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## Transdiagnostic treatment for eating disorders

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# Chapter 3

## **Competitive memory training (COMET) for treating low self-esteem in patients with eating disorders: a randomized clinical trial**

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## **Abstract**

This study evaluates a short stepwise cognitive-behavioral intervention for the treatment of low self-esteem in patients with eating disorders. Competitive memory training (COMET) for low self-esteem is based on insights and findings from experimental psychology. A total of 52 patients with eating disorders and low self-esteem were treated with COMET in a routine mental health center in addition to their regular treatment. These patients were randomized to receive eight weeks of COMET + treatment as usual (TAU), or to receive TAU only. Differential effects in favor of COMET +TAU were found for two indexes of self-esteem and for one index of depressive mood. Shortcomings of this study and possible clinical implications are discussed.

## **Keywords**

self-esteem, memory retrieval, eating disorders, psychopathology, group treatment

## Introduction

In addition to the over-evaluation of eating, body shape, weight and their control, low self-esteem is considered to be an important aspect of the clinical picture of the various eating disorders (Polivy & Herman, 2002). Self-esteem is the overall evaluation of one's personal worth or value as a person. In adult psychiatry no specific evidence-based treatment protocols for enhancing self-esteem are currently available. Usually, one implicitly expects that self-esteem will be automatically enhanced with the amelioration of the target symptoms of the disorder the patient is treated for; however, it is doubtful whether this is always the case. Several specific interventions to enhance self-esteem have been described (Fennell, 1997; Tarrrier, 2001). Fennell's approach (1997) is characterized by the identification and Socratic challenging of dysfunctional negative automatic thoughts, assumptions and core beliefs about one's own worth and importance, and is accompanied by a range of specific behavioral experiments. Most of these experiments are concerned with the anticipated reactions of others to the personal value and capacities of the patient. The approach taken by Tarrrier and colleagues (2001) seeks to focus the patient's attention on positive characteristics by discussing and monitoring concrete instances in which these positive characteristics were and are manifest; this method proved to be effective in two small studies in which patients with psychosis were investigated (Hall & Tarrrier, 2003; Oestrich et al., 2007). We are not aware of any randomized study to test the efficacy of Fennell's approach.

In the present study, we applied a somewhat different approach to influence self-esteem. Patients regularly report that they do not feel worthwhile, although they (intellectually) know that they are. In problems in which dysfunctional expectations are the major issue, behavioral experiments are initiated to overcome this problem of knowing but not feeling. However, behavioral experiments might not be the most effective method to change the potency of implicit and self-referent opinions, which is the main issue in low self-esteem. To target such implicit and self-referent opinions, we developed a series of interventions, referred to as competitive memory training (COMET). Several of these COMET protocols have recently been tested. At the moment, two studies that used the COMET protocol for low self-esteem have been completed, one in a mixed group of outpatients and the other in a group of hospitalized and day-treatment patients with eating disorders and/or personality disorders (Korrelboom et al., 2009; Olij et al., 2006). In these

studies self-esteem was enhanced, and depression was diminished – both with large (within-group) effect sizes. However, these two studies were not randomized trials.

COMET for low self-esteem is aimed at making patients feel what they already know by making this (functional) knowledge more retrievable from long-term memory. According to Brewin (2006), cognitive therapy does not modify the negative meaning of concepts directly but rather influences the relative retrievability from long-term memory of the different meanings that are associated with these concepts. Strengthening the possibility of retrieving functional representations that are in retrieval competition with dysfunctional representations is considered to be the core activity of all psychological treatments. It is assumed that different processes and procedures influence this retrieval competition. COMET centers on three of these: emotional saliency, repetition, and association. Emotional saliency of functional self-concepts is stimulated in COMET by writing self-referent stories about scenes where positive characteristics are in action and by repeatedly verbalizing positive self-statements connected to these scenes (Lange et al., 1998). Deliberate manipulation of posture, facial expression (Camras, Holland, & Patterson, 1993) and imagery (Holmes et al., 2008) are also used to promote emotional saliency. Finally, positive mood is stimulated by listening to music that is specifically selected by the patients themselves (Krumhansl, 1997). By activating this already emotionally enhanced positive self-knowledge repeatedly, COMET further promotes an even higher and thus more competitive position of this knowledge in the retrieval hierarchy. Then, as a final step, this emotionally enhanced positive self-knowledge is associated with situations and cues that trigger dysfunctional negative self-concepts in daily life with a procedure that is considered to be a modern variant of counter-conditioning.

Having been developed independently of each other, COMET (Korrelboom, 2000) and Tarrrier's (2001) procedure for treating low self-esteem share similarities as well as differences. In both treatments, patients are stimulated to retrieve and attend to positive autobiographical memories that are incompatible with low self-esteem. However, somewhat different from Tarrrier's method, COMET supports this emphasis on positive memories by explicitly making use of imagery, posture and facial expression, self-verbalizations, and music. On the other hand, Tarrrier's method stimulates his patients to monitor and record behaviors in daily life that are indicative for positive self-esteem, whereas COMET relies on the counterconditioning

part of the intervention to firmly connect positive self-esteem with ongoing daily activities. In general, Tarrrier's method seems to be more behaviorally oriented, whereas COMET has a more cognitive orientation.

In this brief report, we describe the first controlled test of the COMET protocol for low self-esteem in a routine outpatient treatment center for patients with eating disorders. The main hypothesis tested was that COMET + treatment as usual (TAU) would enhance self-esteem more than TAU alone.

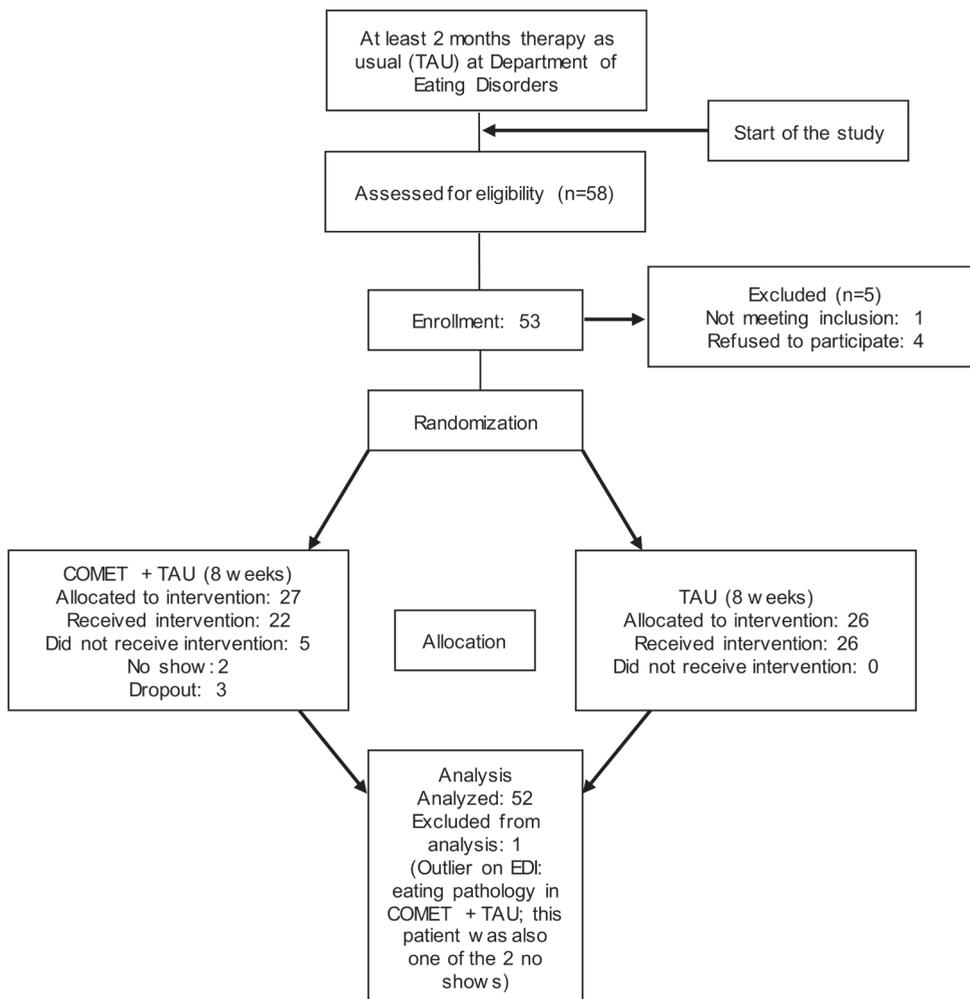
## Method

### Overview

All patients in the study were recruited from the Department of Eating Disorders (DED) of PsyQ, one of the largest organizations for mental health in the Netherlands. Patients in this DED with such problems are treated with the usual evidence-based interventions. After a minimum of two months of this regular TAU, patients who still had eating problems and were low in self-esteem were asked by their (TAU) therapists to apply for the current study. After inclusion, patients were randomly assigned to one of the two conditions: eight weeks of COMET + (ongoing) TAU versus eight weeks of (ongoing) TAU (see Figure 3.1).

### Patients

Inclusion criteria were actual diagnoses (at the time of recruitment) of bulimia nervosa (BN), anorexia nervosa (AN), or an eating disorder not otherwise specified (EDNOS). These diagnoses were based on an informal clinical interview by the researchers who were checking for (a) formal *Diagnostic and Statistical Manual of Mental Disorders, 4th ed., text revision*. (American Psychiatric Association, 2000) criteria in combination with (b) low self-esteem as reported by the patients and their referring therapists and confirmed in an informal clinical interview by the researchers. Patients were considered to have low self-esteem when they expressed feelings such as being inferior to others, being insecure, considering themselves as failures, and so forth. In addition, to be eligible for the study, patients had to be able to identify at least one positive personal characteristic, and they had to be in regular treatment (TAU) at the DED for at least two months. Finally, they had to give informed consent. Suicidal risk, comorbid major depression, and psychotic experiences - all assessed by the researchers in the clinical interview - were criteria for exclusion.



**Figure 3.1.** Overview of the study

COMET = competitive memory training; EDI = Eating Disorder Inventory-II

On the basis of findings in previous pilot studies on COMET for low self-esteem, large effect sizes were expected. In a baseline controlled study with hospitalized and day-treatment patients with personality disorders and eating disorders, pre- to post-treatment effect sizes varied between 0.9 and 1.3 on several measures of self-esteem (Korrelboom et al., 2009). In an uncontrolled pilot study with 75 outpatients with mixed primary disorders, the pre- to post-treatment effect size on the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) was 1.2 (Olij et al., 2006). Therefore, with a power of 0.80 and two equal groups, a minimum of 52 patients was needed.

Enrollment was performed in five blocks, resulting in five COMET + TAU (experimental) groups and five waiting for COMET + TAU (control) groups. Between January 2006 and September 2007, 58 patients were referred for intake. Of these, 4 refused to participate in the randomization procedure, and 1 patient with binge eating disorder did not fulfill the diagnostic criteria for inclusion. Finally, a total of 53 patients were included in the study and randomized. Of these patients, 22 had their regular treatment on an outpatient basis; the remainder were treated on a day-treatment basis: 18 in low-intensity day treatment and 12 in high-intensity day treatment. All included patients were female, and all were Caucasian.

### Instruments

All patients were assessed two times: at the start of the study, and again eight weeks later at the end of COMET + TAU or the waiting period + TAU. The measures listed below were assessed.

- *RSES* (Rosenberg, 1965). On a Dutch version of this 10-item scale, items had to be answered on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). A high score means higher self-esteem. The RSES scale assesses global self-esteem and is sufficiently reliable and valid (Blascovich & Tomaka, 1991). While measuring a trait-like concept, such as self-esteem, the RSES has been shown to be sensitive to changes during therapy in several studies (Agras et al., 2000; Safer, Telch, & Agras, 2001). The RSES was considered the first primary outcome measure.
- *Beck Depression Inventory (BDI)* (Beck et al., 1961). A Dutch translation of this 21-item self-referent, 4-point Likert scale has proven to be reliable (Bouman et al., 1985) and to be valid (Bouman, 1989). High scores indicate more depression. The BDI was considered a secondary outcome measure.
- A valid and reliable Dutch translation of four subscales (Pursuit of Thinness, Bulimia, Body Dissatisfaction, and Ineffectiveness) of the *Eating Disorder Inventory-II (EDI-II)* (Garner & Olmstead, 1983; Schoemaker, van Strien, & van der Staak, 1994; van Strien, 2002) was administered. The first three subscales, covering the core symptoms of the eating disorders, were used to describe the study population. Body dissatisfaction was also used as a secondary outcome measure to control for the quality of TAU in improving eating pathology. The Ineffectiveness subscale is considered to be a measure for self-esteem and was the second primary outcome measure. Low scores on all four EDI-II subscales are favorable.

## **Therapists**

All COMET sessions were conducted by two therapists - one a clinical psychologist (Martie de Jong) and the other an art therapist - acting as cotherapists. The senior therapist (Martie de Jong) had several years of experience in conducting cognitive-behavioral therapies and was specifically trained and supervised in COMET by Kees Korrelboom. The second therapist had no prior experience in cognitive-behavioral interventions.

## **Procedure**

COMET was carried out in small groups as an additional treatment module to the ongoing regular treatment program. After informed consent, all 53 patients fulfilled the pretreatment measurements and were randomized to either eight weeks of COMET + (ongoing) TAU (experimental group) or to eight weeks of waiting + (ongoing) TAU (control group). Randomization was performed in five separate blocks (each consisting of 12-16 patients) by opening blinded envelopes in which both treatment conditions were concealed in advance. A total of 27 patients were randomized to the experimental group, and 26 to the control group.

After eight weeks, at the end of COMET, the post-treatment measurements were taken from both the experimental group and the control group. Whereas the length of the therapy period was the same for all patients in both conditions, the actual number of therapy contacts received in each condition could differ between patients.

## **Treatments**

**TAU** – Regular treatment (TAU) in the DED is based on the Dutch multidisciplinary guidelines for eating disorders. Some patients are either treated individually or in groups on an outpatient basis, at a frequency of once a week or biweekly. Others are treated in a day-treatment setting of 1 (low intensity) or 3 (high intensity) days a week. All treatments have a mainly cognitive-behavioral orientation and consist of psycho-education, enhancing motivation, symptom-focused interventions, and social rehabilitation. In all these therapies the management of food and dieting is a central theme and concern.

**COMET for low self-esteem** – COMET for low self-esteem is a manualized, stepwise, cognitive-behavioral intervention (comprising eight sessions) and is practiced in small groups of 6-8 patients (in the present study, all women). Sessions are held once a week, each taking 1.5 hr. The COMET protocol encompasses four main steps.

1. *Identifying the negative self-image.* The patient describes in a few words what he/she thinks is negative about himself/herself.
2. *Identifying a credible positive self-image that is incompatible with the negative self-image.* The patient is asked whether he/she really believes that this negative image of himself/herself is totally true and, if not, which personal characteristics and experiences contradict the negative self-image.
3. *Strengthening the positive self-image.* Then, the retrievability of the contradictory positive self-image is enhanced by strengthening its emotional load. In COMET, this is realized by (a) writing small self-referent stories of instances in which the positive qualities were and are manifest and distilling positive self-statements of these instances, (b) imagining oneself in positive personalized scenes, (c) purposefully manipulation body posture and facial expression, and (d) listening to music that is chosen by each patient personally because it is felt to be congruent with a positive self-image. These exercises are to be practiced during Sessions 2-5 as well as during daily homework assignments.
4. *Forming new associations between risk cues and positive self-image by counterconditioning.* In the last sessions of COMET, patients are trained to associate their new positive self-image with cues that normally provoke uncertainty and self-demeaning thoughts. The patient has to activate his/her positive self-esteem with the aid of imagination, posture and facial expression, music and positive self-statements. Then, the positive image is replaced by the image of a situation in which he/she normally feels insecure and worthless. Now, however, by keeping his/her positive feeling state activated, he/she tries to feel self-confident while being in the imagined difficult scene. Again, this has to be repeated several times and also has to be practiced in daily homework assignments. Once a difficult scene can be tolerated while retaining positive self-esteem, other scenes are practiced.

## **Treatment integrity**

COMET sessions were observed by a trainee who was familiar with the COMET protocol; this observer made a checkmark on a list when the intended subjects of each therapy session had been dealt with adequately and noted whether any elements not in the protocol had been introduced.

## **Statistical analyses**

On the basis of earlier findings (Korrelboom et al., 2009; Olij et al., 2006) large effect sizes were expected. In this randomized clinical trial design, we tested possible differences at baseline between both groups and between dropouts and completers (for continuous variables) with independent *t* tests or Mann-Whitney tests (when prerequisites for *t* tests were violated) and (for categorical variables) with chi-square tests. All differences between pre- and posttreatment measurements were tested with separate analyses of variance for repeated measures on an intention-to-treat basis by substituting the pretreatment scores of the 4 dropouts/no shows as posttreatment scores. Cohen's *d* was used to estimate the size of these differences, and 95% confidence intervals were calculated for all outcome measures. In all tests, a *p*-value of .05 was considered statistically significant. To assess the clinical significance of changes during treatment, we applied a method described by Jacobson and Truax (1991).

## **Results**

One patient in the experimental condition was an outlier with extreme *Z* scores ( $< -3.19$ ) far within the range of the normal population on two main indicators for having an eating disorder (Pursuit of Thinness and Body Dissatisfaction); she was considered to be misdiagnosed. Although this person was randomized, she never started COMET. Leaving this patient out of the analyses resulted in the experimental group and the control group having 26 patients each; all further calculations pertain to these 52 patients. For 1 patient in the experimental group, the pretreatment RSES was missing. Table 3.1 gives an overview of the pretreatment characteristics. There were no significant pretreatment differences between both groups. Compared with a functional Dutch female student norm group, these patients scored high to very high on the Pursuit of Thinness, Bulimia, and Body Dissatisfaction subscales of the EDI-II (van Strien, 2002). Compared with a non-clinical Dutch population (Schmitt & Allik, 2005) patients' scores on the RSES were extremely low ( $M = 21.2, SD = 5.3$ ).

**Table 3.1.** Pretreatment status for the two treatment groups

Variable	Experimental group			Control group			Significance
	M	SD	n	M	SD	n	
Age (years)	25.5	5.3		25.4	5.7		ns
Diagnosis							ns
EDNOS			12			17	
BN			10			5	
AN			4			4	
Length of treatment before COMET (months)	9.8	7.7		10.7	9.3		ns
Intensity of TAU							ns
Outpatient			10			12	
LI day- treatment			11			7	
HI day-treatment			5			7	
Pursuit of thinness (EDI-II)	31.2	6.1		33.1	5.7		ns
Bulimia (EDI-II)	19.3	8.6		18.0	7.6		ns
Body dissatisfaction (EDI-II)	42.8	9.2		46.4	8.8		ns
Ineffectiveness (EDI-II)	41.6	8.6		41.4	9.5		ns
Self-esteem (RSES)	20.0	5.2		20.3	5.6		ns
Depressiveness (BDI)	22.1	11.8		22.7	11.8		ns

EDNOS = eating disorder not otherwise specified; BN = bulimia nervosa; AN = anorexia nervosa; COMET = competitive memory training; TAU = treatment as usual; LI day-treatment = low-intensity day-treatment (1 day per week); HI day-treatment = high-intensity day-treatment (3 days per week); EDI-II = Eating Disorders Inventory-II; RSES = Rosenberg Self-Esteem Scale; BDI = Beck Depression Inventory; ns = not significant

In the COMET group, 3 patients dropped out, and 1 did not show up for treatment (16%: 2 diagnosed with EDNOS, 1 with BN and 1 with AN; 3 of these patients had outpatient treatment as TAU, and 1 had high-intensity day-treatment), whereas all the patients in the control group filled in their posttreatment measurements. There were no significant differences in pretreatment measures between dropouts/no shows and completers. In addition, there were no important differences between the two groups for the number of therapy contacts or for the number of therapy hours received. During the research period, patients in TAU received on average 10.1 therapy contacts ( $SD = 13.2$ ), whereas patients in COMET+TAU received 11.8 therapy contacts ( $SD = 7.1$ ); this difference was not significant,  $t(50) = 0.561$ ,  $p = .58$ . Measured in received hours of therapy, patients in COMET had on average

13.9 hr ( $SD = 13.5$ ) of therapy during the research period, whereas patients in TAU received 10.5 hr ( $SD = 20.1$ ). This difference was not significant,  $t(50) = 0.56, p = .58$ .

Treatment integrity was good. According to the observers, more than 90% of all the issues in the treatment protocol were adequately handled during COMET, and no new treatment elements were introduced.

Table 3.2 presents an overview of the interaction effects. Significant interaction effects (Treatment x Time) in favor of COMET were found for self-esteem (RSES),  $F(1,49) = 7.58, p < .01$ ; EDI-II (Ineffectiveness),  $F(1,50) = 4.4, p = .04$ ; and for depression (BDI),  $F(1,50) = 5.17, p = .03$ . The (between-subjects) effect size for the RSES was large, with Cohen's  $d$  being 0.8,  $t(49) = 2.8$ ; the (between-subjects) effect size was intermediate for both the EDI-II (Ineffectiveness), Cohen's  $d = 0.6, t(50) = 2.1$ , and the BDI, Cohen's  $d = 0.6, t(50) = 2.3$ . All main effects for time were significant: RSES,  $F(1,49) = 17.71, p < .00$ ; EDI-II (Ineffectiveness),  $F(1,50) = 11.9, p < .00$ ; BDI,  $F(1,50) = 16.00, p < .00$ ; and EDI-II (Body Dissatisfaction),  $F(1,50) = 20.74, p < .00$ . The within-subject effect sizes (Cohen's  $d$ ) for the experimental group were intermediate: 0.7 for the RSES and 0.6 for the EDI-II (Ineffectiveness) and the BDI.

To make a clinically significant change, a patient has to fulfill two criteria: (a) he/she should progress from the problematic population to the normal population, and (b) the difference between his/her posttreatment score and pretreatment score should surpass the standard error of difference between these two scores (i.e. he/she should realize a reliable change score) (Jacobson & Truax, 1991). On the basis of the mean and standard deviation found by Schmitt and Allik (2005) in a functional Dutch population, a score of 23 was determined as the cutoff score between normal and pathological functioning on the RSES. On the basis of a reliability index of 0.87, found in that same study, an increase of at least 6 points between pre- and posttreatment was considered necessary to achieve a reliable change on this scale. In COMET + TAU, 6 patients (27% of the 22 patients who had completed COMET) achieved both the Jacobson and Truax's (1991) criteria and can be considered to have made a clinically significant change. In TAU, no patient realized a clinically significant change. In the two groups, no patient had a clinically significant change for the worse and no patient had a reliable change for the worse.

**Table 3.2.** Interaction effects between pre- and posttreatment: Intention to treat

Variable/Group	Pretreatment				Posttreatment				Effect size (Cohen's <i>d</i> )	Significance
	N	M	SD	95% CI	M	SD	95% CI			
RSES									0.8	.01
Exp	25 <sup>a</sup>	20.0	5.2	17.8-22.1	23.6	5.5	21.4-25.9			
TAU	26	20.4	5.6	18.2-22.5	21.1	5.5	19.0-23.3			
BDI									0.6	.03
Exp	26	22.1	11.8	17.4-26.7	15.2	12.0	10.4-20.1			
TAU	26	22.7	11.8	18.0-27.4	20.8	12.7	16.0-25.7			.57 (ns)
Body dissatisfaction (EDI-II)										
Exp	26	42.8	9.2	39.3-46.4	39.8	11.3	35.5-44.1			
TAU	26	46.4	8.8	42.9-50.0	42.5	10.4	38.2-46.8			
Ineffectiveness (EDI-II)									0.6	.04
Exp	26	41.6	8.6	38.0-45.1	36.5	9.9	33.0-40.1			
TAU	26	41.4	9.5	37.8-44.9	40.2	8.0	36.6-43.7			

CI = confidence interval; ns = not significant; RSES = Rosenberg Self-Esteem Scale; Exp = experimental group (COMET + TAU);

TAU = control group (treatment as usual); BDI = Beck Depression Inventory; EDI-II = Eating Disorders Inventory-II<sup>a</sup> One RSES missing

## Discussion

The present study confirms earlier findings in two less rigidly controlled studies (Korrelboom et al., 2009; Olij et al., 2006) - that is, COMET as an add-on to regular therapy enhances self-esteem, at least in woman being treated for eating disorders. That the self-esteem of patients with eating disorders can be enhanced with a specific treatment procedure is of particular significance. Given that low self-esteem is an important aspect of the clinical picture of eating disorders and is considered a risk factor for relapse, interventions specifically aimed at the enhancement of self-esteem might be a valuable addition to the regular procedures used in treating these patients (Fairburn, Cooper, & Shafran, 2003). However, although 27% of the COMET completers had a clinically significant change, and none of the patients in TAU had a clinically significant change, it should be pointed out that the mean self-esteem score after COMET ( $M = 23.6$ ,  $SD = 5.5$ ) is still below the scores of a functional Dutch population ( $M = 31.6$ ,  $SD = 4.5$ ).

Having been performed in a (non-university) routine mental health setting, this study has several limitations. First, diagnoses and other inclusion and exclusion criteria were established in non-standardized clinical interviews. Second, there was no formal check on whether patients fulfilled their homework assignments, whereas doing so is considered an essential part of the COMET intervention. Third, it is debatable whether the Hawthorne effect might have played a role; in that case, the results could have been merely a reflection of the patients' or therapists' enthusiasm of being part of something new. Although this is a real possibility for the therapists, and although it cannot be ruled out completely for the patients, all control group patients knew that they too would receive COMET, albeit eight weeks later. Thus, it is unlikely that there has been a differential effect between patients in both groups concerning the Hawthorne effect. Fourth, all COMET therapies were applied by the same cotherapists, leaving the question open whether the outcome was a therapist effect or a treatment effect; however, in other studies on COMET protocols, similar results with many different therapists were found. Finally, although therapists conducting TAU were instructed not to apply interventions specifically aimed at enhancing self-esteem, no formal check on treatment integrity was made regarding this issue. On the other hand, had patients in TAU indeed received self-esteem enhancement procedures, COMET would still have outperformed the effects of these procedures.

To summarize, COMET seems to be an effective additional intervention for eating disorders and low self-esteem. The promising results of the current study warrant further investigation of this intervention among this and other psychiatric populations, with a sufficiently long follow-up period and with better control of several methodological aspects of the study.

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