Dialectical Behavior Therapy of Anorexia and Bulimia Nervosa Among Adolescents: A Case Series

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The aim of this study was to describe a case series of adolescents (mean age = 16.5 years, SD = 1.0) with anorexia nervosa (AN) and bulimia nervosa (BN) who received dialectical behavior therapy (DBT). Twelve outpatients with AN and BN took part in 25 weeks of twice weekly therapy consisting of individual therapy and a skills training group. Family members were involved in the treatment. The patients were compared pre- and posttreatment on behavioral symptoms of AN and BN and symptoms of general psychopathology using standardized instruments (Structured Inventory for Anorectic and Bulimic Syndromes, Eating Disorder Inventory-2, The Symptom Checklist-90-Revised). Posttreatment, significant improvements in behavioral symptoms of eating disorder and symptoms of psychopathology were identified. The application of DBT adapted for the treatment of AN and BN among adolescents was associated with a decrease in behavioral symptoms of eating disorders and symptoms of general psychopathology. However, randomized controlled studies are required to prove the efficacy of this approach.

Anorexia nervosa (AN) and bulimia nervosa (BN) are severe and often chronic disorders with a high level of physical and psychological comorbidity and high mortality (Fichter, Quadflieg, & Hedlund, 2006; Harris & Barraclough, 1998). BN affects about 1% to 3% of high school- and college-age girls and AN affects about 1% of female adolescents (Faravelli et al., 2006; Kotler, Cohen, Davies, Pine, & Walsh, 2001). Although these disorders mostly begin in adolescence, only a few randomized controlled trials of psychosocial interventions for adolescent outpatients exist.

Cognitive-behavioral therapy (CBT) has been found to be effective in the treatment of BN in adults; however, there is only one published controlled treatment study that specifically targets adolescents with BN (Le Grange, Crosby, Rathouz, & Leventhal, 2007; Wilson & Sysko, 2006). In this randomized controlled study, Le Grange et al. (2007) compared family-based treatment (FBT) and supportive psychotherapy (SPT) for adolescents suffering from BN and found a clinical and statistical advantage for FBT over SPT at posttreatment and at 6-month follow-up.

For adolescent AN, eight uncontrolled treatment trials and five controlled studies exist (Le Grange & Lock, 2005). Most of these studies involved family members and suggested that family therapy is helpful with younger patients with a short duration of illness. After treatment, 60% to 70% of patients reached a healthy weight (Eisler et al., 2000). Although FBT seems to be the treatment of choice for adolescent AN, Fairburn (2005) levels the criticism that it is still not clear that the effects of FBT are due to involvement of the family or indeed to any property of the treatment. Alternative treatment approaches (which obviously involve the family to a certain extent) need to be investigated and their outcome compared with that of FBT (Fairburn, 2005). With regards to AN treatment, there is a lack of research outside the field of FBT. Psychodynamic treatments and CBT are described in the literature (Bowers, Evans, Le Grange, & Andersen, 2003; Jeammet & Chabert, 1998); however, to date, no systematic evaluations have been performed. In overall terms, there is a need for systematic trials evaluating psychotherapy in adolescents with AN and BN.

Dialectical behavior therapy (DBT) is an empirically supported treatment and was originally developed for female adult multiproblem outpatients diagnosed with borderline personality disorder (BPD; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). Interest in DBT has grown and researchers have begun to apply DBT to other clinical populations with and without Axis II symptoms (Lynch, Morse, Mendelson, & Robins, 2003; Miller, Rathus, & Linehan, 2007; Rathus & Miller, 2002). Miller, Rathus, Linehan, Wetzler, and Leigh (1997) and Miller et al. (2007) adapted DBT for suicidal adolescents with borderline personality features. Their
adaptations comprise inclusion of families in skills training groups and conducting family sessions, reducing the length of treatment from 1 year to 16 weeks, simplifying the skills handouts, including skills handout examples that are more relevant to teenagers, and adding a new skills module (Walking the Middle Path) relevant to working with highly dysregulated families (Miller et al., 2007). Wisniewski and Kelly (2003) presented a case for applying DBT to the treatment of patients who suffer from AN and BN. They adapted the biosocial theory and proposed that people who develop eating disorders (ED) may have some biological vulnerability to regulating emotions or to the hunger/satiety system or both. If this biological vulnerability interacts with a specific type of environment (i.e., invalidating environment), the patient may develop an ED. The invalidating environment can occur across a spectrum from a poor fit between the temperament of the individual and her environment to serious physical or sexual abuse. The practical adaptations suggested by Wisniewski and Kelly (2003) include the following: develop ED-specific dialectics (the primary dialectic dilemma as overcontrolled eating versus absence of an eating plan), emphasize ED behaviors in the treatment targets, broaden the diary card, and append a nutrition skills module. Safer, Telch, and Agras (2001), Telch, Agras, and Linehan (2001), and Safer, Lock, and Couturier (2007) adapted DBT for patients with binge eating disorder and BN in their studies. These results showed preliminary evidence suggesting that DBT may be an effective psychotherapy to treat ED in adults.

DBT focuses on helping patients to more effectively regulate their emotions. Because patients with ED often show difficulty regulating emotions and often present with eating pathology (i.e., restricting, binge eating, vomiting), DBT may be viewed as a way to cope with that emotional vulnerability (Safer et al., 2007). The deficits in affect regulation in ED patients are broad in scope and vary between AN and BN. Patients with BN struggle with emotion intensity and dyscontrol (Telch & Agras, 1996), while AN patients have difficulties with identification and awareness of emotions, and avoid emotions to an extreme extent (Casper, Hedecker, & McClough, 1992).

The inherent structure of DBT is a good model for treating patients with ED. It provides a clear behavioral hierarchy that guides therapists in targeting interventions. Suicidal and nonsuicidal self-injurious behaviors (Target I), which are not uncommon in AN and BN adolescents, are addressed first; behaviors that interfere with the therapy (Target II) are discussed next, followed by quality-of-life-interfering behaviors (Target III). DBT includes specific techniques for working with variable commitment to change. AN and BN patients often have difficulties in modifying symptoms, and may be less responsive to traditional therapeutic interventions, which often are perceived as controlling. Thus, the DBT telephone skill coaching can be used with ED patients to assist in averting dysregulated eating behavior. Finally, weekly consultation team meetings keep clinicians motivated and enable helpful input and feedback around the applied treatment (Wisniewski & Kelly, 2003).

To date, only one study exists on the effectiveness of DBT for adolescent patients suffering from AN and BN (Salbach et al., 2007). This pilot study evaluated the effectiveness of DBT for inpatient adolescents. The results indicate that DBT appears to be a promising treatment for inpatient adolescents with ED. To the best of our knowledge, no study has yet examined whether an outpatient DBT intervention is feasible and effective at reducing symptoms of AN and BN among adolescents.

Method

Participants

Twelve female adolescents (6 with AN and 6 with BN) were recruited from a child and adolescent outpatient psychiatric department of a major university hospital in Germany. All met the criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994), and all were of German origin. All participants included in the study were between 12 and 18 years of age. At the time of entry to this study, subjects could not be in other treatments relating to their ED. Permission to undertake the study was approved by the Institutional Review Board. All subjects received a written notification form that outlined the project and inclusion/exclusion criteria of the study. Participants under 18 years of age could only participate in the study if they and their parents gave written informed consent. Before treatment, the following psychiatric comorbidities were diagnosed with the Composite International Diagnostic Interview (CIDI, German version; Wittchen & Pfister, 1997) and the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II, German version; Fydrich, Renneberg, Schmitz, & Wittchen, 1997). Three patients met the DSM-IV criteria for major depression, four met criteria for minor depression, one for panic disorder, one for histrionic personality disorder, and one for borderline personality disorder. During the trial, one subject initiated antidepressant treatment. Detailed information on patients appears in Table 1.

Measures

The Structured Inventory for Anorectic and Bulimic Syndromes (SIAB-EX; Fichter & Quadflieg, 2001; Fichter, Herpertz, Quadflieg, & Herpertz-Dahlmann, 1998) was used to assess the prevalence and severity of specific
eating-related pathology over the past 3 months according to DSM-IV diagnostic criteria for people between 12 and 65 years of age. The SIAB-EX consists of 87 items. This semistructured interview supplies general probes for each item in order to determine if the item of investigation applies to the person questioned. It also provides additional probes when the answers to the general probes are not sufficient to decide if the item applies to the individual. The items were formulated in such a way so as to enable a computer algorithm to provide diagnostics according to the ICD-10 and the DSM-IV. All items except two were rated on a severity scale from 0 (symptom not present) to 4 (symptom severely present). The last two items were transformed to a rank order rating; one item assesses the BMI, calculated from body height and weight, the other item records irregularities in the menses (0 = no irregularities to 3 = amenorrhea). The interrater reliability was high, Cronbach’s alpha coefficients ranged between .43 and .91 (Fichter et al., 1998).

Data regarding the frequency of binge eating, purging behavior, use of laxatives and food restriction obtained during these interviews were utilized in subsequent analysis. Weight and height were measured to calculate BMI (kg/m²). The Structured Composite International Diagnostic Interview (CIDI, Wittchen, 1994) yielded assessments of comorbidity (Axis I). Furthermore, patients were interviewed using the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II, German version; Fydrich et al., 1997). They also completed the Eating Disorder Inventory–2 for children and adolescents (EDI-2, German version; Rathner & Waldherr, 1997), which consists of 64 items and includes the following scales: Drive for Thinness (EDI-DT), Bulimia (EDI-B), Body Dissatisfaction (EDI-BD), Ineffectiveness (EDI-I), Perfectionism (EDI-P), Interpersonal Distrust (EDI-ID), Interoceptive Awareness (EDI-IA), and Maturity Fears (EDI-MF). Patients also completed the 90-item self-reporting German version of the Symptom Checklist–90 Revised (SCL-90-R; Franke, 2002), which assesses, among other things, current psychopathology (Global Severity Index Score).

Two clinically experienced and trained research assistants under the supervision of the attending child and adolescent psychiatrist, who were not involved in the treatment, conducted the interviews pre- and posttreatment.

**Treatment**

*Modifications for Adolescents With AN and BN.* In developing our approach, we referred to the experiences at Montefiore Medical Center/Albert Einstein College of Medicine, where Miller, in collaboration with Rathus and Linehan, adapted DBT for the treatment of multiproblem adolescents at highest risk for suicidal behavior and nonsuicidal self-injury (Miller et al., 2007). The basic concept of treatment, as established at a child and adolescent psychiatric department of a major university hospital in Germany, is described elsewhere (Salbach et al., 2007). Compared to Miller et al.’s outpatient model, our approach included two primary modifications: (a) lengthen the treatment from 16 to 25 weeks, because documented rates of relapse and recurrence among AN and BN are high (Steinhausen, 2002); (b) develop a supplementary skills training module, “Dealing With Food and Body Image.” This new module provides basic education regarding nutrition (i.e., meal planning,

### Table 1

**Characteristics of the patients**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>ED Diagnosis at Start of DBT assessed by SIAB-EX</th>
<th>Psychiatric Comorbidity (DSM-IV) assessed by CIDI&lt;sup&gt;b&lt;/sup&gt; and SKID-II&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Medication</th>
<th>ED Diagnosis at End assessed by SIAB-EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>17</td>
<td>AN restricting type</td>
<td>Dysthymia</td>
<td>-</td>
<td>No ED</td>
</tr>
<tr>
<td>B</td>
<td>16</td>
<td>AN restricting type</td>
<td>Dysthymia</td>
<td>-</td>
<td>No ED</td>
</tr>
<tr>
<td>C</td>
<td>16</td>
<td>AN restricting type</td>
<td>-</td>
<td>-</td>
<td>No ED</td>
</tr>
<tr>
<td>D</td>
<td>14</td>
<td>AN restricting type</td>
<td>-</td>
<td>-</td>
<td>No ED</td>
</tr>
<tr>
<td>E</td>
<td>17</td>
<td>AN binge eating/purging type</td>
<td>Dysthymia</td>
<td>-</td>
<td>No ED</td>
</tr>
<tr>
<td>F</td>
<td>16</td>
<td>AN binge eating/purging type</td>
<td>Major depression</td>
<td>Fluoxetine</td>
<td>AN binge eating/purging type</td>
</tr>
<tr>
<td>G</td>
<td>16</td>
<td>BN purging type</td>
<td>-</td>
<td>-</td>
<td>BN purging type</td>
</tr>
<tr>
<td>H</td>
<td>14</td>
<td>BN purging type</td>
<td>Major depression</td>
<td>-</td>
<td>BN purging type</td>
</tr>
<tr>
<td>I</td>
<td>17</td>
<td>BN purging type</td>
<td>Panic disorder; minor depression</td>
<td>-</td>
<td>EDNOS</td>
</tr>
<tr>
<td>J</td>
<td>16</td>
<td>BN purging type</td>
<td>Histrionic personality disorder</td>
<td>-</td>
<td>EDNOS</td>
</tr>
<tr>
<td>K</td>
<td>16</td>
<td>BN purging type</td>
<td>Borderline personality disorder, major</td>
<td>-</td>
<td>BN purging type</td>
</tr>
<tr>
<td>L</td>
<td>17</td>
<td>BN purging type</td>
<td>Major depression</td>
<td>-</td>
<td>Not explored - Dropped out</td>
</tr>
</tbody>
</table>

<sup>a</sup> SIAB-EX = Structured Inventory for Anorectic and Bulimic Syndromes.
<sup>b</sup> CIDI = Composite International Diagnostic Interview.
<sup>c</sup> SCID-II = Structured Clinical Interview for DSM-IV Personality Disorders.
metabolism, effect of food restriction) and addresses specific myths about dieting and weight control. In addition to disturbed eating behavior, negative body image is a central feature in AN and BN and seems to play an important role in the development (Killen et al., 2003). Therefore, the Dealing With Food and Body Image module also provides basic education on understanding the formation of body image and dissatisfaction. Furthermore, exposure exercises to reduce body anxiety and the use of avoidance behavior and links between physical appearance and repetitive negative self-statements are included.

The 25-week DBT program comprised (a) a weekly 50-minute individual psychotherapy session to conduct behavioral and solution analyses on target behaviors as well as to enhance client motivation, (b) a weekly (100 minute) skills training group to enhance skill capabilities, (c) intersession telephone contact available with the primary therapist, to enhance skills generalization and therapeutic relationship issues.

As in DBT for BPD, treatment goals are arranged hierarchically by severity of the behavior. The following describes the list of treatment goals used in DBT for AN and BN, in order of decreasing severity (Wisniewski & Kelly, 2003):

**Target I:** Decrease life-threatening behaviors (suicide, parasuicide)

**Target II:** Decrease behavior that interferes with treatment (i.e., not completing food diary cards, refusing to be weighed)

**Target III:** Decrease quality-of-life-interfering behaviors (i.e., restrictive eating, avoiding food-related events)

**Target IV:** Increase behavioral skills (e.g., distress tolerance, emotion regulation, interpersonal effectiveness, mindfulness, dealing with food and body image skills, and Walking the Middle Path skills)

Unstructured eating, binge eating, purging, diet pill/laxatives, excessive exercising, calorie counting, and body checking are ED behaviors that are considered Target III behaviors. Thus, for ED patients who are not suicidal and...
whose ED does not present an imminent risk to life, the treatment foci will typically address reducing Target II and Target III behaviors (Wisniewski & Kelly, 2003) while simultaneously increasing behavioral skills (Target IV).

Because targeted behaviors (e.g., restrictive eating, binge eating, purging, and exercise) need to be noted on the diary card, we modified the diary card. AN and BN adolescents monitor daily food intake, targeted behaviors (e.g., binge eating, purging, exercise), emotions, and the use of skills on their diary card, which provides the focus for the next therapy session.

**Skills Training for Adolescents With AN and BN.** The schedule for the 25-week version of outpatient skills group consists of six rotating modules (Core Mindfulness, Distress Tolerance, Emotion Regulation, Interpersonal Effectiveness, Walking the Middle Path, and Dealing With Food and Body Image; see Table 2).

According to Miller et al. (2007), family members are included in the skills training group and are also invited to participate in the adolescent’s individual therapy when dyadic issues appear to be important. In contrast to Miller et al. (2007), parents are only included in the skills training group for eight sessions. We decided to reduce the number of common sessions in order to force autonomy on the part of the adolescents. When a new skills module is started and new patients enter the skills group, we conduct an orientation specific to the DBT skills groups. According to Miller et al. (2007), each module employs a didactic presentation of skills, role-plays, other experiential components, and review of homework exercises. Trainers teach new skills in a supportive manner, assign homework, and give constructive feedback. Table 3 illustrates a format for the initial session and the subsequent sessions of the skills module Dealing With Food and Body Image. The other five skills modules (Core Mindfulness, Distress Tolerance, Emotion Regulation, Interpersonal Effectiveness, and Walking the Middle Path) are conducted similarly.

**Individual Therapy for Adolescents With AN and BN.** In individual therapy, the DBT therapist is responsible for enhancing the adolescent’s motivation, increasing the adolescent’s skillful behavior, and inhibiting maladaptive behaviors. As explained above, during the individual therapy the patient is expected to complete the diary card, and target behaviors are addressed systematically according to the subhierarchy of therapeutic goals. The DBT therapist conducts a behavioral analysis for each targeted behavioral problem (e.g., restrictive eating, binge eating, purging, excessive exercise) in order to discern the function of this behavior and to help identify constructive solutions. Family members participate in individual therapy in various modes. First, they are included in individual sessions if current family conflicts need to be clarified. Second, if the adolescent identifies a key link in his/her behavioral chain analysis of restrictive eating as involving parental interactions (e.g., restrictive eating typically prompted by anxiety regarding parental dispute), specific family member/s are invited to join the individual session. Third, including parents in the sessions allows them to learn concurrently the skills necessary to improve family communication and relationships in general.

**The Therapist Consultation Group.** According to Linehan (1993), a therapist consultation group enhances DBT treatment adherence and increases therapist capabilities and motivation. Our therapist consultation team was comprised of three therapists who met weekly (for 50 minutes). All three were experienced clinicians and had received intensive training in DBT. In addition, a DBT consultant was brought in to evaluate the treatment program.

**Results**

Subjects were 12 females with a mean age of 16.5 (SD=1.0) years. Seven patients lived in two-parent families and 5 in single-parent homes. One patient (7%) with BN dropped out after the seventh treatment session (Table 1, Patient L). All participants were high school students.
Eating Disorder Diagnosis from the SIAB-EX

Before treatment, 4 subjects met the DSM-IV criteria for AN restricting type, 2 for AN binge/eating purging type, and 6 for BN purging type. Of the 4 patients who met criteria for AN restricting type at the start of treatment, none had an ED at the end of treatment. Of the 2 patients who met the criteria for AN binge/eating purging type, I met the DSM-IV criteria for AN binge/eating purging type (Table 1, Patient F) and I had no ED at the end of treatment. Of the 6 patients who met criteria for BN purging type at the start of treatment, 3 met the DSM-IV criteria for BN purging type (Table 1, Patients G, H, K), 2 met criteria for Eating Disorders Not Otherwise Specified (EDNOS; Table 1, Patients I and J), and I dropped out prematurely.

Behavioral Symptoms

Table 4 outlines pre- and posttreatment scores on the different measures. For all AN patients, results indicated an enhancement of BMI. Mean BMI for all AN patients improved from 15.6 (SD=1.0) at the start of treatment to 18.1 (SD=1.0) at the end of treatment (t6 =-4.8; p<.01; ES (Cohen’s d) = -2.6). Results from a paired-samples t test indicated a significant reduction of vomiting frequency [Mpre = 3.7 (SD=0.8); Mpost = 1.9 (SD=1.3); t7 = 3.7; p<.05; ES (Cohen’s d) = 1.7] as well as a significant reduction of binge frequency [Mpre = 3.6 (SD=0.9); Mpost = 1.6 (SD=1.1); t5 = 6.3; p<.01; ES (Cohen’s d) = 1.9]. At the beginning of the treatment, 7 patients reported a high frequency of vomiting (e.g., above once a day). Posttreatment data suggest a reduction in vomiting frequency for 6 patients. Binge eating was reported from 5 participants at the beginning of the treatment. At the end, the data displayed a reduction in binge eating frequency for all the 5 patients. Furthermore, results indicated that at pretreatment assessment, all patients endorsed food restriction. At the end of the therapy, a reduction in food restriction was reported for 9 patients. A paired samples t test displayed a significant reduction in food restriction [Mpre = 2.6 (SD=1.5); Mpost = 1.0 (SD=1.1); t11 = 3.4; p<.01; ES (Cohen’s d) = 1.2]. Only I patient used laxatives once a week at the beginning of the treatment. At the end of the treatment all patients denied the use of laxatives.

Table 4

Pre- and post-treatment measures of eating disorder behavior and psychopathology

<table>
<thead>
<tr>
<th>Patient (A-M)</th>
<th>BMIa</th>
<th>Binge eating frequencyb</th>
<th>Vomiting frequency</th>
<th>Use of laxativesb</th>
<th>Food restrictionc</th>
<th>EDI-DTd</th>
<th>EDIB-Bd</th>
<th>EDIB-BDd</th>
<th>EDI-Ied</th>
<th>EDIPd</th>
<th>EDIAF</th>
<th>EDI-MFd</th>
<th>GIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>A:Pre</td>
<td>15.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>33</td>
<td>7</td>
<td>33</td>
<td>31</td>
<td>31</td>
<td>15</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>A:Post</td>
<td>18.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>13</td>
<td>7</td>
<td>17</td>
<td>13</td>
<td>12</td>
<td>9</td>
<td>16</td>
<td>0.3</td>
</tr>
<tr>
<td>B:Pre</td>
<td>16.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>32</td>
<td>16</td>
<td>29</td>
<td>37</td>
<td>26</td>
<td>25</td>
<td>35</td>
<td>24</td>
</tr>
<tr>
<td>B:Post</td>
<td>19.9</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>17</td>
<td>10</td>
<td>34</td>
<td>31</td>
<td>21</td>
<td>17</td>
<td>26</td>
<td>24</td>
<td>0.4</td>
</tr>
<tr>
<td>C:Pre</td>
<td>15.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>18</td>
<td>7</td>
<td>25</td>
<td>18</td>
<td>11</td>
<td>18</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>C:Post</td>
<td>17.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>10</td>
<td>4</td>
<td>15</td>
<td>19</td>
<td>12</td>
<td>18</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>D:Pre</td>
<td>14.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>17</td>
<td>10</td>
<td>34</td>
<td>39</td>
<td>14</td>
<td>22</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>D:Post</td>
<td>18.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>12</td>
<td>8</td>
<td>14</td>
<td>32</td>
<td>17</td>
<td>22</td>
<td>21</td>
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</tr>
<tr>
<td>E:Pre</td>
<td>16.7</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>3</td>
<td>33</td>
<td>34</td>
<td>44</td>
<td>36</td>
<td>20</td>
<td>21</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>E:Post</td>
<td>18.7</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>12</td>
<td>6</td>
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<td>17</td>
<td>5</td>
<td>12</td>
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</tr>
<tr>
<td>F:Pre</td>
<td>15.7</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>40</td>
<td>34</td>
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<td>31</td>
<td>12</td>
<td>16</td>
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<td>27</td>
</tr>
<tr>
<td>F:Post</td>
<td>17.1</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>29</td>
<td>35</td>
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<td>32</td>
<td>14</td>
<td>16</td>
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<td>35</td>
</tr>
<tr>
<td>G:Pre</td>
<td>20.7</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>39</td>
<td>31</td>
<td>51</td>
<td>37</td>
<td>12</td>
<td>27</td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td>G:Post</td>
<td>19.2</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>30</td>
<td>21</td>
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<td>40</td>
<td>16</td>
<td>23</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>H:Pre</td>
<td>19.7</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>3</td>
<td>38</td>
<td>36</td>
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<td>43</td>
<td>20</td>
<td>21</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>H:Post</td>
<td>18.9</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>38</td>
<td>36</td>
<td>52</td>
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a BMI = Body Mass Index.

b 0=no binge eating / vomiting frequency; 1=under 2x/week; 2=at least 2x/week; 3=once a day; 4=several times a day.

c 0=no food restriction; 1=light; 2=distinct, 3=severely, 4=very severely.

d Raw score: EDI-DT = Eating Disorder Inventory-Drive for Thinness; EDI-B = Eating Disorder Inventory-Bulimia; EDI-BD = Eating Disorder Inventory- Body Dissatisfaction; EDI-I = Eating Disorder Inventory-Ineffectiveness; EDI-P = Eating Disorder Inventory -Perfectionism; EDI-ID = Eating Disorder Inventory-Interpersonal Distress; EDI-IA = Eating Disorder Inventory-Interceptive Awareness; EDI-MF = Eating Disorder Inventory-Maturity Fears; GSI = Global Severity Index (SCL-90-R).

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EDI-2 and SCL-90-R
Subscale scores from the EDI-2 indicated significant reductions on all of the subscales of the EDI-2. As far as the Global Severity Index (GSI) of the SCL-90-R was concerned, results displayed a significant reduction in symptoms of psychopathology after the treatment. Table 5 outlines paired *t* test comparisons of pre- and posttreatment scores of the EDI-2 and the GSI of the SCL-90-R.

Case Studies
The following two case studies provide an illustration of how we implemented the DBT for adolescents with AN and BN. The first case went well and remitted, whereas the second case did not go well. Both cases were treated by the first author (HSA).

Case Study B
Gina1 was a 16-year-old Caucasian female who was referred to our outpatient program by her parents. At the time of referral, she met the DSM-IV criteria for AN—restricting type and for dysthymia (see Tables 1 and 4, Patient B). She was underweight (163 cm, 42.8 kg, body mass index [BMI] = 16.1 kg/m²) but considered herself to be too fat. She wanted her belly to be extremely flat and was of the opinion that her thighs and face were too fat. She was very anxious about gaining weight, avoided fatty food and sweets, used fruit and vegetables as the basis of her nourishment, and took exercise daily for about 1 hour. She counted calories and measured her waist every day to keep her body under control. As a result of her weight loss, she suffered from a secondary amenorrhea. She denied binge eating and purging behavior and ingesting laxatives or diuretics. Gina felt sad, worthless, and for the past 14 months had not derived any pleasure from activities she had once enjoyed. She had never met the criteria for major depression and had never received psychotropic medications.

She recalled that she had started a diet (BMI = 20.6 kg/m²) with a friend at the age of 14. When her friend discontinued, she felt proud of keeping it up and lost 5 kg. She thought that she became more attractive to boys and decided to lose more weight. She ate less and her body weight dropped to 41.0 kg (BMI = 15.4 kg/m²).

At the time Gina entered our program, she lived with her parents. Her mother had a history of bingeing and purging episodes that occurred between the ages of 18 and 25.

Treatment
To help acquaint Gina with the structure of the treatment and enhance her motivation, the therapist initially focused on the pretreatment targets of orientation, agreement on goals, and commitment to treatment. After obtaining commitment from Gina, the therapist invited the parents in for the second session to begin orientation and commitment with them as well. Accordingly, the therapist provided the family members with the guidance they required to understand the treatment format, including the modes of treatment.

The focus on individual therapy then shifted to Stage I of treatment. During the treatment, Gina was not suicidal and her AN did not pose an imminent risk. Thus, the treatment focused on Targets II, III, and IV:

**Target II**: decreasing her therapy-interfering behaviors (e.g., not completing homework assignments)

**Target III**: decreasing her quality-of-life-interfering behavior patterns, such as restrictive eating, calorie counting, negative thoughts about body image, sadness and increasing her varied nourishment and self-esteem

**Target IV**: increasing her behavioral skills to address such skill deficits as inability to express emotions, extremely judgmental thinking about herself, restrictive eating, absence of positive body experience, and limited assertiveness skills

Each week Gina filled out a diary card to monitor her daily food intake, exercise, emotions, and the use of skills. Problematic behaviors were addressed by conducting a behavioral analysis. For example, Gina restricted eating and lost weight. Thus, the therapist elicited from her the vulnerability factors (e.g., fatigue from performance in high school) and precipitating events (e.g., conflicts between her parents) that had contributed to her problematic behavior and its consequences. In addition, Gina was encouraged to see the connections between her thoughts (e.g., “restrictive eating and losing weight will help me cope with the tensions between Mom and Dad”), emotions (e.g., afraid of divorce), and actions (e.g., restrictive eating and losing weight). The behavioral analysis helped Gina perceive how the consequences of her problematic behaviors were negatively reinforced by temporarily avoiding her negative emotions of anxiety and anger. Furthermore, this analysis helped her identify positive reinforcers, which included the increased attention she received from her parents. The analysis, however, elicited the negative consequences of her actions, such as increased calorie counting, weakness, and sadness, in order to emphasize factors that might serve to decrease her problematic behaviors. Using a solution analysis, alternative pathways for managing similar problems in the

1 Name and other identifying information have been changed to protect the patient’s identity.
future were highlighted. Gina and her therapist identified specific skills she could apply the next time a similar situation arose (e.g., mindfulness skills, distraction skills, nutrition skills).

Gina’s individual therapy also comprised the use of dialectical and validation strategies. For example, the therapist used the devil’s advocate technique to help her to increase her commitment to gain weight.

Gina was encouraged to obtain coaching outside of sessions via phone consultations with her therapist to manage problematic situations (e.g., restrictive eating and excessive exercising after a conflict with a friend).

In the skills training group, Gina learned Distress Tolerance skills, Mindfulness skills, Interpersonal skills, Emotion Regulation skills, skills to Deal with Food and Body Image, and Walking the Middle Path skills. When she was faced with a crisis (e.g., being upset by a boyfriend problem), she learned to employ self-distraction and self-soothing (Distress Tolerance module). She learned to consider pros versus cons (e.g., advantages to restrictive eating versus disadvantages to restrictive eating) and used mindfulness skills that helped her turn to her “wise mind” for a more balanced perspective. Learning skills to help her deal with food and body image enabled her to eat enough and gain weight. She also learned how to obtain positive body experience and decrease negative thoughts about body image. The individual therapist further challenged her negative thoughts about body image through cognitive restructuring and helped rectify her distorted body image. By using the emotion regulation skills, she began to express her feelings and build positive experiences by enhancing pleasant activities (e.g., spending time with friends). Learning DEAR MAN skills (see Table 2) in the Interpersonal Effectiveness module helped Gina to more effectively and assertively ask for what she wanted from others.

Gina’s parents played an important role during her treatment. They participated in five individual sessions and eight skills training groups. At the beginning of treatment, Gina’s parents treated her like a child and fostered dependence (e.g., “We cannot leave her alone at home”). By learning the three adolescent-family dialectical dilemmas, validation skills, and behaviorism skills, the interactions within the family improved. Besides, by learning a good portion of the skills, the parents were able to reinforce Gina’s attempts to use the newly learned skills.

At the end of the therapy Gina still showed a slight distorted body image, but was able to eat regularly with varied nourishment. She no longer fulfilled the DSM-IV criteria for an ED and for dysthymia, weighed 53.3 kg (BMI = 19.9 kg/m²), and she was better able to express her feelings overall.

Case Study L

Laura,2 a 17-year-old Caucasian female, was referred to our outpatient treatment after she reported to her physician that she was bingeing and inducing vomiting several times a day. At the time of referral, she met the DSM-IV criteria for BN purging type and for major depression (see Tables 1 and 4, Patient L). At baseline assessment the patient reported 14 objective bulimic episodes, 5 subjective bulimic episodes, and 19 purging episodes weekly, weighed 58.0 kg (170 cm, BMI = 20.0 kg/m²), and denied ingesting laxatives or diuretics. She showed a depressed mood most of the day for the past 3 years, a markedly diminished interest in all activities, social withdrawal, disturbance of sleep, feelings of worthlessness, a diminished ability to concentrate, and recurrent suicidal ideation without a specific plan.

She recalled that since she was 11 years old she had felt disgusted with her appearance and had started a diet several times without success. At the age of 13, her first boyfriend criticized her physique (64 kg; BMI = 22.2 kg/m²) and pressured her to lose weight, substantially affecting the way she viewed her body. At the end of the relationship, Laura was depressed, felt very disgusted with her appearance, and lost weight. She thought that if she lost weight her last boyfriend would find her attractive again and decided to lose more weight. In order to slim down, she began at age 14 to vomit even after small meals (<400 cal), reduced her weight to 46.0 kg (BMI = 15.9), and went for 13 weeks in an inpatient treatment specializing in ED. After inpatient treatment, her weight was stable (BMI = 19.5) and she did not binge nor purge for about 6 months. Triggered by familial stressors (parents’ divorce), she began bingeing and purging and felt very depressed. As a result, she was hospitalized in a psychiatric unit for 4 months and treated with antidepressants. Laura reported that she had no response to the medications, which she discontinued after her discharge.

At the time Laura entered our program, she lived alone with her mother. Her mother was also depressed, and had difficulty caring for her daughter. Her father was abusing substances, and Laura broke off ties with him after a severe conflict 1 year ago.

Treatment

During the first sessions, which included orientation and commitment, the therapist tried to establish a therapeutic alliance. This crucial primary task was very difficult, because Laura believed that she could not benefit from any treatment. She was angry that her physician and her mother had told her that she must talk to a therapist again. The therapist used these early sessions to get to know

2 Name and other identifying information have been changed to protect the patient’s identity.
Laura and to allow her to get to know him. He did not force an agenda on her, but let the sessions unfold. He skillfully wove his way into her problems by carefully applying DBT strategies. After defining Laura’s specific problems, introducing the biosocial theory, and the treatment’s format and characteristics, the therapist used the following strategies to obtain commitment: (a) highlighting freedom to choose and absence of alternatives; (b) playing devil’s advocate; (c) the foot-in-the-door and door-in-the-face techniques; and (d) cheerleading. Although Laura did not present voluntarily for treatment, she committed after four sessions to the treatment and its targets. Her mother was likewise acquainted with the structure and philosophy of our treatment program and also committed to DBT. The treatment occurred within treatment Targets I, II, III, and IV:

**Target I:** decreasing Laura’s suicidal ideation

**Target II:** decreasing her therapy-interfering behaviors such as showing up late, missing sessions, and not completing therapy homework assignments

**Target III:** decreasing her quality-of-life-interfering behaviors, such as bingeing and purging, negative thoughts about body image, and depression

**Target IV:** increasing Laura’s behavioral skills to address her inability to regulate emotions, poor tolerance for distress, frequent impulsivity, minimal interpersonal skills, decreasing familial conflicts by using validation strategies and highlighting the mother-adolescent dialectical dilemma “excessive leniency versus authoritarian control”

In individual therapy the therapist asked Laura to fill out the diary card. Problematic behaviors were addressed by conducting a behavioral analysis (e.g., binge and purge episodes). Laura and her therapist worked together to identify the precipitating events (e.g., conflict with her mother about skipping school) as well as factors that may have made her vulnerable (e.g., physical illness, lack of sleep). The therapist and Laura identified the connections between her thoughts (e.g., “my mother is too strict”), emotions (e.g., anger at her mother), and actions (e.g., bingeing and purging behavior), and the immediate and delayed consequences of the problem were analyzed. During that time, Laura often forgot to complete the diary card, “zoned out” in sessions, and arrived late at therapy. Because of these significant therapy-interfering behaviors, the therapist intermittently returned to pretreatment targets in order to reestablish commitment.

In the skills training group, Laura only spoke to others if she was called on and appeared to be bored. Hence, the individual therapist evaluated with Laura the pros and cons of proceeding with treatment. At this point, she was not committed to work on the goals of reducing bingeing and purging and told the therapist that she only began therapy because her mother forced her. The therapist identified the commitment strategy of “highlighting freedom to choose and absence of alternatives” to increase the feelings of choice and enhance compliance. Although Laura was afraid of managing her problem behaviors on her own without therapy, she decided to terminate therapy.

**Discussion**

This case series is the first study to evaluate the feasibility of applying DBT to adolescents diagnosed with AN and BN. These findings demonstrate a significant reduction in the behavioral symptoms of AN and BN adolescent patients regarding eating pathology and general psychopathology at the end of DBT treatment. At the start of treatment most of the patients showed higher scores on all subscales of the EDI-2 compared to normal

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samples. Concerning the GSI of the SCL-90-R, five of the patients showed a pathological GSI score at the start of treatment. At the end of treatment, all subscale scores of the EDI-2 and the GSI of the SCL-90-R showed significant declines. Half of the patients showed higher EDI-2 subscale scores compared to normative samples at the end of treatment, and three patients displayed a pathological GSI score at the end of treatment. These findings are in line with the outcomes of Safer, Telch, and Agras (2001) and Telch, Agras, and Linehan (2001), who reported reductions in ED symptoms for adults with BN. However, at posttreatment of the present study, six patients still met the DSM-IV criteria for AN, BN, or EDNOS assessed by the SIAB-EX. One patient dropped out prematurely. Interestingly, all of the restricting AN cases remitted, whereas none of the BN cases fully remitted (i.e., some stayed BN and some switched to EDNOS), and only one of the two AN binge eating–purging type cases remitted. Even if all of the BN and AN binge eating–purging type cases displayed a reduction of vomiting and binge eating frequency after treatment, the failure of treatment results in abstinence from binge eating and purging, given that ongoing binge eating and purging is considered to increase risk for relapse (Keel et al., 2005). One possible explanation for this result might be related to the severity of illness. None of the five patients who fully remitted had a comorbid condition more severe than dysthymia. In contrast, nearly all of the patients who still met the DSM-IV criteria for AN, BN, or EDNOS at the end of treatment displayed more severe comorbid disorders (DSM-IV criteria for major depression, borderline personality disorder, histrionic personality disorder, and panic disorder). These patients might benefit from a DBT treatment that offers more than 25 sessions.

While we caution against placing undue emphasis on the meaning of assessment measures from single-case series, the case reports both highlight the utility of the modified version of DBT for AN and BN among adolescents and point out that symptom severity and duration of illness are unfavorable prognostic factors and inadequate commitment to treatment leads to therapy failures. Furthermore, including parents in the individual therapy and skills training group appears to be a very effective intervention. This may imply the importance of parental involvement within treatments for adolescents with AN and BN, as also pointed out by the results highlighting the superior results for family-based treatment for adolescents suffering from AN (Eisler et al., 1997, 2000) and BN (Le Grange, Crosby, Rathouz, & Leventhal, 2007).

Limitations

There are important limitations of the study that need to be highlighted. One major limitation concerned the lack of follow-up data. Furthermore, the study is limited by a small sample size, the absence of a control group and the variation in severity of symptoms of AN and BN. Moreover, the study cannot rule out that the improvement may be caused by factors other than DBT, which could not be controlled. But, we can state confidently that this intervention did no harm and the patients did not get worse.

The above results suggest that DBT adapted for adolescents with AN and BN is promising and could be a helpful and effective outpatient treatment; however, further evaluation is required before any firm conclusions can be drawn.

References


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