

# Six-Month Follow-Up of In-Patient Experiential Cognitive Therapy for Binge Eating Disorders

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## ABSTRACT

Treating binge eating disorders is not easy: the disordered eating is usually combined with a patient who is overweight and often obese. As underlined by the current literature, treatment outcome must focus, at a minimum, on the binge eating characterizing this disorder, on weight changes, and preferably also changes in co-morbid psychopathology. To address these issues, cognitive behavioral therapy (CBT) is still considered the best approach. However, if we check the results of follow-up studies, different authors reported some relapse in the frequency of binge eating and small weight gains over the follow-up period. This paper describes the 6-month follow-up outcome of the Experiential Cognitive Therapy (ECT), a multi factorial treatment for binge eating disorders, including virtual reality therapy. These results are compared in a randomized controlled trial ( $n = 36$ ) with the ones obtained by CBT and nutritional groups only. The results showed that 77% of the ECT group quit bingeing after 6 months versus 56% for the CBT sample and 22% for the nutritional group sample. Moreover, the ECT sample reported better scores in most psychometric tests including EDI-2 and body image scores.

## INTRODUCTION

**B**INGE EATING DISORDER (BED) is included in the 4th ed. of the *Diagnostic and Statistical Manual of Mental Disorders—DSM IV*,<sup>1</sup> and is characterized by ingestion of a large amount of food in a discrete period of time (about 2 h) and loss of control without the compensatory behavior (vomiting, use of laxatives) typical of bulimia nervosa. Treating BED is not easy because the disordered eating is usually combined with a patient who is overweight and often obese. As noted by Agras and colleagues,<sup>2</sup> treatment outcome must focus, as a minimum, on the binge eating characterizing this disorder, on weight changes, and preferably also on changes in co-morbid psychopathology.

In fact, research on co-morbidity indicates a substantial degree of psychological disturbance in BED

beyond the BED criterion of marked distress.<sup>3</sup> In a recent paper, Safer and colleagues<sup>4</sup> identified predictors of relapse at 6-month follow-up for women with BED. Post-treatment predictor variables included the sub-scales Restraint, Weight Concerns, and Shape Concerns from the Eating Disorders Examination, the Emotional Eating Scale score, the Rosenberg Self-Esteem Scale, body mass index, and early versus late age of binge eating onset.

This last datum suggests that perceived pressure to be thin from family, peers, friends, and dating partners is also a key factor for the development of the disturbance. This pressure can produce in the patient a poorly developed sense of self, coupled with beliefs of ineffectiveness in dealing with others.<sup>5</sup>

Cognitive behavioral therapy (CBT) is still considered the best psychological approach.<sup>6,7</sup> However, if

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we check the results of follow-up studies, different authors reported some relapse in the frequency of binge eating and small weight gains over the follow-up period.<sup>2,8</sup>

To address these issues, this paper describes the 6-month follow-up outcome of Experiential Cognitive Therapy (ECT) for binge eating disorders. These results are compared in a randomized controlled trial with the ones obtained by CBT and nutritional groups only.

## EXPERIENTIAL COGNITIVE THERAPY FOR BINGE EATING DISORDERS

ECT for BED is a relatively short-term, integrated, patient-oriented approach that focuses on individual discovery.<sup>9-11</sup> The inpatient/outpatient treatment lasts about 6 weeks plus different booster sessions, and it is administered by therapists with a cognitive-behavioral orientation who work in conjunction with a psychiatrist as far as the pharmacological component is concerned. When a multidisciplinary treatment is mandatory (e.g., a suicidal patient), ECT is conducted on an inpatient basis. However, ECT can also be beneficially applied to non-hospitalized patients. In this case, the treatment has to include nutritional counseling and physical activity to help patients learn to regulate their eating and cope with specific high-risk situations (i.e., increased availability of food or limited control) that cannot be adequately addressed during outpatient therapy.

The different therapists carry out one step of the psychological process, both with individual and group sessions. The individual work regards assessment by means of psychometric tests, weekly supportive psychological talks, sessions for assessment, and therapy carried out using virtual reality (VR), and psycho-pharmacological assessment and control. The psychological group therapy is based on weekly group meetings ("closed" group of 5/6 persons) of 2 h each. The group aims both at training for development and acquisition of assertive skills, and at training for assessment and consolidation of motivation.

Moreover, the subjects participate in both bi-weekly psycho-nutritional groups held by nutritionists and in daily group sessions of physical activity. The provided physical activities are as follows:

- Postural gymnastics (in the gymnasium), based on warm-up; abdominal exercises, floor exercises, stretching, and agility training (60 min);

and aerobic activity through the use of cycloergometers (30 min)

- Walks in the open with different levels of difficulty (30 min)

Probably the key novelty of this approach is the use of VR in therapy. The most common application of VR in clinical psychology is the treatment of phobias.<sup>12-14</sup> However, it seems likely that VR can be more than a tool to provide exposure and desensitization.<sup>14</sup> As noted by Glantz et al., "VR technology may create enough capabilities to profoundly influence the shape of therapy."<sup>15</sup> In particular, they expect that VR may enhance cognitive therapy. VR can in fact be described as a "cognitive technology," a technology created to influence cognitive operations.<sup>16</sup>

## THE CONTROLLED STUDY

### *Subjects*

One hundred and twenty consecutive patients seeking treatment at the Eating Disorder Unit of the Istituto Auxologico Italiano, Verbania, Italy were seen for screening interviews for admission to the study. Criteria for participation in the study included the following: (1) women aged 18–50 years; (2) who met DSM-IV criteria for binge eating disorders for at least 6 months prior to the beginning of the study; (3) no other concurrent severe psychiatric disturbance (psychosis, depression with suicidal risk, alcohol or drug abuse); (4) no concurrent involvement in other treatment, including medication; (5) no concurrent medical condition not related to the disorder; and (6) written and informed consent to participate.

Of these, 74 either did not fulfill inclusion criteria or were excluded for other reasons (e.g., time constraints, involvement in other treatment). A total of 36 (mean age, 33.07 ± 8.08 years; mean weight, 105.44 ± 17.73 kg; mean height, 1.62 ± 0.06 cm; mean BMI, 39.80 ± 6.10) met inclusion criteria and consented to continue in the study.

The study was approved by the Ethical Committee of the Istituto Auxologico Italiano and received by Current Controlled Trials Organization the following official trial number—ISRCTN59019572—"VEPSY Updated—Virtual reality in eating disorders."

### *Procedures*

In the initial interview, prospective participants were provided with detailed information about the study and the treatments. All patients meeting the

inclusion criteria were then randomly assigned to the waiting-list group or to the one of the three treatment conditions described below, all conducted on an inpatient basis. The duration for all treatments was 6 weeks and was administered by two chartered clinical psychologists and one chartered psychotherapist under the supervision of a senior chartered psychotherapist. The three therapists were balanced between the three conditions. In accordance with informed consent, assessments were obtained before treatment, at post treatment, and 6 months after the end of treatment.

*Nutritional groups.* In this condition, the subjects entered only 5 weekly nutritional groups held by dietitians, in addition to maintaining a low-calorie diet (1,200 kcal/day) and physical training.

*Experiential cognitive therapy.* ECT involved the same treatment proposed to the first condition plus 15 additional sessions over 6 weeks. In particular, after the first week, the patients entered 5 weekly group sessions aimed at improving assertiveness and motivation to change, and 10 biweekly virtual reality sessions. ECT treatment was based on a detailed protocol describing the contents of each of the 15 sessions.<sup>17,18</sup> For the virtual reality sessions, the Virtual Reality for Eating Disorders Modification—VREDIM—was used. VREDIM is an enhanced version of the original Virtual Reality for Body Image Modification (VEBIM) immersive virtual environment, previously used in different preliminary studies on non-clinical subjects.<sup>19,20</sup> VREDIM is composed of 14 virtual environments used by the therapist during a 50-min session with the patient.

The first session is used to assess any stimuli that could elicit abnormal eating behavior. In particular, the attention is focused on the patient's concerns about food, eating, shape, and weight. This assessment is normally part of the Temptation Exposure with Response Prevention protocol.<sup>21</sup> At the end of the first VR session, the therapist uses the miracle question, a typical approach used by the solution-focused brief therapy.<sup>22,23</sup> According to this approach, the therapist asks the patient to imagine what life would be like without her or his complaint. Answering this question in writing, the patient constructs her or his own solution, which then guides the therapeutic process.<sup>24</sup>

The next nine sessions are used to assess and modify:

- *The symptoms of anxiety related to food exposure.* This is done by integrating different cognitive-behavioral methods: Countering, Alternative

Interpretation, Label Shifting, Deactivating the Illness Belief, and Temptation Exposure with Response Prevention.<sup>21,25</sup>

- *The body experience of the subject.* To do this, the virtual environment integrated the therapeutic methods used by Butter and Cash<sup>26</sup> and Wooley and Wooley.<sup>27</sup> In particular, in VREDIM we used the virtual environment in the same way as guided imagery<sup>28</sup> is used in the cognitive and visual/motor approach.

In all the sessions, the therapists followed the Socratic style: they used a series of questions, related to the contents of the virtual environment, to help clients synthesize information and reach conclusions on their own.

*Cognitive-Behavioral therapy.* CBT involved the same treatment proposed to the first condition plus 15 additional sessions over 6 weeks. In particular, after the first week the patients entered 5 weekly group sessions aimed at improving assertiveness and motivation to change, and 10 biweekly individual sessions whose target behaviors for change were eating behavior (dietary restraint and binge eating) as well as self-esteem and related problems. The main goals and the structure of the 10 sessions were based on the manuals by Fairburn.<sup>29,30</sup>

#### Assessment

Subjects were assessed by one of three independent assessment clinicians that were not involved in the direct clinical care of any subject. They were two M.A.-level chartered psychologists and a Ph.D.-level chartered psychotherapist. All of the subjects were assessed at pretreatment and upon completion of the clinical trial.

The following psychometric tests were obtained as entry to the study:

- Eysenck Personality Inventory—EPI<sup>31</sup>
- Eating Disorders Inventory 2—EDI 2<sup>32</sup>

Moreover, the following psychometric tests were administered at each assessment point:

- *Dieter's Inventory of Eating Temptations.*<sup>33,34</sup> The inventory has 30 items, each presenting a situational description along with a competent response. The subject rates the percentage of time he or she would behave as described in similar situations.
- *Italian version of the State-Trait Anxiety Inventory—STAI*<sup>35,36</sup>

- *Beck Depression Inventory—BDI II*.<sup>37</sup> The BDI II consists of 21 items to assess the intensity of depression in clinical and normal patients. Each item is a list of four statements arranged in increasing severity about a particular symptom of depression.
- *Rathus Assertiveness Schedule—RAS*.<sup>38</sup> This 30-item instrument was designed to measure assertiveness, or what the author called social boldness. Respondents are asked to rate 30 social situations according to how characteristic each is of their own experience.
- *Rosenberg Self-Esteem Questionnaire—RSEQ*.<sup>39</sup> It is a 10-item questionnaire with five positively worded items and five negatively worded items which measures self-esteem.
- *Weight Efficacy Life-Style Questionnaire—WELSQ*.<sup>40,41</sup> The WELSQ is composed of 20 items that measure the confidence of the subjects about being able to successfully resist the desire to eat. The questionnaire was used to predict both acute change and long-term maintenance of weight loss across a range of ages in men and women.<sup>41</sup>
- *University of Rhode Island Change Assessment Scale—URICA*.<sup>42–44</sup> The URICA consists of 32 items designed to measure four stages of change in psychotherapy: pre-contemplation, contemplation, action, and maintenance.
- *Body Satisfaction Scale—BSS*.<sup>45,46</sup> The scale consists of a list of 16 body parts, half involving the head (above the neck) and the other half involving the body (below the head). The subjects rate their satisfaction with each of these body-parts on a seven-point scale: the higher the rating, the more dissatisfied the individual.
- *Body Image Avoidance Questionnaire—BIAQ*.<sup>47,48</sup> The BIAQ is 19-item self-report questionnaire on avoidance of situations that provoke concern about physical appearance, such as avoidance of tight-fitting clothes, social outings, and physical intimacy. In particular, the questionnaire measures the avoidance behaviors and grooming habits associated with negative body image.<sup>48</sup>
- *Contour Drawing Rating Scale—CDRS*.<sup>49</sup> This is a set of nine male and female figures with precisely graduated increments between adjacent size. In this test, subjects rate the figures based on the following instructional protocol: (a) current size and (b) ideal size. The difference between the ratings is called the “self-ideal discrepancy score” and is considered to represent the individual’s dissatisfaction.

### Statistical analysis

A power calculation was made to verify the possibility of obtaining statistically significant differences both between the two groups (independent measures), and the pre- and post-treatment scores (repeated measures). Given the low/medium statistical power, due to the relatively small number of subjects and the high standard deviation, we decided to use the exact methods, a series of non-parametric statistical algorithms developed by the Harvard School of Public Health, that enable researchers to make reliable inferences when data are small, sparse, heavily tied, or unbalanced.<sup>50</sup> The exact method used to compare the mean scores—both for repeated and independent measures—was the marginal homogeneity test.<sup>51</sup>

## RESULTS

No differences were found between the waiting list condition and the treatment conditions at pre-treatment in demographic and clinical variables. Pre-post treatment comparison revealed several interesting changes both at psychological and behavioral level. State Anxiety (STAI X2) significantly decreased in both ECT (mean score before treatment, 49.44; after, 36.77;  $p = 0.018$ ) and nutritional groups (NG) conditions (before, 49.77; after, 38.77;  $p = 0.013$ ), while no significant changes were evidenced in CBT and in the Waiting List (WL) conditions. Depression levels (BDI) significantly decreased in both ECT (before, 22.23; after, 8.11;  $p = 0.008$ ) and CBT (before, 20.55; after, 12.11;  $p = 0.050$ ); however, complete remission of depressive symptoms was observed only in the ECT group. Improvement of Self-Esteem levels (RSE) was significant in all groups, with the exception of the waiting list group. This suggests that being involved in rehabilitation program increases self-esteem independently from the treatment experienced by the patients.

Positive changes of Assertive Behaviors (RAS) were observed in ECT only. This seems to suggest that virtual simulations of real situations help to improve the patient’s social skills. DIET and WELSQ pre- and post-treatment comparisons revealed that eating control and eating self-efficacy significantly increased in all conditions, with the exception of the waiting list control group. This emphasizes the importance of the nutritional groups that were attended by all subjects during the in-patient phase. Significant reduction of binge eating episodes—in all of the treatment groups, the

patients quit bingeing at the end of the treatment—further confirms this assumption.

ECT was, however, more effective than CBT in improving body image (BIAQ—BSS—CDRS): in particular, ECT subjects scored significantly higher after the treatment on body awareness, body satisfaction and physical acceptance.

If we check the weight loss, we obtained significant decrease in all the three conditions without any significant differences between them:

- ECT: before, 103.7 ± 17.2 kg; after, 97.2 ± 15.6 kg
- CBT: before, 109.3 ± 10.5 kg; after 102.1 ± 9.14 kg
- NG: before, 103.8 ± 21.3 kg; after, 103.8 ± 21.3 kg

However, the analysis of the results after a 6-month follow-up shows a different picture. On one side, the ECT sample scored significantly better on different psychometric tests including EDI and body image scores:

- EDI Bulimia scores: ECT = 9.33; CBT = 14.56; NG = 18.11 ( $p < 0.05$ )
- DIET Resisting Temptations scores: ECT = 19.11; CBT = 12; NG = 10.89 ( $p < 0.05$ )
- Body Satisfaction Scale Total scores: ECT = 8.5; CBT = 17.3; NG = 16.2 ( $p < 0.05$ )
- Body Satisfaction Scale Trunk scores: ECT = 9.56; CBT = 17.73; NG = 14.72 ( $p < 0.058$ )

These results underlie a better efficacy of ECT in targeting body satisfaction and in improving self-esteem. On the other side, 77% of the ECT sample still was not bingeing after 6 months versus 56% for the CBT sample and 22% for the nutritional group's sample. As at the end of the treatment, no differences were found in the weight loss: all of the sample weighed 0.5–1.5 kg more than at the end of the treatment.

## CONCLUSION

The presented data showed that ECT treatment is able to reduce binge frequency better than CBT and nutritional groups after a 6-month follow-up. Moreover, even if no differences were found in the weight loss, ECT was more effective than CBT in improving the overall psychological state of the patients. In particular, ECT was more successful than CBT in improving body satisfaction and resistance to social pressure.

The multidisciplinary approach of ECT seems to be suitable to the peculiar characteristics of binge

eating disorders. In particular, ECT was effective in dealing with two key features of these disturbances not always adequately addressed by cognitive-behavioral therapy: body experience disturbances and self-efficacy.

As noted by Glantz,<sup>15</sup> one of the main reasons it is so difficult to modify patients' attitudes towards their body is that change often requires a prior step—recognizing the distinction between an assumption and a perception. "Until revealed to be fallacious, assumptions constitute the world; they seem like perceptions, and as long as they do, they are resistant to change. We anticipate using VR to help people in distress make the distinction between assumptions and perceptions."

This is particularly true for body experience. When a particular event or stimulus violates the information present in the body schema (as occurs during a virtual experience), the information itself becomes accessible at a conscious level.<sup>52</sup> This facilitates the process of modification, and by means of the mediation of the self (which tries to integrate and maintain the consistency of the different representations of the body), also makes it possible to influence body image.

Second, using the VR experiences, therapists can improve the self-efficacy and motivation for change in their patients. According to Prochaska and DiClemente,<sup>53</sup> it is possible to identify five stages of change that people face in altering problematic behavior. These stages can be considered predictable and stable sub-processes within the therapeutic process. The five stages are Precontemplation, Contemplation, Determination, Action, and Maintenance/Relapse.

In particular, a stage of change is critical for the therapy of binge eating disorders: Contemplation. Contemplation is a paradoxical stage of change, since the patient is open to the possibility of change but is stopped by ambivalence. The characteristic style of the contemplator is, "yes, but . . ." Two key techniques are used in facilitating a shift from the contemplation stage to the determination stage of change.<sup>23</sup> The first technique is the miracle question, a typical approach used by the solution-focused brief therapy.<sup>22,23</sup> The second technique is the search for exceptions: situations in which the patient has been able to manage the problematic eating behaviors more successfully.

Using the VR sessions to experience the effects of the miracle and the successful situations, the patient is more likely not only to gain an awareness of their need to do something to create change, but also to

experience a greater sense of personal efficacy. As such, ECT can be considered as a multi-factorial treatment package aimed at breaking through the "resistance" to treatment in clinical subjects.<sup>54,55</sup> In particular, ECT specifically targets emotion regulation by teaching adaptive skills to enhance patients' emotion regulation capabilities as done by dialectical behavior therapy, an approach recently explored as a new treatment for BED.<sup>56</sup>

Of course, given the limited size of the sample and the short follow-up (6 months), the obtained results are not definitive. Further multi-centric clinical trials are required to confirm this data. Also, for out-patient treatment, results from other studies<sup>57</sup> suggest that an extended course of therapy—up to 20 sessions—will likely maximize the number of potential responders to therapy.

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