

Body checking and avoidance among behavioral weight-loss participants

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Abstract

The present study examined the psychological and weight-related correlates of body checking and avoidance behaviors in individuals who have lost weight through obesity treatment. Among 185 individuals in behavioral weight-control treatment, the prevalence of body checking and avoidance behavior was assessed, as well as the relationship of checking and avoidance to attitudinal disturbances, weight loss, and perception of struggling in treatment. Checking and avoidance were frequent, and they correlated significantly with higher overvaluation of shape and weight, lower self-esteem, greater body dissatisfaction, higher fear of fat, and the perception of greater struggling in weight-loss treatment. Checking was inversely correlated with the percentage weight lost in treatment and BMI lost but not related to pre-treatment or current BMI. Thus, body checking and avoidance behaviors were associated with psychological disturbances and poorer treatment outcome.

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Introduction

Among obese individuals, greater body image dissatisfaction is associated with lower self-esteem, more depressive symptoms (Foster, Wadden, Vogt, & Brewer, 1997; Grilo, Wilfley, Brownell, & Rodin, 1994; Sarwer, Wadden, & Foster, 1998), and greater internalization of society's emphasis on the importance of physical appearance (Matz, Foster, Faith, & Wadden, 2002). Because of the significant consequences of negative body image in obese individuals, it is important to understand the nature and correlates of body dissatisfaction among individuals who are or who have

been overweight (Foster & Matz, 2002; Schwartz & Brownell, 2004). Weight loss appears to improve body satisfaction, at least in the short term (Adami et al., 1998; Foster et al., 1997). However, body image also may worsen again with weight regain (Foster et al., 1997). Less is known about the nature of body dissatisfaction among individuals who have maintained weight losses over longer periods of time. Research comparing formerly overweight individuals who have lost weight with overweight individuals who have not lost weight or with never-overweight individuals suggests that “vestigial” body disparagement may persist following weight loss (Annis, Cash, & Hrabosky, 2004; Cash, Counts, & Huffine, 1990), particularly in those who have had early-onset obesity (Adami et al., 1998).

Body checking and avoidance of exposure to one's body may be a common behavioral manifestation of body image concerns across a number of different clinical populations. Frequent body checking and

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avoidance have been documented and shown to be associated with high shape and weight concerns among individuals with obesity or extreme obesity (Grilo et al., 2005), overweight and obese patients with binge eating disorder (BED; Reas, Grilo, Masheb, & Wilson, 2005; Reas, White, & Grilo, 2006), and patients with anorexia nervosa, bulimia nervosa, and atypical eating disorders (American Psychiatric Association, 2000; Shafran, Fairburn, Robinson, & Lask, 2004). Obese treatment seekers were significantly more likely than non-obese controls to report camouflaging their appearance with clothing and avoiding looking at their body on more than half the days of the month (Sarwer et al., 1998). Some research suggests that obese individuals may use avoidance as a coping technique to deal with weight stigma (Myers & Rosen, 1999) and loneliness (Hörchner, Tuinebreijer, Kelder, & van Urk, 2002).

Checking and avoidance behaviors may be associated with impaired functioning or psychopathology in obese individuals. For example, among obese patients and controls, avoidance of both mirrors and sexual encounters correlated highly with responses to other items in a scale assessing obesity-related quality of life, and scale scores showed more impairment among obese patients (Kolotkin, Crosby, Kosloski, & Williams, 2001). Body checking was associated with self-esteem and depressive symptoms in treatment-seeking obese individuals with BED (Reas et al., 2006). Checking and avoidance may prevent individuals from disconfirming their worst fears about their body shape and weight (Shafran et al., 2004). Body checking and avoidance could serve to maintain dysfunctional attitudes about the body by confirming patients' belief in the necessity of engaging in these behaviors and "the belief that one should fear fatness" (Williamson, White, York-Crowe, & Stewart, 2004, p. 715). Body checking and avoidance behaviors may be associated with increased importance placed on shape and weight in one's self-evaluation. This construct is often called overvaluation of shape and weight (and is considered a core aspect of eating disorder psychopathology; Fairburn, Cooper, & Shafran, 2003).

The relationship between checking and avoidance behaviors, psychopathology, and weight loss may be particularly important for individuals who are attempting or maintaining behavior change as part of obesity treatment. In individuals with eating disorders, weight checking appears to motivate dietary restraint (Reas et al., 2005; Shafran et al., 2004). However, it is unknown whether checking might influence actual weight change. Just as patients with eating disorders may use information gleaned from body checking to assess their success or failure at shape and weight

change (Fairburn, Shafran, & Cooper, 1999), so might patients with obesity. This information and the ensuing body dissatisfaction could potentially motivate weight loss (e.g., Heinberg, Thompson, & Matzon, 2001). It is also possible that patients may check their shape frequently to assess and reinforce positive changes when they are successfully losing weight, but avoid exposure to their body shape when they are not losing weight.

However, the information gained from body checking may often be inaccurate, serving merely to increase preoccupation with shape and weight. It may also induce feelings of failure at weight loss. As proposed by Reas et al. (2005), repeated body checking may magnify perceived appearance flaws or excess weight, which may impede weight-loss efforts by discounting actual success at weight loss. This discounting could in turn interfere with actual success at weight loss and maintenance, as self-efficacy is a determinant of weight-loss maintenance (Byrne, 2002). Like other expressions of body image disturbance, body checking and avoidance may therefore be important targets of change during or after weight-loss treatment (Hrabosky & Cash, 2007). The possible presence and prevalence of "vestigial" avoidance and checking behaviors among individuals who have lost weight are unknown.

The purpose of the present study was to extend previous research by examining the correlates of body checking and avoidance behaviors in a sample of individuals who have lost weight through behavioral treatment. It was predicted that checking and avoidance behaviors would be associated with the overvaluation of shape and weight. It was also predicted that these behaviors would be associated with body dissatisfaction, self-esteem, and fear of fat. This study also examined the relationship of checking and avoidance behaviors with actual weight lost and with the perceptions of success and struggling in weight-loss treatment. Finally, the association of checking and avoidance with history of weight-based stigmatization was explored.

Method

Participants

Participants included 155 women and 30 men who were active participants in a self-help, continuing-care, behavioral group treatment program for obesity (the Trevoze Behavior Modification Program [TBMP]; see Latner et al., 2000; Latner & Wilson, 2007, for a description of the treatment and its effectiveness. This program does not include a focus on body image, or

avoidance and checking behaviors, as targets of treatment.) The mean (*SD*) age of participants was 55.5 years (13.7), and 96.4% were Caucasian. When they had begun treatment, participants' mean initial body mass index (BMI; kg/m²) was 33.24 (4.13). Their mean current BMI was 27.74 (3.36). On average, participants had lost 16.41% (6.84%) of their initial body weight (range = .55–36.71%). Participants had been in treatment for an average of 37 months (range = 2.5–232.0 months).

Measures

All participants currently enrolled in the treatment program were invited to participate by their program leaders. Self-report questionnaires, completed by participants at home and returned anonymously to program leaders, assessed information about weight, weight lost, and length of participation in treatment. Participants were also asked about their current perceived success and perceived struggling in the program: "In TBMP, I feel I am currently . . . (circle one)." Two sets of responses were given on a 5-point scale (1 = *very successful*, 5 = *very unsuccessful*) and (1 = *seriously struggling*, 5 = *not at all struggling*). Participants were administered two questions from the Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994), a self-report measure based on the Eating Disorder Examination interview (Fairburn & Cooper, 1993). These two items assess the overvaluation of weight and shape, with responses on a 7-point Likert scale (0 = *not at all*, 6 = *markedly*): "Over the past 4 weeks, has your weight influenced how you think about (judge) yourself as a person?" and "Over the past 4 weeks, has your shape influenced how you think about (judge) yourself as a person?" The validity of the use of these items to measure overvaluation of shape and weight has been supported in previous research (e.g., Hrabosky, Masheb, White, & Grilo, 2007).

The Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) is a 34-item, reliable and valid measure of satisfaction and concern with body shape using a 6-point response format ranging from *never* to *always* (sample item: "Have you felt ashamed of your body?"). For the purpose of this study, two items were used to assess body checking (item #30: "Have you pinched areas of your body to see how much fat there is?") and body avoidance (item #15: "Have you avoided wearing clothes which make you particularly aware of the shape of your body?"). Previous research has supported the convergent validity of these two items, which correlate strongly with the respective total scales and relevant subscales of the

Body Checking Questionnaire (BCQ; Reas, Whisenhunt, Netemeyer, & Williamson, 2002) and the Body Image Avoidance Questionnaire (BIAQ; Rosen, Sreb-nik, Saltzberg, & Wendt, 1991). The BSQ checking item correlated with the total BCQ scale and its specific body parts subscale (*r*-values of .70 and .71, respectively), and the BSQ avoidance item correlated with the total BIAQ scale and its clothing factor subscale (*r*-values of .74 and .73, respectively; Grilo et al., 2005; Reas et al., 2005). The remaining 32 items on the BSQ were used as a measure of overall body dissatisfaction; the checking and avoidance items were removed from this general measure.

The Goldfarb Fear of Fat Scale (GFF; Goldfarb, Dykens, & Gerrard, 1985) contains 10 items assessing fear of weight gain and obesity. Four-point responses range from *very true* to *very untrue* (sample item: "Becoming fat would be the worst thing that could happen to me"). It has good test-retest reliability (*r* = .88) and internal consistency (α = .85) and is able to distinguish between non-dieting women, repeat dieters, and women with frequent bingeing and purging (Goldfarb et al., 1985).

The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979) contains 10 items assessing global feelings of self-worth and self-esteem on a 4-point scale (*strongly agree* to *strongly disagree*; sample item: "All in all I am inclined to feel that I am a failure"). It has demonstrated good reliability and validity (Demo, 1985).

The Stigmatizing Situations Inventory (SSI; Myers & Rosen, 1999) assesses the lifetime frequency of 50 weight-related experiences of stigmatization that occurred to the respondent during the period when he or she was overweight. Responses are made on a 10-point scale ranging from *never* to *daily* (sample item: "Friends, acquaintances, co-workers, etc. making fun of your appearance"). It has good internal consistency (α = .95) and content validity (Myers & Rosen, 1999).

This study was approved by the Human Ethics Committee at the University of Canterbury, the institution of the investigator at the time of data collection.

Results

Prevalence and gender differences in body checking and avoidance

High levels of body checking and avoidance occurred in a substantial proportion of the sample: 28.2% said they "often," "very often," or "always" pinched areas of their body to check for fatness, and 41.2% said they "often," "very often," or "always"

avoided clothing that made them particularly aware of their shape. Men did not differ from women in their scores on checking ($M_s = 2.99$ vs. 2.72 for women and men), but women reported significantly higher rates of avoidance than men ($M_s = 3.56$ vs. 2.76 ; $t(176) = 3.14$, $p < .005$), replicating previous findings in other clinical samples (Grilo et al., 2005; Reas et al., 2005). (Because the BSQ was developed primarily for women, analyses involving the BSQ were additionally run while excluding men from the sample; this did not change the results, and thus men were retained.)

Relationship of checking and avoidance with psychological variables

Consistent with previous findings in other samples, body checking and avoidance were significantly correlated with overvaluation of shape and weight. As shown in Table 1, checking and avoidance were also both associated with higher fear of fat ($M = 24.38$, $SD = 5.22$) and body dissatisfaction ($M = 82.31$, $SD = 24.75$), and lower self-esteem ($M = 17.29$, $SD = 4.54$). Neither checking nor avoidance was associated with stigmatizing experiences. Avoidance and checking were significantly correlated with each other ($r(184) = .29$, $p < .001$). To determine whether checking and avoidance were uniquely related to overvaluation of shape and weight, semi-partial correlations were conducted. After partialing out the contribution of checking, the correlations between avoidance and the overvaluation of shape ($r_s = .28$, $p < .001$) and weight ($r_s = .22$, $p < .005$) were still significant. However, partialing out the contribution of avoidance caused the correlations of checking with shape and weight overvaluation to become no longer significant.

Relationship of checking and avoidance with weight and weight lost

Although neither checking nor avoidance behavior was correlated with pre-treatment BMI or current BMI, more checking was significantly associated with less weight lost in treatment, when described as either the percentage of initial weight lost or BMI lost, as shown in Table 2. Furthermore, greater checking and avoidance both were associated with lower success at achieving weight-loss goals. (This success was defined as the percentage of the participant's weight-loss goal that had been lost: weight lost divided by weight-loss goal, multiplied by 100). This association was not due to higher weight-loss goals among more frequent checkers or avoiders, as the correlations between weight-loss goals and checking ($r = -.12$) and avoidance ($r = .05$) were non-significant. Both checking and avoidance were significantly correlated with the perception of greater struggling in treatment, but neither checking nor avoidance was correlated with the perception of success in treatment. When partialing out the effects of actual percentage weight lost, the correlation between perceived struggling and avoidance was still significant ($r = .23$, $p < .01$), but the correlation between perceived struggling and checking was not ($r = .13$, $p = .13$).

To account for possible effects of length of treatment, correlations were examined between treatment length and all dependent variables. Only percent of goal lost was significantly correlated with treatment length ($r = .30$, $p < .001$). (Partial correlations of percent of goal lost with avoidance and with checking, controlling for treatment length, yielded correlations of a similar magnitude to those reported above; $r = .36$, $p < .001$, $r = .16$, $p = .07$, respectively.)

Table 1
Correlations of checking and avoidance behaviors with psychosocial and attitudinal variables

	Weight overvaluation	Shape overvaluation	Self-esteem	Fear of fatness	Body dissatisfaction	Stigmatization experiences
Body avoidance	.26***	.32***	.29***	.29***	.66***	.13
Body checking	.17*	.22**	.26***	.17*	.55***	.10

Note: Weight overvaluation was measured by question 56 of the Eating Disorders Examination Questionnaire (EDE-Q), shape overvaluation was measured by question 57 of the EDE-Q, self-esteem was measured by Rosenberg Self-Esteem Scale, fear of fatness was measured by the Goldfarb Fear of Fat Scale, body dissatisfaction was measured by Body Shape Questionnaire (BSQ), and stigmatization experiences were measured by Stigmatizing Situations Inventory. Body avoidance was measured by question 15 of the BSQ, and body checking was measured by question 30 of the BSQ.

* $p < .05$.

** $p < .005$.

*** $p < .001$.

Table 2
Correlations of checking and avoidance behaviors with weight-loss outcomes

	Current BMI	Pre-treatment BMI	BMI lost	Percentage weight lost	Percentage weight goal lost	Perceived success in treatment	Perceived struggling in treatment
Body avoidance	.11	.03	-.09	-.12	-.35***	.10	-.24**
Body checking	-.00	-.14	-.19*	-.18*	-.18*	-.03	-.15

Note: BMI = kg/m². Percentage weight lost is the amount of weight lost divided by pre-treatment body weight. Percentage weight goal lost is the amount of weight loss divided by participants' weight-loss goal (number of pounds over ideal weight), multiplied by 100. Perceived success and perceived struggling in treatment were measured on two 5-point Likert scales. Body avoidance was measured by question 15 of BSQ, and body checking was measured by question 30 of BSQ.

* $p < .05$.

** $p < .005$.

*** $p < .001$.

Relationships with overvaluation of shape and weight

Multiple regression analysis was used to determine the amount of variance in overvaluation of shape and weight that was accounted for by the psychological variables assessed, with all variables entered simultaneously (body checking, avoidance, self-esteem, fear of fat, and stigmatizing experiences; body dissatisfaction was not included because this construct too closely resembled the dependent variable). Four variables accounted for 21% of the variance in overvaluation of shape ($F(4, 175) = 11.93, p < .001$): body avoidance ($\beta = .20, t = 2.84, p < .005$), self-esteem ($\beta = .19, t = 2.52, p < .05$), stigmatizing experiences ($\beta = .18, t = 2.58, p < .05$), and fear of fat ($\beta = .16, t = 2.11, p < .05$). Three variables accounted for 19% of the variance in overvaluation of weight ($F(3, 177) = 13.47, p < .001$): self-esteem ($\beta = .27, t = 3.81, p < .001$), stigmatizing experiences ($\beta = .24, t = 3.49, p < .005$), and body avoidance ($\beta = .15, t = 2.13, p < .05$). To assess the relative variance in checking and avoidance accounted for by global body dissatisfaction and shape and weight overvaluation, multiple linear regression analyses also examined BSQ scores (excluding checking and avoidance items), shape overvaluation, weight overvaluation, and fear of fat as independent variables and checking and avoidance as dependent variables. Only BSQ had an independently significant beta value for checking ($R^2 = .31; F(4, 173) = 19.30, p < .001; \beta = .60, t = 7.91, p < .001$) and avoidance ($R^2 = .44; F(4, 174) = 33.75, p < .001; \beta = .65, t = 9.53, p < .001$).

Discussion

The present findings showed that body avoidance and checking are associated with self-esteem disturbance, fear of fat, and shape and weight overvaluation, among individuals in behavioral weight-loss treatment.

These findings are consistent with previous research linking general body dissatisfaction with low self-esteem in obese patients (Friedman, Reichmann, Costanzo, & Musante, 2002; Sarwer et al., 1998). Avoidance, in particular, was associated with shape and weight overvaluation above and beyond the contribution of checking, and it accounted for a significant amount of the variance in shape and weight overvaluation. These findings are consistent with previous research in other populations (Grilo et al., 2005; Reas et al., 2005; Shafran et al., 2004). The largest proportion of the variance in checking and avoidance was accounted for by global body dissatisfaction, suggesting that these may be behavioral manifestations of more general body dissatisfaction. Body dissatisfaction (as measured by the BSQ) predicted checking and avoidance, while neither shape nor weight overvaluation were significant predictors. The correlation between checking and avoidance suggests that these behaviors co-occur and may interact to help maintain one another.

Greater body checking was significantly associated with less weight lost in treatment, expressed as either the percentage of initial weight lost or BMI lost. Both body checking and avoidance were linked to participants' losing a lower proportion of their weight-loss goal and feeling they were struggling more in treatment. This perception could partly reflect frequent body checkers and avoiders' actual difficulty in achieving their treatment goals. However, the relationship between avoidance and perceived struggling was significant even beyond the contribution of actual weight lost, suggesting that avoidance could be related to psychological (e.g., self-efficacy) as well as behavioral (e.g., adherence to diet and exercise) aspects of weight loss.

The present findings suggest that even though body dissatisfaction has been proposed as a motivator of weight loss (Heinberg et al., 2001), checking is not

sufficient to prompt a consistent reduction of caloric intake relative to output, among individuals in behavioral weight-loss treatment. Persistent body checking and avoidance may undermine weight-loss self-efficacy (the belief that one is able to lose or maintain weight) by preventing individuals from disconfirming their fears of being fat and their belief that they must avoid certain clothes and check for body fat. This lack of self-efficacy may interfere with actual weight loss, which in turn may further reinforce low self-efficacy and maintain body avoidance and checking. It is also possible that for individuals with frequent checking and avoidance, it may be harder to lose and maintain weight because of two opposing pressures on their eating behavior: excessively strict dieting and disinhibition (which are correlated with checking and avoidance, respectively; Reas et al., 2005).

It is also possible that those who have less success at weight loss may engage in more frequent checking as a form of self-monitoring to help them in losing weight. Other forms of regular self-monitoring, such as weighing oneself or recording food intake, can be helpful as strategies to control body weight and eating patterns (Latner & Wilson, 2002; Wing, Tate, Gorin, Raynor, & Fava, 2006). However, checking may represent a misguided attempt to engage in accurate or helpful self-monitoring. Individuals who lose less weight might also engage in frequent checking behaviors in response to anxiety about not meeting their treatment goals.

Although a history of greater weight-based stigmatization was not related to avoidance and checking, it accounted for a significant amount of variance in two core elements of eating disorder psychopathology, overvaluation of both shape and weight. This finding is consistent with previous literature showing that personal experiences of weight-related bias or teasing are associated with body dissatisfaction and eating-related disturbances (Annis et al., 2004; Grilo et al., 1994; Myers & Rosen, 1999; Thompson, Coover, Richards, Johnson, & Cattarin, 1995). The present results suggest that a history of weight stigma should be examined in future research as a possible risk factor for overvaluation of shape and weight, as it has been for body dissatisfaction and eating disturbances.

A limitation of this study is its cross-sectional design, which does not allow conclusions to be drawn about the direction of causality between variables. This is particularly true of the findings related to weight loss. Prospective research is needed to examine body checking and avoidance behaviors as predictors of shape and weight overvaluation, and weight change,

over time. Research is also needed on the potential changes in checking and avoidance behaviors over the course of weight-loss treatment. Experimental research is also recommended to address questions of causality. For example, a recent laboratory-based study showed that the immediate effects of body checking were increased body dissatisfaction and feelings of fatness (Shafran, Lee, Payne, & Fairburn, 2007). Treatment studies could compare weight control therapies that address or do not address patients' avoidance and checking problems.

Another important limitation is the single-item measurement of checking and avoidance behaviors. Previous research has demonstrated that these items are closely correlated with multidimensional measures of checking and avoidance and can thus serve as valid indices of these behaviors (Grilo et al., 2005; Reas et al., 2005). However, a wide range of checking and avoidance behaviors is common (e.g., mirror gazing, mirror avoidance) and has been found to be associated with eating psychopathology (Rosen et al., 1991). Some of the participants in the present study might not have engaged in the particular behaviors assessed here but might have engaged in other checking and avoidance behaviors. This limitation restricts our ability to generalize these findings to all forms of body checking and avoidance. In order to address this significant psychometric consideration, future research should examine these constructs using multiple-item instruments.

Findings from the current sample may not be generalizable to other populations of individuals in weight-loss treatment, as the sample consisted primarily of Caucasians and women, most of whom have experienced success at weight loss. However, the examination of individuals who have succeeded in losing and maintaining weight is also a study strength, as this approach allows for the determination of the psychological correlates of success (as in other studies of successful weight losers, e.g., Butryn, Phelan, & Wing, 2007; Klem, Wing, McGuire, Seagle, & Hill, 1997). The present study relied on self-reported weight and weight-loss data. However, participants are weighed on a balance-beam scale by treatment program staff members at weekly meetings, and their weight and weight losses are recorded on cards which participants keep with them and bring to meetings.

Body checking and avoidance are behaviors that are associated with psychological difficulties. These behaviors and other manifestations of body image disturbance can be effectively treated through cognitive-behavior therapy (Hrabosky & Cash, 2007), and it has

been proposed that a good time to address them would be following weight loss, in order to enhance weight maintenance (Cooper & Fairburn, 2002). The present results support this proposal, as they suggest that greater weight loss over time is associated with less frequent body checking and avoidance.

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