Adapting family-based therapy to a day hospital programme for adolescents with eating disorders: preliminary outcomes and trajectories of change

Laura Girz,[a] Adele Lafrance Robinson,[b] Mirisse Foroughe,[c] Karin Jasper[d] and Ahmed Boachie[e]

Adolescent eating disorder symptoms, depression and anxiety, the impact of their symptoms on their parents, and parental self-efficacy were assessed before beginning family-based day hospital treatment, and at 3 and 6 months post-assessment. Parents' self-efficacy increased during the first 3 months of treatment, and their knowledge and confidence in their effectiveness against the eating disorder continued to increase between 3 and 6 months post-assessment. Adolescent eating disorder symptoms, depression and anxiety, and the impact of the symptoms on their parents decreased between 3 and 6 months post-assessment. The results suggest that family-based treatment can be adapted to day hospital programmes for adolescents. The results also provide preliminary support for a treatment duration of at least 6 months.

Key words: family-based therapy; day hospital treatment; eating disorder; anorexia; bulimia.

[a] PhD candidate, University of Toronto, Sidney Smith Hall, 100 St. George Street, Toronto, Ontario, M5S 3G3. E-mail laura.girz@utoronto.ca

[b] Staff Psychologist at the Eating Disorder Program of Health Sciences North, Sudbury, Canada; Assistant Professor, Laurentian University, Sudbury, Ontario

[c] Child and Adolescent Psychologist, Summerville Family Health Team, Mississauga, Ontario; Consulting Psychologist, Child Development Institute, Toronto, Ontario

[d] Clinical Mental Health Specialist, Southlake Regional Health Centre, Newmarket, Ontario; Assistant Professor, Department of Psychiatry, University of Toronto, Toronto, Ontario

[e] MD, Director of Eating Disorder Program, Southlake Regional Health Centre, Newmarket, Ontario; Assistant Professor, Department of Psychiatry, University of Toronto, Toronto, Ontario; Psychiatrist, Eating Disorder Program, Hospital for Sick Children, Toronto, Ontario

Family-based therapy for adolescent eating disorders is currently considered the treatment of choice for adolescent anorexia nervosa (AN) (Keel and Haedt, 2008; Le Grange and Eisler, 2008). Studies examining the outcomes of family-based therapy have shown that between 50 and 75 per cent of adolescents with anorexia are weight restored at the end of treatment and 60–90 per cent have fully recovered after 4–5 years, based on Morgan-Russell criteria (Le Grange and Eisler, 2008). Furthermore, rates of full remission have been found to be higher 6 and 18 months after the end of treatment for adolescents who receive family-based treatment than for those who receive adolescent-focused individual therapy (Lock *et al.*, 2010). Family-based therapy may also be a promising treatment for adolescents with bulimia nervosa (BN) (Keel and Haedt, 2008; Le Grange and Lock, 2007). Adolescents treated with family-based therapy have been found to have higher rates of abstinence from binge eating and purging at the end of treatment and at 6-months' follow up compared with adolescents treated with supportive psychotherapy (Le Grange *et al.*, 2007). Family-based therapy has also produced outcomes equivalent to those of cognitive behaviour therapy guided self-care for adolescents with BN (Schmidt *et al.*, 2007).

In contrast to traditional forms of family therapy, family-based therapy is agnostic with regard to the aetiology of the eating disorder, focusing instead on empowering parents to help their adolescent recover (Le Grange, 1999). The family-based therapy approach regards families as part of the solution, not the problem (Le Grange and Eisler, 2008), while still recognizing the tremendous burden that the presence of an eating disorder can place on parents and family functioning (for example, Cottee-Lane *et al.*, 2004; Kyriacou *et al.*, 2008). Specifically, as the adolescent's eating disorder symptoms take a progressively more central role in family life, the main focus of the family's time is often narrowed and organized around the eating disorder. Eventually, the patterns of family interaction can become restricted so that the family feels helpless to change the situation and becomes fearful of doing anything outside the usual routine (Eisler, 2005). In other words, as a consequence of trying to cope with their adolescent's illness, the family may get stuck in patterns of interaction that help to maintain the eating disorder (Schmidt and Treasure, 2006; Treasure *et al.*, 2008).

Family-based therapy consists of three phases: (i) parents re-feed their adolescent and prevent unhealthy behaviour such as purging, (ii) control of eating is slowly handed back to the adolescent, and (iii)

the family works towards the restoration of healthy relationships and autonomy for the adolescent (Le Grange, 1999; Le Grange *et al.*, 2003; Lock *et al.*, 2001). A central feature of the therapy is freeing parents from immobilizing guilt about their adolescent's eating disorder while heightening appropriate anxiety about the seriousness of the illness so as to mobilize parents' already existing skills and resources in the service of re-feeding their child (Le Grange and Eisler, 2008; Lock *et al.*, 2001).

Although family-based therapy (also known as the Maudsley model) is usually practiced as a weekly outpatient therapy, the model has also been adapted to several day hospital programmes in Canada. A number of staff at the site where the present study took place received training in the model by Daniel le Grange (for single family outpatient treatment), Ivan Eisler and Pennie Fairbairn (for multifamily group therapy) and James Lock (in a day hospital context). These staff have provided in-house training to other staff members on a regular basis.

Because adolescents are in a developmental flux that includes physical growth, which in many cases requires repeated upward adjusting of weight targets, as well as cognitive, emotional and social growth, it is essential that disruption due to the eating disorder be minimized. Most adolescents with eating disorders will not consistently attend day hospital and complete treatment of their own accord. Parents are in a position to insist that their children attend treatment and to assume responsibility for ensuring that they continue to be healthy after they leave day hospital. Parents can play a significant role in day hospital treatment although they are not present in the treatment setting most of the time. Day treatment can be seen as a form of separated family therapy, in which the therapist meets the adolescents and parents separately as well as having sessions where they are brought together. As Eisler *et al.* (2000) found, both types of family therapy can be equally successful, although families with higher levels of maternal criticism had better outcomes with separated family therapy than conjoint family therapy (Eisler *et al.*, 2007).

There are six key ways that parents are involved in our day hospital programme: parents check in with the family therapist after the weekend; the family therapist holds a conversation with the parents after weekly team rounds; parents attend re-entry meetings should extra support be required in the event that their child is struggling to meet the demands of the programme; parents and children attend weekly individual family-based therapy sessions; parents and children

attend a multi-family therapy evening; and parents are involved in completing a family transition plan; including identifying food-related and non-food-related goals to continue their child's recovery. Details of this involvement are provided in the 'Setting' section below.

Adolescents with eating disorders are referred to our day hospital for treatment either if they are losing weight or not gaining sufficient weight with weekly outpatient treatment; if they have had repeated in-patient admissions without sustained improvement or if they are being discharged from an in-patient stay early due to systemic or financial pressures and need more structure to support adequate weight gain than therapy once a week can provide. In all these cases, day hospital treatment provides an alternative to in-patient treatment that is less costly and less disruptive to the life of the adolescent. For example, day hospital treatment promotes greater contact with family and friends than does in-patient treatment and allows patients to incorporate new skills in their home environment (Zipfel *et al.*, 2002). Consistent with the family-based therapy approach, the day hospital programme also promotes the normalization of eating – this is in stark contrast to in-patient programmes that often focus on acute medical care, including nasogastric re-feeding and food supplements. Throughout day hospital treatment, parents are responsible for weekend meals and are coached to manage their adolescents' recovery after they transition from the day hospital programme to outpatient treatment. Effective day hospital treatment, therefore, not only reduces eating disorder behaviour and aims at improving the psychological functioning of the adolescent but also improves parents' understanding of the illness and increases their ability to re-feed their adolescents and interrupt their eating–disorder-related behaviour.

Findings from studies of multidisciplinary adult day hospital programmes have been largely positive, with such programmes producing reductions in eating disorder symptoms and improvements in psychological functioning (Gerlinghoff *et al.*, 1998; Kong, 2005; Schaffner and Buchanan, 2008; Zeeck *et al.*, 2009). Day hospital programmes might be similarly helpful for adolescents with eating disorders.

In a recent open clinical trial of a day treatment programme for adolescents in Australia, Goldstein *et al.* (2011) reported some improvement in weight gain and significant changes in eating attitudes, the drive for thinness, perfectionism and readiness to change scores. Adolescents attended this transition programme 3.5 days per week for 10 weeks and were followed up at 6 months. Parents

attended some aspects of this programme but it appears that the programme did not adhere to a family-based treatment model. After 6 months the mean percentage of ideal body weight (IBW) among the adolescents was 88.64, which may be considered insufficient, considering the potential impact of low weight on the developmental processes of adolescents and the short time frame in which some developmental processes occur; for example, height and bone density.

It is clear that very little is known about adolescent outcomes after day hospital treatment for eating disorders that is adapted from the model of family-based therapy; for instance, whether parental involvement might improve the rate and amount of weight gain. Furthermore, despite the central role that parents play in family-based therapy there have been no reports in the literature of changes in parent self-efficacy or the care-giving burden following family-based therapy.

In addition to determining whether family-based day hospital therapy produces positive outcomes for both adolescents and their parents, it is also vital to explore trajectories of change for both groups over the course of treatment. Only two studies to date have begun to examine the question of treatment length on adolescent outcomes following outpatient family-based therapy (Lock *et al.*, 2005, 2006) and none have done so in the context of day hospital treatment. In fact, there are currently no benchmarks for the optimal length of stay in an adolescent day hospital programme. The two studies examining length of treatment that have been published found no significant differences in either short-term or long-term outcomes between adolescents who completed 6 months of outpatient family-based therapy and those who completed 12 months, although adolescents with more severe eating-related obsessive-compulsive behaviour and those from non-intact families did fare better with the longer course of therapy (Lock *et al.*, 2005, 2006). It is unclear from these findings, however, whether a full 6 months of therapy is actually needed to obtain optimal results or whether shorter treatments could produce an equivalent outcome, especially in a day hospital setting. As there are currently no indicators of the optimal duration of family-based therapy for day hospital programmes, an understanding of the trajectories of change with respect to adolescent and parent outcomes over the first 6 months of treatment will provide preliminary data on treatment length. A relatively short course of day hospital treatment might be appropriate if most of the change in adolescents and parents were to occur early in

the treatment process, whereas longer term treatment might be indicated if improvement were more protracted.

Because of the small sample size, the purpose of the present study was to

1. conduct a preliminary examination of adolescent and parent outcomes during family-based therapy in a day hospital programme;
2. explore trajectories of change for both adolescents and parents.

Method

Adolescent eating disorder behaviour and psychological symptoms, the impact of the symptoms on the parents, and parental self-efficacy were assessed before beginning the day hospital and at 3 and 6 months post-assessment. This allowed for change scores between time points to be examined.

Participants

All patients and their parents who attended the day hospital programme during the 2-year study period and who had reached the 6-month follow up were included in the study. Several adolescents were not included in the study because they had recently entered the programme and had not yet completed the 3-month or 6-month follow-up questionnaires. No patients or parents refused to participate in the study. All the adolescents in the sample were female and their mean age at assessment was 16.06 (SD = 1.03). Eating disorder diagnoses included anorexia nervosa, restricting type (AN-R) (*n* = 4), bulimia nervosa, purging type (BN-P) (*n* = 6), eating disorder not otherwise specified (EDNOS) restricting profile (EDNOS-R) (*n* = 6) and EDNOS binge or purge profile (EDNOS-B/P) (*n* = 1). The average duration of illness was 2.5 years (SD = 1.10). The group was mixed with regard to comorbid psychiatric diagnoses. Nine adolescents were diagnosed with mood or anxiety disorders and eight were without assessed psychiatric comorbidities. At assessment, nine adolescents presented on selective serotonin reuptake inhibitor (SSRI) medications (AN-R = 2, BN-P = 3, EDNOS-R = 3, EDNOS-B/P = 1). In terms of previous treatment, eight of the adolescents had never received prior mental health or medical treatment. Of the remaining nine adolescents, two had received in-patient treatment in a community hospital, two received in-patient treatment in an eating disorder unit, two had received treatment in a day programme, nine received

outpatient treatment for their eating disorder and two had received outpatient treatment for general mental health issues.

During the period from assessment to the 6-month follow up, the adolescents in the sample spent an average of 149.76 days (SD = 30.34) in the day hospital programme. Among the parents in the sample, twelve couples were married and five were divorced or separated. All sets of parents were coached to work together as a unit with respect to their daughter's recovery.

Setting

Adolescents with eating disorders who are between the ages of 13 and 18 may be referred to the day hospital programme at the time of the assessment should they need daily support or more structure than is available through weekly outpatient treatment but do not require a medical intervention that would make in-patient treatment necessary. New families can join the programme at any time for a maximum of eight families in total. The programme uses a multidisciplinary approach that includes medicine, psychiatry, psychology, nutrition, child and youth counselling, social work, and education.

From Monday to Friday the adolescents have all their meals and most of their snacks in the programme and attend school and a variety of groups, including skill-building, food desensitization and interpersonal groups. The programme dieticians assist in menu selection and child and youth counsellors provide meal support for normal food intake to resume. Weekly medical monitoring includes weighing patients up to three times per week. Psychiatrists provide bi-weekly individual assessment and prescribe and monitor psychopharmacological medication as needed. In these ways the day hospital programme promotes the health, safety and development of the patients until their parents are able to take over from the programme on a full-time basis. However, most of the adolescents who attend the day hospital say that they would not be in the programme if their parents did not require them to attend. This is consistent with the amotivational nature of the illness. While the patients need the structure of the programme, the programme depends on the full partnership of the parents.

Family-based therapy (Lock *et al.*, 2001) is central to the philosophy and functioning of the programme and has been adapted to the day hospital setting. Each adolescent and their parents meet with a family therapist once a week to work out difficulties related to weekend meals

and snacks. All the adolescents and their parents meet in a multi-family group one evening each week. This group includes a 1-hour joint activity with the adolescents and parents, followed by 1 hour of recreation for the adolescents while their parents attend a support group facilitated by a family therapist. One of the four joint activities is a multi-family meal. The families eat dinner together in a group and the parents are responsible for bringing food and for seeing to their own child's progress at the meal. The week previous to the meal, the joint session is devoted to families planning this meal. The other joint activities are designed to increase understanding or trust between the parents and children, especially in relation to the eating disorder. The parents' support group gives parents an opportunity to learn from one another at each phase of the recovery process and to benefit from staff expertise about eating disorders.

The single family meetings and the multi-family group meetings provide two opportunities per week for parents to get coaching and support in how to manage the re-feeding of their children, which they practice every weekend. Parents phone their family therapist on Monday mornings to discuss how the weekend meals went and the therapists call the parents after weekly team rounds to let parents know how their children are progressing in the programme and to communicate any changes in care that need to be implemented at home immediately; for example, supervising exercise or monitoring bathrooms to prevent purging. In addition, if an adolescent struggles with meeting the demands of the programme, for instance, by not completing a meal or struggling to attend a group, their parents are called to come to the programme in order to support the reintegration of the young person as soon as possible.

During weekly team meetings the multidisciplinary team discusses the family's readiness for transition on the basis of the following: weight gain or stabilization has been achieved, symptoms are rare or in remission, mood is stable (including the absence of suicidality), adolescents exert more control over their meals in the programme and at home (with parent's ongoing support) and parents show confidence in their ability to manage the transition and a possible relapse. The process of transition is also discussed with the adolescent and their parents in order to assess their perceived preparedness and willingness for the transition. When the treatment team and family are ready to proceed with the transition from the day hospital programme, with support from the family therapist, the family completes a family transition plan in which each family member identifies and

works toward food and non-food goals related to the child's recovery during the transition and beyond.

Procedure

During a multidisciplinary assessment in the adolescent eating disorder programme, the patients and their parents completed the measures and were offered treatment, for example, the day hospital programme. The patients and their parents were then reassessed at 3 and 6 months post-assessment. This research was reviewed and approved by an institutional review board.

Measures

Eating-disordered symptomatology was assessed using the *Eating Disorder Inventory*, 3rd edn (EDI-3) (Garner, 2004), which is a ninety-one-item measure of psychological traits and eating disordered symptoms relevant to the development and maintenance of AN, BN and EDNOS. The EDI-3 was designed for use with females aged 13–53 years. A 0–4 point scoring system is used and responses are categorized into twelve subscales as well as six composite scores. Three of the subscales are specific to eating disordered behaviour (the drive for thinness, BN and body dissatisfaction), while the other nine subscales assess psychological traits that are relevant to eating disorders (low self-esteem, personal alienation, interpersonal insecurity, interpersonal alienation, interoceptive deficits, emotional dysregulation, perfectionism, asceticism and maturity fears).

Anxiety was measured with the multidimensional anxiety scale for children (MASC), a thirty-nine-item, four-point Likert self-report scale that robustly represents the factor structure of anxiety in children aged 8 to 18 years (March and Staff, 1997). The main factors include (i) physical symptoms (tense/restless and somatic/autonomic), (ii) social anxiety (humiliation/rejection and public performance fears), (iii) harm avoidance (perfectionism and anxious coping) and (iv) separation anxiety.

Depression was measured with the children's depression inventory (CDI) (Kovacs, 1992). This self-report inventory measures levels of depressive symptomatology in children and adolescents aged 7–17 years. The measure comprises twenty-seven items, each containing three statements. Respondents are instructed to choose the statement that best describes their feelings within the last 2 weeks.

Parental self-efficacy was assessed using a revised version[1] of the parent versus anorexia scale (PvA) (Rhodes *et al*., 2005). The PvA was designed to study the perceived efficacy of a parent to take a primary role in managing their child's anorexia in the home setting for the purpose of bringing about recovery (Rhodes *et al*., 2005). Seven items are included in the scale and these are rated on a five-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree). Scores can range from seven to thirty-five, with higher scores representing greater self-efficacy. In the current study the term 'eating disorder' was used instead of 'anorexia' throughout the questionnaire. There is preliminary evidence of adequate psychometric properties for the PvA (Rhodes *et al*., 2005). In the present study internal consistency was found to be adequate (Cronbach's alpha = 0.71).

The care-giving burden resulting from caring for a child with an eating disorder was measured by the eating disorders symptom impact scale (EDSIS) (Sepulveda *et al*., 2008), a twenty-four-item scale developed to measure the specific impact that eating disorders have on family life. Responses to each item are rated on a five-point Likert scale (never, rarely, sometimes, often, nearly always), with higher scores representing a greater impact of symptoms on parents. The scale provides four factor scores: social isolation, guilt, nutrition and dysregulated behaviour. The reliability of the EDSIS has been found to be good (Cronbach's alpha ranged from 0.84 to 0.90). Reliability was very good in the current study (Cronbach's alpha = 0.94). The convergent validity of the EDSIS subscales has also been established through moderate correlations with other measures of care-giving burden or distress (Sepulveda *et al*., 2008).

Results

Adolescent measures

At assessment the adolescents in this study averaged 88 per cent of the IBW as determined by information obtained through their clinical history, growth curves and menstrual threshold. At the 3-month follow up, 12 of the adolescents were at the IBW, with the remaining

---

[1] For example, the item, 'It is not always advisable to get tough with a child with anorexia because he/she will experience too much trauma and distress' was revised to 'It is not always advisable to get tough with a child with an eating disorder because he/she will experience too much trauma and distress'.

seven adolescents averaging 94 per cent IBW. At the 6-month follow up, sixteen of the adolescents were at the IBW, with the remaining adolescent averaging 99 per cent IBW. It is important to note that only ten of the adolescents had restricting-type eating disorder presentations. As such, weight restoration was a treatment goal for only a subset of the adolescents of the sample.

A series of repeated-measures ANOVAs was conducted with adolescent scores on the CDI, MASC and EDI-3 across the three time points (assessment, 3-month and 6-month follow up) as the dependent variables. Planned comparisons with Bonferroni adjustments were then conducted to examine significant differences between time points. Results of the planned comparison analyses are included as subscripts in each means table.

All CDI subscale scores decreased significantly over time (all P-values < 0.005; see Table 1). Planned comparisons indicated that scores on the interpersonal problems subscale decreased significantly during the first 3 months of treatment. Scores on negative mood, interpersonal problems, ineffectiveness, anhedonia and negative self-esteem subscales decreased significantly between 3 and 6 months.

For the MASC, scores on the tense/restless, somatic/automatic, humiliation/rejection, performance fears and separation/panic subscales decreased significantly over time (all P-values < 0.02; see Table 2). Planned comparisons showed that scores on the tense/restless, somatic/automatic, humiliation/rejection and performance fears subscales decreased significantly between 3 and 6 months, while scores on the separation/panic subscale decreased significantly between assessment and 6 months.

TABLE 1 *Means and standard deviations for the children's depression inventory (CDI)*

	Assessment		3 months		6 months	
	M	*SD*	*M*	*SD*	*M*	*SD*
CDI total	73.47$_a$	18.97	64.00$_a$	16.95	38.47$_b$	20.57
Negative mood	72.18$_a$	18.19	64.24$_a$	15.66	38.94$_b$	19.08
Interpersonal problems	70.06$_a$	18.53	59.06$_b$	13.11	37.06$_c$	17.33
Ineffectiveness	63.82$_a$	19.90	59.71$_a$	18.67	47.53$_b$	13.02
Anhedonia	66.29$_a$	12.22	59.71$_a$	11.53	51.41$_b$	12.90
Negative self-esteem	66.82$_a$	19.70	57.24$_a$	15.49	47.41$_b$	10.36

Note: Means in the same row that do not share subscripts differ at P < 0.05. Average T-scores = 45–55.

TABLE 2 *Means and standard deviations for the multidimensional anxiety scale for children (MASC)*

	Assessment		3 months		6 months	
	M	SD	M	SD	M	SD
MASC total	65.24[a]	9.37	60.06[a]	11.78	51.59[b]	11.73
Tense/restless	64.71[a]	9.41	58.47[a]	7.58	50.88[b]	9.12
Somatic/automatic	57.88[a]	16.32	52.24[a]	10.66	44.41[b]	8.46
Perfectionism	53.29	11.53	53.59	12.69	50.29	12.87
Anxious coping	48.18	11.16	45.71	10.06	42.35	12.70
Humiliation/rejection	66.94[a]	8.10	65.75[a]	11.12	57.06[b]	11.48
Performance fears	62.59[a,b]	13.30	64.18[a]	14.93	54.82[b]	11.81
Separation/panic	58.53[a]	13.58	54.18[a,b]	10.85	49.06[b]	11.14

Note: Means in the same row that do not share subscripts differ at $P < 0.05$. Average T-scores = 45–55.

TABLE 3 *Means and standard deviations for the eating disorder inventory (EDI)*

	Assessment		3 months		6 months	
	M	SD	M	SD	M	SD
Drive for thinness	49.24[a]	12.61	42.06[a]	11.52	31.06[b]	13.11
Bulimia	55.41[a]	12.76	40.59[b]	7.42	39.35[b]	7.58
Body dissatisfaction	48.47[a]	11.85	46.65[a]	11.74	36.88[b]	12.32
Low self-esteem	52.31[a]	11.56	49.44[a]	9.43	40.63[b]	8.12
Personal alienation	54.94[a]	13.01	49.47[a]	9.81	42.06[b]	10.30
Interpersonal insecurity	53.44[a]	7.46	53.31[a]	9.05	43.75[b]	7.31
Interpersonal alienation	54.82[a]	11.60	53.41[a]	8.73	43.88[b]	8.89
Interoceptive deficits	53.82[a]	11.22	48.53[a]	9.47	39.47[b]	8.02
Emotional dysregulation	60.53[a]	14.20	52.65[b]	8.37	45.06[c]	7.64
Perfectionism	51.12[a]	7.57	48.12[a]	8.20	43.47[b]	8.68
Asceticism	56.29[a]	12.57	46.71[b]	11.98	41.41[b]	11.76
Maturity fears	50.47	7.77	48.00	5.97	46.41	4.66

Note: Means in the same row that do not share subscripts differ at $P < 0.05$. Clinical T-scores: elevated = 67–99; typical = 25–66, low = 1–24.

For the EDI-3, scores on all subscales except maturity fears decreased significantly over time (all *P*-values < 0.003; see Table 3). Planned comparisons indicated that scores on the bulimia, emotional dysregulation and asceticism subscales decreased significantly during the first 3 months of treatment. Scores on the drive for thinness, body dissatisfaction, low self-esteem, personal alienation, interpersonal insecurity, interpersonal alienation, interoceptive deficits, emotional dysregulation and perfectionism subscales decreased significantly between 3 and 6 months.

Parent measures

Parent scores on the PvA and EDSIS were analysed using separate repeated-measures analyses of variance (ANOVAs). Scores for mothers and fathers were included together in each analysis, with both parent (mother and father) and change in score across the three time points (assessment, 3-month follow up and 6-month follow up) as within-subjects variables. Planned comparisons with Bonferroni adjustments were then used to examine significant differences between individual time points.

Main effects for PvA showed that scores for knowledge, solution, strategies, tough and responsibility increased significantly over time (all P-values less than 0.002; see Table 4). Planned comparisons showed that scores for knowledge, solution, strategies, tough and responsibility increased significantly between assessment and 3 months. Scores for knowledge and strategies also increased significantly between 3 and 6 months. No differences in change over time were observed between mothers and fathers, but overall scores for knowledge and responsibility were higher for mothers than for fathers ($P = 0.034$ and $P = 0.027$, respectively).

EDSIS scores for the nutrition and dysregulated behaviour subscales decreased significantly over time ($P < 0.001$ and $P = 0.038$, respectively; see Table 5). Planned comparisons indicated that scores on the nutrition subscale decreased between 3 and 6 months. Scores on the social isolation subscale increased between assessment and 3 months and decreased between 3 and 6 months but did not differ between assessment and 6 months. Scores of the dysregulated behaviour subscale changed differently over time for mothers and fathers ($P = 0.013$). Dysregulated behaviour scores decreased significantly between assessment and 6 months for mothers ($P = 0.009$) and between 3 and 6 months for fathers ($P < 0.001$).

Discussion

The results of the current study showed that, for adolescents with eating disorders in a day hospital setting who needed to gain weight, an increase in the IBW to 95 per cent or more required 3 to 6 months of treatment. Most of the improvement on psychological measures also occurred between 3 and 6 months. Furthermore, most scores on the various subscales of the CDI and MASC that were in the clinical range at assessment were in the normal range by

TABLE 4 *Means and standard deviations for the parents versus anorexia scale (PvA)*

	Assessment				3 months				6 months			
	Mothers		Fathers		Mothers		Fathers		Mothers		Fathers	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
PvA total	17.58$_a$	4.87	17.00	3.02	23.42$_b$	3.82	21.33	3.82	24.83$_c$	4.34	23.50	3.37
Knowledge[1]	2.46$_a$	1.27	2.31	1.11	4.15$_b$	0.99	3.08	1.32	4.46$_c$	0.78	4.08	1.32
Solution[2]	3.31$_a$	1.25	2.85	1.14	3.70$_b$	1.49	3.85	1.28	4.08$_b$	1.12	4.46	0.78
Strategies[3]	2.38$_a$	0.87	2.54	0.78	3.85$_b$	0.90	3.23	0.93	4.31$_c$	0.75	4.08	0.76
Tough[4]	2.58$_a$	1.24	2.67	0.98	3.92$_b$	0.90	3.67	1.15	4.08$_b$	1.08	3.33	1.44
Instinct[5]	2.00	0.82	2.00	0.58	1.92	1.04	2.15	0.90	2.38	0.77	2.31	1.32
Individual[6]	1.69	1.18	1.77	0.83	1.69	0.63	2.00	0.58	1.92	1.12	2.38	1.26
Responsibility[7]	2.54$_a$	1.05	2.46	0.88	3.92$_b$	1.19	3.08	1.26	3.69$_b$	1.03	2.69	1.11

Note: Means in the same row that do not share subscripts differ at $P < 0.05$. Subscripts indicate an effect of time on PvA scores for both parents. PvA scores can range from 5–35. Examples of statements in each area are as follows: [1]I don't have the knowledge to take a leadership role when it comes to achieving a total victory over the eating disorder. [2]Parents cannot be seen as the solution in the treatment of eating disorders until the ways in which they have caused it have been properly explored. [3]I feel equipped with specific practical strategies for the task of bringing about the complete recovery of my child in the home setting. [4]It is not always advisable to get tough with a child with an eating disorder because he/she will experience too much trauma and distress. [5]My own parental instincts are a more reliable guide for the task of achieving the recovery of my child from an eating disorder than any expert advice I might receive from professionals. [6]While parents are important, children with eating disorders will never get better until they receive some sort of individual therapy themselves. [7]It is more my responsibility than my child's to bring him/her to a healthy weight.

TABLE 5 Means and standard deviations for the parents versus anorexia scale and the eating disorders symptom impact scale (EDSIS)

| | Assessment | | | | 3 months | | | | 6 months | | | |
| | Mothers | | Fathers | | Mothers | | Fathers | | Mothers | | Fathers | |
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
EDSIS total	26.75a	14.76	28.63	16.70	22.00a	12.81	29.00	13.92	16.50a,b	11.24	17.75	14.23
Social isolation	2.30a	2.00	3.50	3.17	5.10b	3.60	6.10	2.60	3.30a	3.62	2.50	2.42
Guilt	7.92	5.05	7.08	5.63	7.33	4.46	7.00	4.97	6.08	4.36	5.42	4.91
Dysregulated behaviour	5.33a	5.00	6.44a	5.29	2.56a,b	3.40	6.44a	3.09	1.56b	2.92	2.33a	2.40
Nutrition	13.80a	5.39	13.80	5.16	8.70a	5.19	11.40	5.99	4.80b	4.10	7.10	5.97

Note: Means in the same row that do not share subscripts differ at *P* < 0.05. Subscripts indicate an effect of time on EDSIS scores for both parents.
Range of total scores: EDSIS 0–96; social isolation 0–16; guilt 0–20; dysregulated behaviour 0–28; nutrition 0–32.

the 6-month follow up. Although the EDI-3 scores did not reach the low clinical range, scores on most subscales on the EDI-3 did decrease significantly over the 6 months of treatment. With respect to parents' ability to manage the child's eating disorder symptoms at home, the results suggest that most of the change in parents' beliefs about what would help their child recover occurs in the first 3 months of treatment, while their sense of being equipped with knowledge and specific strategies increases significantly between assessment and 3 months and again between 3 and 6 months of treatment. Overall, the caregiver burden related to nutrition appears to lessen between 3 and 6 months, whereas the burden related to dysregulated behaviour lessened between assessment and 6 months for mothers and between 3 and 6 months for fathers. Our observations are consistent with the findings of Lask and Bryant-Waugh (2007) that when parents learn that they are the key to helping their children recover, and then develop confidence in their ability to implement this knowledge at meals and with compensating behaviour, their children first protest, then settle down and are able to recover.

Our observations indicate that a family-based day hospital programme may make better outcomes possible for adolescents than day hospital programmes without significant parental involvement. Parents in the study improved on various subscales at about the same time as the adolescents showed improvements on physical and psychological indicators of health, including weight gain (where appropriate) and level of eating disorder symptoms. Further evidence to support our findings has been documented in the literature on family-based therapy, which has shown that separated family therapy, where the adolescent is seen on their own by the same therapist as part of family therapy, may have the same good outcome as conjoint family therapy where the adolescent is seen always with parents (Eisler *et al.*, 2000).

In terms of length of stay, the current findings suggest that treatment programmes lasting less than 6 months may not allow for adequate symptom improvement. Lock *et al.* (2005) found no added benefit of extending treatment beyond 6 months in an outpatient sample, unless the child had obsessive-compulsive disorder-like eating behaviour or the family was not intact. Our results suggest that there may be a need for family-based day hospital treatment programmes with duration of at least 6 months for some families. Our clinical experience suggests that for some patients in day hospital, more than

6 months is required. Further research is required to distinguish which patients may benefit from a longer length of stay.

Limitations

This study has a number of limitations. The sample size is small and the case series design is not experimentally controlled. Because there was no control group, it is possible that the positive outcomes observed were the result, at least in part, of factors other than family involvement in the treatment. In addition, because of the small number of participants the sample of adolescents includes a number of eating disorder diagnoses and analyses could not be conducted separately for each diagnostic group. Reassessments of eating disorder diagnoses would also have been useful to track for changes in diagnosis and symptom pattern. Some adolescents were on SSRIs from the time of initial assessment and although their trajectories and outcomes were very similar to that of the other adolescents in the study it is possible that the medication may have influenced their outcome. Finally, the current study did not explore the influence of senior or 'expert' parents on the progress of more junior families, as it is possible that, among other factors, vicarious learning may have occurred (Honig, 2005).

Despite these limitations, our study is the first, to our knowledge, to report on adolescent and parental outcomes in the context of family-based treatment in a day hospital setting. It is also the first to provide information on the effects of the length of stay in such a programme. These results will contribute to the development of the research base in this important area so that more can be known about family treatment trajectories, particularly in the context of day hospital settings. Future studies will need to examine long-term outcomes of family-based treatment in a day hospital setting, with larger groups of participants allowing for analysis by eating disorder subtypes. Furthermore, it will be important to study possible moderators of response to treatment, including the severity of eating disorder symptoms, comorbid diagnoses, medication use, length of illness and family factors. In addition, possible mechanisms of change, including the quality of previous parent–child relationships, as well as the role of senior parents' expertise and influence, should be explored. It will also be important to replicate these findings in young adult groups and in groups of adolescents with other eating-related issues such as obesity.

References

Cottee-Lane, D., Pistrang, N. and Bryant-Waugh, R. (2004) Childhood onset anorexia nervosa: the experience of parents. *European Eating Disorders Review*, **12**: 169–177.

Eisler, I. (2005) The empirical and theoretical base of family therapy and multiple family day therapy for adolescent anorexia nervosa. *Journal of Family Therapy*, **27**: 104–131.

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

Eisler, I., Simic, M., Russell, G. and Dare, C. (2007) A randomized controlled treatment trial of two forms of family therapy in adolescent anorexia nervosa: A five-year follow-up. *Journal of Child Psychology and Psychiatry*, **48**: 552–560.

Garner, D. M. (2004) *EDI-3 Eating Disorder Inventory – 3 Professional Manual*. Odessa: Psychological Assessment Resources.

Gerlinghoff, M., Backmund, H. and Franzen, U. (1998) Evaluation of day treatment program for eating disorders. *European Eating Disorders Review*, **6**: 96–106.

Goldstein, M., Peters, L., Baillie, A., McVeagh, P., Minshall, G. and Fitzjames, D. (2011) The effectiveness of a day programme for the treatment of adolescent anorexia nervosa. *International Journal of Eating Disorders*, **44**: 29–38.

Honig, P. (2005) A multi-family group program as part of an inpatient service for adolescents with a diagnosis of anorexia nervosa. *Clinical Child Psychology and Psychiatry*, **10**: 465–475.

Keel, P. K. and Haedt, A. (2008) Evidence-based psychosocial treatments for eating problems and eating disorders. *Journal of Clinical Child and Adolescent Psychology*, **37**: 39–61.

Kong, S. (2005) Day treatment program for patients with eating disorders: randomized controlled trial. *Journal of Advanced Nursing*, **51**: 5–14.

Kovacs, M. (1992) *Children's Depression Inventory* manual. North Tonawanda: Multi-Health Systems.

Kyriacou, O., Treasure, J. and Schmidt, U. (2008) Understanding how parents cope with living with someone with anorexia nervosa: modelling the factors that are associated with carer distress. *International Journal of Eating Disorders*, **41**: 233–242.

Lask, B. and Bryant-Waugh, R. (2007) *Eating Disorders in Childhood and Adolescence*. (3rd edn) New York: Routledge Taylor Francis group.

Le Grange, D. (1999) Family therapy for adolescent anorexia nervosa. *Journal of Clinical Psychology*, **55**: 727–739.

Le Grange, D., Crosby, R., Rathouz, P. and Leventhal, B. (2007) A randomized controlled comparison of family-based treatment and supportive psychotherapy for adolescent bulimia nervosa. *Archives of General Psychiatry*, **64**: 1049–1056.

Le Grange, D. and Eisler, I. (2008) Family interventions in adolescent anorexia nervosa. *Child and Adolescent Psychiatric Clinics of North America*, **18**: 159–173.

Le Grange, D. and Lock, J. (2007) *Treating Bulimia in Adolescents: A Family-Based Approach*. New York: Guilford Press.

Le Grange, D., Lock, J. L. and Dymek, M. (2003) Family-based therapy for adolescents with bulimia nervosa. *American Journal of Psychotherapy*, **57**: 237–251.

Lock, J., Agras, W. S., Bryson, S. and Kraemer, H. C. (2005) A comparison of short- and long-term family therapy for adolescent anorexia nervosa. *Journal of the American Academy of Child and Adolescent Psychiatry*, **44**: 632–639.

Lock, J., Couturier, J. and Agras, W. S. (2006) Comparison of long-term outcomes in adolescents with anorexia nervosa treated with family therapy. *Journal of the American Academy of Child and Adolescent Psychiatry*, **45**: 666–672.

Lock, J., LeGrange, D., Agras, S. and Dare, C. (2001) *Treatment Manual for Anorexia Nervosa: a Family-Based Approach*. New York: Guilford Press.

Lock, J., Le Grange, D., Agras, S., Moye, A., Bryson, S. W. and Jo, B. (2010) Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa. *Archives of General Psychiatry*, **67**: 1025–1032.

March, J. M. and Staff, H. S. (1997) *Multidimensional Anxiety Scale for Children (MASC): Technical Manual*. North Tonawanda: Multi-Health Systems.

Rhodes, P., Baillie, A., Brown, J. and Madden, S. (2005) Parental efficacy in the family-based treatment of anorexia: preliminary development of the parents versus anorexia scale (PVA). *European Eating Disorders Review*, **13**: 399–405.

Schaffner, A. D. and Buchanan, L. P. (2008) Integrating evidence-based treatments with individual needs in an outpatient facility for eating disorders. *Eating Disorders: The Journal of Treatment and Prevention*, **16**: 378–392.

Schmidt, U., Lee, S., Beecham, J., Perkins, S., Treasure, J., Yi, I. *et al.* (2007) A randomized controlled trial of family therapy and cognitive behaviour therapy guided self-care for adolescents with bulimia nervosa and related disorders. *American Journal of Psychiatry*, **164**: 591–598.

Schmidt, U. and Treasure, J. (2006) Anorexia nervosa: valued and visible. A cognitive–interpersonal maintenance model and its implications for research and practice. *British Journal of Clinical Psychology*, **45**: 343–366.

Sepulveda, A. R., Whitney, J., Hankins, M. and Treasure, J. (2008) Development and validation of an eating disorder symptom impact scale (EDSIS) for carers or people with eating disorders. *Health and Quality of Life Outcomes, 6*. doi:10.1186/1477-7525-6-28.

Treasure, J., Sepulveda, A. R., MacDonald, P., Whitaker, W., Lopez, C., Zabala, M. *et al.* (2008) The assessment of the family of people with eating disorders. *European Eating Disorders Review*, **16**: 247–255.

Zeeck, A., Weber, S., Sandholz, A., Wetzler-Burmeister, E., Wirsching, M., Scheidt, C. E. *et al.* (2009) Inpatient versus day treatment for bulimia nervosa: results of a one-year follow-up. *Psychotherapy and Psychosomatics*, **78**: 317–319.

Zipfel, S., Reas, D. L., Thornton, C., Olmsted, M. P., Williamson, D. A., Gerlinghoff, M. *et al.* (2002) Day hospitalization programs for eating disorders: a systematic review of the literature. *International Journal of Eating Disorders*, **31**: 105–117.