.4)	2 (2.7)	3 (16.7)	
Diagnosis, $N$ (%)				0.42
AN	57 (62)	44 (59.5)	13 (72.2)	
EDNOS	35 (38)	30 (40.5)	5 (27.8)	
Treatment setting, $N$ (%)				0.16
S-IFT	28 (30.4)	20 (27)	8 (44.4)	
M-IFT	64 (69.6)	54 (73)	10 (55.6)	
Age at entry, years, mean (SD)	14.84 (2.74)	14.74 (2.81)	15.27 (2.44)	0.65
Age of onset, years, mean (SD)	13.11 (2.42)	13.05 (2.52)	13.38 (2)	0.63
Duration of illness, years, mean (SD)	1.9 (1.95)	1.86 (1.97)	2.1 (1.93)	0.79
%EBW, mean (SD)	86.14 (8.65)	86.36 (8.74)	84.62 (8.33)	0.41
AN	80.44 (4.67)	80.52 (4.84)	80 (3.85)	
EDNOS	94.8 (5.55)	94.93 (5.46)	93.87 (7)	
Medication use, $N$ (%)	39 (42.4)	31 (41.9)	8 (44.4)	1
Previous hospitalizations, individuals, $N$ (%)	35 (38)	23 (31.1)	12 (66.7)	0.007
Previous residential treatments, individuals, $N$ (%)	5 (5.4)	5 (6.8)	0 (0)	0.58
Family history of psychiatric disorders, $N$ (%)	63 (68.5)	53 (71.6)	10 (55.6)	0.33
Family history of eating disorders, $N$ (%)	30 (32.6)	25 (33.8)	5 (27.8)	0.82

Note: Fisher's exact test and Mann–Whitney–Wilcoxon test were used to assess statistical significance for categorical and continuous variables, respectively.

S-IFT, single-family intensive family therapy; M-IFT, multi-family intensive family therapy; AN, anorexia nervosa; EDNOS, eating disorder not otherwise specified, restricting type; %EBW, % expected body weight.

The majority of those affected by EDNOS underwent M-IFT (73.3%,  $N=22$ ).

S-IFT was implemented in November 2006 and M-IFT was implemented in March 2010.

**Lost case analysis**

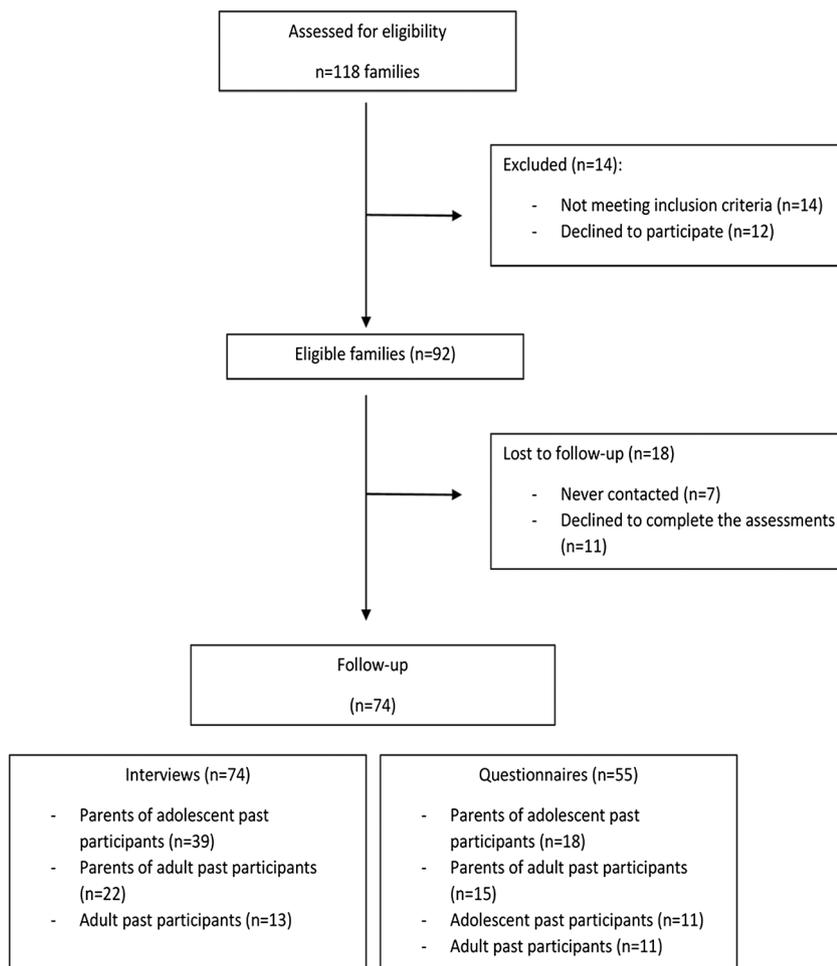
As shown in Table 2, the lost case analyses revealed no significant differences between those individuals who agreed to participate ( $N=74$ ) and those who did not ( $N=18$ ), with respect to any of the variables measured at baseline (age, duration of illness, treatment structure, %EBW, age of onset, and place of origin), except number of hospitalizations before IFT.

**Study participation and attrition**

A total of 74 families participated in the outcome study (Figure 1), of which 27% ( $N=20$ ) completed S-IFT and 73% ( $N=54$ ) completed M-IFT. Of this sample, at time of follow-up, 47.3% ( $N=35$ ) were young adults and 52.7% ( $N=39$ ) were adolescents. The mean length of follow-up was 30.85 months ( $SD=20.2$  months; range=4–83 months), and it should be noted the M-IFT group featured a significantly shorter follow-up period (Mann–Whitney–Wilcoxon test  $p < 0.001$ ), because

**Characteristics of participants at follow-up**

At follow-up, mean %EBW of the overall sample was 99% ( $SD=12.6$ ; Table 3), representing a statistically significant increase in weight ( $t=7.99$ ,  $p < 0.001$ ) with a very large effect size ( $d=1.18$ ). A significant increase in %EBW emerged in both diagnosis subgroups (Figure 2a). Since discharge from UCSD, 24.2% ( $N=18$ ) received no other treatments, 50% ( $N=37$ ) individual psychotherapy, 6.8% ( $N=5$ ) family counselling, 2.7% ( $N=2$ ) intensive outpatient programme, 9.5% ( $N=7$ ) a combination of individual psychotherapy and psychiatric consultations, 2.7% ( $N=2$ ) psychiatric visits only, and 4.1% ( $N=3$ ) other kinds of treatments. Taken cumulatively across both treatment groups, 87.8% ( $N=65$ ) of our overall sample achieved a positive outcome, with significantly less hospitalizations following IFT when compared with those required before IFT. More specifically, 87.8% ( $N=65$ ) of participants achieved either full (60.8%,  $N=45$ ) or partial remission (27%;  $N=20$ ), while 12.2% ( $N=9$ ) reported a poor outcome (Figure 3).

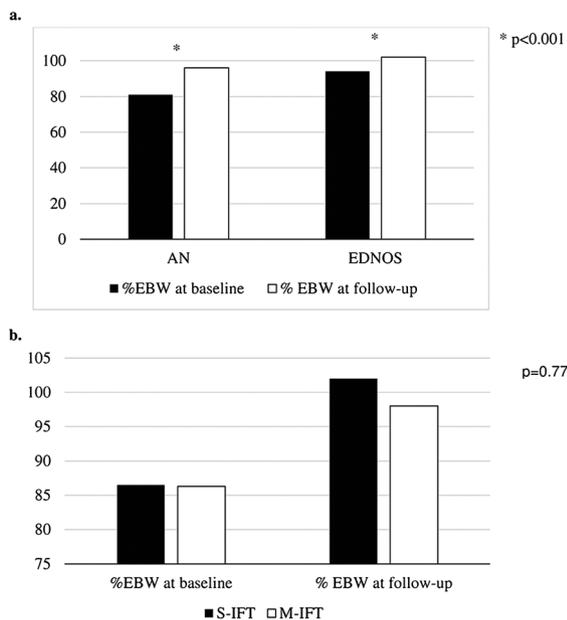


**Figure 1.** Outline of family enrollment in this study

**Table 3** Participant characteristics at follow-up and by treatment structure in those who completed the follow-up study

	Total sample participating in follow-up study (N = 74)		S-IFT (N = 20, 27%)		M-IFT (N = 54, 73%)		p-value
Length of follow-up, months, mean (SD)	30.85	(20.2)	53.4	(16.07)	22.5	(14.37)	<0.001
Age at follow-up, years, mean (SD)	17.18	(3.4)	19.2	(3.03)	16.44	(3.25)	0.002
%EBW, mean (SD)	99	(12.57)	102.17	(17.47)	97.83	(10.14)	0.57
AN	96.89	(14.42)	104.16	(21.92)	94.17	(9.47)	0.27
EDNOS	102.11	(8.52)	99.18	(7.52)	103.17	(8.78)	0.26
Outcome, N (%)							1
Full remission	45	(60.8)	13	(65)	32	(59.3)	
Partial remission	20	(27)	5	(25)	15	(27.7)	
No remission	9	(12.2)	2	(10)	7	(13)	
Undergoing treatment, N (%)	36	(50.7)	6	(31.6)	30	(57.7)	0.06
On medications, N (%)	34	(45.9)	8	(40)	26	(48.1)	0.61
How long on medications, N (%)							0.9
<6 months	9	(26.5)	3	(37.5)	6	(23.1)	
6–12 months	8	(23.5)	1	(12.5)	7	(26.9)	
>12 months	12	(35.3)	3	(37.5)	9	(34.6)	
n.a.	5	(14.7)	1	(12.5)	4	(15.4)	
Hospitalization since IFT, individuals, N (%)	6	(8.1)	2	(10)	4	(7.4)	0.66
Residential treatments since IFT, individuals, N (%)	11	(14.9)	2	(10)	9	(16.7)	0.72

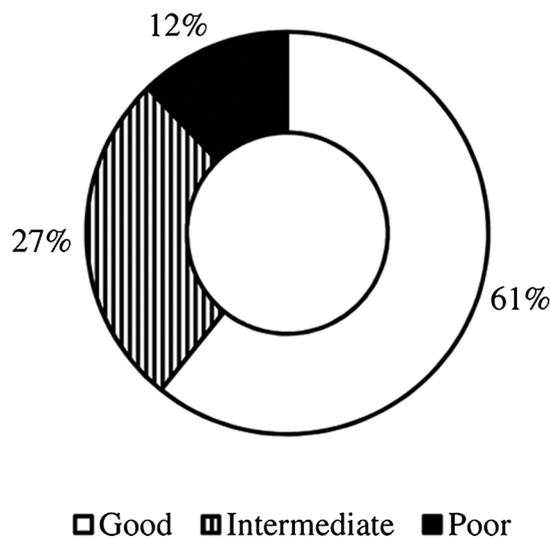
Note: S-IFT, single-family intensive family therapy; M-IFT, multi-family intensive family therapy; AN, anorexia nervosa; EDNOS, eating disorder not otherwise specified, restricting type; %EBW, % expected body weight.



**Figure 2.** Comparison of % expected body weight (%EBW) at baseline and follow-up between (a) individuals with anorexia nervosa (AN) and (b) eating disorder not otherwise specified (EDNOS)-restricting subtype and single-family intensive family therapy (S-IFT) and multi-family intensive family therapy (M-IFT)

**Outcome sensitivity analyses**

The sensitivity analysis revealed that even if those who were lost at follow-up had all positive outcomes, the findings of this study



**Figure 3.** Outcomes at follow-up for total sample

would not be affected. However, the overall findings could be modified if those lost at follow-up reported all poor outcomes or in case of all positive outcomes in one condition and all negative in the other.

**Treatment after discharge and outcome**

No significant differences emerged across outcome groups with respect to kinds of treatment received after discharge from UCSD (Fisher’s exact test  $p = 0.69$ ).

## Relationship between baseline variables and outcome

Binary logistic regressions failed to show an association between outcome and the following baseline variables: diagnosis (Wald test = 2.92,  $p = 0.09$ ), age at intervention (Wald test = 0.45,  $p = 0.5$ ), age of onset (Wald test = 0.24,  $p = 0.62$ ), and duration of illness (Wald test = 2.43,  $p = 0.12$ ).

## Comparison of diagnosis; AN and EDNOS-restricting subtype

Among baseline characteristics, individuals affected by AN versus EDNOS-restricting subtype differed only with respect to %EBW (Table 2). No differences emerged between AN and EDNOS groups with respect to outcome (Fisher's exact test  $p = 0.16$ ), medications (Fisher's exact test  $p = 0.16$ ), or higher levels of care in the interval since IFT treatment (Fisher's exact test hospitalizations  $p = 0.7$ ; residential treatments  $p = 0.18$ ).

## Comparison of different models of delivery; S-IFT and M-IFT

No differences emerged between S-IFT and M-IFT on baseline characteristics (data not shown). Furthermore, no differences between S-IFT and M-IFT groups emerged with respect to %EBW at follow-up (Mann–Whitney–Wilcoxon test  $p = 0.77$ ; Figure 2b), outcome (Fisher's exact test  $p = 1$ ), medications (Fisher's exact test  $p = 0.61$ ), or higher levels of care in the interval since IFT treatment (Fisher's exact test hospitalizations  $p = 0.659$ ; residential treatments  $p = 0.72$ ).

## Acceptability of IFT

The vast majority of the interviewees reported IFT to be useful ( $N = 68$ , 91.9%). In particular, 60% of those who underwent S-IFT evaluated as particularly helpful the combination of psycho-educational activities and behavioural contracting, while 87% of those who participated in M-IFT valued the combination of all three components (i.e., psycho-educational activities, behavioural contracts, and group setting).

## Discussion

The main aim of this study was to assess the long-term outcome of two forms of short-term IFT in the context of adolescents affected by AN and EDNOS-restricting subtype. When considered together, both S-IFT and M-IFT showed similarly significant weight and behavioural symptom remission, with approximately 88% demonstrating full (61%) or partial remission (27%), and only 12% reporting a poor outcome at a mean of 30 months follow-up. Furthermore, both forms of IFT were deemed acceptable to families and adolescents. Cumulatively, these data represent novel findings and may provide preliminary support for the clinical utility of short-term intensive treatments in adolescents with EDs.

In keeping with outcome criteria widely endorsed in the extant outcome literature (Eisler, Simic, Russell, & Dare, 2007; Le Grange, Lock, et al., 2012; Lock et al., 2010), the present findings demonstrate comparable outcomes with those reported in controlled trials of FT-AN, which typically illustrate that up to 49% report full and 77% report partial remission at 12-month

follow-up, with 23% reporting poor outcome (Le Grange, Lock, et al., 2012; Lock et al., 2010). In this study, we found comparable outcomes for S-IFT and M-IFT, although there were differences in follow-up lengths. Other studies presenting longer term follow-ups indicate that there is an ongoing improvement following family therapy and that those who do well maintain their achievements and have low relapse rates (Eisler, Dare, Russell, Szukler, Le Grange, & Dodge, 1997; Eisler et al., 2007; le Grange et al., 2014; Lock, Couturier, & Agras, 2006).

This study is the first to present data on long-term outcomes using intensive treatments for adolescents with AN and EDNOS-restricting subtype. This model provides a treatment alternative that may be able to reach a greater proportion of the families who have a child with an ED. It is important to note the scarcity of expert FT-AN therapists (Murray & Le Grange, 2014) alongside the propensity for lack of treatment fidelity among those in unsupported settings (Couturier, Kimber, Jack, Niccols, Van Blyderveen, & McVey, 2013, 2014; Wallace & von Ranson, 2012) that could impinge upon both the uptake and outcome of specialist treatments (House et al., 2012). This intensive therapy model could provide an empirically supported treatment for families whose geographical location restricts their access to specialist outpatient ED services that are most likely to provide evidence-based treatments (Couturier, Kimber, Jack, et al., 2013, 2014).

Furthermore, our findings add to a growing body of literature suggesting the efficacy of the multi-family intensive treatment for families with a child with an ED (Gabel, Pinhas, Eisler, Katzman, & Heinmaa, 2014; Salaminou et al., in press). Indeed, in light of the similar treatment outcomes between our S-IFT and M-IFT, and the empirically supported individual FT-AN (Lock, 2011), the simultaneous treatment of multiple families in intensive treatment programmes without any loss of efficacy may represent a particularly cost-effective avenue for further empirical and clinical endeavours, although these treatments were not directly compared in this study. This assertion may be further underscored in light of the present findings drawn from adolescents engaged in costly hospital and partial hospital programmes (Madden et al., 2014), with reduced rates of readmissions to hospital settings further underscoring the cost-effectiveness of this treatment.

In addition to our overall findings, delineating the differential effects of short-term intensive treatments across diagnoses further supported the efficacy of treatment, with both those with AN and those with EDNOS-restricting type presentations reporting comparable treatment outcomes. This may be particularly important to consider when considering the heterogeneity and complexity of presentation (i.e., high levels of obsessive compulsive disorder and complex family presentations) and the noted ambiguity surrounding the treatment of atypical presentations of disordered eating (Keel & Brown, 2010). There is evidence that more complex cases require a greater degree of flexibility and tailoring to the specific needs of a particular family (Webb, Thuras, Peterson, Lampert, & Crow, 2011), and it is possible that the intensive and immersive nature of short-term treatment allows for more observation and analyses of the subtle nuances of atypical presentations, which may not emerge in less intensive and time-limited outpatient settings.

Alongside the notable clinical implications, the present findings, if replicated in larger and more controlled trials, may likely impact the development of treatment policies. Firstly, providing centralized access to leading evidence-based treatments mitigates the challenges to treatment uptake brought about by the scarcity of specialized treatment providers. This may be particularly important when considering access to treatments most typically delivered on an outpatient basis, as long distance commutes may likely impinge upon regular treatment schedules. It is of note that in the present study, 57.6% of those seeking intensive specialist treatment came from other states or outside the USA, confirming the difficulty for patients and their families in accessing specialist treatment programmes. Furthermore, grouping several families together throughout treatment allows for the division of treatment costs between families, providing more financially viable and equally efficacious treatment options for families and insurance providers alike. This is particularly noteworthy in the context of costly treatment programmes for AN, which typically approximate up to \$3979 per day in the USA (Madden et al., 2014).

However, despite these encouraging findings, limitations should also be noted. This study relies on self-report data, and the semi-structured interview used is not validated and was not administered to all patients at the different time points considered. In fact, in some cases, either the EDE-Q or the interview was used to evaluate outcome. Moreover, a number of participants were lost at follow-up assessment, and our sensitivity analyses suggested that if all the participants who were lost to follow-up did poorly, the results of this study may not stand. Furthermore, because of the evolution of this clinical treatment programme, the length of follow-up varied between individual and multi-family intensive treatments. Moreover, in keeping with our clinical policy to exercise no exclusion criteria for treatment, there were both AN and EDNOS-restricting subtype included in the present study, although our analyses were not powered to look at any differential effects of treatment by diagnosis.

Finally, it is possible that there was a selection bias, in that families who participated in our intensive programme were particularly motivated to engage in treatment, given that they had to travel to San Diego and often pay out of pocket for treatment. Furthermore, those who completed the follow-up assessment reported less frequently a history of hospitalizations than those who declined to participate in this study. Lastly, a significant proportion of participants received follow-up treatments after attending the programme. This confounds the reported outcome data as it is possible that changes in reported outcomes may be partially attributed to follow-up services. However, a quarter of individuals did not undergo any other treatments after receiving IFT, and of those who did, the majority did not receive specialty family therapy services. Given these limitations, it remains to be proven whether these results will generalize to all patients with AN and EDNOS-restricting subtype and their families.

The present results provide novel data as to the preliminary efficacy of 1 week intensive treatments for adolescent EDs. While preliminary at this stage, these promising findings suggest that further research should replicate the present findings in larger and more rigorously controlled trials.

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