A Pilot Study of Maudsley Family Therapy With Group Dialectical Behavior Therapy Skills Training in an Intensive Outpatient Program for Adolescent Eating Disorders

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Objective: The goal of this study was to provide pilot clinical data on the effectiveness of an intensive outpatient treatment model for adolescent eating disorders that combines Maudsley-based family therapy and group dialectical behavior therapy skills training. Method: Measures of physical and psychological status were gathered upon admission, discharge, and at 3 follow-up intervals. Results: Adolescents who completed the program gained a significant amount of weight and experienced a significant decrease in eating disorder psychopathology. At the 1-year follow-up, 64% of adolescents were weight restored and menstruating normally. Measures of eating disorder psychopathology continued to improve up to a year after treatment. Conclusions: This pilot, multimodal program warrants further investigation and may be an effective intermediate level of care treatment option for adolescent eating disorders. © 2015 Wiley Periodicals, Inc. J. Clin. Psychol. 71:527–543, 2015.

Keywords: anorexia nervosa; eating disorders; family therapy; group treatment; treatment outcome

Eating disorders typically originate during late childhood and early adolescence and they are relatively common among adolescent girls and young women (Hoek & van Hoeken, 2003). Moreover, eating disorders pose a considerable risk to the physical and psychological health of adolescents (Lewinsohn, Striegel-Moore, & Seeley, 2000) and can become chronic, potentially fatal illnesses for many (Le Grange & Lock, 2005; Steinhausen, 1999).

Despite the gravity of eating disorders, there is a lack of empirically supported treatment options for adolescents (Lock & Fitzpatrick, 2009; Lock & Gowers, 2005). For clinicians and treatment centers seeking to provide evidence-based care, the paucity of research on types of effective treatment is a significant obstacle. Additionally, there seems to be little consensus as to what level of care (outpatient, intensive outpatient, day programs, residential, or inpatient) allows for the most effective delivery of treatment. For example, in the past, most severely ill patients were admitted to inpatient care (Meads, Gold, & Burls, 2001). However, there is not enough evidence to prove whether hospitalization is more or less effective than outpatient care for patients who do not require emergency medical stabilization (Meads et al., 2001).

In fact, a recent randomized controlled trial comparing inpatient treatment for adolescent anorexia nervosa (AN) to both specialized outpatient treatment (incorporating individual cognitive-behavioral therapy, parental counseling, dietary therapy, and feedback monitoring

We acknowledge the clinical staff at Walden Behavioral Care for their contributions to the implementation of the program presented in this article, and Hannah Liggett for her assistance in data collection. We also thank Dr. Tara L’Heureux for her consultation on statistical procedures. We extend special thanks to the clients for their willing collaboration.

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including weight checks) and treatment as usual (generally including a multidisciplinary family based approach with possible dietetic, individual therapy and medical support) found no advantage to any one of these treatment approaches (Gowers et al., 2007). Moreover, the potential benefits of adolescent hospitalization may not outweigh the cost of disrupted schooling and removal from peers and family (National Institute for Clinical Excellence [NICE], 2004). Thus, inpatient may not be the treatment of choice for all children and adolescents with eating disorders.

In keeping with this perspective, some have argued that more attention should be given to the development of outpatient and day treatment services for eating disorders (Bryant-Waugh, 2006). In terms of outpatient services, several promising forms of individual and family outpatient treatment approaches exist, though most have not been systemically examined. A specific form of family therapy, family-based treatment (FBT) has growing empirical support (NICE, 2004), and will be described in more detail below. Individual outpatient models of treatment, like adolescent-focused individual therapy and cognitive behavior therapy (CBT) have also demonstrated the potential to lead to clinical improvements (Lock & Fitzpatrick, 2009) and are important alternatives to family treatment approaches (Dalle Grave, Calugi, Doll, & Fairburn, 2013; Lock et al., 2010; Robin et al., 1999; Schmidt et al., 2007).

At the same time, there are many situations in which these forms of outpatient treatment do not provide sufficient structure and support for adolescents and their families. For other diagnoses, day treatment options have become popular and cost-effective strategies for treating patients in crisis because they provide more structure and support than outpatient intervention but significantly less restriction than inpatient settings (Neuhaus, 2006). Thus, these types of programs can provide an important bridge between outpatient and inpatient settings (Ritschel, Cheavens, & Nelson, 2012). However, even with recent recognition of the need to provide day treatment service options (Bryant-Waugh, 2006), there is little information to guide program development.

Some researchers have advocated flexibility in day treatment programs, such as the combination of different theoretical and clinical approaches, to meet the unique and variable needs of each presenting patient (Schaffner & Buchanan, 2008). To date, however, there are few investigations assessing such multimodal interventions in inpatient, outpatient, or partial hospitalization settings (Chavez & Insel, 2007). One recent open clinical trial of a day program for adolescents with AN (Goldstein et al., 2011) provides tentative data to suggest that adolescent patients with mild to moderate restrictive eating disorders might be successfully treated in day program settings. More research is needed to determine whether day programs can be effective in the treatment of adolescent eating disorders.

Even less is known about the effectiveness of intensive outpatient programs, which typically involves fewer hours per week of attendance than many day or partial hospital settings. In part, the lack of research in day hospital and intensive outpatient programs could be attributed to the fact that the variations in patient population and treatment approach seen in partial hospitalization and intensive outpatient programs make investigations of effectiveness difficult in real-world settings. The potential for numerous uncontrolled confounds interferes with establishing internal validity. Still, for the investigation of novel treatment interventions to move forward, it seems necessary for pilot programs that do combine clinical approaches to report their outcomes. This would provide direction to current program development and future research. To that end, the purpose of this paper is to provide preliminary pilot data on the outcomes of an intensive outpatient (IOP) therapy program for adolescents and families combining the Maudsley approach to eating disorder treatment and group dialectical behavior therapy (DBT) skills treatment.

The Maudsley Approach

Family therapy in the treatment of adolescent eating disorders has been studied closely since Minuchin, Rosman, and Baker (1978) used structural family therapy to modify maladaptive familial characteristics and facilitate behavioral change of eating disorder symptoms. Their work influenced the development of subsequent models of family treatment for AN, including
the approach developed at the Maudsley Hospital in London during the 1980s. This approach focused on family management of the symptoms and consequences of AN (Dare & Eisler, 1997). In addition, it prioritized behavioral change around eating and weight gain over development of insight into causes of the illness.

Models of outpatient family therapy similar to the Maudsley approach have been evaluated in randomized controlled trials (Eisler et al., 2000; le Grange, Eisler, Dare, & Russell, 1992; Lock, Agras, Bryson, & Kraemer, 2005; Lock et al., 2010; Robin et al., 1999; Russell, Szumukler, Dare, & Eisler, 1987). Results from these studies suggest that family-based therapy can be an effective treatment for many adolescents with AN (Lock & Fitzpatrick, 2009). The efficacy of family therapy for bulimia nervosa (BN) in adolescents does not have the same degree of evidential support; however, preliminary studies suggest that adolescents with BN and AN binge/purge subtype may benefit from family-based therapy as well (Dodge, Hodes, Eisler, & Dare, 1995; Eisler et al., 2000; le Grange, Crosby, Rathouz, & Leventhal, 2007; le Grange, Lock, & Dymek, 2003; Schmidt et al., 2007). A family-based therapy for adolescents based on the Maudsley method has been manualized for the outpatient treatment of both AN (Lock, le Grange, Agras, & Dare, 2001) and BN (le Grange & Lock, 2007). This manualized version is termed FBT and typically comprises 10 to 20 one-hour family sessions occurring over 6 to 12 months.

Though the Maudsley model of FBT is promising, there remain some areas of concern. First, despite the availability of treatment manuals and the preliminary empirical support, FBT has not been widely adopted by clinicians (Couturier, Isserlin, & Lock, 2010). This means that a substantial number of patients and families who could potentially benefit from this type of outpatient therapy are not able to receive this service. A primary goal of this IOP was to increase the availability of Maudsley interventions to local families.

The second area of concern is that the standard Maudsley model does not bring about recovery for all patients. This has led to the suggestion that there may be instances wherein standard Maudsley may benefit from augmentation (Rhodes, Gosbee, Madden, & Brown, 2005). In the United Kingdom and Germany, practitioners have adapted the Maudsley approach into a multiple family therapy format (Asen, 2002; Colahan & Robinson, 2002; Dare & Eisler, 2000; Scholz & Asen, 2001). In this version, up to six families are seen together 8 hours per day for an initial intensive week of treatment. Thereafter, the group is seen for a half-day every 4 to 6 weeks for 6 months. Proponents of this multiple family format argue that it can add benefits to the standard approach including a reduction in social isolation and stigmatization and increase in solidarity and information-sharing between families (Colahan & Robinson, 2002; Dare & Eisler, 2000; Scholz & Asen, 2001).

Because of the culture of health insurance in the United States, where this treatment center is located, this format of multiple family therapy is less feasible. However, we propose that the advantages of the multiple family format could also potentially be realized through the structure of an IOP program, wherein six to eight families meet together three times a week for 6 to 8 weeks. This could provide similar opportunities for families to learn from and support each other in their fight against the eating disorder.

Another area where family therapy may benefit from augmentation is for the subset of eating disorder patients who present with greater emotional dysregulation and/or those with personality disorder features. Dare and Eisler (2000) describe this population as “more complicated cases of bulimia patients with co-existing deliberate self-harm, engagement in risky social behavior and so on. These appeared to be early onset ‘multi-impulsive’ cases for whom there were no obvious well-established treatment programmes” (p. 7). There is some data to suggest that this type of eating disorder adolescent patient with higher levels of psychopathology may be difficult to treat using FBT and have higher dropout rates from treatment (le Grange, Crosby, & Lock, 2008; Lock, Couturier, Bryson, & Agras, 2006). It has also been posited that families may become overwhelmed by the presence of additional psychiatric problems in their already ill child and seek additional treatment beyond that found in FBT eating disorder treatment (Lock et al., 2006). Thus, a treatment that addresses emotional dysregulation and associated skills deficits may be a helpful addition to family therapy. One such treatment that directly targets these particular patient characteristics is DBT, described below.
DBT

DBT is a multidisciplinary treatment approach originally developed for clients with borderline personality disorder and has been effective in reducing impulsive and self-destructive behaviors in this difficult to treat population (Linehan, 1993a,b). DBT is designed to address deficits in interpersonal relationships, affect regulation, and impulse control by teaching specific adaptive skills in the areas of mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. Mindfulness skills enhance a patient’s ability to nonjudgmentally observe and describe their current emotional, cognitive, and physical state. Distress tolerance skills include techniques of coping with life stress, including distraction, self-soothing, and acceptance techniques. Emotion regulation training teaches patients how to understand their emotions, decrease vulnerability to distressing emotions, and change or modify emotions. Interpersonal effectiveness skills examine how to build and maintain positive relationships by making effective requests, setting appropriate limits, and engaging actively in the relationship.

DBT has been adapted for use with adolescents and a fifth skills training module, Walking the Middle Path, has been added (Miller, Rathus, & Linehan, 2007). In this module, adolescents and families are taught additional DBT principles like validation, dialectical thinking and acting, behavioral reinforcement. This module is designed to provide families with tools to avoid intractable conflict and impasse.

The use of DBT in the treatment of eating disorders arose from the theory that eating disorder behaviors are used as maladaptive methods of affect regulation and that eating disorder behaviors could be reduced if patients learned more adaptive methods of managing their distress (Safer, Telch, & Agras, 2001; Telch, Agras, & Linehan, 2001). Indeed, DBT treatment modified for eating disorders in adults has demonstrated some efficacy, especially for those patients with comorbid borderline personality disorder (Ben-Porath, Wisniewski, & Warren, 2009; Chen, Matthews, Allen, Kuo, & Linehan, 2008; Kröger et al., 2010; Palmer et al., 2003).

There is also preliminary evidence to support the use of DBT skills training alone (offered in individual or in group format) for adult clients with less severe BN and binge eating disorder (Chen & Safer, 2010; Safer, Robinson, & Jo, 2010; Safer et al., 2001; Telch et al., 2001). Evidence for the use of DBT in adolescents with eating disorders is more limited. However, early results from pilot studies suggest that DBT may be similarly effective in the treatment of adolescent eating disorders on both an inpatient and outpatient basis (Safer, Couturier, & Lock, 2007; Salbach, Klinkowski, Pfeiffer, Lehmkuhl, & Korte, 2007; Salbach-Andrae, Bohnenkamp, Pfeiffer, Lehmkuhl, & Miller, 2008).

While the above-mentioned studies have primarily investigated the viability of DBT as a stand-alone treatment approach for eating disorders, the integration of DBT treatment with evidence-based treatment approaches for eating disorders has also been proposed as potentially beneficial in adult and adolescent populations, especially for those patients with a history of chronic treatment failure and severe life-threatening and therapy-interfering behaviors (Federici, Wisniewski, & Ben-Porath, 2012; Federici & Wisniewski, 2012). For adolescents, Federici and Wisniewski (2012) suggest that DBT and FBT can be integrated on an outpatient basis and describe the ways in which DBT is theoretically compatible with FBT. Notably, DBT and FBT are both behavioral, change-oriented treatment approaches. Moreover, they both focus on addressing symptoms in a nonjudgmental fashion and advocate for empowerment of the client and family (Federici & Wisniewski, 2012).

This integration of FBT and DBT is proposed at an outpatient level of care and incorporates the full DBT treatment model. However, it also seems possible, given the research support for DBT skills training and the suggestion that DBT and FBT are compatible, that DBT and FBT principles and skills could be meaningfully incorporated in more intensive programs for eating disorders. To that end, this intensive outpatient program sought to combine group DBT skills treatment with Maudsley family therapy in the treatment of adolescent eating disorders.

Integrating Maudsley-Based Family Therapy and DBT

Family therapy was the primary intervention in this IOP program. DBT skills training was intended to provide patients with effective tools to replace their eating disorder behaviors and
to equip them with methods for tolerating the distress of refeeding. These elements of treatment are not included in standard FBT. Groups focused on teaching and practicing mindfulness, emotion regulation, distress tolerance, interpersonal effectiveness, and walking the middle path skills within the context of an eating disorder.

An additional body image group based on DBT principles was also incorporated. One component of DBT therapy is helping patients identify extreme and absolute thought patterns, and then assisting them in testing the validity of those conclusions and beliefs (Linehan, 1993a). Adolescents with eating disorders often show extreme and absolute thought patterns related to their bodies. There is some evidence to suggest that these types of thought patterns may moderate FBT treatment outcome in adolescent patients with BN (le Grange et al., 2008), with patients with higher levels of BN cognitions being less likely to meet criteria for remission. In standard DBT, thoughts and beliefs would be analyzed in greater detail within individual sessions. In this IOP, an additional body image group was included to address this particular symptom of eating disorder pathology. This allowed for extra attention to be paid to identifying distorted thoughts related to shape and weight, challenging those thoughts to determine their accuracy, and altering maladaptive behavior.

The data for this article were collected in the context of a clinical treatment center delivering eating disorder care to local families. Given the demand for services, and the pilot nature of this treatment approach, it was difficult to justify randomization of some patients and their families to a no-treatment group. The gathering of preliminary data was a crucial first step to demonstrate whether this approach warrants further controlled investigation. Thus, the intent of this article is to provide a description of this multimodal program and preliminary clinical outcomes in hopes that more standardized studies of this type of intermediate level of care treatment program can occur in the future.

For adolescents completing this treatment program, it was hypothesized that (a) body mass index (BMI) would increase significantly from admission to discharge, (b) Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994) scores would decrease significantly from admission to discharge, and (c) binge–purge behaviors would decrease significantly from admission to discharge. Moreover, a secondary aim of this study was to explore follow-up treatment effects. It was hypothesized that (a) BMI would continue to significantly improve over the 1-year follow-up period, (b) EDE-Q scores would continue to improve over the 1-year follow-up period, and (c) binge–purge behaviors would be eliminated by the 1-year follow-up point.

Method

Brief Program Description

The adolescent IOP eating disorder program at Walden Behavioral Care meets three evenings a week for 3 to 4 hours (see Table 1). Each family attends the program for 7 to 8 weeks. The stated goals of the IOP program are weight restoration/healthy weight maintenance and the reduction of eating disordered behaviors including restriction, binging, and purging. These goals are attained through the following interventions.

Each family meets once a week for 45 minutes with one of three family therapists and sees the same family therapist for the duration of treatment. Family sessions focus on bringing the patient’s food intake under parental control. Parents are taught how to work together as a team in the home setting to confront eating disorder behavior. All family members are encouraged to separate the eating disorder from the patient, blaming the disease not the adolescent. Attention is paid to minimizing criticism and expressed emotion. For underweight patients, weight gain is the central goal. Each session begins with a discussion of the patient’s weight and progress made towards normalizing eating patterns. For patients who are not underweight, the primary focus of sessions is stabilizing eating patterns and interrupting eating disorder-related behaviors like purging, binging, and excessive exercise.

Study therapists (one psychologist and two master’s-level clinicians) had been previously trained in family therapy. The lead clinician attended a family-based therapy workshop with the developers of FBT, comprising 2 days of instruction outlining the key interventions of the
One component of FBT is the coached family meal. This FBT intervention is incorporated into this IOP with the inclusion of coached multifamily meals on all three nights of the program. All parents are instructed to bring in meals that they feel meet the nutritional requirements of their child; families then eat together as one large group. Parents are given nutritional assistance and coaching during meal preparation. During meals, parents are provided with continued support and encouragement to help their children eat the whole meal, or at least one more mouthful than the patient was prepared to eat. The adolescents themselves are encouraged to use DBT strategies to manage the distress of mealtime.

Adolescents also attend six 45-minute groups weekly. These groups are based on an 8-week curriculum. The first day of the treatment week begins with DBT skills integration group. In this group, adolescents discuss the past weekend and their attempted use of DBT skills to cope with distress related to the eating disorder. If they experienced difficulty in implementing the skills, then solutions are discussed. Adolescents then attend multifamily group with their parents, where they receive instruction in skills from the Walking the Middle Path module. Families are taught how to use validation, behavioral principles, and dialectical thinking to avoid impasse around meals and/or in conversation about the eating disorder.

On the second day of the treatment week, adolescents attend DBT skills I, wherein they learn core DBT skills from the mindfulness and emotion regulation modules. Adolescents also attend the body image group, wherein they practice identifying and challenging their beliefs about their shape and weight. On the last treatment day of the week, adolescents have DBT skills II, which includes the skills from the remaining two DBT modules, distress tolerance and interpersonal effectiveness. Finally, in DBT problem solving, all the skills learned during the week are reviewed. Adolescents are then asked to plan how they can use these skills in potentially triggering situations over the weekend.

Parents participate in two 45-minute groups weekly. Parents attend their own separate DBT skills group on the first day of the treatment week and learn the same core DBT concepts and skills as their children. The rationale for teaching parents DBT skills is twofold. With their own knowledge of DBT skills, parents can better encourage and reinforce their children in the use of these skills. Moreover, parents can use the DBT skills to develop their own personal methods for tolerating the stress of their child’s illness. Parents and adolescents are taught DBT skills in separate groups for both practical and clinical reasons. In this specific treatment setting, space
constraints necessitate splitting the parents and adolescents for the majority of the groups; this makes the group experience physically more comfortable and simplifies group management. Clinically, providing separate groups also facilitates discussion of concerns specific to parents and adolescents and enables supportive conversations that may not occur in conjoint groups. The one exception to conducting separate adolescent and parent groups is the multifamily group (described above). Because this group focuses more on family dynamics and communication, it is more useful to have adolescents and parents attend this group together.

Participants

A total of 51 female adolescents (mean \( M_{\text{age}} = 14.8 \) years, standard deviation \( SD = 1.5 \) years, range = 12 to 17.5 years) were admitted to the adolescent IOP program during a 4-month period (131 days). Eligible adolescents needed to be between 12 and 17 years of age, be medically stable, and have at least one parent able to commit to program attendance. For the purposes of this analysis, males and any adolescents who had previously received treatment through the IOP were omitted from the data set. Approximately half of the participants (\( n = 27; 53\% \)) were referred from inpatient eating disorder treatment. For these patients, inpatient clinicians and insurance reviewers felt the family required more intensive support than outpatient therapy could provide. Outpatient providers referred another 18 adolescents (35%) who had been unable to make treatment gains on an outpatient basis. For six (12%) others, no referral source was documented.

There was a significant difference at pretreatment between those recruited from outpatient treatment and those recruited after inpatient stay on BMI (mean pretreatment BMI for outpatients = 18.92, \( SD = 2.16 \), and for inpatients = 17.16, \( SD = 2.36 \) \( t(44) = 2.53, p = .02 \), but not EDE-Q scores (mean pretreatment EDE-Q score for outpatients = 3.36, \( SD = 1.62 \), and for inpatients = 3.12, \( SD = 1.32 \) \( t(41) = 0.53, p = .60 \). Participants were admitted regardless of diagnosis. Seventeen (33%) adolescents met the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria for AN (\( M_{\text{weight}} = 41.79 \) kg, \( SD = 4.80 \) kg; \( M_{\text{ideal body weight IBW}} = 81.24\%, SD = 2.05\% \)), six (12%) for BN (\( M_{\text{weight}} = 55.13 \) kg, \( SD = 8.85 \) kg; \( M_{\text{IBW}} = 102.50\%, SD = 12.18\% \)), and 28 (55%) for eating disorder not otherwise specified (EDNOS; \( M_{\text{weight}} = 47.49 \) kg, \( SD = 7.12 \) kg; \( M_{\text{IBW}} = 92.21\%, SD = 6.88\% \)). As would be expected, there was a significant difference between all diagnoses at pretreatment on BMI, \( F(2, 48) = 15.34, p < .001 \). There was no significant difference between diagnoses at baseline on EDE-Q scores, \( F(2, 43) = 1.91, p = .16 \).

For those patients who could estimate symptom onset (\( n = 47 \)), the approximate length of illness ranged between less than 6 months and 7 years with an average of 1.90 years (\( SD = 1.55 \) years). Comorbid diagnoses were common, with 53% reporting at least one additional diagnosis. Sixteen adolescents were diagnosed with mood disorders, six with anxiety disorders, and four with both mood and anxiety disorders. Five subjects were also diagnosed with attention–deficit/hyperactivity disorder. Moreover, one patient was diagnosed with pervasive developmental disorder and one with Asperger’s disorder, both of whom were able to successfully complete the full IOP program. The Institutional Review Board at the University at Albany-SUNY approved this study, which was conducted at Walden Behavioral Care. Informed consent was obtained from parents and adolescents provided informed assent.

Measures

Program efficacy was evaluated by participant improvement in physiological and psychological indicators of the eating disorder from pretreatment to posttreatment and at the 3-, 6-, and 12-month follow-ups.

Physiological measures. Physiological variables included weight gain, BMI, and menstruation status. Weight was measured in pounds on the same scale upon admission and discharge and converted to kilograms. The scale was calibrated by an outside agency every 6 months. Adolescents were weighed at the same time of day in a paper medical gown after going to the
bathroom. BMI was then calculated using the patients’ height at admission. Weight at follow-up
time points was obtained from parents. Menstruation status was also based on parent report.
Outcome categories were determined using the Morgan–Russell outcome criteria (Morgan &

**Psychological measures.** Psychological improvement in eating disorder thoughts, atti-
ditudes and behaviors was measured by the EDE-Q (Fairburn & Beglin, 1994). This is a self-report
measure derived from the Eating Disorder Examination Interview (EDE), which is considered
the “gold standard” for assessment of eating disorder pathology (Garner, 2002). Research sug-
suggests that the EDE-Q may be a valid and acceptable alternative to the EDE and has been normed
in the female adolescent population (Carter, Stewart, & Fairburn, 2001). The EDE-Q also as-
sesses the frequency of binge–purge behaviors. Identifying information, weight, and EDE-Q
scores were recorded as part of the program’s standard admission and discharge procedure.
Treatment attrition and readmission rates in the first year after treatment were also recorded as
indicators of treatment efficacy.

**Follow-Up Procedures**

At the end of treatment, parents and adolescents were asked whether they would be willing to
be contacted by a program clinician for follow-up over the course of the next year. All parents
and adolescents agreed to be contacted.

Parents were contacted at 3 months, 6 months, and 1 year after discharge. Parents reported
their child’s weight, menstruation status, and frequency of eating disorder behaviors. Moreover,
because all participants were permitted to return to their referring outpatient care providers
or transition to new outpatient care providers, utilization of these outpatient services was also
documented at each follow-up point. Adolescents were sent an EDE-Q in the mail 6 months
and 1 year after discharge, with a prepaid return envelope. A participant flow chart is shown in
Figure 1.

**Statistical Analysis**

Because program effectiveness was measured by change in BMI, EDE-Q scores, and binge–
purge behaviors within participants over time, dependent samples t-tests were used to compare
differences in these variables at each follow-up. Additionally, a repeated measures analysis of
variance (ANOVA) was conducted for each factor of interest after the 1-year follow-up.

**Results**

Of the 51 adolescents who began IOP, 36 (71%) completed the full program, attending an
average of 22.2 days (SD = 3.8 days). Baseline BMI did not significantly differ between treatment
completers ($M_{BMI} = 17.58 \text{ kg/m}^2$; $SD = 2.15 \text{ kg/m}^2$) and noncompleters ($M_{BMI} = 18.98 \text{ kg/m}^2$;
$SD = 2.82 \text{ kg/m}^2$). $t(50) = 1.40$, $p = .059$. Moreover, those who completed treatment did not
differ in baseline EDE-Q scores ($M = 3.15, SD = 1.52$) from those who discharged prematurely
($M = 3.78, SD = 1.10$), $t(45) = 1.40$, $p = .18$. Treatment attrition will be examined in the
Discussion section of this article. All 36 adolescents who fully completed IOP were included in
the follow-up and outcome analyses.

**Treatment Outcomes**

The mean BMI of participants ($n = 36$) before the start of treatment was 17.58 kg/m$^2$ ($SD = 2.15$
kg/m$^2$). These participants weighed an average 88.64% ($SD = 9.34\%$) of their estimated IBW.
The mean weight gained during the program for all adolescents was 2.28 kg ($SD = 2.15$ kg),
reaching 93.47% ($SD = 8.22\%$) of their IBW. As hypothesized, change in BMI from admission to
discharge was statistically significant, $t(35) = 6.61$, $p < .001$. There was no significant difference
in weight change between patients admitting with a diagnosis of AN ($n = 12$, $M = 2.67$ kg,
Figure 1. Participant flow chart through treatment and follow-up periods.

$SD = 2.47$ kg) and patients admitting with a diagnosis of BN ($n = 2$, $M = -1.22$ kg, $SD = 2.25$ kg) or EDNOS ($n = 22$, $M = 2.39$ kg, $SD = 1.72$ kg), $F(2, 33) = 3.28$, $p = .05$.

Only two adolescents—one diagnosed with BN and one with EDNOS—weighed at or above their IBW upon admission and these two were included in the overall analyses. However, it should be noted that these two participants lost weight on average from admission to discharge ($M = -0.82$ kg, $SD = 2.82$ kg). The participant with BN achieved this weight loss via healthy means, experiencing a reduction in binge–purge behaviors as well as restriction. This participant stabilized eating patterns and began approved, moderate exercise. The participant with EDNOS also experienced a reduction in binge–purge behaviors, but restriction behaviors increased over the course of the program. It is possible that the stabilization of binge–purge behaviors as well as restriction takes longer for some patients. This is partially validated by the fact that this particular patient experienced a decrease in restrictive behaviors (with continued abstinence from binging and purging) by the 3-month follow-up.

A total of 33 participants completed the EDE-Q upon admission to the IOP program. Two participants did not complete the questionnaire upon transfer from the inpatient unit and a third participant declined to complete. The mean global EDE-Q score at admission ($n = 33$) was $3.15$ ($SD = 1.52$). This mean score of 3.15 exceeded the 80th percentile for adolescent girl
Figure 2. Repeat measure ANOVA results for change in BMI over time \((n = 25)\). Statistically significant differences between pre- and post-treatment BMI \((p < .001)\), post-treatment and three month BMI \((p = .001)\), and six month and one year BMI \((p = .008)\). *Significant after bonferroni adjustment.

norms (Carter et al., 2001). As predicted, global posttreatment EDE-Q scores \((M = 2.11, SD = 1.49)\) decreased significantly from admission, \(t(30) = 3.63, p = .001\). Mean frequency of binge–purge behaviors for all participants upon admission was between 0 and 5 days in the last month. Overall frequency of binge–purge behaviors decreased over the course of treatment, but contrary to expectation, the difference between pre- and posttreatment assessments of purging or binging behaviors was not significant.

**Follow-Up Outcomes**

3-month follow-up. Of the families, 34 were successfully contacted at the 3-month follow-up. Patients had made further significant weight gains \((M_{BMI} = 18.95 \text{ kg/m}^2; SD = 1.88 \text{ kg/m}^2)\) \(t(32) = 3.14, p = .004\), and had reached an average of 96.09% \((SD = 8.74\%)\) of their estimated IBW. Scores on the EDE-Q were not gathered at this follow-up. Of the parents, 53% reported that their daughters were menstruating. Of the families, 97% were using follow-up treatment.

6-month follow-up. Of the families, 28 were contacted at the 6-month follow-up. Adolescents in these families had continued to gain weight \((M_{BMI} = 19.18 \text{ kg/m}^2; SD = 1.83 \text{ kg/m}^2; M_{\%IBW} = 98.18\%, SD = 8.31\%)\), although this gain did not reach statistical significance from 3-month weights, \(t(27) = 1.57, p = .13\). Of these adolescents, 61% were menstruating naturally and 4% had been prescribed birth control. Global scores on the EDE-Q continued to improve at 6 months \((n = 19, M = 1.64, SD = 1.17)\). Of the families, 93% were using follow-up treatment.

1-year follow-up. A total of 27 families were successfully contacted at the 1-year follow-up. The mean BMI for these participants was 19.74 kg/m\(^2\) \((SD = 1.71 \text{ kg/m}^2)\) and the average %IBW was 100.78% \((SD = 7.95\%)\). The change in BMI from the 6-month follow-up was significant \((n = 25)\) \(t(24) = 2.92, p = .008\). Of these patients, 78% had regular menses, one patient continued to take birth control, and four had not yet returned to normal menstruation. Global EDE-Q scores remained similar to 6-month scores \((n = 16, M = 1.59, SD = 1.54)\). A repeated measures ANOVA was conducted for change in BMI (see Figure 2) and global EDE-Q scores (see Figure 3) after the 1-year follow-up. Analyses indicated significant differences for BMI, \(F(4, 96) = 26.481, p < .001\), and global EDE-Q scores, \(F(3, 30) = 15.860, p < .001\), over time and post hoc tests were conducted. No significant differences were found for binge frequency, \(F(4, 92) = 1.643, p = .17\), or purge frequency, \(F(4, 92) = 1.626, p = .17\), over the course of treatment or the subsequent year.
Figure 3. Repeat measure ANOVA results for change in Global Eating Disorder Examination-Questionnaire (EDE-Q) Scores over time (n = 11) as compared to adolescent norm (Carter et al., 2001). Statistically significant difference between pre- and post-treatment scores (p = .001). Pre-treatment scores were significantly different than the adolescent norm (p < .001). *Significant after bonferroni adjustment.

In total, 23 patients (64% of treatment completers) were fully weight restored and, if postmenorrheal, were menstruating normally. Thus, when applying the Morgan–Russell outcome criteria, 64% of treatment completers were classified as having a “good” outcome at the 1-year follow-up. Of these 23 patients, 15 (42% of treatment completers) also scored within one standard deviation of community norms on the EDE-Q or their parents reported no symptoms of eating disorder behaviors (restricting, binging, or purging). The six patients who readmitted during the follow-up period were considered to have poor outcome. One participant was below 85% IBW at the 1-year follow-up and three participants reported binging and purging more than 6 days per month; these patients were also considered to have poor outcome. The remainder weighed more than 85% IBW but remained symptomatic, as defined by an EDE-Q score above one standard deviation of the norm or, if EDE-Q scores were unavailable, parent report of residual symptoms. A total of 78% of families were using follow-up treatment. This study was not sufficiently powered to detect significant differences in outcome at 1-year between those who had follow-up care and those who did not.

Discussion

The hypotheses in this study were partially supported. On average, patients completing the adolescent IOP program gained a significant amount of weight over the course of treatment and continued to gain weight over the subsequent year. Patients completing treatment also experienced a significant decrease in eating disorder thoughts, attitudes, and behaviors as measured by the EDE-Q. This improvement in eating disorder psychopathology was maintained up to 1 year posttreatment. However, binge–purge behaviors did not significantly improve over the course of treatment or the subsequent year.

The finding that 64% of treatment completers can be classified as having a “good” outcome at the 1-year follow-up based on weight and menstruation status compares somewhat favorably to outcomes recorded in a recent review of AN. In this review, < 50% of patients, followed for 4 years or less, with adolescent onset of the disorder had good outcomes at follow-up (Steinhausen, 2002). However, despite the importance of weight gain in the treatment of underweight patients with eating disorders, these results should be interpreted with caution and considered in the context of the other psychological and behavioral symptoms of eating disorders assessed in this study. For example, approximately one third of the patients meeting Morgan–Russell criteria for good outcome had residual symptoms, based on EDE-Q scores or parent report.
Because psychological features of eating disorders are slower to change, one possible explanation for this result is that further improvements would be noted in EDE-Q scores if the patients were followed over a longer period of time. It is equally possible that this treatment approach does not adequately target cognitive assumptions around body and weight that are prevalent in adolescent patients. Finding ways to address concerns related to shape and weight will continue to be critical in developing new treatments for adolescent eating disorders.

Importantly, this treatment also may not effectively address binge-purge behaviors, as improvement in these behaviors was not significant. The lack of significant improvement in these behaviors may be partially attributed to the low sample of BN patients (n = 2) completing treatment and the low incidence of binge-purge behaviors among all patients at treatment onset (M_incidence = 1–5 times per month). This would limit the ability to detect any significant decrease in these behaviors. It is also possible that the short duration of treatment in this model is insufficient to stabilize binging and purging behaviors. Further studies would need to recruit a higher number of participants with BN and binge eating disorders to more accurately assess the viability of this IOP model in the treatment of this population, as the current study does not provide enough evidence to support its use with this population.

Treatment Attrition and Readmission

The overall treatment attrition rate was 29%, with 36 of the original 51 adolescents completing the IOP program. While still undesirably high, this noncompletion rate compares somewhat favorably to that reported by Fassino, Pierò, Tomba, and Abbate-Daga (2009) in a recent review of factors related to dropout from treatment for eating disorders. This examination of 26 studies found noncompletion rates between 20.2% and 51% for inpatient treatment and 29% and 73% for outpatient treatment. Since this current study was not a randomized controlled trial, there were minimal exclusion criteria; families were allowed to begin the program if they wished to receive treatment. This may account for some treatment attrition, but reducing treatment dropout would still be an important focus in future studies.

In the current data set, psychiatric or medical hospitalization accounted for nine (56%) of the premature discharges from IOP treatment. Of the five patients who discharged against program recommendations, four left within the first 10 days of treatment. Although reasons for discharge were not officially recorded, these families often reported that they felt individual treatment was more appropriate for their child than a treatment requiring high parental involvement. This occasional preference for individual treatment has previously been noted by Schmidt et al. (2007) and highlights the need for multiple effective treatment approaches to be made available to patients.

In the current data set, six patients (AN = 3, BN = 1, EDNOS = 2) readmitted to a higher level of care over the 1-year follow-up period. Another three were unable to be contacted and their status is unknown. Readmission rates after IOP programs for eating disorders are not well established. However, a recent study (Steinhausen, Grigoriou-Serbanescu, Boyadjiyeva, Neumärker, & Winkler Metzke, 2008) found that nearly half of a large adolescent sample (N = 212) receiving inpatient care required a second hospitalization during the follow-up period. Since readmissions are associated with risk for poor long-term psychosocial and psychiatric outcomes (Steinhausen et al., 2008), future studies would want to examine possible predictors of readmission.

Benefits

There are inherent benefits and challenges to assessing new treatment programs in real world clinical settings. The most notable advantage is external validity. Clinicians often voice concern about generalizability of controlled research treatments to real-world clinical practice (Stewart, Chambless, & Baron, 2012). Thus, studies completed in treatment settings can help bridge the gap between research and practice by showing the relevance of empirically supported treatments. For example, this current study takes two empirically supported treatments (FBT and DBT) and demonstrates how these two approaches might be meaningfully and effectively adapted and
combined to provide a practical treatment approach for use in a busy, heterogeneous community
treatment setting. It is critical that we have controlled clinical trials to assess treatments, but it
is also valuable to provide data from applied settings, taking methodological limitations into
account.

Limitations
As far as limitations, this study has several methodological challenges. First, the study had a
small sample size. One consequence of the small initial sample size and subsequent treatment
dropout is that the study was not sufficiently powered to investigate whether the benefits seen
from the intervention varied according to diagnosis or eating disorder subtypes (AN restricting
versus binge-eating/purging types). Moreover, as noted above, the small sample limited the
ability to detect any significant decrease in binging and purging behaviors. Further studies
would need to recruit a higher number of participants to more accurately assess differential
treatment outcomes.

Second, no comparison condition or control group was used. Thus, the results from this
study cannot be attributed specifically to the combination of Maudsley family therapy and
DBT. Nonspecific elements of treatment, like support, socialization, and elapsed time, might
also explain the findings. Nor does this study design allow for an investigation of the specific
effect of the family and DBT interventions individually. As just one example, participants in this
study tended to improve in eating disorder cognitions regarding body and weight, as measured by
the EDE-Q. This treatment program incorporated a specific group to address these cognitions,
the body image group, but the study design does not allow for any conclusions to be drawn
regarding the added benefit of this group. It is possible that weight gain alone or other aspects
of treatment resulted in the improved cognitions.

Third, follow-up data was self-reported and difficult to obtain, especially from adolescents.
Only 19 of the 28 adolescents returned a completed EDE-Q at the 6-month follow-up and this
number dropped to 16 of 27 at the 1-year follow-up. One hypothesis for the low response rate
is based on the report of some parents: that their children were healthy and engaged in life and
did not like to answer questions that reminded them of being ill. However, an equally likely
hypothesis is that those adolescents who did not respond to the questionnaire were those who
were still actively struggling with eating disorder symptomology. Ultimately, the reason for the
lower response rate is unknown, and this limits the generalizability of the results related to eating
disordered attitudes and behaviors.

Moreover, another drawback to self-reported results is that the data may be subject to patient–
parent bias and/or subterfuge. One observation that might lend credence to the suspicion that
results were fabricated is the finding that global EDE-Q scores actually fell below adolescent
norms. However, these norms include a considerable number (24%) of adolescent girls who are
dieting but do not use extreme methods of weight control (Carter et al., 2001). Because parents
are directly recruited to assist in eliminating all dieting and weight control methods in this study
intervention, it is possible that the global EDE-Q scores would drop below the adolescent norm
because that norm includes a substantial number of dieters.

Another limitation of this study is that some of the adolescents and families continued to
receive outpatient services after discharging from the program, while others did not. Thus, the
improvements in BMI and EDE-Q observed at the 1-year follow-up might be moderated by
the utilization of other outpatient treatment. This study was not sufficiently powered to detect
significant differences between those who had follow-up care and those who did not.

Areas for Further Research
Although this study would seem to indicate the potential viability of treatment combining
group DBT skills and Maudsley-based family therapy for adolescent restrictive behaviors and
associated psychological symptoms, much further research is needed. In particular, this IOP
program would need to be compared to standard outpatient FBT. In the five randomized
controlled trials reported by Lock and Fitzpatrick (2009) that evaluated FBT for AN, a positive
outcome (i.e., good and intermediate outcomes according to the Morgan–Russell criteria) has ranged from 63% to 94%. Analysis of this IOP data set, with a good outcome documented for 64% of the patients, certainly does not indicate that the IOP model outperforms outpatient FBT, but it does suggest the possibility that it could compare favorably with further refinement. A potential advantage of the IOP treatment model over outpatient FBT is that treatment occurs over a relatively short period of time.

In outpatient FBT, families are in treatment for 1 year, while families attend treatment for approximately 2 months in this IOP treatment model. For families who live in areas where there is limited access to outpatient FBT services, this condensed treatment approach may improve availability and dissemination of family-based services. Indeed, several of the families incorporated in this study traveled from out of state during the time they were in the program, but would not have been able to commit to that degree of travel for an entire year. Additionally, it is possible that the IOP treatment model is well suited for adolescents and families in crisis because sessions occur more frequently than in standard FBT. However, both of these hypotheses require additional research support.

Further, the differential effect of the FBT and DBT components of treatment should be explored. This could be accomplished by employing a design that compares the combination treatment of FBT and DBT against FBT and DBT alone. Validity checks throughout the course of treatment would also be necessary to establish treatment integrity. Future studies may also wish to incorporate measures of mood and personality disorder features, in addition to the EDE-Q used to assess eating disorder symptomology in this pilot study. It would also be useful to evaluate how the multifamily group dynamics contribute to treatment outcome. Families consistently commented that they found the sharing and support they received from other families to be very helpful. However, there was no formal analysis of this component of the program.

Finally, it would be important to compare this treatment to inpatient treatment. A considerable advantage to the IOP level of care, as opposed to residential or inpatient settings, is that adolescents are able to stay in their home environment. This allows parents and their children to develop different patterns of interaction around food and the eating disorder, which may allow for continued progress posttreatment.

Conclusion

In sum, the IOP model of intervention described and evaluated in this paper is a promising treatment option for adolescent eating disorders. While much further development and research are needed, programs similar to this might meet the need for effective intermediate level of care treatment approaches.

References


