

Findings From a Couple-Based Open Trial for Adult Anorexia Nervosa

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Adult anorexia nervosa (AN) often is persistent, significantly erodes quality of life for both the patient and loved ones, and carries high medical and psychiatric comorbidity. Whereas individual psychotherapy for adult AN leads to improvement in some patients, recent findings indicate that the magnitude of improvement is limited: Only a small percentage of individuals fully recover and dropout rates are high. Thus, it is important to build upon current interventions to improve treatment response. We present results from an open trial of a couple-based intervention for adult anorexia nervosa as an adjunct treatment to standard multidisciplinary care. Twenty couples received treatment over approximately 26 weeks, including a couple-based intervention, individual CBT sessions, psychiatry visits for medication management, and nutritional counseling sessions. The results indicate that patients improved at posttest and 3-month follow-up on a variety of AN-related measures, anxiety and depression, and relationship adjustment. Partners also improved on anxiety, depression, and relationship adjustment. In an exploratory analysis, the multicomponent couple treatment intervention was benchmarked to well-conducted randomized controlled trials of individual therapy for AN; the couple intervention seems to compare favorably on AN-related measures and was associated with a lower dropout rate. In spite of methodological limitations, the findings suggest that including partners in the treatment of adult AN holds potential for bolstering treatment outcomes.

Keywords: anorexia nervosa, eating disorders, cognitive behavior therapy, couple therapy

Adult anorexia nervosa (AN) is a serious, complex disorder. It carries high medical and psychiatric comorbidity (Westmoreland, Krantz, & Mehler, 2016) and is associated with the highest mor-

tality rate of any psychiatric disorder (Papadopoulos, Ekblom, Brandt, & Ekselius, 2009), yet effective treatment for adult AN is limited. That is, complete recovery rates are low (Bulik, Berkman, Brownley, Sedway, & Lohr, 2007), and no specific form of psychotherapy has been isolated as the treatment of choice (Zipfel et al., 2014). Also, the experience of caring for someone with AN is extremely challenging to family members (Anastasiadou, Medina-Pradas, Sepulveda, & Treasure, 2014), and partners report being unsure how to help [see Bulik, Baucom, & Kirby, (2012) for a more extensive consideration of the interpersonal aspects of AN].

These limited treatment results for adult AN are based on trials involving various forms of individual psychotherapy accompanied by medical management and occasionally nutritional counseling. Three randomized controlled trials are noteworthy for employing a multimodal treatment (McIntosh et al., 2005; Schmidt et al., 2015 [MOSAIC]; Zipfel et al., 2014 [ANTOP]), and the findings from these investigations were similar and reflect results from smaller investigations as well (Bulik et al., 2007). In these trials, no convincing and sustained differences emerged between “control” conditions and specialized therapies with regard to recovery at posttest, with recovery rates varying only between 5% and 12%. Furthermore, average gains in BMI (1.0, 0.78, 0.93 kg/m² for the McIntosh et al., ANTOP, and MOSAIC studies, respectively) were modest in all trials with no significant differences among conditions in any study at posttest or follow-up (Carter et al., 2011;

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Schmidt et al., 2016). A further challenge is that dropout from treatment is high—approximately 25% in psychotherapy trials (Berkman et al., 2006). Thus, the development of interventions that are more effective for adult AN and are acceptable to patients is essential.

Treatment findings from two related domains suggest that one potential strategy for improving treatment for adult AN is to include partners in the intervention. First, Family Based Treatment (FBT), which incorporates parents into treatment for youth with AN, is a promising evidence-based intervention for this age group (Bailey et al., 2014; Bulik et al., 2007), and pilot investigations have explored the feasibility and acceptability of incorporating support adults (i.e., parents, siblings, partners, other relatives, or friends) into treatment for the disorder, adapting either FBT or other forms of family therapy, or including support persons in a CBT framework. For example, the MOSAIC study (Schmidt et al., 2015) offered two sessions with a close other. Findings demonstrate reasonable acceptability of these interventions (Chen et al., 2016; Dimitropoulos, Farquhar, Freeman, Colton, & Olmsted, 2015; Doba, Pezard, Berna, Vignau, & Nandirino, 2013; Reyes-Rodriguez, Bulik, Hamer, & Baucom, 2013; Schmidt et al., 2015). Therefore, developing appropriate ways to incorporate family members such as partners into treatment for adult AN might facilitate treatment efficacy.

In addition, a second treatment tradition that supports the inclusion of partners in the treatment of adult AN derives from cognitive-behavioral couple therapy (CBCT; Epstein & Baucom, 2002). CBCT has been demonstrated to assist a wide range of couples, including both distressed and nondistressed, make adaptive changes in overall relationship adjustment and specific domains such as communication. Couple-based interventions from a CBCT perspective also have demonstrated efficacy in assisting couples with other psychological disorders, including those highly comorbid with AN, such as anxiety and depression (Fischer, Baucom, & Cohen, 2016). Thus, couple-based interventions for other adult disorders are effective while also improving relationships, supporting the development of couple-based interventions for AN.

Based on the utility of adapting CBCT to treat other psychological disorders and the record of FBT for treating younger individuals with AN, a cognitive-behavioral approach was developed for the current couple-based intervention [Uniting Couples in the treatment of Anorexia Nervosa (UCAN)]. Consistent with current treatment guidelines for AN (Workgroup on Eating Disorders, 2006), UCAN was developed as a component of a multi-component treatment including individual CBT, medical management, and nutritional counseling. UCAN builds on existing treatments by incorporating principles from individual CBT for AN placed in an interpersonal context.

We initially began the investigation by comparing UCAN to unscripted couple therapy. However, given the challenge of treating couples in which one partner has AN, we ultimately adopted an open trial approach, offering UCAN to all couples enrolling later in the trial. Based on findings described above, we hypothesized that patients with AN in our multicomponent couple treatment (MCCT) would demonstrate significant improvements in three domains: (a) BMI and AN symptoms; (b) depression and anxiety; and (c) relationship adjustment. Given the stress that AN places on partners, we expected that partners would report improvements in

(a) depression and anxiety and (b) relationship adjustment. Also, it was expected that the changes would maintain over short-term follow-up. Finally, given the presence of the partner to assist when the patient's motivation lags, we anticipated lower dropout rate from MCCT in comparison to previous trials of individual psychotherapy. Because there was no comparison condition in the current trial and no previous couple-based randomized controlled trial (RCTs) for adult AN, we employed exploratory benchmarking strategies to compare BMI changes in MCCT to the McIntosh et al. (2005) and ANTOP (2014) investigations. Because these previous RCTs involved approaching AN as a multidisciplinary team including individual therapy, medical management, and nutritional counseling, the couple component is the only new modality of intervention not included in these two trials. The MOSAIC trial is not included in these analyses as it did include some sessions with a close other. At the same time, these comparisons are presented only as exploratory since these earlier trials differ from the current intervention in numerous ways.

Method

Participants

Twenty couples in which one partner suffered from AN were recruited through contact with mental health professionals and facilities providing treatment for AN, flyers, electronic ads, and email listserv announcements. Adults of both sexes and any sexual orientation were eligible, but only couples with the female partner suffering from AN and their male partners entered the study. Participants had to be at least 18 years old, in a committed relationship, and cohabiting for at least one year with a partner willing to participate. Patients had to meet *DSM-IV* criteria for AN at the time of assessment (except for criterion D—amenorrhea), with a BMI between 16 and 19 kg/m² at the beginning of the study. Exclusion criteria were alcohol or drug dependence in the past year, current significant suicidal ideation reported at the assessment, developmental disability that would impair ability to benefit from the treatment, and psychosis (i.e., schizophrenia, bipolar I disorder).

On average, patients were 33.20 ($SD = 9.15$) and partners were 35.60 ($SD = 9.37$) years old. Among patients, 85% identified as White, 10% Black, 5% Asian American. Among partners, 95% identified as White and 5% Black. No patients or partners identified as Hispanic. Seventy percent of patients and 45% of partners had a college degree or higher; median household income was \$25,000–\$34,999 and ranged from under \$5,000 to \$100,000–\$249,999. Couples had been romantically involved for an average of 10.78 years ($SD = 9.67$). Eleven couples had children (number of children: $M = 2.27$, $SD = 1.35$). In addition to AN, patients on average had 2.0 ($SD = 2.0$, ranging from 0 to 8) comorbid psychiatric diagnoses, based on the Structured Clinical Interview for *DSM* (SCID) administered at pretest. Seventy percent of patients and 15% of partners had at least one comorbid anxiety disorder (including obsessive-compulsive disorder); 45% of patients and 5% of partners had a comorbid mood disorder.

Materials

Measures in three categories were given at pretest, posttest, and 3-month follow-up: (a) AN-specific measures, (b) measures of

depression and anxiety, and (c) measures of relationship adjustment. Additional measures not focal to the outcome portion of the investigation were completed, but they are not reported here. Couples were paid \$50 to complete the measures at posttest and follow-up and received treatment free of charge.

AN-specific measures. The following weight and eating related measures were completed by patients only.

Body mass index (BMI). Weight was measured using a regularly calibrated digital scale; enrollment weight was used in calculating pretest weight in the analyses. A fixed stadiometer was used to assess height at pretest. BMI was calculated as weight (in kilograms)/height² (in meters). Given the nature of AN, we allowed for two stabilizing hospitalizations during the course of the clinical trial at any point after enrollment. We also recorded BMI just prior to the first session for all patients, and it is reported as well.

Eating Disorders Examination (EDE; Fairburn, Cooper, & O'Connor, 2008). The EDE is a standardized interview to assess eating disorder symptoms, resulting in scale scores in four areas: (a) dietary restraint, (b) concerns and behaviors related to eating, (c) concerns and behaviors related to body shape, and (d) concerns and behaviors related to weight. A global score ranging from 0 to 6 is derived by averaging the scale scores; higher scores reflect more symptoms. The EDE is a valid and reliable assessment of eating disorder symptoms (Berg, Peterson, Frazier, & Crow, 2012). In the current study, the alpha for patients was .93.

Global recovery index. A global recovery index with three categories (recovered, intermediate, poor) was created for the current investigation, similar to the indexes employed by McIntosh et al. (2005) and Zipfel et al. (2014). The index accounted for physical recovery (BMI), behavioral recovery (number of objective bulimic episodes, self-induced vomiting, and number of days with 8 or more waking hours without eating; all assessed with the EDE), and psychological recovery (scores on the four EDE subscales). Behavioral recovery was considered achieved in patients who were abstinent from all behaviors (binge eating, vomiting, restrictive eating) in the past 28 days. Psychological recovery was considered to be met when patient scores fell within one *SD* of the population norms on all EDE subscales (Fairburn et al., 2008). In order to be categorized as recovered, patients had to meet the following criteria: (a) BMI >18.5 kg/m² plus the behavioral and/or physical recovery criterion met, or (b) BMI between 17.5 and 18.5 kg/m² plus both the behavioral and physical recovery criteria met. A BMI <17.5 kg/m² was considered a poor outcome regardless of the psychological and behavioral components; likewise, a BMI between 17.5 and 18.5 kg/m² in the absence of the behavioral and psychological recovery criteria being met was also considered poor outcome. All other outcomes were considered intermediate.

Non-AN measures of psychopathology. Both the patient and the partner completed measures of depression and anxiety to assess individual distress not focal to AN. The *Beck Depression Inventory-II* (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report questionnaire that is frequently used to assess the severity of depressive symptoms in the past two weeks; the BDI has good internal consistency, test-retest reliability, and validity (Dozois, Dobson, & Ahnberg, 1998). In the current sample, the BDI had high internal consistency with a Cronbach's alpha = .89 for patients and $\alpha = .87$ for partners. The *Beck Anxiety Inventory* (BAI; Beck & Steer, 1993) is a 21-item, frequently used self-report

measure of anxiety. Convergence with other measures of anxiety has been demonstrated; reliability and validity are good (Bardhoshi, Duncan, & Erford, 2016). In the current study, alphas were .91 and .86 for patients and partners, respectively.

Relationship adjustment. Global relationship adjustment was assessed in both partners using the *Dyadic Adjustment Scale-4* (DAS-4; Sabourin, Valois, & Lussier, 2005), a four-item revision of the original Dyadic Adjustment Scale (DAS, Spanier, 1976). The DAS is one of the most widely used measures of relationship adjustment. Sabourin et al. demonstrated that the DAS-4 is as informative at all levels of couple satisfaction and is as effective at predicting couple dissolution when compared to the original 32-item DAS. The alphas in the current sample were .92 for patients and .86 for partners; a score below 13 indicates relationship distress.

Procedure

All study procedures were approved by the UNC institutional review board.

Study design. The current study was conducted with an NIMH award supporting the development and testing of innovative treatments for adult AN, given the limited effectiveness of existing treatments. Within this context, the study was originally planned as an RCT comparing the MCCT intervention (UCAN couple therapy, individual CBT, medical management, nutritional counseling) to a supportive couple therapy treatment package (supportive couple therapy, individual CBT, medical management, nutritional counseling). However, during the trial it became clear that it would not be possible to develop UCAN and attain an adequately powered sample size within the 3-year study duration. We therefore opted to discontinue randomization and converted the investigation into an open trial enrolling all remaining couples into the UCAN intervention, in order to provide adequate preliminary efficacy data for this novel intervention. This approach resulted in 13 couples receiving the UCAN intervention and 7 couples receiving the supportive couple therapy treatment package; both groups of couples are considered together as MCCT in the analyses, as explained below.

Treatment. All patients received treatment over approximately 26 weeks, including: 22 weekly sessions of a couple-based intervention, along with 22 individual CBT sessions, biweekly psychiatry visits for medication management, and nutritional counseling (beginning with weekly sessions and tapered later).

UCAN couple therapy. The UCAN couple intervention uses a CBCT approach and includes several intervention components outlined in a session-by-session treatment manual. A detailed description of all treatment interventions can be found elsewhere (Bulik et al., 2012; Bulik, Baucom, Kirby, & Pisetsky, 2011); what follows is an overview. The first phase of UCAN presents psychoeducation about AN and the recovery process, followed by training in communication skills to help the couple share thoughts and feelings and make effective decisions, within the context of couples' conversations about AN. Second, the major portion of UCAN focuses on helping the couple address eating-disordered behavior, including (a) how to arrange their environment for healthful eating, exercise, and other relevant behavioral patterns, and (b) addressing concerns around eating in public and changing unhelpful couple interaction patterns (e.g., partner trying to control

patient's eating behaviors) toward more appropriate strategies (e.g., problem-solving around how the couple will respond if the partner notices eating-disordered behaviors). In the third phase, couples consider how to address body image, affection, and sexual concerns. Finally, relapse prevention is discussed in regard both to AN-related behaviors as well as couple interaction patterns.

Supportive couple therapy. The supportive couple intervention allowed the couple therapist to address AN issues in any way the therapist thought would be beneficial to the specific couple. The couples were not taught specific communication skills, and the therapist was not asked to follow a particular protocol. No treatment manual was provided.

Results

Data Analytic Approach

Because only seven couples were seen in the supportive couple therapy component, a comparison between the two conditions was not possible on the various analyses described below involving inferential statistics due to very limited power to detect group differences. On the broadest primary outcome measure at posttest, the Global Recovery Index, the two groups were essentially identical in the proportion of patients improving/recovering. On a more general descriptive level, the results indicated no striking differences in outcome between the two conditions on the outcome measures described below, so the data were aggregated across conditions and treated as an open trial of MCCT. A series of analyses was used to test the statistical significance, within-group effect sizes, and clinical significance of changes over time. In order to provide some basis for comparing the results to more established findings from RCTs for adult AN including individual treatment, the magnitude of within-group effect sizes for BMI was compared in an exploratory fashion to those reported by McIntosh et al. (2005) and Zipfel et al. (2014) using benchmarking procedures. These latter trials included similar treatment components, except for the couple therapy that is unique to the current trial; yet other methodological differences among the studies merit caution in reaching conclusions regarding the relative impact of treatment across investigations.

All outcome variables had some amount of missing data, and analyses were therefore performed using recommended intent to treat methods (e.g., White, Horton, Carpenter, & Pocock, 2011). More specifically, all analyses reported below were conducted using five imputed data sets generated using methods recommended for multiply nested designs (i.e., fully conditional specification; Van Buren, 2011). In order to examine the stability of findings regarding statistically significant change, additional sensitivity analyses of statistically significant change were performed for all outcomes using multilevel modeling (MLMs) estimated using the original, unimputed data as well as using cases with complete data at pretest and posttest or pretest and follow-up (available from the first author). All findings regarding statistically significant change were stable across these approaches, with the one exception that pre- to posttest change in the EDE was somewhat more unstable (marginally significant for imputed data, significant in the MLM and completer analyses).

Within-group effect sizes were estimated by averaging the means and standard deviations of the imputed data sets and computed using the standard deviation of the relevant variable at pretest. Comparisons of effect sizes for BMI in the current study to those reported in McIntosh et al. (2005) and Zipfel et al. (2014) were conducted using procedures outlined in Minami, Serlin, Wampold, Kircher, and Brown (2008). Clinically significant change categories were calculated using formulas provided in Jacobson and Truax (1991). We additionally report the number of participants in the unchanged or deteriorated categories whose scores are in the healthy range on each outcome.

Primary Outcomes

Of the 20 couples enrolled in the study, 18 completed treatment. The dropout rate in the current investigation was 10%. [Previous investigations of treatments for adult AN have reported dropout rates averaging 25% (Berkman et al., 2006), ranging from 9% to 41%].

BMI. As shown in Table 1, BMI improved significantly from pretest to posttest and from pretest to follow-up. Mean BMI increased from 16.74 kg/m² at pretest to 19.83 kg/m² at posttest and 20.17 kg/m² at follow-up, with corresponding within-group effect sizes of ES = 1.92 and ES = 2.13. Consistent with the within-group changes

Table 1

Mean Scores (Standard Deviations) on Treatment Outcome Variables at All Assessment Points, Test Statistics (T-Tests for BMI and EDE, Fixed Main Effects for Measures Completed by Both Partners), and Within-Group Effect Sizes (Changes From Pre)

Variable	Pre		Posttest		Follow-up		
	Mean (SD)	Mean (SD)	Test statistic ^a	ES	Mean (SD)	Test statistic ^a	ES
BMI – patient	16.74 (1.61)	19.83 (2.48)	$t(19) = -7.64^{***}$	1.92	20.17 (2.26)	$t(19) = -2.67^{**}$	2.13
EDE – patient	3.11 (1.49)	2.56 (1.56)	$t(19) = 1.71; p = .087$	-.37	2.23 (1.19)	$t(19) = 2.90^{**}$	-.59
BAI – patient	20.49 (12.10)	14.91 (12.04)	$B = -3.81 (1.81)^*$	-.46	12.49 (9.46)	$B = -4.60 (1.68)^{**}$	-.66
BAI – partner	3.58 (4.74)	1.55 (2.54)		-.43	2.38 (2.75)		-.25
BDI – patient	27.84 (12.28)	16.35 (15.48)	$B = -7.94 (3.13)^*$	-.94	12.36 (12.84)	$B = -10.80 (4.97)^*$	-1.26
BDI – partner	7.90 (7.01)	4.12 (5.58)		-.54	4.39 (5.33)		-.50
DAS-4 – patient	13.15 (4.83)	15.11 (3.98)	$B = 1.54 (.72)^*$.41	15.50 (7.2)	$B = 2.20 (1.02)^*$.49
DAS-4 – partner	12.15 (3.87)	13.28 (3.98)		.29	14.21 (3.96)		.53

Note. ES = (within-group) effect size; BMI = Body mass index; EDE = Eating Disorders Examination; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; DAS-4 = Dyadic Adjustment Scale-4.

^a Test statistics are based on repeated measures *t*-test for BMI and EDE and based on MLM for all other outcomes where data was nested within couples.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Percent of Individuals in Clinically Significant Change Categories at Posttest and Follow-Up

Variable	Pretest/Posttest				Pretest/Follow-up			
	Det. (healthy) ^a	Unch. (healthy) ^a	Improv.	Recov.	Det. (healthy) ^a	Unch. (healthy) ^a	Improv.	Recov.
BMI	0%	0%	35%	65%	0%	0%	25%	75%
EDE	15% (0%)	40% (5%)	25%	20%	10% (0%)	15% (5%)	55%	20%
BAI								
Patient	0% (0%)	70% (50%)	5%	25%	0% (0%)	55% (40%)	10%	35%
Partner	0% (0%)	75% (40%)	15%	10%	10% (5%)	65% (40%)	10%	15%
BDI								
Patient	20% (0%)	20% (10%)	20%	40%	5% (0%)	20% (5%)	20%	55%
Partner	5% (0%)	60% (35%)	20%	15%	10% (5%)	45% (25%)	15%	30%
DAS-4								
Patient	15% (10%)	40% (25%)	10%	35%	10% (10%)	45% (40%)	5%	40%
Partner	10% (5%)	50% (30%)	5%	35%	10% (10%)	40% (35%)	5%	45%

Note. BMI = Body mass index; EDE = Eating Disorders Examination; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; DAS-4 = Dyadic Adjustment Scale-4; Det = Deteriorated; Unch = Unchanged; Improv. = Improved; Recov. = Recovered.

^a denotes % of all individuals who deteriorated or did not change but were in the healthy range at post or follow-up.

described above, the analyses of clinically significant change also indicated meaningful increases in BMI for the majority of patients (see Table 2); 65% of patients at posttest and 75% at follow-up had crossed into the healthy range for BMI (>18.5 kg/m²).

When using the BMI measured prior to the first session of MCCT, following hospital stays for some patients after enrolling in the study, changes in BMI at posttest and follow-up were still significant, although effect sizes were smaller. Clinically significant change analyses using this BMI showed that 55% of patients at posttest and 70% at follow-up had improved and crossed into the healthy range for BMI. At posttest, 25% had deteriorated and 5% were unchanged; at follow-up, only 5% had deteriorated and none were unchanged.

EDE. In addition to increases in BMI, significant improvements were also observed in the EDE global score. The reduction in EDE scores were statistically significant for all time points, and the within-group effect sizes were $-.37$ and $-.59$, respectively (see Table 1). The clinically significant change analyses for the EDE also suggest that changes were clinically meaningful for a large proportion of patients (see Table 2).

Global recovery index. The overall pattern of significant and clinically meaningful improvements in terms of weight status and AN symptoms was further supported by changes in the global recovery index. More specifically, the number of patients with poor status greatly decreased from 80% at pretest to 30% and 20% at posttest and follow-up, respectively. At the end of treatment, 25% of patients were categorized as having recovered, and this number increased to 30% at follow-up. These rates were even more favorable when analyzing completers with available data only (instead of using the dataset with imputed scores): 38% of completers were categorized as recovered at posttest, and this number increased to 50% at follow-up.

Thus, all analyses focusing on AN symptoms (BMI and EDE) consistently showed significant and clinically meaningful improvements for a majority of patients.

Secondary Outcomes: Patient and Partner Depression and Anxiety

In addition to the improvements in AN symptoms, patients and partners also improved in broader domains of individual function-

ing. More specifically, BDI and BAI symptoms improved significantly from pretest to posttest and from pretest to follow-up for both patients and partners, with effect sizes ranging from .25 to 1.26 (see Table 1). Across partners, changes on the BDI and BAI correlated .48, indicating some overlap but suggesting they are separate phenomena. Patients reported notably greater anxiety and depressive symptoms at pretest than partners (see Table 1), but there were no significant spouse*time interactions, indicating patients and partners changed at rates that were not significantly different from one another. For the BDI, the clinically significant change analyses indicated that the majority of patients improved significantly, 60% at posttest and 75% at follow-up. Among partners, 35% at posttest and 45% at follow-up had improved significantly on the BDI (see Table 2 for details). For the BAI, the clinically significant change analyses indicated that 30% of patients had improved significantly at posttest and 45% at follow-up. Among partners, 25% had significantly improved at posttest and follow-up (see Table 2).

In summary, following the MCCT, depression and anxiety decreased for both patients and partners. Partners' levels of depression and anxiety were relatively low at pretest, but nevertheless improved following MCCT.

Secondary Outcomes: Interpersonal Functioning

Relationship adjustment improved significantly and equally for patients and partners across all time points, with effect sizes ranging from .29 to .53 (see Table 1). Clinically significant change analyses indicated that at posttest, 45% of patients and 40% of partners improved significantly on the DAS-4; at follow-up, 45% of patients and 50% of partners had improved significantly (see Table 2). Thus, even though the treatment did not focus on relationship distress, relationship adjustment improved significantly and at a clinically meaningful level for both patients and partners.

Exploratory Benchmarking Comparisons

In the absence of a comparison group, we compared BMI outcomes to those reported in other published clinical trials for the

treatment of adult AN that did not include a close other, recognizing that differences among these various investigations require caution in reaching conclusions regarding relative effectiveness of treatment. Across both test statistics, the within-group effect sizes in the current study for change from pretest to post treatment were significantly larger than every treatment condition in Zipfel et al. (2014) and McIntosh et al. (2005), $2.18 \leq t \leq 3.09$, with one exception: Compared to specialized supportive clinical management (SSCM) in McIntosh et al. (2005), the t test, $t(34) = 1.33$, $p = .19$ was not significant, which suggests that the effect size in MCCT was not significantly different than that for SSCM. However, the critical noncentral d index ($d = 1.52$) suggests that the effect size for BMI in MCCT ($d = 1.92$) was larger than that seen in SSCM. The effect sizes across the three conditions in Zipfel et al.'s study (2014) ranged from .62 to 1.00 and across the three conditions in McIntosh's study (2005) from .34 to .90. Thus, the effect size for MCCT in the current study for BMI at posttest ($ES = 1.92$) was approximately 1.9 times to 5.6 times larger than the effect sizes for the individual treatments in the two benchmark studies. Likewise, comparing recovery rates, at the end of treatment, 25% of current patients were categorized as having recovered [compared to 5%–10% in McIntosh et al. (2005) and Zipfel et al. (2014)], and this number increased to 30% at follow-up. Complete details of these analyses are available from the first author.

Discussion

The findings from the current investigation are promising and suggest that adding a couple treatment to a typical multidisciplinary intervention package has the potential to boost treatment response in adult AN. First, the most central outcomes of concern involved weight gain (BMI) and improvement in AN symptoms. These domains were explored in a variety of ways, and in almost every instance, the gains from pretreatment to posttreatment were noteworthy. Likewise, when a more comprehensive measure of recovery was explored (global recovery index), the recovery rate was 25%, which still leaves substantial room for improvement, yet is higher than seen in previous RCTs employing individual therapy (Bulik et al., 2007). Thus, adding couple treatment to existing multicomponent interventions might notably improve adult AN treatment outcome.

In addition, the findings suggest that the treatment benefited both patients and partners in important individual and relationship domains beyond AN symptoms. Both patients and partners showed significant decreases in both depression and anxiety, and both patients and partners increased in relationship adjustment at posttest and follow-up. These improvements in relationship adjustment along with improving targeted symptoms of the disorder are consistent with previous couple-based intervention trials for other disorders, such as meta-analytic findings for depression (Barbato & D'Avanzo, 2008) and our open couple-based trial for OCD (Abramowitz et al., 2013). This cumulative set of findings from the current investigation seem to be adding to a developing picture that working with a couple around a given person's psychological disorder might have the benefit of addressing the specific disorder, along with improving broader indices of distress for both persons, and helping to improve relationship adjustment. To the degree that this emerging patterns is valid, the mechanisms of change that lead

to greater individual and relationship adjustment are unclear but warrant further investigation.

A final important area of treatment response involves patients discontinuing treatment prematurely, which historically has been a substantial impediment to providing effective treatment for adult AN. As noted earlier, across psychotherapy trials for adult AN, dropout rates average approximately 25% (Berkman et al., 2006), and in the current investigation, only 10% of couples dropped out of treatment. Our clinical observations of factors that might have contributed to this low dropout were that many couples had a shared sense of commitment to coming to treatment that facilitated adherence, even when individual motivation was low, although we have no empirical measures to support this observation. In addition, the individuals in the current investigation are unique in that both the patient and partner agreed to have the partner as a central part of treatment. Thus, there could be unique characteristics of these couples that contributed to low dropout relative to other treatment trials. At the same time, these couples were not merely a group of happy, well-functioning couples. They demonstrated a wide range of relationship adjustment at pretest, as a group scoring very near the cutoff between distressed and nondistressed, and clinicians often remarked how challenging the couple intervention was.

However, these findings must be interpreted with caution given the small sample size and open trial design, which changed during the course of the investigation. Because this was an initial trial without a comparison condition, it is helpful to put the findings in some context by comparing the treatment gains to previous investigations. Therefore, we conducted exploratory benchmarking strategies to compare the current results to the two largest RCTs for adult AN (that did not include a partner or selected other) (McIntosh et al., 2005; Zipfel et al., 2014). A benefit of this comparison is that these previous RCTs and the current trial all included some form of individual therapy, medical management, and nutritional counseling. Thus, the current trial added only the couple intervention. At the same time, the comparisons are only broad estimates and rough comparisons because as is almost always the case, the treatment trials vary in multiple ways, including setting (both RCTs were conducted in countries other than the U.S.), therapists, length of treatment, and patient characteristics [for example, in the current investigation, patients exhibited more extensive comorbid psychopathology than in the ANTOP study (mood disorders: 45% vs. 24% and anxiety disorders: 70% vs. 24%, respectively)]. Given these limitations, the findings suggest that the couple-based intervention compares favorably relative to the previous RCTs in addressing AN symptoms. In terms of BMI, the current effect size was approximately 1.9 times to 5.6 times larger than the effect sizes for the individual treatments in the two benchmark studies; on the broader recovery index, more than twice as many patients recovered compared to the benchmarked trials. These findings are promising, although the findings clearly call for an RCT so that direct comparisons can be made across treatment conditions.

Whereas the present findings suggest the possible utility of incorporating a partner into treatment of adult AN, it must be acknowledged that this multicomponent intervention is complex and requires professional expertise. Whereas the other components of the intervention (i.e., individual therapy, medical management, and nutritional counseling) are routine in many specialist settings

that treat AN, the couple intervention component is unique. This requires a provider with expertise to provide the couple treatment, as well as the presence of a willing partner to participate. Whereas individuals with AN enter into committed relationships at rates comparable to healthy peers (Maxwell et al., 2011), many individuals do not have a partner or the partner might be unwilling or unable to participate, so the current treatment will not serve all AN patients. In addition, the most effective way to incorporate a partner into treatment is unknown at present. It is yet to be determined whether some benefit might result from incorporating partners into treatment in a more limited manner (i.e., receiving psychoeducation about AN and explaining the patient's treatment goals).

In summary, the results of the current investigation are promising while posing many new questions requiring empirical investigation. Skilled researchers and clinicians have devoted considerable effort over decades to develop efficacious interventions for AN, one of the most complex psychiatric disorders to treat. The results of recent RCTs indicate that a variety of individual treatment approaches do promote change, yet improvements from individual therapy are less than optimal. Thus, expanding our treatment paradigm is needed, and building from current treatment approaches to incorporate working with the couple as a team appears to be one fruitful avenue that merits further consideration.

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