Behaviour Research and Therapy 49 (2011) 529–535

Contents lists available at ScienceDirect

Behaviour Research and Therapy

journal homepage: www.elsevier.com/locate/brat

An evaluation of the enhanced cognitive-behavioural model of bulimia nervosa

Amy M. Lampard [a,*], Susan M. Byrne [a,b], Neil McLean [a], Anthea Fursland [b]

[a] University of Western Australia, School of Psychology, M304, 35 Stirling Hwy, Crawley, Perth, Western Australia 6009, Australia
[b] Centre for Clinical Interventions, 223 James St, Northbridge, Perth, Western Australia 6003, Australia

ARTICLE INFO

Article history:
Received 6 December 2010
Received in revised form
29 April 2011
Accepted 3 June 2011

Keywords:
Cognitive-behavioural model
Bulimia nervosa
Binge eating

ABSTRACT

The original cognitive-behavioural model of bulimia nervosa (BN) has been enhanced to include four additional maintaining mechanisms: low self esteem, clinical perfectionism, interpersonal problems, and mood intolerance. These models have been used to guide cognitive-behavioural treatment for BN, but the enhanced model has yet to be directly evaluated as a whole in a clinical sample. This study aimed to compare and evaluate the original and the enhanced cognitive-behavioural models of BN using structural equation modelling. The Eating Disorder Examination and self-report questionnaires were completed by 162 patients seeking treatment for BN ($N = 129$) or atypical BN ($N = 33$). Fit indices suggested that both the original and enhanced models provided a good fit to the data, but the enhanced model accounted for more variance in dietary restraint and binge eating. In the enhanced model, low self esteem was associated with greater overevaluation of weight and shape, which, in turn, was associated with increased dietary restraint. Interpersonal problems were also directly associated with dietary restraint, and binge eating was associated with increased purging. While the current study provides support for some aspects of the enhanced cognitive-behavioural model of BN, some key relationships in the model were not supported, including the important conceptual relationship between dietary restraint and binge eating.

The original cognitive-behavioural model of bulimia nervosa (CB-BN; Fairburn, Cooper, & Cooper, 1986; Fairburn, Marcus, & Wilson, 1993) outlines the cognitive and behavioural factors that maintain bulimia nervosa (BN) and forms the foundation of cognitive-behaviour therapy for BN. At the centre of this model is a dysfunctional system of self evaluation, whereby self worth is largely defined in terms of eating, weight, or shape, and their control. This overevaluation of the importance of weight and shape can then lead to extreme dietary restraint, which often includes inflexible dietary rules about food and eating. Due to the physiological and psychological effects of dietary restraint, these inflexible dietary rules are difficult to maintain and, when broken, often lead to episodes of binge eating. Binge eating serves to increase concerns about weight and shape, thereby maintaining further dietary restraint. Following binge eating, concerns about weight and shape encourage the use of compensatory behaviours, such as self-induced vomiting or laxative misuse, in an attempt to mitigate the effect of binge eating on weight and shape. The belief that purging guards against binge-related weight gain removes a deterrent against binge eating, and serves to maintain a cycle of binge-purge behaviour.

Fairburn, Cooper, and Shafran (2003) have extended this original CB-BN model in an attempt to more fully encapsulate the factors involved in the maintenance of eating disorders. The enhanced CB-BN model describes how core low self esteem, clinical perfectionism, mood intolerance, and interpersonal problems interact with the core psychopathology of BN (described in the original CB-BN model) to obstruct change in some patients. In certain patients, low self esteem and clinical perfectionism are proposed to encourage increased striving to achieve in the valued domain of weight and shape. Low self esteem and clinical perfectionism may also lead to negative self-evaluations following perceived failure to achieve in the valued domain of weight and shape, thereby maintaining the overevaluation of the importance of weight and shape. Mood intolerance (the perceived inability to withstand aversive mood states) may also play a role in the maintenance of binge eating and purging. As in the affect regulation model of binge eating (Wiser & Telch, 1999), the enhanced model suggests that individuals with mood intolerance may engage in binge eating and purging in order to cope with the experience of intense mood states (Fairburn, Cooper, et al. 2003). Finally, the enhanced CB-BN model proposes that, for some patients, interpersonal problems may maintain eating disorders by, for example, magnifying concerns about shape and weight, acting as a trigger for binge eating episodes, or exacerbating self esteem concerns (Fairburn, Cooper et al., 2003). The success of interpersonal

* Corresponding author. Tel.: +61 8 6488 3245; fax: +61 8 6488 1006.
E-mail address: amy.lampard@uwa.edu.au (A.M. Lampard).

0005-7967/$ – see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.brat.2011.06.002

psychotherapy in treatment trials for BN provides some indirect support for the hypothesised role of interpersonal factors in the maintenance of BN (Fairburn, Jones, Peveler, Hope, & O'Connor, 1993; Fairburn et al., 1995).

A number of prospective studies have examined the role of CB-BN variables in the development of eating disorder symptoms in non-clinical samples. Appearance overevaluation (similar to overevaluation of weight and shape) has been shown to prospectively predict dietary restraint in female adolescents (Spangler, 2002), and numerous studies have found that dietary restraint prospectively predicts binge eating in children (Allen, Byrne, La Puma, McLean, & Davis, 2008) and female adolescents (Field et al., 2008; Stice, 2001; Stice & Agras, 1998; Stice, Presnell, & Spangler, 2002). These studies point to the importance of appearance overevaluation and dietary restraint in the development of eating disorder symptoms but they did not attempt to evaluate the original or enhanced CB-BN models as a whole.

Five cross-sectional studies have employed structural equation modelling or path analysis to simultaneously evaluate conceptual relationships within the original or enhanced CB-BN models. In the first study, drive for thinness and body dissatisfaction were found to be associated with dietary restraint, dietary restraint predicted binge eating, and binge eating predicted purging amongst a sample ($N = 526$) of males and females aged over 15 (Byrne & McLean, 2002). However, the relationship between dietary restraint and binge eating was opposite to that predicted, as *lower* levels of dietary restraint were associated with *increased* binge eating. The second study tested some aspects of the original CB-BN model in a sample of overweight adult females ($N = 444$) (Womble et al., 2001). In support of the CB-BN model it was found that body dissatisfaction predicted dietary restraint which, in turn, predicted binge eating. The third study tested a path analysis model of variables associated with disordered eating in a sample of female adolescents ($N = 323$) (Wade & Lowes, 2002). Perfectionism and low self esteem were associated with weight and shape concern, and weight and shape concern predicted disturbed eating (dietary restriction, loss of control over eating, purging, and excessive exercise). The fourth study evaluated the original CB-BN model in a sample of obese male and female children and adolescents ($N = 196$) (Decaluwe & Braet, 2005), and found support for all tested relationships in the model. Specifically, low self esteem led to greater overevaluation of weight and shape, which in turn was associated with greater dietary restraint. Dietary restraint was also associated with increased binge eating. Finally, the enhanced CB-BN model has been evaluated in a sample of 227 undergraduate students (78 male and 149 female) and 70 patients seeking psychological or surgical treatment for overweight or obesity (4 male and 66 female) (Allen, 2009). This study represents the most comprehensive evaluation of the enhanced CB-BN model to date. Self esteem and perfectionism were significantly associated with overevaluation of weight and shape, which, in turn, was significantly associated with dietary restraint. Dietary restraint was associated with binge eating, and binge eating was associated with purging. Mood intolerance was positively associated with both binge eating and purging. While most expected relationships in the model were supported, the model as a whole was a poor fit to the data and accounted for only a small percentage of the variance in binge eating (7%).

These five studies provide some support for key relationships within the original and enhanced CB-BN models, but none of these studies employed either a clinical sample or, more specifically, a sample of participants with the BN phenotype, which significantly limits the conclusions that can be drawn. Further, most of these studies failed to specifically evaluate the role of overevaluation of weight and shape, which is a core construct in the CB-BN model.

Whilst no studies have employed structural equation modelling to evaluate the original or enhanced CB-BN models in a BN sample, a number of alternative lines of evidence provide some support for the original CB-BN model in the persistence of eating disorder symptoms in BN. First, the success of cognitive-behavioural therapy for BN (e.g., Agras, Walsh, Fairburn, Wilson, & Kraemer, 2002; Fairburn et al., 2009), based on the maintaining mechanisms outlined in the CB-BN model, provides some indirect support for the utility of the model. Second, three longitudinal studies have found support for some of the key relationships in the original CB-BN model in BN samples. A prospective study of the natural course of BN in a female community sample ($N = 102$) (Fairburn, Stice et al., 2003) found that overevaluation of weight and shape at baseline was associated with change in dietary restraint 15 months later, and increase in dietary restraint was associated with concurrent increase in binge eating. In addition, a study examining mediators of change over the course of cognitive-behavioural treatment of BN ($N = 154$) found that decrease in dietary restraint at week four of treatment mediated reduction in binge eating at post-treatment (Wilson, Fairburn, Agras, Walsh, & Kraemer, 2002). Finally, Spangler, Baldwin, and Agras (2004) observed that increase in dietary restraint was associated with increase in weight and shape concerns and self-induced vomiting during CBT for BN ($N = 56$).

While these studies provide some support for aspects of the CB-BN theory in BN samples, the enhanced CB-BN model has yet to be directly evaluated as a whole in a clinical sample. It is therefore unclear how well the enhanced CB-BN model accounts for eating disorder symptoms amongst patients with BN. As this model is used to guide the cognitive-behavioural treatment of BN, the lack of a direct evaluation of the enhanced CB-BN model in a clinical sample is a critical gap in the research literature.

The current study therefore aimed to evaluate the original and enhanced CB-BN models in a sample of patients seeking treatment for BN or atypical BN. Three research questions were explored. First, does the original CB-BN model provide a good representation of the relationship between overevaluation of weight and shape, restraint, binge eating, and purging? Second, do the additional variables in the enhanced CB-BN model show the expected relationships with overevaluation of weight and shape, dietary restraint, binge eating, and purging? Third, does the enhanced CB-BN model provide a better account of the occurrence of dietary restraint, binge eating and purging than the original model?

Specification of the original and enhanced CN-BN models was informed by Fairburn, Cooper, et al.'s (2003) model description. The original model has been clearly specified (Fairburn, Cooper et al., 2003), and on this basis it was hypothesised that: overevaluation of weight and shape would be positively associated with dietary restraint; dietary restraint would be positively associated with binge eating; and binge eating would be positively associated with purging. For the enhanced CB-BN model, Fairburn, Cooper et al. (2003) clearly specify the role of low self esteem, perfectionism, and mood intolerance. Hence, in addition to the associations outlined in the original model, it was expected that: self esteem would be negatively associated with overevaluation of weight and shape, perfectionism would be positively associated with overevaluation of weight and shape and dietary restraint, and mood intolerance would be positively associated with binge eating and purging. However, the expected associations between interpersonal problems and specific variables in the enhanced CB-BN model have not been as clearly delineated (Fairburn, Cooper et al., 2003). As such, four planned nested model comparisons were conducted to determine if specifying a relationship between interpersonal problems and overevaluation of weight and shape, dietary restraint, binge eating, and purging improved model fit. As the model does not clearly delineate the role of interpersonal problems, no specific hypotheses were made about associations between