Meta-Analysis of Anorexia Nervosa Counseling Outcome Studies From 1990 to 2015

Sara E. Mann, Bradley T. Erford, and Amelia Minnich

This meta-analysis of 92 anorexia nervosa counseling articles examined the effectiveness of counseling in reducing symptoms of anorexia nervosa at termination and the longest follow-up assessments. Treatment-as-usual studies showed no effect to small effects at both posttest and follow-up assessments, wait-list studies showed small effects at posttest and medium effects at follow-up, and single-group uncontrolled studies showed medium to large effects at posttest and medium effects at follow-up. Implications for research and practice are discussed.

Keywords: meta-analysis, anorexia nervosa, outcome, treatment as usual

Anorexia nervosa is a mental disorder that involves individuals restricting their food intake, which leads to a weight that is less than minimally normal based on their age, sex, physical health, and developmental stage (American Psychiatric Association [APA], 2013). Individuals with anorexia nervosa fear gaining weight or becoming fat and partake in behaviors to prevent or compensate for weight gain. Anorexia nervosa is most prevalent during adolescence and young adulthood, with few cases appearing before puberty or after age 40 years. Anorexia nervosa is often accompanied by other mental disorders, such as bipolar disorder, depression, and anxiety. Recovery rates from anorexia nervosa vary, with some clients recovering after one episode and other clients never fully remitting. The majority of individuals experience recovery within 5 years of the onset of anorexia nervosa.

Body mass index (BMI) is often used to diagnose anorexia nervosa or determine severity and is one of the most frequently used research outcome measures. The BMI diagnostic criteria for adults with anorexia nervosa include BMI ranges of mild anorexia nervosa above 17–17.99 kg/m², a moderate range of 16–16.99 kg/m², a severe range of 15–15.99 kg/m², and an extreme diagnostic category of below 15 kg/m². The diagnosis for adolescents and children should include corresponding percentiles for BMI.

Approximately 0.4% of adolescent and young adult women in the United States have anorexia nervosa (APA, 2013). Anorexia nervosa is significantly less prevalent in men, with an estimated female-to-male ratio of 10:1. Men hospitalized for anorexia nervosa have a reported later age of onset and significantly lower risk for suicide (Gueguen et al., 2012). Risk factors for anorexia nervosa include anxiety and obsessive-compulsive disorders in childhood, cultures where thinness is desired, occupations that demand thinness, and genetics (APA, 2013). Anorexia nervosa is most common in postindustrial and high-income countries; however, the prevalence in nonindustrialized or lower income countries is uncertain. Within the United States, the anorexia nervosa rate is lower for Latin/o, African American, and Asian populations and thus differs across cultures.

The physical symptoms of anorexia nervosa may include lethargy, lack of menarche, lanugo, yellowing of skin, cold intolerance, abdominal pain, and constipation (APA, 2013). Psychological symptoms may include depressed mood, social withdrawal, irritability, insomnia, diminished interest in sex, undernutrition, obsessions about food, desire to control one’s environment, misuse of medications, substance abuse, and restrained emotional expression. With suicide completion rates of 12 per 100,000 per year, individuals with anorexia nervosa are typically at an elevated risk for suicide; thus, individuals diagnosed with anorexia nervosa should be clinically evaluated for suicidal ideation regularly. Death from anorexia nervosa typically results from medical complications, including suicide (Nakai, Fujita, Nin, Noma, & Teramukai, 2015). The chances of mortality increase as

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Author’s Note. A list of the 92 articles included in the meta-analysis is available from the second author upon request.

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the duration of anorexia nervosa increases. The mortality rate is also high because of cardiac complications associated with anorexia nervosa. Overall, mortality rates due to anorexia nervosa are estimated at 5% per decade (APA, 2013). Long-term survival does not differ between men and women; however, men with anorexia nervosa typically die sooner after discharge from treatment (Gueguen et al., 2012). The severity of anorexia nervosa symptoms, the risks, and mortality rates of clients make it essential that counselors understand the best counseling treatments available for anorexia nervosa.

Numerous approaches to the treatment of anorexia nervosa have been studied, including inpatient treatment, family counseling, cognitive remediation therapy, and cognitive behavior therapy (CBT). A few meta-analyses have been conducted to examine the efficacy of anorexia nervosa treatments, and these systematic reviews and research studies are summarized in the following sections. These disaggregated sections include cumulative outcomes related to inpatient treatment (a setting variable), family-based treatment (a paradigm), and modalities (e.g., cognitive remediation, CBT) because they are the clusters most evident in the current literature.

Inpatient Treatment of Anorexia Nervosa

Inpatient treatment is typically recommended for individuals with anorexia nervosa because of the inherent health and mortality risks. Inpatient treatment involves hospital care to increase a patient’s weight and appetite and to decrease thoughts and behaviors related to anorexia nervosa (Suárez-Pinilla et al., 2015). Entry into inpatient treatment requires a substantive severity of symptoms and a high level of risk to the patient. Psychotherapy programs are typically added onto inpatient treatment to help patients with anorexia nervosa cope with emotional elements of the disorder to facilitate weight gain. In their meta-analytic review of randomized controlled trials of inpatient add-on treatments, Suárez-Pinilla et al. (2015) found that there was no difference in weight gain between the treatment group that included an additional psychotherapy program and the control group. The effect size for the four studies (Davies et al., 2012; Eckert, Goldberg, Halmi, Casper, & Davis, 1979; Geist, Heinmaa, Stephens, Davis, & Katzman, 2000; Pillay & Crisp, 1981) with the addition of psychotherapy in Suárez-Pinilla et al.’s meta-analysis ranged from $d_s$ of $-2.16$ to $0.62$, with a mean $d$ of $-0.77$. Overall, inpatient treatment with or without additional psychotherapy treatment showed the same weight restoration.

Hartmann, Webew, Herpertz, and Zeeck (2011) conducted a more comprehensive meta-analysis of 57 studies of available clinical trials to examine the effects of counseling approaches on weight gain in patients with anorexia nervosa. The effect sizes for BMI for inpatient treatment ranged from 1.07 to 1.30, with a mean $d$ of 1.19. Day clinic effect sizes for BMI ranged from 0.79 to 1.46, with a mean $d$ of 1.11. Outpatient effect sizes for BMI ranged from 1.11 to 1.43, with a mean $d$ of 1.27. Thus, unlike Suárez-Pinilla et al. (2015), Hartmann et al. found that counseling made a significant contribution to anorexia nervosa outcome.

Family Counseling Treatment of Anorexia Nervosa

Family counseling can be used to treat anorexia nervosa through the use of conjoint family therapy or separated family therapy (Pitcock & Mair, 2010). Conjoint family therapy involves counseling the entire family at the same time, whereas separated family therapy involves counseling the family and identified patient separately. Pitcock and Mair (2010) found in a systematic review that both family approaches increase body weight and BMI with equal efficiency; however, no overall effect sizes were reported. Fisher, Hetrick, and Rushford (2010) compared two studies (Eisler et al., 2000; Le Grange, Eisler, Dare, & Russell, 1992) in head-to-head examinations of the effects of conjoint family therapy and separated family therapy and found no difference between the two approaches.

Fisher et al. (2010) also found no significant difference when comparing two studies on family therapy versus individual psychological intervention (Ball & Mitchell, 2004; Robin & Siegel, 1999), with an overall large effect in weight restoration at termination and follow-up. Couturier, Kimberly, and Szatmari (2013) found similar results ($p > .05$) when comparing studies of several family-based treatments versus individual treatment for adolescents with anorexia nervosa (Le Grange, Crosby, Rathouz, & Leventhal, 2007; Lock et al., 2010; Schmidt et al., 2007). Although no end-of-treatment difference was found in weight restoration, the follow-up studies found that family-based treatment was superior to individual treatment for weight restoration of adolescents with anorexia nervosa.

In addition, Fisher et al. (2010) compared two studies (Crisp et al., 1991; Dare, Eisler, Russell, Treasure, & Dodge, 2001) to examine the effectiveness of family therapy compared with treatment as usual (TAU) and found an overall large, significant effect for family therapy. Fisher et al. also compared family therapy with psychological intervention in four studies (Ball & Mitchell, 2004; Dare et al., 2001; Robin & Siegel, 1999; Russell, Szmukler, Dare, & Eisler, 1987) and found that family therapy may be more effective. However, family therapy compared with psychological intervention over the long-term follow-up resulted in no overall differences, indicating more evidence is needed to determine which intervention is superior in the long run.
Cognitive Remediation Therapy Treatment for Anorexia Nervosa

Cognitive remediation therapy helps patients improve their cognitive flexibility and planning to enhance social functioning (Tchanturia, Loues, & Holtum, 2014) to alleviate symptoms of major depressive disorder and obsessive-compulsive disorder, both of which are often comorbid with anorexia nervosa. Tchanturia et al. (2014) reviewed four recent randomized controlled trials of cognitive remediation therapy (Brockmeyer et al., 2014; Dingemans et al. 2014; Lock et al., 2013; Steinglass et al., 2014) and found that participants in the cognitive remediation therapy group had lower dropout rates compared with participants in the CBT group and better quality of life during the follow-up phase compared with those in the TAU group. Tchanturia et al.'s review did not identify superior overall effect sizes, and they concluded that more research is needed to support using cognitive remediation therapy to treat anorexia nervosa.

CBT for Anorexia Nervosa

CBT challenges the thinking of patients with anorexia nervosa, thus changing the patient’s behavior. Galasworthy-Francis and Allan (2014) conducted a systematic review of the effectiveness of CBT on patients with anorexia nervosa and found that CBT decreased treatment dropout rates and improved BMI, anorexia nervosa symptoms, and anorexia nervosa psychopathology. Galasworthy-Francis and Allan concluded that CBT can be used to treat anorexia nervosa; however, there is not enough evidence to support CBT as a superior treatment compared with other treatments. Pittock and Mair (2010) conducted a systematic review of randomized controlled studies for the treatment of anorexia nervosa and found similar results: CBT can help patients with anorexia nervosa but is not superior to other treatments.

Patients With Chronic Anorexia Nervosa

Hay, Touyz, and Sud (2012) reviewed randomized controlled trials of treatment of patients with chronic anorexia nervosa, defined as patients with anorexia nervosa for more than 3 years. They found 11 studies with limited efficacy for treating patients with chronic anorexia nervosa (Barbarich et al., 2004; Birmingham, Gutierrez, Jonat, & Beumont, 2004; Bissada, Tasca, Barber, & Bradwejn, 2008; Dare et al., 2001; Fassino et al., 2002; Miller et al., 2011; Mondratty et al., 2005; Pike, Walsh, Vitousek, Wilson, & Bauer, 2003; Russell et al., 1987; Walsh et al., 2006; Whitney et al., 2012). Hay and colleagues concluded that less emphasis is needed on targeting core eating disorder pathology, and they called for therapies to minimize harm by reducing the personal and social costs of chronic anorexia nervosa.

Research Questions for Current Study

A great deal of research has been conducted on the effects of counseling as treatment for adolescents and adults with anorexia nervosa. Surprisingly, although more than 100 clinical trials were conducted, only several dozen of these were randomized controlled trials, and even fewer of these included short- or long-term follow-up studies to assess the follow-up interventions. This is due in part to the high-stakes mortality and health implications associated with anorexia nervosa (APA, 2013). Often, it is just not possible to defer treatment for months or years, because a portion of participants are randomly assigned to wait-list, placebo, or TAU conditions. TAU is a control condition in which clients receive the ordinary treatment offered by a typical clinician for mental health services, such as supportive counseling. Furthermore, the literature seems to indicate that no specific treatments for anorexia nervosa are superior to any other. The purpose of the current meta-analytic study was to locate all available wait-list, TAU, placebo, and single-group clinical trials of the counseling treatment of anorexia nervosa and synthesize the results to determine the efficacy of counseling both at the end of treatment and at the longest follow-up assessment. Thus, two research questions were formulated and pursued: (a) Is counseling effective in reducing symptoms of anorexia nervosa? And, if so, (b) does the counseling treatment effectiveness last at follow-up assessments? We used meta-analytic procedures to determine not only whether effect size averages are greater than zero (i.e., whether counseling is effective) but also whether the effect size distributions are homogeneous or heterogeneous. In the event of heterogeneity, we will pursue moderator and mediator analyses to determine whether some approaches or variables may show benefits over others.

Method

This meta-analysis examined the effectiveness of counseling treatments and interventions in decreasing anorexia nervosa symptoms. Counseling of participants with anorexia nervosa involved professional assistance in reducing the social, personal, and psychological aspects of anorexia nervosa through the use of counseling techniques and theories. Treatment modalities could include individual, group, or family counseling.

Inclusion Criteria

To obtain a robust set of high-quality clinical trials of anorexia nervosa treatment, we used the following nine criteria during the article selection process: (a) studies appeared in print between 1990 and 2015; (b) studies were published in English with no limitation on the nation or culture of origin; (c) a treatment or intervention was implemented to directly reduce the symptoms of anorexia nervosa; (d) treatment involved individual, group, or family approaches.
to counseling, whether inpatient or outpatient, and drug trials were excluded; (e) symptoms of anorexia nervosa were assessed by at least one standardized measurement procedure (e.g., self-report rating scale, frequency count, BMI); (f) output data (means and standard deviations) were available for computation of mean gain or mean difference effect sizes; (g) participants were adolescents or adults (no children under the age of 13 years); (h) studies had a minimum sample size of six participants; and (i) studies included quasi-experimental or true experimental clinical trial designs using either a single-group or some control or comparison condition (i.e., wait-list, placebo, TAU). Nonexperimental or preexperimental designs were excluded. Although current-day meta-analyses often exclude nonrandomized, quasi-experimental single-group clinical trials, we retained them because they made up about 70% of the available studies. Thus, excluding them would have significantly curtailed what is known about treatment of anorexia nervosa. For ethical and legal reasons, many researchers hold clients with anorexia nervosa in a control condition for months or years, which presents an undue risk to the health of the clients. Finally, we excluded redundant studies or samples from the results of potential candidate articles to preserve the independence of results.

Search Strategies

Candidate studies were identified through computerized searches and review of reference lists from previous meta-analyses and clinical trials. The computerized searches were done through Academic Search Premier, MEDLINE, PsycINFO, and ERIC from 1990 to 2015 with keywords anorexia AND counseling, and anorexia AND psychotherapy. Restriction parameters included English language, age, peer review, and clinical trials. Reference lists of previous meta-analysis articles were examined for additional clinical trials.

Article Selection and Coding Procedure

The coders were two independent, trained, graduate counseling students (first and third authors) who reviewed each candidate article to determine whether all nine article selection criteria were met. Each coder was a school counseling graduate student under the second author. Each coder indicated "accept" if all selection criteria were evident and "reject" if one or more selection criteria were not met. The second author served as a judge to resolve disagreements and finalize the articles selected.

The two coders examined participant characteristics, study design, and treatment method characteristics. Effect sizes were computed separately by the second author. The coded variables included the type of study design, sample size, average age of participants, gender of participants, ethnicity of participants, the country of participants, patient diagnosis determination, treatment setting, type of control group, therapist training, if the assessments were conducted blind, if the counselors were supervised, if a treatment manual was used, the therapy modality, group size if group was used, if clients received homework, duration of sessions, duration of treatment percentage of sample completing treatment, therapist degree qualifications, therapist professional discipline, and therapist vocation. Each coder used a manualized coding protocol and was under the supervision of the second author, who adjudicated all coding disagreements and made the final determination. Interrater agreement on article selection was 97.2% (κ = .93), and agreement across all coded variables ranged from 75% to 100% (κ = .49–1.00). Landis and Koch (1977) provided the following interpretations: kappas of .41 to .60 were moderate and sufficient for research purposes, kappas of .61 to .80 were substantial, and kappas of .81 to 1.00 were almost perfect.

Outcome Measures

For the main effect, outcome measures were combined into a single effect size for each study, condition, or posttest/ follow-up circumstance, as appropriate. Outcome measures were required to assess the prevalence of anorexia nervosa in participants. Although more than a dozen outcome measures were used in the 92 selected articles, four occurred most commonly: Eating Disorder Examination (Fairburn, 2008), Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983), Eating Attitudes Test (Garner & Garfinkel, 1979), and BMI (Centers for Disease Control and Prevention, 2016).

Statistical Methods

We combined effect sizes from similar study designs (i.e., wait-list control groups, TAU control groups, and single groups); no placebo studies were located. The posttest data following the anorexia nervosa treatment created the posttreatment effect sizes. We determined follow-up effect sizes by using the final (i.e., longest) follow-up data from each study. Cohen's d was used to determine standardized mean difference effect sizes (Cohen, 1988). Negative effect sizes illustrate no effect to a negative effect of treatment, and positive effect sizes show a positive effect of treatment. Effect sizes from individual studies were computed by hand and combined to provide a single, independent effect size for each study. We used Comprehensive Meta Analysis Version 3.0 (Borenstein, Hedges, Higgins, & Rothstein, 2014) to compute average standardized effect sizes and publication bias tests.

For nonrandomized, single-group studies, standardized mean gain effect sizes were determined by the formula suggested by Lipsey and Wilson (2001), which calculates the difference between the pretest and posttest scores divided by the pooled standard deviation. Lipsey and Wilson also suggested use of .80 as a default for missing
sample reliabilities. Although current-day meta-analyses often include only randomized controlled trials and remove single-group studies because they are not randomized or controlled, we retained the single-group studies \( (j = 65, k = 83 \) for posttreatment studies and \( j = 24, k = 33 \) for follow-up studies, where \( j \) is the number of articles and \( k \) is the number of studies) because so few randomized controlled trials exist. As mentioned previously, this is due primarily to the high-stakes mortality of not immediately treating clients with anorexia nervosa. Thus, removing all single-group trials would have eliminated 74% of all available evidence pertaining to the counseling treatment of anorexia nervosa.

We corrected sample bias for all effect size estimates, and unbiased estimates \( (d) \) were again corrected with an inverse variance weighting procedure \( (d'k \); Erdford, Savin-Murphy, & Butler, 2010; Lipsey & Wilson, 2001) and then combined to produce \( d'^2 \), the average effect size. Hypothesis testing of \( d'^2 > 0 \) was accomplished by determining 95% confidence intervals (CIs). The null hypothesis can be rejected if the total CI range is above zero.

Analyses with fewer than 20 studies have an increased probability of Type II errors (Cornwell, 1993; Cornwell & Ladd, 1993). In the present meta-analysis, the single-group analyses were the only analyses with more than 20 studies, including within the follow-up studies, so they can be interpreted with some confidence. Caution is warranted when interpreting the TAU and wait-list results, because these analyses may be underpowered.

Effect size heterogeneity was estimated using Cochran’s heterogeneity statistic \( (Q) \) and assessed using the chi-square distribution, along with the \( Q < k \) criterion. The degree of inconsistency \( (I^2; Higgins, Thompson, Deeks, & Altman, 2003) \) was also calculated. Higgins et al. (2003) suggested that for interpretation purposes of \( I^2 \), 0% means homogeneity, 25% means low homogeneity, 50% means moderate homogeneity/heterogeneity, 75% means high homogeneity, and 100% means total heterogeneity. Further investigation of variables with \( Q \) probability < .05 or \( I^2 > 50 \% \) may be necessary by testing for the potential influence of mediator and moderator variables.

Publication Bias

The current meta-analysis did not include unpublished manuscripts, which may have resulted in publication bias and could have influenced average effect sizes \( (d'^2) \). Funnel plot analysis, trim-and-fill procedures (Duval & Tweedie, 2000), and Rosenthal’s (1979) fail-safe \( N \) procedures were conducted using Comprehensive Meta Analysis Version 3.0 (Borenstein et al., 2014) on each set of effect sizes to assess for potential publication bias.

Funnel plots are used to graph study size on the vertical axis and effect size on the horizontal axis. Thus, large sample studies cluster at the high end of the plot, and small sample studies cluster toward the bottom. When publication bias is absent, a symmetrical distribution of data points should cluster around the mean effect size. When publication bias is present, this symmetry is not observed. For example, Duval and Tweedie (2000) developed an imputation strategy to determine where missing studies were likely to fall, added these missing studies, and then recomputed the effect. Rosenthal’s (1979) fail-safe \( N \) proposes that rather than speculating whether studies may be missing, a researcher can compute the number of studies required to mitigate or nullify the observed effect. Rosenthal’s file-drawer analysis indicates how many unknown or missing studies would need to exist (unpublished and sitting in researchers’ filing cabinets) to nullify the obtained average effect size estimate. If the fail-safe \( N \) is large, the result is robust because one is unlikely to find hundreds or thousands of missing studies with an effect size of .00. However, if the fail-safe \( N \) is low (e.g., 5, 10), then one can be far less confident.

Overall, across all analyses, few outliers were noted and tended to disperse on either end of the effect size continuum, and the effect sizes basically conformed to expected graphical configurations. As a result, these few outliers were retained rather than trimmed or removed. Rosenthal’s fail-safe \( N \) was computed for each analysis, and publication bias was viewed as nominal (see Table 1).

Results

The article selection process for the meta-analysis is presented in Figure 1. The electronic search identified 1,546 candidate articles. An additional 22 candidate articles were identified through hand searches. Of the 1,568 articles, 1,476 articles were excluded because they violated one or more of the inclusion criteria, leaving 92 articles for the meta-analysis. (A list of the 92 articles included in the meta-analysis is available from the second author upon request.)

The two coders (first and third authors) agreed on 97.0% of the independent selection decisions, with a kappa coefficient of .82. The second author helped reach consensus on disputed articles and confirmed the selection decisions for all articles. As mentioned earlier, kappa ranges of .41 to .60 were identified as moderate and sufficient for research purposes, .61 to .80 as substantial, and .81 to 1.00 as almost perfect (Landis & Koch, 1977).

Study Characteristics

The current meta-analysis examined the effectiveness of counseling on the treatment of anorexia nervosa by wait-list, TAU, and single-group condition. Figure 1 shows that five articles used wait-list control groups, 18 articles used TAU control groups, and 65 articles used single-group studies. No placebo control groups were located. The meta-analysis also assessed the long-term effects of each condition. As seen in Figure 1, of the 92 articles used in the meta-analysis, 88
### TABLE 1
Summary Statistics for the Total (Main) and Supplemental Outcome Variables

<table>
<thead>
<tr>
<th>Dependent Variable and Comparison Group</th>
<th>j</th>
<th>k</th>
<th>n</th>
<th>d+</th>
<th>95% CI</th>
<th>&gt; 0</th>
<th>Fail-Safe N</th>
<th>Q</th>
<th>df</th>
<th>P (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Posttest</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>83</td>
<td>4,446</td>
<td>0.78</td>
<td>[0.69, 0.87]</td>
<td>Yes</td>
<td>6,457</td>
<td>100.14</td>
<td>82</td>
<td>17.1</td>
</tr>
<tr>
<td>Single group</td>
<td>5</td>
<td>7</td>
<td>651</td>
<td>0.37</td>
<td>[0.12, 0.62]</td>
<td>Yes</td>
<td>259</td>
<td>6.54</td>
<td>6</td>
<td>8.3</td>
</tr>
<tr>
<td>Wait-list</td>
<td>18</td>
<td>22</td>
<td>1,271</td>
<td>0.10</td>
<td>[-0.05, 0.26]</td>
<td>No</td>
<td>224</td>
<td>24.81</td>
<td>21</td>
<td>11.3</td>
</tr>
<tr>
<td>Body mass index</td>
<td>50</td>
<td>64</td>
<td>3,608</td>
<td>0.94</td>
<td>[0.63, 1.05]</td>
<td>Yes</td>
<td>5,987</td>
<td>118.44</td>
<td>63</td>
<td>46.8</td>
</tr>
<tr>
<td>Single group</td>
<td>4</td>
<td>4</td>
<td>562</td>
<td>0.42</td>
<td>[0.04, 0.81]</td>
<td>Yes</td>
<td>170</td>
<td>2.72</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Wait-list</td>
<td>9</td>
<td>11</td>
<td>679</td>
<td>0.02</td>
<td>[-0.13, 0.16]</td>
<td>No</td>
<td>26</td>
<td>8.97</td>
<td>10</td>
<td>0.0</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>16</td>
<td>21</td>
<td>1,942</td>
<td>0.84</td>
<td>[0.67, 1.00]</td>
<td>Yes</td>
<td>1,754</td>
<td>48.17</td>
<td>5</td>
<td>58.5</td>
</tr>
<tr>
<td>Restraint</td>
<td>3</td>
<td>3</td>
<td>522</td>
<td>0.17</td>
<td>[0.00, 0.34]</td>
<td>No</td>
<td>51</td>
<td>2.14</td>
<td>2</td>
<td>6.6</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>5</td>
<td>6</td>
<td>437</td>
<td>0.13</td>
<td>[-0.20, 0.46]</td>
<td>No</td>
<td>77</td>
<td>8.73</td>
<td>5</td>
<td>42.7</td>
</tr>
<tr>
<td>Eating concerns</td>
<td>14</td>
<td>18</td>
<td>694</td>
<td>0.69</td>
<td>[0.49, 0.88]</td>
<td>Yes</td>
<td>1,238</td>
<td>20.57</td>
<td>15</td>
<td>17.3</td>
</tr>
<tr>
<td>Single group</td>
<td>1</td>
<td>1</td>
<td>212</td>
<td>0.09</td>
<td>[-0.18, 0.36]</td>
<td>No</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Wait-list</td>
<td>3</td>
<td>4</td>
<td>199</td>
<td>0.29</td>
<td>[-0.05, 0.63]</td>
<td>No</td>
<td>116</td>
<td>2.59</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>28</td>
<td>37</td>
<td>2,690</td>
<td>0.40</td>
<td>[0.26, 0.52]</td>
<td>Yes</td>
<td>1,476</td>
<td>20.45</td>
<td>36</td>
<td>0.0</td>
</tr>
<tr>
<td>Body dissatisfaction</td>
<td>2</td>
<td>2</td>
<td>420</td>
<td>0.14</td>
<td>[-0.05, 0.34]</td>
<td>No</td>
<td>29</td>
<td>2.16</td>
<td>1</td>
<td>53.7</td>
</tr>
<tr>
<td>Single group</td>
<td>9</td>
<td>11</td>
<td>556</td>
<td>0.22</td>
<td>[0.05, 0.39]</td>
<td>Yes</td>
<td>245</td>
<td>2.24</td>
<td>10</td>
<td>0.0</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>25</td>
<td>31</td>
<td>1,371</td>
<td>0.51</td>
<td>[0.42, 0.60]</td>
<td>Yes</td>
<td>1,587</td>
<td>31.17</td>
<td>30</td>
<td>3.8</td>
</tr>
<tr>
<td>Weight concerns</td>
<td>2</td>
<td>2</td>
<td>314</td>
<td>0.14</td>
<td>[-0.08, 0.37]</td>
<td>No</td>
<td>29</td>
<td>0.90</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>9</td>
<td>11</td>
<td>649</td>
<td>0.16</td>
<td>[-0.04, 0.36]</td>
<td>No</td>
<td>179</td>
<td>10.33</td>
<td>10</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>Follow-Up</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>33</td>
<td>1,211</td>
<td>0.64</td>
<td>[0.53, 0.75]</td>
<td>Yes</td>
<td>2,119</td>
<td>44.72</td>
<td>32</td>
<td>26.2</td>
</tr>
<tr>
<td>Single group</td>
<td>3</td>
<td>5</td>
<td>337</td>
<td>0.51</td>
<td>[0.28, 0.74]</td>
<td>Yes</td>
<td>254</td>
<td>1.72</td>
<td>4</td>
<td>0.0</td>
</tr>
<tr>
<td>Wait-list</td>
<td>9</td>
<td>12</td>
<td>605</td>
<td>0.14</td>
<td>[-0.03, 0.31]</td>
<td>No</td>
<td>167</td>
<td>5.06</td>
<td>11</td>
<td>0.0</td>
</tr>
<tr>
<td>Body mass index</td>
<td>17</td>
<td>24</td>
<td>779</td>
<td>0.95</td>
<td>[0.80, 1.11]</td>
<td>Yes</td>
<td>2,294</td>
<td>22.72</td>
<td>23</td>
<td>0.0</td>
</tr>
<tr>
<td>Single group</td>
<td>2</td>
<td>2</td>
<td>248</td>
<td>0.65</td>
<td>[0.38, 0.91]</td>
<td>Yes</td>
<td>130</td>
<td>0.13</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>6</td>
<td>9</td>
<td>530</td>
<td>-0.15</td>
<td>[-0.33, 0.03]</td>
<td>No</td>
<td>0</td>
<td>5.34</td>
<td>8</td>
<td>0.0</td>
</tr>
<tr>
<td>Restraint</td>
<td>7</td>
<td>10</td>
<td>388</td>
<td>0.53</td>
<td>[0.41, 0.76]</td>
<td>Yes</td>
<td>583</td>
<td>10.57</td>
<td>9</td>
<td>14.9</td>
</tr>
<tr>
<td>Single group</td>
<td>1</td>
<td>1</td>
<td>208</td>
<td>0.30</td>
<td>[0.03, 0.58]</td>
<td>Yes</td>
<td>31</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Wait-list</td>
<td>2</td>
<td>3</td>
<td>57</td>
<td>0.63</td>
<td>[0.05, 1.21]</td>
<td>Yes</td>
<td>189</td>
<td>0.52</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>Treatment as usual</td>
<td>6</td>
<td>9</td>
<td>381</td>
<td>0.53</td>
<td>[0.25, 0.81]</td>
<td>Yes</td>
<td>474</td>
<td>2.69</td>
<td>8</td>
<td>0.0</td>
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<tr>
<td>Eating concerns</td>
<td>14</td>
<td>19</td>
<td>609</td>
<td>0.40</td>
<td>[0.29, 0.51]</td>
<td>Yes</td>
<td>760</td>
<td>18.56</td>
<td>18</td>
<td>3.0</td>
</tr>
<tr>
<td>Single group</td>
<td>1</td>
<td>1</td>
<td>208</td>
<td>0.32</td>
<td>[0.04, 0.59]</td>
<td>Yes</td>
<td>32</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Wait-list</td>
<td>2</td>
<td>3</td>
<td>57</td>
<td>0.26</td>
<td>[-0.51, 0.02]</td>
<td>No</td>
<td>76</td>
<td>0.88</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>Weight concerns</td>
<td>13</td>
<td>17</td>
<td>577</td>
<td>0.48</td>
<td>[0.38, 0.59]</td>
<td>Yes</td>
<td>818</td>
<td>16.43</td>
<td>166</td>
<td>2.6</td>
</tr>
<tr>
<td>Single group</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>[0.00, 0.00]</td>
<td>No</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Wait-list</td>
<td>1</td>
<td>2</td>
<td>43</td>
<td>0.31</td>
<td>[-0.36, 0.98]</td>
<td>No</td>
<td>62</td>
<td>0.36</td>
<td>1</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Note. Posttest measurement was taken at the termination of treatment. Post-test measurement was taken at the longest pretreatment follow-up available. j = number of articles; k = number of studies; d+ = average effect size; CI = confidence interval; > 0 = the mean effect size was greater than zero ("Yes" in this column means the effect size estimate is composed of a homogeneous grouping of effect sizes); Q = Cochran's Q test statistic; I² = a homogeneity index presented as a percentage; NA = not available.

were examined for posttest comparison and 36 were examined for follow-up comparison (four of the articles provided only follow-up information). There were 6,368 total patients for posttest comparisons. Unfortunately, only about 40% of the studies included follow-up comparison data, and 2,153 patients were included in studies for follow-up comparison. Effect sizes were interpreted according to Lipsey and Wilson's (1993) suggested categorization, with d = 0.20 indicating a small effect, d = 0.50 indicating a medium effect, and d = 0.67 indicating a large effect of treatment.
Is Counseling Effective in Reducing Symptoms of Anorexia Nervosa?

**Wait-list studies.** The five wait-list control group articles had 651 participants across seven posttest comparisons (see Table 1). The wait-list \( d^+ \) of 0.37, 95% CI [0.12, 0.62], indicated that the null hypothesis could be rejected because the full CI range was above zero. Thus, the average effect size of the wait-list control group studies was small but significant, indicating that counseling was effective in reducing anorexia nervosa symptoms for the wait-list control participants. Because the \( d^+ \) is, in effect, a modified \( z \) score, the average participant in the treatment group performed at the 64th percentile of the wait-list control group distribution. In Cochran’s test of homogeneity, \( Q(6) = 6.54, p > .05 \) and \( I^2 = 8.3\% \; \text{; thus, no moderator or mediator analysis was indicated.} \) Rosenthal’s \( N \) for publication bias indicates that 259 wait-list studies with an effect size of 0.00 would need to be located in the literature or unpublished manuscripts to lower the observed \( d^+ \) to an insignificant 0.01. Given that only five wait-list articles were located in the current search, this is an unlikely result.

**TAU studies.** The 18 TAU group comparison articles yielded 22 posttest treatment comparisons for a total sample size of 1,271 participants and an average \( d^+ \) of 0.10, 95% CI [−0.05, 0.26]. This \( d^+ \) range was not greater than zero, thus indicating that the null hypothesis of no difference could not be rejected. The average effect size for TAU was no effect to a small effect, and the average experimental group participant stood at a percentile rank of only 54 in the TAU control condition distribution. Still, Rosenthal’s fail-safe \( N \) was 224, \( Q(21) = 24.81, p > .05 \), and \( I^2 = 11.3\% \; \text{; thus, no moderator or mediator analysis was indicated.} \)

**Single-group studies.** The 65 single-group treatment articles yielded 83 posttest comparisons for a total sample size of 4,446 participants. The single-group treatment \( d^+ \) of 0.78, 95% CI [0.69, 0.87], easily allowed for a rejected null hypothesis, resulting in a robust medium to large effect, meaning the average posttest participant exceeded the performance of 78% of the pretest score distribution, \( Q(82) = 100.14, p > .05 \) and \( I^2 = 17.1\% \; \text{; thus, no moderator or mediator analysis was indicated.} \) Rosenthal’s fail-safe \( N \) was a robust 6,457 studies. In summary, single-group and wait-list control group studies indicated that counseling was effective at posttreatment in reducing anorexia nervosa symptoms, whereas TAU studies indicated no effect of treatment.

**Secondary variable analysis.** Secondary variable analyses were conducted, and the results are summarized in Table 1 for BMI, restraint, eating concerns, body dissatisfaction/shape concerns, and weight concerns/to drive for thinness. In general, the analyses indicated significant treatment effects for single-group studies for all variables; however, significant treatment effects in wait-list studies were noted only for the BMI analysis, and significant treatment effects in TAU studies were noted only for body dissatisfaction/shape concerns. Most of these analyses were very underpowered, and they are likely to create more positive outcomes when the number of clinical trials increases in the future. Also, only two instances of effect size heterogeneity were noted: the single-group analysis for BMI (\( k = 64 \); range of \( d^+ \) from 0.08 to 3.38), and the single-group analysis for restraint (\( k = 21 \); range of \( d^+ \) from 0.27 to 2.06). Cursory rational inspection noted that the homogeneity was influenced by small size rather than small sample or study characteristics; that is, smaller samples had larger effect sizes.

**Does the Counseling Treatment for Anorexia Nervosa Last at Follow-Up Assessments?**

**Wait-list studies.** Follow-up comparisons in the wait-list control condition included 337 participants across only five studies (see Table 1). The wait-list \( d^+ \) was 0.51, 95% CI [0.28, 0.74], indicating that the null hypothesis could be rejected and a medium average effect size for the wait-list follow-up

---

**FIGURE 1**

Flowchart of Included Studies

*Note. \( j \) = number of articles; \( k \) = number of studies/comparisons.*

<table>
<thead>
<tr>
<th>Articles finally included in the meta-analysis (( j = 92 )) with usable information (( j = 88 ), ( k = 112 ) posttest comparisons ( [n = 6,368] ), ( j = 38 ), ( k = 50 ) follow-up comparisons ( [n = 2,153] )), including:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No placebo studies</td>
</tr>
<tr>
<td>• Wait-list control groups (( j = 5 ), ( k = 7 ) posttest comparisons ( [n = 651]; j = 3, k = 5 ) follow-up comparisons ( [n = 337] ))</td>
</tr>
<tr>
<td>• Treatment-as-usual comparison groups (( j = 18 ), ( k = 22 ) posttest comparisons ( [n = 1,271]; j = 9, k = 12 ) follow-up comparisons ( [n = 605] ))</td>
</tr>
<tr>
<td>• Single-group studies (( j = 65 ), ( k = 83 ) posttest comparisons ( [n = 4,446]; j = 24, k = 33 ) follow-up comparisons ( [n = 1,211] ))</td>
</tr>
</tbody>
</table>

---

**TABLE 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Studies</th>
<th>Total Participants</th>
<th>Average Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>64</td>
<td>4,446</td>
<td>0.51, 95% CI [0.28, 0.74]</td>
</tr>
<tr>
<td>Restraint</td>
<td>21</td>
<td>337</td>
<td>0.78, 95% CI [0.69, 0.87]</td>
</tr>
<tr>
<td>Eating concerns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body dissatisfaction/shape concerns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight concerns/to drive for thinness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
studies was observed. This also means that the average participant in the treatment condition was at the 69th percentile of the wait-list control distribution of scores. In the analysis of homogeneity, $Q(4) = 1.72, p > .05$ and $I^2 = 0.0%;$ thus, no moderator or mediator analysis was indicated. Rosenthal’s fail-safe $N$ was 254 studies. Table 2 shows that all of the wait-list follow-up studies reported data at 7 to 12 months after the posttest collection, yielding a weighted 1-year follow-up $d'$ of $0.46 (k = 5, n = 337).$ Therefore, wait-list studies reported that counseling was an effective treatment for anorexia nervosa, and significant effects seemed to last for at least 1 year after treatment concluded.

**TAU studies.** The TAU analysis yielded 12 follow-up studies with a total of 605 participants, yielding a $d^+$ of 0.14, 95% CI $[0.01, 0.27].$ A 95% CI range with a negative value means that the null hypothesis could not be rejected; in addition, the $d^+$ was in the range of none to a small effect of treatment, and the percentile rank conversion was only 55%, meaning that the average treated participant stood at the 55th percentile of the TAU distribution of scores. With regard to homogeneity, $Q(11) = 5.06, p > .05$ and $I^2 = 0.0%;$ thus, no moderator or mediator analysis was indicated. Rosenthal’s fail-safe $N$ was 167 studies. Table 2 shows that TAU $d^+$ moved from 0.10 ($k = 22, n = 1,271$) at posttest to 0.17 ($k = 7, n = 369$) less than 7 months after posttest, to 0.03 ($k = 6, n = 349$) at 7–12 months follow-up, and finally to 0.23 ($k = 3, n = 87$) 2 or more years after treatment was terminated. All of these follow-up results are very close to a zero effect of treatment. Thus, TAU studies reported that counseling was not an effective treatment for anorexia nervosa at the end of treatment, and significant effects did not appear to last, or at least were very small, after treatment concluded.

**Single-group studies.** Finally, 24 single-group treatment follow-up articles were located, yielding 33 study comparisons. This analysis yielded a $d^+$ of 0.64, 95% CI $[0.53, 0.75],$ which was significantly above zero and allowed rejection of the null hypothesis. This single-group follow-up average effect size was medium, which also meant that the average participant in the treatment condition was at the 74th percentile of the pretest distribution of scores. In the analysis of homogeneity, $Q(32) = 44.72, p > .05$ and $I^2 = 26.2%;$ thus, no moderator or mediator analysis was indicated. Rosenthal’s fail-safe $N$ was a very robust 2,119 studies. Table 2 shows that all of the single-group follow-up study clusters reported weighted $d'$s of $0.50.$ Thus, single-group studies reported that counseling was an effective treatment for anorexia nervosa, and significant effects appeared to last for at least 2 years after treatment concluded.

**Secondary variable analysis.** Similar to the posttest analyses, secondary variable analyses were conducted, and the results are summarized in Table 1 for BMI, restraint, eating concerns, body dissatisfaction/shape concerns, and weight concerns/driver thinness. However, unlike the posttest results, the follow-up analyses indicated significant treatment effects for single-group and wait-list studies for all variables with more than one study. No significant follow-up effects were observed on any secondary variables for TAU comparisons except for restraint. Although most of these analyses were underpowered, the results indicated that even though significant treatment effects were absent at the posttest measurement for most wait-list conditions, counseling did create significant treatment effects at follow-up measurement points, although these effects were primarily small to moderate. Also, no instances of effect size heterogeneity were noted in any follow-up study analyses, so no moderator or mediator analysis was conducted.

**Discussion.** The results of the current meta-analysis indicate that counseling is generally an effective treatment for clients with anorexia nervosa, with small to medium effect sizes, especially when wait-list control and single-group studies were analyzed. When the studies were examined separately, the only group that could not confidently dispute the null hypothesis was the TAU group. The average $d^+$ for the TAU posttest analysis was a no effect to small effect of 0.10, with a total sample size of 1,271. A power analysis indicates that a $d^+$ of 0.10 at a sample size very close to 2,000 would have allowed the null hypothesis to be rejected. Thus, as more TAU studies are conducted, sufficient power may allow a conclusion of effectiveness at posttreatment, albeit quite a small effect of treatment. Ordinarily, it is expected that TAU comparisons will yield the smallest effects of treatment, compared with wait-list, placebo,

<table>
<thead>
<tr>
<th>TABLE 2</th>
</tr>
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<tbody>
<tr>
<td><strong>Continuum of Follow-Up Studies for Anorexia Nervosa Treatment Total Score Effect Sizes</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>Wait-list</td>
</tr>
<tr>
<td>Treatment as usual</td>
</tr>
<tr>
<td>Single group</td>
</tr>
</tbody>
</table>

Note. Dashes indicate no follow-up studies. $d^+$ = mean effect size estimate; $k =$ number of studies; $d'$ = mean effect size, unbiased.
and single-group studies, given that substantive curative factors such as a strong therapeutic alliance are also evident in TAU procedures. The more robust results in the single-group and wait-list control conditions demonstrate effectiveness of treatment protocols absent a therapeutic control condition—or when anorexia treatments are compared with no alternative treatments at all. Thus, counseling treatments for anorexia nervosa were definitely more effective than no treatment at all in reducing the various symptoms and outcomes of anorexia nervosa (see Tables 1 and 2).

This meta-analysis used 92 studies, which was the largest and broadest meta-analysis found in the literature. Hartmann et al. (2011) was the second largest, with 57 studies; however, their meta-analysis focused only on patient weight gain and not the overall decrease of anorexia nervosa symptoms. The number of studies in the current meta-analysis may allow for greater confidence and statistical power using counseling as a treatment for anorexia nervosa.

The effect sizes of small to medium in this meta-analysis are more conservative than Hartmann et al.’s (2011), because a random effects model was applied to a large sample of theoretically different approaches (Erford et al., 2013), and because our meta-analysis examined overall reduction of anorexia nervosa symptoms and not just weight gain. In general, and as can be verified by inspection of the effect size averages listed in Table 1, reliance on BMI and weight gain tended to produce larger effect sizes than use of other anorexia nervosa symptoms from self-report and interview protocols, at least insofar as single-group and wait-list comparisons were concerned.

Furthermore, the homogeneous effect size analyses indicated that moderator and mediator variables were not in operation. Only two single-group posttest analyses resulted in significant heterogeneity of Q and I (i.e., BMI and restraint outcome measures) and were due to unusually large ds in small-sample studies compared with the more conservative ds found in single-group studies with larger samples. Our meta-analysis supports and expands on most of the previous literature. Hartmann et al. (2011) conducted a robust meta-analysis with 57 articles and found that counseling made a significant contribution to anorexia nervosa outcome (weight gain) regardless of the treatment setting, similar to the current meta-analysis. A systematic review by Pittock and Mair (2010) and a meta-analysis by Fisher et al. (2010) had similar conclusions of homogeneity to the current meta-analysis, in that both conjoint and separate family counseling approaches decreased anorexia nervosa symptoms with equal efficiency. Results from Couturier et al. (2013) and Fisher et al. also supported the current meta-analysis with their findings that both family counseling and individual counseling led to equal decreases in anorexia nervosa symptoms. Galsworthy-Francis and Allan (2014) and Pittock and Mair also had similar homogeneous conclusions to the current meta-analysis in that CBT was an effective counseling treatment for anorexia nervosa, although it was not superior to other counseling treatments.

Our meta-analysis did not conclude, as did some other meta-analyses and systematic reviews, that one counseling treatment was superior to another. Suárez-Pinilla et al. (2015) did not find a difference in their meta-analysis with the addition of psychotherapy to TAU for inpatient treatment compared with TAU only; however, only four studies were used by Suárez-Pinilla et al., two of which were from 1979 and 1981. Fisher et al. (2010) also compared family therapy with psychological intervention in three studies and found that family therapy may be more effective. Fisher et al. also reported family counseling to be more effective than individual psychological interventions, which is not consistent with the current meta-analysis data. Tchanturia et al. (2014) found that cognitive remediation therapy lowered dropout rates and led to a more positive life experience; however, they did not measure the same outcomes as the current meta-analysis. The systematic reviews by Suárez-Pinilla et al., Fisher et al., and Tchanturia et al. each had four or fewer studies, lacking statistical power (Cornwell, 1993) in comparison with the current meta-analysis.

Our meta-analysis also found small to medium effect sizes in the follow-up studies, whereas the follow-up results in previous reviews varied. Couturier et al. (2013) found in their meta-analysis that family counseling in the long term is superior to individual counseling, which does not match the homogeneity of the current meta-analysis. The systematic review by Hay et al. (2012) concluded there was low, long-term efficacy in treating patients with chronic anorexia nervosa, although they studied the effects of counseling on the most difficult clients to treat—those with chronic anorexia nervosa. As suggested by Couturier et al. and Hay et al., the current meta-analysis confirms the need for more follow-up research to bolster the small to medium effect sizes reported and to increase the statistical power of current clinical trials.

Limitations
This meta-analysis used stringent methodological procedures to determine which published literature sources to include. The selection criteria ensured that all studies included in the analysis were of high-quality published, peer-reviewed clinical trials. The methodological procedures included a random effects model; weighting effect sizes for inverse variance; Cochran’s Q test and I to determine homogeneity; and funnel plots, trim-and-fill, and computation of Rosenthal’s (1979) fail-safe N to determine publication bias, which appeared nominal.

Publication bias could have occurred because the scrupulous nine-level selection criteria could have eliminated studies with less rigorous methodology. The exclusion of those studies may have altered the average effect size results (d+), consequently increasing the chances of publication bias. Effect
sizes could have also been affected because only published studies were included, thus again resulting in a greater chance of publication bias. Using only published studies ensures that the studies have been through rigorous examination, and thus the results and methodology of the included studies are more reliable; conversely, lower quality or unpublished manuscripts may have been eliminated.

Another limitation is that the wait-list and TAU meta-analysis groups had fewer than 20 studies each, which increases the chances of Type II error (Cornwell, 1993; Cornwell & Ladd, 1993). Additional wait-list and TAU studies are needed to increase the strength and statistical power of this meta-analysis and thus reduce the chances of Type II error.

Implications for Counseling Treatment and Research

Overall, the average effect sizes in this meta-analysis indicate that counseling is a viable treatment for clients with anorexia nervosa, especially when compared with no treatment at all. Counseling allows clients with anorexia nervosa to process and examine the social, personal, and psychological aspects of the disorder. It is important not only to treat the client’s physical symptoms of anorexia nervosa medically to increase weight to healthy levels, but to also treat the client with counseling to decrease overall anorexia nervosa symptomatology and cognitions. The homogeneity of effect size distributions in our meta-analysis indicated that counseling approaches, regardless of theoretical orientation, decreased anorexia nervosa symptoms, and none counseling approach appeared superior to another.

Even though more research and clinical trials are needed, the current meta-analysis also found that follow-up effect sizes confirm the usefulness of anorexia nervosa counseling treatments in producing lasting effects over the long term—2 or more years—except in the TAU condition. Additional follow-up studies are needed to make this conclusion stronger, because only about 40% of the participants in the posttreatment studies in the meta-analysis had follow-up data. More follow-up studies would increase our understanding of and evidence for the long-term benefits/consequences of anorexia nervosa counseling treatments.

Further research is also needed to examine the efficacy of booster counseling sessions to determine further gains or stabilization of anorexia nervosa symptoms in the long term (Erford et al., 2013). This would help counselors determine client follow-up needs after the counseling treatment is terminated. This would also help counselors and clients to see whether booster counseling sessions would be worthwhile and effective.

Additional research is needed for anorexia nervosa counseling treatments using TAU studies, as only 18 studies in the last 25 years with rigorous methodology qualified for the meta-analysis. Additional wait-list and TAU studies would allow for a larger comparison and a more statistically powerful meta-analyses. Wait-list and placebo treatments pose an ethical dilemma in that a lack of treatment for anorexia nervosa could cause severe medical and mental risks to the participants in the control condition. TAU studies are important because they allow for all anorexia nervosa participants to be treated while determining the degree of efficacy of the different active counseling techniques.

Additional research is also needed to examine the cost-effectiveness of anorexia nervosa treatments. This information would allow counselors, doctors, clients, and families to plan the best counseling and financial course of recovery for clients with anorexia nervosa. In many cases, earlier detection and outpatient counseling could help the patient avoid costly hospitalization.

Additional research is also needed to examine the effect of early identification and prevention programs on anorexia nervosa. Because the onset of anorexia nervosa is typically during adolescence, such programs could be implemented in high schools and universities. Research examining the costs and cost-effectiveness of such programs should be conducted as well.

For the current meta-analysis, we used articles that provided client, counselor, and study characteristics for secondary analysis. In many instances, vital information was missing. Editors of peer-reviewed journals must insist on higher standards for inclusion of important study details, thereby including all necessary information to ensure accurate study replication and secondary analysis.

It is important to study anorexia nervosa treatment, because anorexia nervosa is a mental disorder that is physically harmful and has a high mortality rate. The current meta-analysis determined that counseling is an effective treatment for decreasing anorexia symptomatology; however, more research is needed to fully determine the effectiveness of different types of counseling treatments.

References


