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ORIGINAL ARTICLE

# Mediation of the relationship of behavioural treatment type and changes in psychological predictors of healthy eating by body satisfaction changes in women with obesity

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## KEYWORDS

Psychosocial;  
Behavioural;  
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## Summary

**Problem:** Psychological correlates of both short- and long-term weight loss are poorly understood. Changes in satisfaction with one's body might serve to motivate healthier eating by mediating treatments' effect on psychological factors previously suggested to be associated with weight loss.

**Methods:** Women with obesity (age  $48.6 \pm 7.1$  years; BMI  $35.4 \pm 3.3$  kg/m<sup>2</sup>) were randomly assigned to social cognitive theory-based weight-management treatments that were either group sessions emphasizing physical activity-derived self-regulation (experimental;  $n = 53$ ) or review of a written manual and phone support (comparison;  $n = 54$ ). Changes in weight, physical activity, body satisfaction, negative mood, and self-efficacy and self-regulation for controlled eating were assessed over 3, 6, 12, and 24 months.

**Results:** The experimental treatment was associated with significantly more favourable changes across variables. Over 6, 12, and 24 months, body satisfaction change mediated relationships between treatment type and changes in each of the psychological predictors of healthier eating (mood, self-efficacy, self-regulation). Reciprocal, mutually reinforcing, relationships between changes in body satisfaction and those psychological predictors were also found. Increased physical activity was associated with improved body satisfaction, even after controlling for weight changes.

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*Conclusion:* Findings increased understandings of the role of body satisfaction in improving psychological predictors of healthier eating over both the short- and longer-term. Results also suggested that body satisfaction could be improved through increased physical activity, irrespective of change in weight. Although results were limited to women with class 1 and 2 obesity, findings on interactions of psychological factors associated with eating changes have implications for the architecture of improved behavioural treatments.

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## Introduction

For decades, behavioural weight-loss treatment have consistently yielded poorly sustained results [1,2]. Improvements are urgently sought [3]. It has been posited that a more comprehensive understanding of psychosocial correlates of both short- and long-term weight loss are needed to improve the architecture of behavioural treatments [4]. Baker and Brownell [5] proposed a model where exercise impacts mood, self-efficacy, coping, well-being, self-esteem, and body image which, in turn, impacts commitment, motivation, and changes in exercise and diet. In a series of studies, Annesi and his colleagues extended the above-referenced model and demonstrated that exercise treatment-induced changes in mood, self-regulation, and self-efficacy predict a large portion of the variance in controlled, healthy eating over both the short [4,6] and long term [7] in women with obesity. Research confirms the presence of a strong association between physical activity and psychological improvements [8], which might partially explain why exercise is a primary predictor of maintained weight loss [9,10].

Most individuals with obesity, especially women, are unsatisfied with their physical appearance [11]. The perceived efficacy of a weight-loss program is, therefore, often manifested by improved feelings about one's body [11]. Almost all women desiring weight loss do so through trying to adjust their eating [12]. One study suggested that when changes in body satisfaction and physical self-concept was added to mood, self-regulation, and self-efficacy changes in the prediction of weight-loss success over 6 months, accuracy was not significantly strengthened [13]. However, a recent meta-analysis concluded that body image influences both self-regulation and psychological well-being [14]. This, in turn, affects, "... the capacity for an individual to maintain weight loss." [14, p. 10]. Possibly, treatment-induced changes in body image mediate improvements in

predictors of controlled eating such as mood, self-regulation, and self-efficacy [15]. For example, increased satisfaction with one's body might be associated with improved feelings of the self that emanate from cognitive-behaviourally oriented weight-loss treatments [14,16,17]. Following that, improved body satisfaction might positively affect: (1) mood, by inducing an overall more positive psychological profile; (2) self-regulation, by reinforcing the perceived productivity of newly developed facilitation skills; and (3) self-efficacy, through acknowledging one's abilities to progress. Additionally, changes in body satisfaction and the aforementioned psychological predictors of weight loss might reciprocally reinforce one another, thereby increasing associated effects [16,17]. Clarifying those possible relationships that are indirectly embedded within social cognitive [18] and self-efficacy [19] theory could be an important factor for inducing controlled eating.

Given previously identified behavioural/psychological relationships as described above [4–8], maintaining a program of physical activity [20] and controlled eating [21] might improve body satisfaction in women, even beyond the effects of weight loss. Therefore, treatments placing a strategic emphasis on adhering to a program of exercise – a difficult task for many [22]—might benefit controlled eating through improvements in salient psychological factors. Only several studies have examined both short- and longer-term effects of treatment-induced changes in psychological predictors of eating change [7,23]. Of those, even fewer adequately attended to the directionality of the tested relationships; often using descriptive or cross-sectional analyses that do not address the temporal dimensions needed to inform processes over the full length of a treatment. Studies addressing the above concerns within an easily accessed community setting might benefit timely generalisation of research-based findings to practice [24].

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