

Testing a Brief Cognitive-Behavioural Intervention to Improve Extreme Shape Concern: A Case Series

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Abstract. The successful treatment of extreme shape concern in patients with eating disorders has been shown to be important for their sustained recovery. This case series reports a preliminary investigation of the effects of a new brief cognitive-behavioural intervention for extreme shape concern. The intervention, which is implemented in a single 2-hour session, addresses four mechanisms hypothesized to contribute to the maintenance of extreme shape concern and is designed to be suitable as an adjunct to existing treatments for eating disorders. Participants were five women with extreme shape concern and three female patients with eating disorders. The results indicate that the intervention was effective to various degrees in each participant, and suggest that the intervention warrants further investigation. In particular, methods of increasing the potency of the intervention should be investigated, and its efficacy tested in a larger controlled study.

Keywords: Extreme shape concern, eating disorders, cognitive behavioural intervention, case series.

Introduction

The central importance of extreme shape concern in eating disorders is widely recognized; it is among the diagnostic criteria for anorexia nervosa and bulimia nervosa (American Psychiatric Association., 1994), and research using exploratory factor analysis has identified extreme shape concern as a main component of the psychopathology of these disorders (Gleaves and Eberenz, 1993; Gleaves, Williamson and Barker, 1993).

The detrimental effect of residual shape concern for the long term outcome of patients with bulimia nervosa has been documented in two studies (Fairburn, Peveler, Jones, Hope and Doll, 1993; Freeman, Beach, Davis and Solyom, 1985). Specifically, these studies found that the level of shape concern remaining at the end of successful treatment for bulimia nervosa predicted relapse. These findings are ominous considering that residual shape concern at the end of successful treatment for an eating disorder (i.e. recovery from the behavioural features) has been reported to be present in as many as 30–50% of cases (Deter and Herzog, 1994; Goldbloom and Olmsted, 1993; Windauer, Lennerts, Talbot, Touyz and Beumont, 1993). It appears therefore that a large number of patients may be at risk of relapse due to the inadequate treatment of their extreme shape concern.

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Although many current treatments for eating disorders do include a component that addresses extreme shape concern, their therapeutic effects are only modest (Rosen, 1996) and there is room for improvement (Fairburn, Cooper and Shafran, 2003). Treatments targeted uniquely at extreme shape concern have been developed (Cash, 1995; Rosen, 1997; Stice, Chase, Stormer and Appel, 2001; Winzelberg et al., 2000). However, many of these have been designed for use in non-clinical samples for the prevention of eating disorders, they do not include a personalized formulation and are not linked to a theoretical framework specifying discrete maintaining mechanisms. Furthermore, they consist of many sessions of treatment, administered over several weeks. This makes them unsuitable to be included within treatments for eating disorders. The only single session intervention to have been reported (Nicolino, Martz and Curtin, 2001) failed to improve the body image of a sample of college students.

The leading evidence-based treatment for bulimia nervosa is a specific form of cognitive behavioural therapy (Fairburn and Harrison, 2003; Fairburn, Marcus and Wilson, 1993; Hay and Bacaltchuk, 2003; National Institute for Clinical Excellence, 2004). Any intervention to improve extreme shape concern should therefore be compatible with this treatment. The aim of the current study was to serve as a preliminary evaluation of a new brief cognitive-behavioural intervention designed to improve extreme shape concern and be compatible with CBT.

The intervention

Rationale

The most rational way of developing an effective psychological treatment is by constructing a theory of the processes involved in the maintenance of the disorder and then devising interventions that address these processes (Clark, 1997). In line with this, four specific mechanisms that are believed to maintain extreme shape concern were identified, based on the scientific literature and clinical experience. These are:

1. *Selective attention to disliked body parts* (Freeman, Touyz, Sara, Rennie and Beumont, 1991). This is believed to lead to an increase in preoccupation about the body and in particular the disliked parts (Williamson, Muller, Reas and Thaw, 1999), and is believed to maintain dissatisfaction in a manner analogous to the role of selective attention to anxiety symptoms in the maintenance of panic disorder (Clark, 1986). In addition to an increase in preoccupation, selective attention to disliked body parts may maintain extreme shape concern by giving a biased view of the “acceptability” of the body as a whole.

2. *Negative cognitions and emotions when looking at the body*. These are likely to arise as a result of selective attention since patients will be looking at parts that they already dislike. The presence of these negative cognitions, and their reinforcement via selective attention to the parts that elicit them, will be likely to result in individuals experiencing a negative emotional state when they see themselves in the mirror. This may further reinforce the discomfort associated with looking at their bodies, and increase their dissatisfaction and preoccupation with their body shape and size.

3. *Frequent body checking and body avoidance*. This is commonly reported by patients with eating disorders (Reas, Whisenhunt, Netemeyer and Williamson, 2002; Shafran, Fairburn, Robinson and Lask, 2004). Confirmatory cognitive biases that are part of extreme shape concern (Williamson, 1996) may result in the patient drawing unreliable conclusions from

checking her body, such that her dissatisfaction is maintained (Fairburn, Shafran and Cooper, 1999). As Smeets suggests, "A patient who feels that her buttocks are exceptionally fat may thus come to perceive them as exceptionally fat." (Smeets and Panhuysen, 1995, p. 111). Avoidance is also frequently reported (Rosen, Srebnik, Saltzberg and Wendt, 1991; Shafran et al., 2004). This happens when the strength of the negative cognitions and emotions elicited by body checking are such that the patient avoids checking to prevent these aversive consequences. Such behaviour does not allow her the possibility of gaining new reliable information to challenge her negative cognitions about her body. The hypothesized role of avoidance in the maintenance of extreme shape concern is thus analogous to that of "safety seeking" behaviours in anxiety disorders (Salkovskis, 1991).

4. *Overestimation of body size.* It has been suggested that behaviours such as body checking and avoidance, along with selective attention to specific body parts, can exacerbate body size overestimation (Fairburn et al., 1999; Rosen, 1997), which is a fourth mechanism postulated to maintain extreme shape concern.

Brief CBT

A brief cognitive-behavioural intervention was designed to address each of the four mechanisms above. A personalized case conceptualization, based on this theoretical formulation, is constructed collaboratively with the patient at the start of the intervention. This allows the hypothesized role of the processes above to be explained, and the techniques employed to address each element, and the rationale behind them, to be described. Four techniques are used.

1. To reduce selective attention to disliked body parts, the therapist asks the patient to look at herself in a full-length mirror, looking at a list of body parts read out by the therapist. The body parts begin at the head and end at the feet, to ensure that the patient looks at her entire body (Tuschen and Bents, 1995; Wilson, 1999b).

2. Given the highly subjective nature of patients' complaints (e.g. stomach too rounded, thighs too large) it has been suggested that it is difficult to directly challenge the validity of patients' negative cognitions and emotions (Wilson, 1999a). Therefore, to tackle negative body-related cognitions and emotions, patients are taught to distance themselves from these so that the cognitions lose their importance. This is achieved using a technique that employs a combination of a body image exposure procedure in which participants look at and describe themselves neutrally (Tuschen-Caffier, Pook and Frank, 2001) as if to a blind person, and use of mindfulness (for example, observing thoughts but not reacting to them, and allowing them to enter and leave awareness), which has been successfully applied to the treatment of recurrent depression (Teasdale et al., 2000).

3. Body checking and avoidance is addressed by providing psychoeducation and its hypothesized role in the maintenance of extreme shape concern. If difficulties in resisting checking are anticipated, strategies can be devised according to the principles of habit reversal e.g. clenching one's fists, which is incompatible with pinching one's stomach (Azrin and Nunn, 1973). Avoidance of looking in the mirror may be harder for the patient to stop, given the anxiety provoked by doing so. The importance of gaining real information about her body is emphasized to these patients. In addition, healthy mirror use is discussed and strategies for promoting this are devised. For example, a patient who had many mirrors around the house

and looked at herself many times a day would be asked to remove surplus mirrors, and to look at herself only once or twice a day.

4. The distorted and unreliable information gained by patients from selective attention to disliked body parts and frequent checking and avoidance is tackled using video feedback to give patients a novel and realistic view of themselves, which is believed to be easier to view objectively than a more familiar experience such as looking in the mirror (Rapee and Hayman, 1996), along with feedback about the accuracy of body size estimations. Video feedback has previously been used to a limited degree to treat extreme shape concern (Fernandez and Vandereycken, 1994; Rushford and Ostermeyer, 1997) and has been found to be effective in correcting distorted self-perceptions in socially anxious patients (Rapee and Hayman, 1996). In this study, participants are asked to imagine they are watching a stranger whilst observing a video of themselves turning through 360°. They are also required to describe what they see on the video in neutral terms, to help encourage distance from their negative cognitions. The utility of video feedback has also been shown to be enhanced by cognitive preparation (Harvey, Clark, Ehlers and Rapee, 2000). Specifically, participants are asked to make predictions about the appearance and size of various body parts prior to watching the video, and these predictions are then confirmed or disconfirmed by reference to the video.

These techniques are taught individually in a single 2-hour session (which includes a break). Patients are then asked to practise the technique every day for a week, and also to resist body checking and avoidance. The techniques involved require practice to be mastered, and the therapeutic effects of the intervention are expected to increase with practice.

Method

Design

Since the current study was a pilot study, a single case design was used. Studies using single case methodology are frequently used for such pilot studies (Stravynski, Arbel, Lachance and Todorov, 2000; Wells and Papageorgiou, 2001; Whittal, Otto and Hong, 2001) and are well suited to the purpose of small-scale evaluations (Long and Hollin, 1995; Wilson, 1999a). An AB multiple baselines design with eight participants, each representing one baseline, was used.

Measures of participants' body image were taken on multiple occasions over the baseline phase (Phase A) which varied from 7–14 days, immediately prior to and after intervention (i.e. on the same day), and after the intervention (Phase B), which varied from 7–24 days. Indices were assessed whilst participants were in front of a mirror in their underwear. Prior to intervention (at the start of Phase A), participants completed cognitive, affective, behavioural and perceptual indices of body image (see below) in the laboratory. Participants were given rating sheets to assess cognitive, affective and behavioural indices of body image at home (across 7 days and on a daily basis wherever possible). All body image indices were administered immediately prior to and after the individual intervention in the laboratory. In addition, outcome for each participant (cognitive, affective and behavioural indices of body image) was assessed again at home on a number of occasions during Phase B (i.e. across 7 days on a daily basis wherever possible) using the same rating scales. At the end of this phase, participants returned to the laboratory to complete all indices of body image for a final time. Every component of body image was assessed on a daily basis wherever possible

(although the perceptual index of body image was only assessed in the laboratory), and measures were deliberately kept simple in order to minimize the inconvenience of completing multiple measures and thereby encourage compliance.

Participants

Since the current study was a preliminary investigation of a new intervention, the effects of which were not known, it was initially tested in a group of individuals ($n = 5$) who did not have a clinical eating disorder. These participants were recruited via adverts for women who were “dissatisfied and unhappy with their shape”. All of these participants reported that their dissatisfaction impaired their social or occupational functioning (all five were undergraduate students). One advantage of single case methodology is that it does not require homogeneity of participants (Long and Hollin, 1995). Therefore, once it was apparent that the intervention was potentially helpful, it was implemented with three patients who were in the last phase of receiving evidence-based CBT for an eating disorder (Fairburn et al., 2003) from the second author (RS).

Measures

Eating Disorder Examination – Diagnostic items (Fairburn and Cooper, 1993). Both clinical and non-clinical participants were administered the Eating Disorder Examination to ascertain diagnostic status. This semi-structured interview was administered by the first author (CF) who had received formal training in its use. The Eating Disorder Examination has good validity and reliability, and is widely considered to be the “gold standard” assessment measure of eating disorder features (Wade, Tiggemann, Martin and Heath, 1997; Wilson, 1993).

Eating Disorder Examination – self-report version (EDE-Q; Fairburn and Beglin, 1994). Participants responding to an advert for “women dissatisfied and unhappy with their shape” were sent the shape concern subscale of the EDE-Q (Fairburn and Beglin, 1994) to complete and were invited to participate if they reported a degree of shape concern that was in the clinical range (i.e. a score of 1 *SD* above the mean [4.21¹] or more on the shape concern subscale of the EDE-Q). All participants were then administered the full version of the EDE-Q prior to the intervention (Table 1). All three clinical cases scored within the clinical range on the shape concern subscale. The subscales of the EDE-Q have been shown to have excellent internal consistency (Chronbach alpha = .78–.93) and 2-week test-retest reliability (Pearson $r = .81–.94$; Luce and Crowther, 1999).

Cognitive and affective components of body image. Outcome for the cognitive and affective components of shape concern was assessed using visual analogue scales (0–100), which were completed whilst participants looked at themselves in a full-length mirror. Visual analogue scales can provide sensitive measures of subjective experience, and have been shown to be valid and reliable indicators in a range of settings (McCormack, Horne and Sheather, 1988).

¹Normative means: shape concern = 2.45 (*SD*. 1.76). Based on a community based sample of 243 women, mean age 26.6, mean BMI 23.7 (Fairburn, Beglin, O’ Connor, Shafran and Harman, 2003).

The cognitive component was assessed by asking the participant to rate the importance, and the strength of her belief in, the most salient negative or critical thought that came to mind as she looked at herself in the mirror (i.e. “at that moment in time”). In addition, she was asked to rate, in two separate ratings, the degree to which her shape and her weight influenced how she judged herself as a person. These specific features have been shown to predict relapse after successful treatment for eating disorders (Fairburn et al., 1993).

The affective component required participants to report how anxious they felt when looking in the mirror, how “fat” they felt (on an emotional level), and how dissatisfied they felt with their body (“at that moment in time”), using visual analogue scales (0–100).

Behavioural component. The behavioural component of shape concern was assessed by asking the participant to report the number of times in the last 24 hours that she had a) checked her body in the mirror b) avoided looking in the mirror because of the distress that doing so might have caused.

Perceptual component. The perceptual component was assessed by asking the participant to estimate her body size using a new ecologically valid method of body size estimation (Farrell, Shafran and Fairburn, 2003; Shafran and Fairburn, 2002). Scores are calculated as a percentage of actual body size – i.e. a score of 100 would indicate 100% accuracy, whereas a score of 110 would indicate an overestimation by 10%.

Analysis

There has been considerable debate regarding the best way to interpret data from single case design experiments. Due to the small sample size of single case designs, parametric assumptions are unlikely to be met (Siegel and Castellan, 1988), and nonparametric tests such as the Mann-Whitney U or Wilcoxon T tests may therefore be considered. However, caution must be exercised in the use of these tests since autocorrelation of residuals is common. Positive autocorrelation of residuals has been shown to inflate the test statistics of classical tests, and negative autocorrelation results in reduced test statistics (Suen and Ary, 1987). In the event of autocorrelation of residuals, more complex tests such as time series analyses (e.g. Box and Jenkins, 1976) or randomization tests (Edgington, 1996) should be used.

The data from the current study were evaluated initially by visual analysis of mean scores within individual participants (see Table 2), and also by statistical tests having assessed the data for autocorrelation (see Table 3).

Results

Participant characteristics

Eight women with significant levels of shape concern (see Measures, above) participated in this pilot study. Five of these did not a clinical eating disorder. The remaining three women were in the final stages of receiving CBT for an eating disorder (one for anorexia nervosa, one for bulimia nervosa, and one for eating disorder not otherwise specified). Table 1 indicates the mean age, BMI and EDE-Q scores across all participants, and by clinical status.

Table 1. Participant characteristics (standard deviations in parentheses)

Measure	All participants (<i>n</i> = 8)	Clinical sample (<i>n</i> = 3)	Non-clinical sample (<i>n</i> = 5)
BMI	22.24 (4.01)	19.03 (3.80)	24.16 (2.94)
Age (years)	20.50 (3.93)	19.67 (0.57)	21.00 (5.10)
EDE-Q restraint scale	3.05 (1.00)	4.00 (0.28)	2.68 (0.92)
EDE-Q eating concern scale	2.37 (0.73)	2.90 (0.99)	2.16 (0.61)
EDE-Q shape concern scale	4.39 (0.85)	4.25 (0.18)	4.45 (1.03)
EDE-Q weight concern scale	3.26 (1.05)	3.10 (0.42)	3.32 (1.26)

Since this was a pilot study of the new intervention we wanted to take into account the experience and observations of the participants in order to inform development of the intervention. The majority of participants (6/8) reported finding the intervention helpful. A seventh reported feeling better about her body, but that she did not know whether it was due to the intervention or not, and the final participant considered that the intervention had had no effect on her body image.

Analysis of mean scores across patients and time

Table 2 gives the descriptive statistics for each participant prior to and after intervention (averaged within each participant before and after intervention) for cognitive and affective indices of body image (using the visual analogues specified earlier) and well as behavioural indices of body image (frequency of checking and avoiding looking at self in the mirror). These data indicate that most of the participants showed small improvements on most of the visual analogue measures. In addition, at least three participants (P1, P2 and P6) showed improvement for the cognitive and affective measures of body image. One participant (P4) did not show any improvements on any of the measures and, in fact, deteriorated on a selection of the measures. She also reported not doing the set homework. This participant was not a clinical case.

Table 3 gives the mean values for each variable prior to and after the intervention averaged across *all* participants. Since the autocorrelation was found to be minimal, non-parametric tests were used. A Wilcoxon Signed Ranks test indicated significant effects of the intervention on all the cognitive, affective and behavioural outcome variables (see Table 3). There was no significant effect of intervention on the perceptual outcome variable (body size estimation). Participants were accurate in estimating their body size both before and after the intervention.

Discussion

The use of both visual and statistical analysis of the data allows evaluation of both individual and group effects. Visual analysis of the results suggested that the intervention had substantial therapeutic effects for some participants. This was consistent with the anecdotal reports from some of the participants that they had found the intervention helpful. An interesting observation was made possible by inspection of pre and post intervention means across individual participants that would not have been identified from statistical analysis alone. This

Table 2. Mean scores of body image measures for each participant

		Affective			Cognitive				Behavioural	
		Anxiety ¹	Feeling Fat ¹	Dissatisfaction ¹	Belief in thought ¹	Importance of thought ¹	Influence of shape ²	Influence of weight ²	Checking ³	Avoidance ³
P1*	Pre	52.7	69.2	65.0	59.2	63.1	58.0	52.6	5.9	2.4
	Post	30.6	21.2	21.8	21.1	20.3	29.9	25.6	3.1	1.6
	Change	22.1	48.0	43.2	38.1	42.8	28.1	27.0	2.8	0.8
P2*	Pre	75.0	67.0	–	67.8	–	96.5	68.0	1.0	–
	Post	43.2	44.6	–	44.5	–	63.6	62.0	1.1	–
	Change	31.8	22.4	–	22.3	–	32.9	6.00	–0.1	–
P3*	Pre	78.1	84.2	84.1	91.2	87.5	69.6	75.5	12.5	0
	Post	68.8	75.5	75.5	87.9	79.3	73.3	71.4	9.7	0
	Change	9.3	8.7	8.6	3.3	8.2	–3.7	4.1	2.8	0
P4	Pre	39.2	71.0	84.7	81.7	68.7	51.6	48.8	4.6	0.3
	Post	70.2	74.7	87.1	86.2	67.1	70.6	82.6	5.4	0.4
	Change	–31.0	–3.7	–2.4	–4.5	1.6	–19.0	–33.8	–0.8	–0.1
P5	Pre	79.6	78.8	82.3	90.0	79.9	79.6	62.4	2.9	3.9
	Post	69.3	65.8	68.7	64.4	64.4	61.3	53.9	3.4	3.6
	Change	10.3	13.0	13.6	25.6	15.5	18.3	8.5	–0.5	0.3
P6	Pre	58.5	73.5	79.0	65.6	33.6	28.0	24.4	4.3	3.1
	Post	27.6	39.4	42.0	22.9	9.3	21.6	15.9	2.4	0.7
	Change	30.9	34.1	37.0	42.7	24.3	6.4	8.5	1.9	2.4
P7	Pre	41.0	83.0	93.8	97.6	90.4	78.8	73.5	1.6	3.0
	Post	53.1	73.8	88.8	93.8	89.0	74.3	64.7	1.5	3.0
	Change	–12.1	9.2	5.00	3.8	1.4	4.5	8.8	0.1	0
P8	Pre	54.8	54.5	57.0	61.8	63.0	52.3	46.3	2.7	0
	Post	39.5	37.0	36.7	36.3	33.0	40.8	41.0	1.4	0
	Change	15.3	17.5	20.3	25.5	30.0	11.5	5.3	1.3	0

* Indicates a clinical case – indicates missing data.

¹ Assessed whilst looking at self in the mirror using a visual analogue scale.

² Participants asked to rate degree to which shape and weight influenced how she judged herself as a person using a VAS (at home and in the lab).

³ Participants asked to indicate frequency over previous 24 hours of checking body in mirror and avoiding checking in mirror because of possible distress (at home and in the lab).

Table 3. Mean and standard deviations of body image measures

Measure	Mean level baseline phase (SD)	Mean level intervention phase (SD)	Wilcoxon Signed Ranks Test
Anxiety	58.4 (19.2)	50.0 (26.2)	($Z = -1.96, p = .050$)
Feeling of fatness	74.0 (13.7)	48.6 (26.5)	($Z = -5.16, p < .001$)
Dissatisfaction	73.5 (13.9)	49.2 (29.2)	($Z = -5.72, p < .001$)
Believe negative thought	73.1 (21.8)	53.9 (31.3)	($Z = -5.51, p < .001$)
Importance of negative thought	66.6 (43.9)	22.6 (31.1)	($Z = -5.61, p < .001$)
Frequency of checking	5.27 (4.31)	3.43 (2.8)	($Z = -2.03, p = .043$)
Frequency of avoidance	2.0 (1.98)	1.29 (1.47)	($Z = -2.45, p = .014$)
Influence of shape	60.4 (21.06)	48.2 (24.7)	($Z = -2.73, p = .006$)
Influence of weight	56.2 (19.6)	47.2 (26.7)	($Z = -2.35, p = .019$)
Body size estimation	104.8 (5.38)	101.75 (6.05)	($Z = -1.1, p = .263$)

was that one participant (P4) made no gains during the intervention phase, and deteriorated on a number of measures. This non-clinical participant reported that she had not been able to practise the mirror retraining technique at home (she was a non-clinical case). Previous research has highlighted the importance of homework compliance in predicting within treatment change and treatment outcome in other psychological disorders such as depression (Addis and Jacobson, 2000).

The statistical tests showed that the effects of the intervention were significant for anxiety, feelings of fatness, dissatisfaction with body, belief in the identified negative thought, importance of the identified thought, influence of shape and influence of weight on self-evaluation, checking and avoidance. The results of these statistical analyses indicate that although large differences were not seen for many participants on most of the outcome measures, the smaller changes that were more consistently apparent produced an effect that overall was statistically significant. This ability of statistical tests to identify small but reliable changes is one of the benefits of using statistical as well as visual analysis of single case data (Todman and Dugard, 2001). The perceptual aspect of body size estimation did not change as a function of the intervention, however, and the participants demonstrated a high level of accuracy in this task generally.

The results of the current study therefore suggest that this form of CBT is a promising intervention that warrants further investigation. However, the ability to assess the impact of the intervention on individuals, made possible by the use of single case methodology, showed that although overall the intervention produced consistent therapeutic effects, these were only large for some individuals. Hence it is clear that the intervention would benefit from development to improve the size and consistency of its effects. One area that has been identified as a potentially fruitful focus for such development is practice. However, the suggestion that homework is critical is speculative at this stage, since it is based on the outcome of only one individual.

The brief cognitive-behavioural intervention was designed to be suitable as an additive component to CBT for eating disorders for those patients who warrant more focused treatment of their extreme shape concern. Although the current study has provided support for the ability of the intervention to reduce extreme shape concern, this is based on a sample that included only three patients who had clinical eating disorders. In addition, no follow-up data were provided. Moreover, the extent to which the intervention is suitable for inclusion in a

comprehensive treatment protocol, and at which point such an intervention is best implemented, was not addressed. It is likely that it would be most beneficial when body shape concern remains high after using standard evidence-based methods. The short duration (2 hrs) of the intervention, and the use of techniques similar to those used in evidence-based CBT for bulimia nervosa suggest that the intervention is likely to be compatible with the leading psychological treatment for bulimia nervosa. Before these factors can be systematically investigated, the therapeutic effects of the intervention must be conclusively demonstrated in a larger controlled study.

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