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Effectiveness of cognitive behavioral therapy supported by virtual reality in the treatment of body image in eating disorders: One year follow-up

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ABSTRACT

Body image disturbance is a significant maintenance and prognosis factor in eating disorders. Hence, existing eating disorder treatments can benefit from direct intervention in patients' body image. No controlled studies have yet compared eating disorder treatments with and without a treatment component centered on body image. This paper includes a controlled study comparing Cognitive Behavioral Treatment (CBT) for eating disorders with and without a component for body image treatment using Virtual Reality techniques. Thirty-four participants diagnosed with eating disorders were evaluated and treated. The clinical improvement was analyzed from statistical and clinical points of view. Results showed that the patients who received the component for body image treatment improved more than the group without this component. Furthermore, improvement was maintained in post-treatment and at one year follow-up. The results reveal the advantage of including a treatment component addressing body image disturbances in the protocol for general treatment of eating disorders. The implications and limitations of these results are discussed below.

1. Introduction

Body image disturbance is one of the most prominent clinical characteristics of eating disorders (Garner, 2002; Stice, 2002; Schwartz and Brownell, 2004; Nye and Cash, 2006). Body image is also one of the most relevant prognostic factors in the treatment of bulimia nervosa (BN) (Fairburn et al., 1993; Stice and Shaw, 2002) and anorexia nervosa (AN) (Thompson, 1992; Gleaves et al., 1993). Dissatisfaction with one's body as well as body image disturbance is associated with problematic behaviors and attitudes toward food, such as lack of control over eating, adopting restrictive diets, and demonstrating bulimic symptomatology. Therefore, the persistence of body dissatisfaction after treatment of eating disorders is a reliable predictor of relapse in AN and BN patients (Shisslak and Crago, 2001; Stice, 2002; Cash and Hrabosky, 2004). Despite the relevance of body image in eating disorder treatment, most studies fail to evaluate or treat body image (Rosen, 1996). In cases where body image is a treatment target, the effect of the treatment on patients' body image is not analyzed (Farrell et al., 2006). Psychoeducational treatment for BN, pure behavioral treatments, pharmacological treatments, interpersonal therapy, and psychodynamic therapy are ineffective in terms of global body image improvement (Cash and Grant, 1996). Some treatments for eating disorders (Thompson et al., 1996) include educational components addressing body image in BN (Fairburn, 2002) and AN (Vitousek, 2002); however the effect of these interventions on body image is unknown (Nye and Cash, 2006).

From a transdiagnostic perspective (Fairburn et al., 2003), body image intervention must prevent the maintenance of eating disorder psychopathology. Fairburn et al. (2009) enhanced Cognitive Behavioral Treatment (CBT) for eating disorders with other components addressing important aspects of these disorders including perfectionism, interpersonal problems, and self-esteem. Several studies (Rosen 1996; Farrell et al., 2006; Nye and Cash, 2006) suggest that interventions based on body image distortion could improve evidence-based treatments for eating disorders (NICE, 2004) However, there has been no controlled study proving the effectiveness of body image treatment in eating disorders (Nye and Cash, 2006). Hence, it would be illuminating to compare the statistical and clinical effectiveness of treatments with or without a component focused on body image (Cash and Hrabosky, 2004; Farrell et al., 2006).

A previous study conducted by our group with participants diagnosed with eating disorders showed that treatment for body

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image disturbances is more effective using CBT based on VR techniques than using traditional CBT treatment alone (Perpiñá et al., 1999). Two treatment conditions were established in that study. In one condition, CBT for body image was applied in eight group sessions as well as six individual sessions with VR (Perpiñá et al., 2000), a total of 14 sessions. In the other condition, we applied CBT for body image in eight group sessions without VR as well as six relaxation sessions (which were included so that both groups had the same number of sessions) (Perpiñá et al., 1999). We found that in participants with serious eating disorders, the number of sessions was not as important as their content. Furthermore, treatment centered on body image reduced both the eating disorder psychopathology and the secondary psychopathology (depression, anxiety, negative emotions); these results persisted at the one year follow-up (Perpiñá et al., 1999). One of the limitations of that study was that the participants had undergone various eating disorder treatments prior to our intervention.

Information and Communication Technologies (ICT) are widely used as therapeutic tools in the field of neuropsychology (Rizzo et al., 1998) and also in the treatment of anxiety disorders: acrophobia (North and North, 1996), agoraphobia (North et al., 1997), spider phobia (Carlin et al., 1997), fear of public speaking (North et al., 1998), claustrophobia (Botella et al., 2000, 2004) and eating disorders (Perpiñá et al., 1999; Riva et al., 2002).

The aim of the present study is to test whether adding a component of treatment on body image in CBT for eating disorders produces a greater improvement than CBT alone. Given our previous studies (Perpiñá et al., 1999) we use VR techniques for the treatment of body image.

For the present research we carried out a controlled study with participants diagnosed with eating disorders in which we compared the CBT for eating disorders to the CBT for eating disorders plus a specific treatment component for body image using VR. Post-treatment and one year follow-up results are presented. Statistical and clinical improvement for both treatment situations are analyzed and compared.

2. Method

2.1. Sample and participant selection

The sample came from the Outpatient Program for Eating Disorders at the Hospital Provincial in Castellón, Spain. Inclusion criteria were as follows: participants diagnosed with eating disorders according to DSM-IV-TR (APA, 2000) criteria. Exclusion criteria were Body Mass Index (BMI) <16, substance abuse, high suicide risk and serious personality disorders. The sample comprised 34 female patients with the following diagnoses: 17 with BN (16 purgative types and 1 non-purgative type), 12 with Eating Disorder not Otherwise Specified (EDNOS) and 5 with AN (2 purgative types and 3 restrictive types). Partcipants' age range was broad: 15–40 years old with an average age of 21.82 (5.75). BMI ranged from 16 to 32 with an average of 21.5 (4.28) and the length of time with eating disorders was 1–16 years with an average of 4.17 (4.1). As for secondary psychopathology, 23.5% of participants presented personality disorders and 32% of them had another Axis I disorder (15% matched Major Depressive Disorder criteria, 12% Posttraumatic Stress Disorder, and 5% other Anxiety Disorders). As for the participants' educational level, 29% had college-level education (including current students), 47% had high school education (including current students), and 24% had primary school education. They volunteered for the study and informed consent was given.

2.2. Assessments and measures

SCID I Interview (First et al., 2002). This is an interview for making the major DSM-IV-TR (APA, 2000) Axis I diagnoses. It is widely used in mental health studies and offers good psychometric properties: Kappa 0.66, demonstrating reliability (Lobbestael et al., 2011).

SCID-II Interview (First et al., 1997). This is an interview for making DSM-IV-TR (APA, 2000) Axis II Personality Disorder diagnoses. It includes 119 questions and has a Kappa 0.74, demonstrating reliability for admitted patients (First et al., 1999).

The primary outcome measure was Body Image. But, Body Image is a multidimensional construct. In this research we selected different measures to assess the different dimensions of this construct because we expected changes in all of them.

Body Attitude Test (BAT) (Probst et al., 1995). This is a scale for evaluating dissatisfaction with one's body. It includes 20 items in Likert format ranging from 1 (never) to 5 (always). The score ranges from 0 to 100. In the general Spanish population the alpha was 0.92 demonstrating internal consistency with test–retest reliability of 0.91 (Gila et al., 1999).

Body Image Automatic Thoughts Questionnaire (BIATQ) (Cash et al., 1987). This measures the cognitive component of body image. It has 52 items in Likert format ranging from 1 (never) to 5 (always) covering automatic thoughts about physical appearance. In the general Spanish population (Perpiñá et al., 2003) it has a 0.91 internal consistency on the general scale, 0.97 on the negative scale, and 0.91 on the positive scale. Test–retest reliability in the general Spanish population is 0.91 for the general scale, 0.88 for the negative scale, and 0.76 for the positive scale.

Body Areas Satisfaction Scale (BASS) (Cash, 1991). This measures the degree of satisfaction and dissatisfaction with regard to 10 body areas. It contains 10 items which are scored on a Likert scale 1 (very unsatisfied) to 5 (very satisfied). It presents 0.79 and 0.78 internal consistency for men and women, respectively (Cash, 1991).

Situational Inventory of Body-Image Dysphoria (SIBID) (Cash, 1994). This instrument collects body discomfort and dissatisfaction reactions triggered by behavior or situations. It comprises 49 items in Likert format ranging from 0 (never) to 4 (always). It has a 0.97 internal consistency in the general Spanish population and 0.86 test–retest reliability (Perpiña et al., 2006).

As a secondary measure of result we also expected changes in eating disorders psychopathology.

The Bulimic Investigatory Test, Edinburgh (BITE) (Henderson and Freeman, 1987). This evaluates the cognitive and behavioral characteristics of binge eating disorder and BN. It has 33 items divided into 2 subscales. The items in the Symptom subscale are formulated in a dichotomous format (yes/no), whereas the items in the Severity subscale are formulated in a Likert-type response format (with 5 or 7 options, depending on the item). It has a 0.68 test–retest reliability for BN. It features two scales: the Symptom scale, with 0.96 internal consistency and the Severity scale, with 0.62 internal consistency.

The Eating Attitudes Test (EAT) (Garner and Garfinkel, 1979; Garner et al., 1982). It evaluates attitudes and behavior associated with AN. It has 40 items organized into 7 factors, which are answered on a Likert scale of 6 points. The authors have established a cutoff point of 30 for clinical symptomatology. Test–retest reliability for a two to three week interval is 0.84 (Carter and Moss, 1984). In the general Spanish population it has 0.93 internal consistency for AN and 0.92 for BN (Castro et al., 1991).

Weekly evaluation of symptoms. A weekly symptom record was designed for this research for the evaluation of clinical variations in patients, specifically the frequency of binges and the frequency of purgative behavior. It also assesses the degree of fear and avoidance of forbidden food on a Likert scale (range 0–5) as well as the degree of discomfort with one's body in front of a mirror on a Likert scale (range 0–10).

2.3. Treatment

Two treatment components were determined.

Component 1: CBT for eating disorders. Depending on diagnosis of CBT for BN (Wilson et al., 1997) or CBT for AN (Garner et al., 1997). The EDNOS cases were partial AN or BN, so they received treatment according to the diagnosis.

Component 2: CBT for body image in eating disorders using VR (Perpiñá et al., 2000). In this study, we adapted the CBT for body image disturbances in eating disorders (Butters and Cash, 1987; Perpiñá et al., 2000), organizing it in three stages and extending it to 15 CBT group sessions and 8 individual psychotherapy sessions with VR techniques with the following stages:

Stage I: Sessions 1–3. The objective of this stage was for participants to become aware of their body image issues, to differentiate between their body and body image, and to learn that discomfort with their bodies cannot be suppressed by changing their bodies but rather by changing their body image. Participants learned about the psychoeducational principles of body image distortion, the consequences of negative body image and how body image is shaped, what weight is, how to maintain one's weight, tricks and lies in advertising, the main cultural factors for dissatisfaction with one's body, etc. At this stage, environments 1, 2, and 3 are used for 3 sessions.

Stage II: Sessions 4–13. The general objective of this stage was to change attitudes and beliefs about body and appearance, and to alter the avoidance and security issues which underlie body image issues. The basics of cognitive therapy as adapted for body image issues were explained. In this stage, participants were exposed to social situations related to body image disorders, and they were taught how to face them in an adaptive way. In the exposure to