

Body-Related Behaviours and Cognitions in the Eating Disorders

Reena Amin

Institute of Psychiatry, King's College London, and Camden and Islington NHS Foundation Trust, UK

Clara Strauss

University of Surrey and Sussex Partnership NHS Foundation Trust, UK

Glenn Waller

University of Sheffield, UK

Background: Different body-related behaviours and cognitions (checking, avoidance, comparison, display) have been shown to be related to unhealthy eating attitudes in a non-clinical sample. **Aims:** This study tested whether the use of body-related behaviours is higher in eating-disordered women than in non-clinical women. It also examined whether the use of body-related behaviours is associated with psychological characteristics (particularly anxiety, depression and narcissistic characteristics), controlling for age and eating pathology. **Method:** Ninety-nine adult women with diagnosed eating disorders (mean age = 30.4 years, $SD = 9.44$; mean body mass index = 21.9, $SD = 6.39$) completed standardized measures of eating pathology, anxiety and depression, narcissistic characteristics, and body-related behaviours and cognitions. **Results:** The Body-Related Behaviours Scale (BRBS) had acceptable levels of internal consistency in this group, and its scales were only weakly to moderately correlated with each other. There were no differences between diagnostic groups, but the clinical group had higher scores than a previous non-clinical sample on three of the scales. The four body-related behaviours had different patterns of association with eating pathology, depression and narcissistic features. However, anxiety was not associated with BRBS scores. **Conclusions:** The findings support the importance of a wide range of body-related behaviours and cognitions in understanding the eating disorders. However, the lack of an association with anxiety is counter to the suggestion that the various behaviours measured by the BRBS reflect safety behaviours on the part of sufferers. Depression and narcissistic features might be more important in maintaining such behaviours.

Keywords: Body image, behaviours, eating disorders.

Reprint requests to Reena Amin, iCOPE, Islington Psychological Therapies and Wellbeing Service, Camden and Islington NHS Foundation Trust, Hill House, 5th Floor, 17 Highgate Hill, London N19 5NA, UK. E-mail: reena.amin@candi.nhs.uk

Introduction

Body image concerns and disturbance play a vital role in the onset, maintenance and relapse of the eating disorders (e.g. Keel, Dorer, Franko, Jackson and Herzog, 2005; Striegel-Moore and Cachelin, 2001). There are several behavioural manifestations of poor body image, which maintain eating psychopathology (e.g. Meyer, McPartlan, Rawlinson, Bunting and Waller, 2011; Mountford, Haase and Waller, 2006). These include body checking, body avoidance, body comparison and body display (e.g. Cahill and Mussap, 2007; Meyer et al., 2011; Shafran, Fairburn, Robinson and Lask, 2004). Body checking involves the repeated critical scrutiny and checking of one's body, shape and weight (e.g. weighing oneself, using a mirror, using the fit of clothes, pinching skinfolds, measuring specific parts of the body). Body avoidance includes covering up mirrors, refusing to be weighed, bathing clothed, and wearing baggy clothes to hide one's body shape. Body comparison involves forming judgements of oneself through comparison with others. Finally, body display is the deliberate visual presentation of one's body shape, weight and size (e.g. wearing tight and revealing clothing that demonstrates one's body and its emaciation). The roles of body checking and body avoidance in the eating disorders have been researched substantially (e.g. Grilo et al., 2005; Reas, Grilo, Masheb and Wilson, 2005; Reas, Whisenhunt, Netemeyer and Williamson, 2002; Shafran et al., 2004; Shafran, Lee, Payne and Fairburn, 2007). Although body comparison and body display have been less researched, there is some evidence that these behaviours are associated with eating pathology (e.g. Cahill and Mussap, 2007; Meyer et al., 2011).

Each of these body-related behaviours and associated cognitions have been described as safety behaviours (Meyer et al., 2011), adopted to manage the anxiety and low mood caused by the underlying cognitions and beliefs related to body, weight and shape (e.g. "If I don't check my weight all the time, it will increase"). In support of this model, there is some evidence that body-related behaviours and cognitions are linked to anxiety and depression (e.g. Cahill and Mussap, 2007; Haase, Mountford and Waller, 2007; Meyer et al., 2011; Shafran et al., 2004). However, it is important to understand these relationships more clearly, in order to refine cognitive behavioural treatment to address the way in which these behaviours maintain eating psychopathology. An additional mechanism that might merit consideration is narcissism (including narcissistic defences), as this has been linked to body image and checking behaviours in the eating disorders (Waller, Sines, Meyer and Mountford, 2008). The potential role of narcissistic characteristics in body avoidance, body comparison and body display also needs to be considered. As a strategy for protecting threatened self-esteem, it can be hypothesized that narcissistic features increase the risk of using such behaviours to reduce negative self-perception.

To summarize, there is substantial literature on the role of body checking and body avoidance in the maintenance of eating psychopathology. However, little research has focused on body comparison and body display. Further to this, little is known about the psychological characteristics underpinning these behaviours, though it can be hypothesized that anxiety, depression and narcissistic characteristics might play a particular role in their aetiology and maintenance. Therefore, this study examines the associations of four body-related behaviours and cognitions (as measured using the Body Related Behaviour Scale; Meyer et al., 2011) with eating psychopathology, anxiety, depression and narcissistic characteristics. It is hypothesized that there will be higher levels of those four body-related behaviours and cognitions in eating disorder sufferers than among non-clinical individuals, and that those body-related

behaviours and cognitions will be associated with anxiety, depression and narcissistic characteristics.

Method

Participants

The sample consisted of 99 eating-disordered women (28 with anorexia nervosa, 46 with bulimia nervosa, and 25 with eating disorder not otherwise specified), who were recruited from a specialist outpatient eating disorders service. Each was diagnosed using DSM-IV criteria (American Psychiatric Association, 1994) by a member of the service's multi-disciplinary assessment team, trained in diagnosis (with any uncertainty resolved through team discussion). The women had a mean age of 30.4 years ($SD = 9.44$), a mean weight of 60.2 kg ($SD = 19.3$), a mean height of 1.66 m ($SD = 1.74$), and a mean body mass index ($BMI = \text{weight}[\text{kg}]/\text{height}[\text{m}]^2$) of 21.9 ($SD = 6.39$). A further four individuals who agreed to participate were excluded from the study (three were male, and one failed to complete the measures).

Procedure

The study obtained ethical approval from the NHS Research Ethics Committee. Each participant completed four self-report measures, either while on the waiting list for therapy or at the start of treatment (to avoid any impact of treatment). The measures, information sheet and consent form were posted to the participants on the waiting list, whereas those who were starting treatment completed the measures at the eating disorders service. All participants were weighed and had their height recorded objectively.

Measures

Four self-report measures were administered, assessing eating psychopathology, body-related behaviours and associated cognitions, anxiety and depression, and narcissistic characteristics.

Eating Disorder Examination-Questionnaire Version 6 (EDE-Q; Fairburn, 2008). The EDE-Q is a widely-used measure of eating attitudes (eating concern, weight concern, shape concern, and restraint) and behaviours (e.g. bingeing, vomiting). It is a 28-item self-report questionnaire, with 22 items that measure attitudes and six items that address behavioural frequency. It can be used with clinical and non-clinical populations, and has been extensively validated with both of these populations (e.g. Fairburn and Beglin, 1994; Mond, Hay, Rodgers, Owen and Beumont, 2004), and has satisfactory psychometric properties (e.g. Peterson et al., 2007). The overall EDE-Q score (mean of the four attitudinal scores) was used in this study. Higher scores indicate a greater level of eating psychopathology. The participants' overall mean score on the EDE-Q was 3.77 ($SD = 1.54$), consistent with clinical norms (e.g. Mond, Hay, Rodgers and Owen, 2006).

Body-Related Behaviours Scale (BRBS; Meyer et al., 2011). The BRBS measures behaviours and associated cognitions relating to four domains: Body Checking (e.g. "I spend time in front of the mirror, checking that I am not gaining weight"); Body Avoidance (e.g. "I

avoid seeing myself naked”); Body Comparison (e.g. “Other people’s appearance is a good way of determining if I look acceptable”); and Body Display (e.g. “I like others to be able to see my bones through my skin”). Higher mean scores indicate greater levels of those behaviours and cognitions. The BRBS has been shown to have acceptable levels of internal consistency and clinical validity in a non-clinical group (Meyer et al., 2011). The participants’ mean scores on the BRBS scales are reported in Table 1.

O’Brien Multiphasic Narcissistic Inventory (OMNI; O’Brien, 1987). The OMNI measures three elements of pathological narcissism: Narcissistic Personality (core narcissism, grandiosity, entitlement); Poisonous Pedagogy (one should control and direct others – “bad you” defence); and Narcissistically Abused Personality (placing others’ needs before one’s own and feeling aggrieved – “poor me” defence). Higher scores indicate a greater level of narcissistic characteristics. The OMNI has acceptable psychometric properties in a range of groups, including the eating disorders (Brunton, Lacey and Waller, 2005a, b; O’Brien, 1987, 1988; Waller et al., 2008). The participants’ mean scores on the OMNI subscales were: Narcissistic Personality – $M = 6.42$ ($SD = 2.65$); Poisonous Pedagogy – $M = 6.38$ ($SD = 3.03$); Narcissistically Abused Personality – $M = 5.72$ ($SD = 2.13$). These high levels of narcissistic characteristics are consistent with previous eating-disordered samples (Waller, Sines, Meyer, Foster and Skelton, 2007).

Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983). The HADS measures anxiety and depression. Higher scores indicate greater levels of anxiety and depressive symptoms. The HADS has good psychometric properties among both clinical and non-clinical groups (Bjelland, Dahl, Haug and Neckelmann, 2002; Zigmond and Snaith, 1983). The participants’ mean Anxiety score was 11.8 ($SD = 4.56$), and their mean Depression score was 8.21 ($SD = 4.31$), indicating mild and moderate levels of anxiety and depression respectively.

Data analysis

The internal consistency of the BRBS scales was calculated using Cronbach’s alpha, and Kolomogorov-Smirnov tests were used to assess the distribution of the data. Levels of body-related behaviours were compared across eating disorder diagnoses using MANOVA and post hoc pairwise comparisons. One-sample *t*-tests were used to compare the mean BRBS scores of this sample to a nonclinical sample from a previous study (Meyer et al., 2011). Bivariate correlations (Pearson’s *r*) were used to test the intercorrelations of the BRBS scales and their correlations with other variables. However, such a use of multiple correlations creates the risk of Type 1 error, and it is possible that any shared variance of the BRBS scales would mean that not all of those scales are truly associated with the other variables (eating attitudes, anxiety, depression, narcissistic characteristics, age and BMI). Therefore, to account for both of those concerns, multiple regression analysis was used to determine the core set of psychosocial measures (EDE-Q, HADS and OMNI scales, age, BMI) that were associated with the dependent variables of the different body-related behaviours and cognitions (BRBS scales). A stepwise method was used, in keeping with the need to determine any impact of HADS and OMNI scales over and above the impact of age, BMI and EDE-Q scores. Therefore, for each dependent variable (BRBS scale), age, BMI and EDE-Q scores were entered in the first block, and the HADS and OMNI scales were entered in the second block.

Table 1. Body-Related Behaviour Scale scores in an eating-disordered sample, including psychometric properties of the scales

	Anorexia Nervosa (<i>N</i> = 28)		Bulimia Nervosa (<i>N</i> = 42)		Ednos (<i>N</i> = 25)		Whole sample		Cronbach's Alpha	K-S test Z
	Mean	(<i>SD</i>)	Mean	(<i>SD</i>)	Mean	(<i>SD</i>)	Mean	(<i>SD</i>)		
Body-Related Behaviours Scale										
Checking	1.66	(0.88)	1.67	(0.83)	1.59	(0.95)	1.66	(0.87)	0.804	0.82 ^{NS}
Avoidance	1.65	(0.98)	1.81	(1.12)	2.26	(1.21)	1.89	(1.12)	0.930	0.81 ^{NS}
Comparison	1.97	(0.93)	2.61	(1.06)	2.41	(1.01)	2.38	(1.04)	0.851	1.01 ^{NS}
Display	1.02	(0.52)	0.92	(0.61)	1.00	(0.63)	0.97	(0.59)	0.645	1.21 ^{NS}

Results

Levels of body-related behaviours in the eating disorders

Table 1 shows the mean BRBS scores of the eating-disordered sample, both by diagnosis and for the group as a whole. An initial MANOVA showed no difference between the diagnostic groups on any of the scales ($p > .10$) apart from Body Comparison ($F = 3.45$, $p < .04$). However, when controlling for BMI in a MANCOVA, the between-group difference disappeared ($F = 1.35$, $p > .25$). Thus, the sample can be treated as a transdiagnostic group for further analyses. Table 1 also shows the results of Kolmogorov-Smirnov tests for normality of distribution and Cronbach's test for internal consistency. Those tests demonstrate that the BRBS has adequate psychometric properties, although the internal consistency (alpha) of the Body Display scale was below the level that is normally desirable.

One-sample *t*-tests were used to compare the mean BRBS scores of this clinical sample with those of the female part of the non-clinical sample reported by Meyer et al. (2011). That non-clinical sample consisted of 162 women from undergraduate, postgraduate and non-student populations. They had a mean age of 24.0 years and a mean BMI of 22.5, meaning that they were somewhat younger than the clinical group and had a higher BMI. The groups differed significantly on the Body Checking scale (non-clinical $M = 1.00$; $SD = 0.69$; $t = 7.48$, $p < .001$), the Body Avoidance scale (non-clinical $M = 0.65$; $SD = 0.62$; $t = 10.9$, $p < .001$) and the Body Comparison scale (non-clinical $M = 1.22$; $SD = 0.87$; $t = 11.1$, $p < .001$), but not on the Body Display scale (non-clinical $M = 0.87$; $SD = 0.50$; $t = 1.64$, $p > .10$). Therefore, the clinical group had more unhealthy overall levels of body checking, comparison and avoidance, but not display (though it is possible that this non-significant difference was partially influenced by the lower internal consistency of that BRBS subscale).

Bivariate associations of BRBS scales with other variables

Table 2 shows the inter-correlations of the BRBS subscales, and their correlations with the other variables (two-tailed Pearson's *r* in all cases). There were weak to moderate correlations

Table 2. Bivariate intercorrelations of body-related behaviours (BRBS scales), and associations of body-related behaviours with patient characteristics (age, BMI), eating attitudes (EDE-Q scores), anxiety and depression (HADS scores), and narcissistic features (OMNI scores)

BRBS:	BRBS scales			
	Checking	Avoidance	Comparison	Display
Avoidance	.110	–	–	–
Comparison	.499**	.325**	–	–
Display	.376**	–.165	.253*	–
Core characteristics:				
Age	–.267**	.222*	–.074	–.051
BMI	–.103	.271**	.207	–.118
EDE-Q	.559**	.498**	.580**	.259*
HADS scales:				
Anxiety	.272**	.345**	.091	.207
Depression	–.037	.487**	.063	–.076
OMNI scales:				
Narcissistic personality	.268**	.039	.454**	.260*
Poisonous pedagogy	.163	.155	.233*	.230*
Narcissistically abused	.331**	.468**	.329**	.176

between the BRBS subscales, showing that they measure constructs that do not overlap excessively.

The four BRBS subscales were all associated with eating psychopathology (EDE-Q total scale), supporting its construct validity. The weak or non-significant correlations between the subscales and BMI suggest that the BRBS subscales measure transdiagnostic features across the eating disorders. Comparison and display behaviours were associated with narcissistic characteristics, but not with depression or anxiety. In contrast, body checking and avoidance were associated with a mixture of OMNI and HADS scales. However, it is important to note that this pattern of individual correlations does not take account of the intercorrelation of the different variables, and also inflates the risk of type 1 error. Therefore, it is necessary to use multivariate statistics to determine the core variables associated with body-related behaviours.

Determining key variables associated with body-related behaviours

In order to determine the key variables that predicted each of the body-related behaviours, stepwise multiple regression analyses were used (accounting for age and eating characteristics before assessing the role of other variables). The significant associations were as follows:

Body Checking. There was a significant overall association ($F = 17.0$, $p < .001$, explained variance [adjusted R^2] = 36.9%), due to significant effects of EDE-Q scores ($t = 6.56$, $\beta = .596$, $p < .001$) and age ($t = 2.26$, $\beta = -.205$, $p < .03$). There were no significant additional effects of BMI or of the OMNI or HADS scales ($p > .10$ in all cases). In other words, eating-disordered patients engage in more body checking if they have more disturbed eating attitudes, and less checking if they are older.

Body Avoidance. Again, there was a significant overall association ($F = 15.4, p < .001$, explained variance = 46.7%), due to significant effects of EDE-Q scores ($t = 2.63, \beta = .242, p < .01$), BMI ($t = 2.47, \beta = .213, p < .02$), Narcissistically Abused Personality ($t = 3.33, \beta = .299, p < .001$), and Depression ($t = 3.04, \beta = .287, p < .005$). There were no significant effects of age or any of the other scales ($p > .30$ in all cases). In summary, eating-disordered patients avoid their body more if they have more disturbed eating attitudes, are heavier, are more depressed, and have a greater degree of the “poor me” narcissistic defence.

Body Comparison. There was a significant overall association ($F = 16.7, p < .001$, explained variance = 43.4%), due to significant effects of EDE-Q scores ($t = 6.00, \beta = .534, p < .001$) and Narcissistic Personality ($t = 2.78, \beta = .240, p < .01$). No other variable was associated with this scale ($p > .07$ in all cases). Eating-disordered patients make more comparisons with others if they have more disturbed eating attitudes and are more egocentric in nature.

Body Display. This BRBS subscale was also significantly linked to these variables ($F = 2.57, p < .05$, explained variance = 7.2%). This was due to an association with a single independent variable - Narcissistic Personality ($t = 2.00, \beta = .222, p < .05$). No other variable was associated with this BRBS scale ($p > .06$ in all cases). Eating-disordered patients reported displaying their body more if they scored higher on the OMNI scale that measures core narcissistic traits.

In summary, while eating attitudes were the strongest predictor of most of the body-related behaviours, BMI, depression and narcissistic characteristics also play a role in predicting these behaviours. It is important to note that anxiety was not related to these behaviours in this eating-disordered sample.

Discussion

This study has examined the levels of body-related behaviours and cognitions in the eating disorders, and has examined the links of those behaviours with eating pathology, anxiety, depression and narcissistic characteristics. Patients with eating disorders had higher levels of body checking, avoidance and comparison than a comparable non-clinical population from a previous study (Meyer et al., 2011). In contrast, body display did not differ between these groups.

As anticipated, all four body-related behaviours were associated with eating psychopathology, which is consistent with the results from a non-clinical sample (Meyer et al., 2011). However, while depression showed links to some of the body-related behaviours and cognitions, anxiety did not. This lack of association between body-related behaviours and anxiety is inconsistent with previous research (e.g. Haase et al., 2007), but might challenge the notion that these are anxiety-based safety behaviours. It might be hypothesized that the lack of an association between anxiety and the use of the body-related behaviours indicates that those behaviours are so effective that anxiety is effectively lowered to non-pathological levels. However, an alternative possibility is that these findings bear on the maintenance of the eating disorders, and that anxiety plays a stronger role in the aetiology of these behaviours than in their maintenance. Webb et al. (2011) have suggested that anxiety in eating situations manifests in many ways, and that patients use a very diverse set of behaviours to cope with that anxiety. Furthermore, they suggest that individuals settle on a relatively limited range of anxiety reduction strategies, rarely substituting them with alternative behaviours. Therefore,

it is possible that the body-related behaviours began as a response to anxiety, but that they do not serve to reduce anxiety as the disorder continues, with other behaviours being the consistent means of attempted anxiety management. The association with depression might indicate more of a long-term helpless response to negative self-perception, rather than there being evidence of an anxiety-based safety behaviour. This hypothesized development across time should be the focus of future research.

There were consistent links between the body-related behaviours and narcissistic characteristics, although the pattern of associations differed across the body-related behaviours. Given the strong links to the narcissistically-abused (“poor me”) defence, it is important to consider body-related behaviours and cognitions as a possible defence against a threatened self-esteem rather than an act of grandiosity and entitlement.

Although further research is needed to tease apart cause and effect in the relationship between body-related behaviours and eating psychopathology, from a clinical perspective, these findings support the stress in existing body image treatments (e.g. Fairburn, 2008; Waller, Cordery et al., 2007) on the use of the body-related behaviours of checking, avoidance and comparison in order to address eating pathology. That work might involve the use of exposure with response prevention and behavioural experiments in order to reduce body avoidance. In contrast, it might be necessary to use schema-level work to address the narcissistic characteristics, and in particular the “poor me” defence that might underlie the body-related behaviours and cognitions of avoidance, comparison and display. The potential benefits of adding these elements to CBT interventions for the eating disorders should be the focus of future research.

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