Perfectionism, weight and shape concerns, and low self-esteem: Testing a model to predict bulimic symptoms

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ABSTRACT

Previous studies have tested multivariate models of bulimia pathology development, documenting that a confluence of perfectionism, body dissatisfaction, and low self-esteem is predictive of disordered eating. However, attempts to replicate these results have yielded controversial findings. The objective of the present study was to test an interactive model of perfectionism, weight and shape concerns, and self-esteem in a sample of patients affected by Eating Disorder (ED). One-hundred-sixty-seven ED patients received the Structured Clinical Interview for DSM-IV Axis I (SCID-I), and they completed the Eating Disorder Examination Questionnaire (EDE-Q), the Rosenberg Self-Esteem Scale (RSES), and the Multidimensional Perfectionism Scale (MPS-F). Several mediation analysis models were fit to test whether causal effects of concern over weight and shape on the frequency of bulimic episodes were mediated by perfectionism and moderated by low levels of self-esteem. Contrary to our hypotheses, we found no evidence that the causal relationship investigated was mediated by any of the dimensions of perfectionism. As a secondary finding, the dimensions of perfectionism, perceived criticism and parental expectations, were significantly correlated with the presence of bulimic symptoms. The validity of the interactive model remains controversial, and may be limited by an inadequate conceptualization of the perfectionism construct.

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1. - Introduction

Binge eating and purging are important symptoms of Eating Disorders (ED) (American Psychiatric Association, 2000; Byrne, Fursland, Allen, & Watson, 2011; Fairburn et al., 2009), and understanding the onset of these behaviors is critical (Fairburn, Marcus, & Wilson, 1993). The three-factor theory by Bardone-Cone and colleagues (Bardone, Vohs, Abramson, Heatherton, & Joiner, 2000; Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999; Bardone-Cone et al., 2007) implicates an interaction between high perfectionism, low self-esteem, and high body dissatisfaction and provides a model of bulimic behavior.

Since its formulation, Bardone-Cone's model has undergone empirical investigation. The first empirical test predicted bulimic symptoms on a population of college students (Vohs et al., 1999). The model replicated in one study (Vohs et al., 2001), but not in another (Steele, Corsini, & Wade, 2007). In a further adaptation (Bardone-Cone, Abramson, Vohs, Heatherton, & Joiner, 2006), self-esteem was interchanged for self-

efficacy. The model predicted binge eating, but not purging. In a cross-sectional study (Tissot & Crowther, 2008), self-oriented and socially prescribed perfectionism dimensions were incorporated (Stice, 1994; Stice, 2001), but the model failed to replicate. Among female adolescents, the model was not supported (Shaw, Stice, & Springer, 2004), and among females with a mean age of 45 years, the model predicted maintenance of bulimic symptoms, but not onset (Holm-Denoma et al., 2005). The first study on a clinical sample (Bardone-Cone et al., 2008) confirmed the three-way model among women with Bulimia Nervosa (BN). A second study (Watson, Steele, Bergin, Fursland, & Wade, 2011), on a population of ED outpatients, found that the three-way interaction did not predict binge eating or purging.

Considering these mixed results, this study was designed to provide an independent replication of an interactive model of perfectionism, weight and shape concerns, and self-esteem predicting binge episodes in a sample of ED patients.

2. - Methods

2.1. Study participants

The present study used a cross-sectional perspective. Participants were consecutive patients with ED referred from February 2012 to

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August 2014 to the Cognitive Psychotherapy Clinical Centre, a specialist ED service in Florence, Italy. The service offers enhanced Cognitive-Behavioral Therapy (CBT-E) following a manual guide (Fairburn, Carrozza, & Dalle Grave, 2010). The patients were recruited during the assessment phase of treatment, were informed about the procedures and aims of the study, and provided written consent. Criteria for inclusion and exclusion in the study were as follows:

- a minimum age of 18 years, absence of mental retardation, and the ability to adequately comprehend written Italian.
- the absence of comorbid psychosis, schizo-affective disorder, bipolar disorder, alcohol and substance abuse.

2.2. Procedures and measuring instruments:

Psychiatrists or psychologists trained in cognitive therapy assessed demographic data via an interview. Weight and height were measured by a clinician at enrolment, and body mass index (BMI) was calculated.

The psychologists administered to all patients the Italian version of the Structured Clinical Interview (SCID-I) (Mazzi, Morosini, De Girolamo, Bussetti, & Guaraldi, 2000; First, Spitzer, Gibbon, & Williams, 1997), a structured interview based on the DSM-IV criteria (American Psychiatric Association, 2000), to determine the diagnosis of Axis I psychiatric disorders. To assess binge eating episodes, we considered the specific questions of the SCID-I that are relevant to the diagnosis of an ED, and that investigate episodes of uncontrolled overeating with reference to the past four weeks.

Each patient completed the following self-reporting questionnaires as well:

- Eating Disorder Examination Questionnaire (EDE-Q): eating attitudes and behaviors were investigated by means of the Italian version of the Eating Disorder Examination Questionnaire (Reas, Grilo, & Masheb, 2006; Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beumont, 2004; Fairburn & Beglin, 1994; Williamson, Anderson, Jackman, Jackson, & Allison, 1995; Fairburn & Cooper, 1993).
- Multidimensional Perfectionism Scale (MPS): the MPS is a thirty-five item self-report questionnaire based on Frost's model of perfectionism (Frost, Marten, Lahart, & Rosenblate, 1990; Parker & Adkins, 1995). In this study, we used the Italian version of this instrument, translated into Italian by Giovanni Maria Ruggiero. One of the authors of the MPS compared the back translated version of the MPS and the original and did not find any meaningful differences (R. Frost, personal communication to Giovanni Maria Ruggiero, December, 29, 2004).
- Rosenberg Self-Esteem Scale (RSES): self-esteem was measured by using the ten-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; Rosenberg, 1979; Griffiths et al., 1999).

2.3. Statistical analysis

We calculated the Spearman's rank correlation coefficient to investigate the degree of collinearity among the six dimensions of perfectionism (as measured by the MPS), the self-esteem (as measured by the score of the RSES), and the concerns over weight and shape. To measure concerns and dissatisfaction with weight and shape in the preceding four weeks, we calculated the mean of the items of the weight concern and shape concern subscales of the EDE-Q, considering that factor analysis suggests that these items generally load on one factor (Peterson et al., 2007; Wade, Byrne, & Bryant-Waugh, 2008).

We set a series of regression models to study the association of concern over weight and shape, self-esteem and the six dimensions of perfectionism, with the presence and with the frequency of binge eating episodes during the four weeks prior to the interview. Two sets of models were separately fitted: multiple logistic regression models in which the outcome was having suffered from at least one bulimic episode (versus none) during the four weeks prior to the interview, and multiple linear regression models in which the outcome was the number of bulimic episodes (continuous variable) during the four weeks prior to the interview. In all models, we compared patients who were in the upper vs. lower half of the distribution (i.e., above vs. below the median) of each variable of interest. We used as possible confounders the following variables: age, years of school attendance, BMI, occupation, marital status, age at menarche, and number of births.

A restricted dataset was used for subsequent analyses, which included only female patients who declared themselves as having suffered from at least one binge episode during the four weeks prior to the interview. In this restricted database, we fitted several mediation analysis models to test whether the causal effect of concerns over weight and shape (causal variable) on the frequency of bulimic episodes (outcome) was mediated by perfectionism (mediator) and moderated by low levels of self-esteem (moderator). All the six dimensions of perfectionism were tested as possible mediators. Each model was fitted twice, modeling the mediator as either a binary variable (above vs. below the median) or as a continue variable. In addition, all models were fitted with and without an interaction term between the causal variable and the mediator, and with or without introducing the moderation term in the model. We reported the following statistics for each mediation analysis model: the Total Causal Effect (TCE), the Average Causal Mediation Effect (ACME), the Average Direct Effect (ADE), and the Proportion Mediated (PM).

We used R (version 3.0.2) open source software for all statistical analyses. The R library "mediation" was used to conduct causal mediation analyses. A p-value less than 0.05 was considered statistically significant.

2.4. Ethics

The research was reviewed and approved by the Internal Review Board of the Cognitive Psychotherapy Clinical Centre of Florence.

3. - Results

Overall, 167 eating disorder patients (160 women) met the inclusion criteria and were recruited for the study. According to the SCID-I, 41 (24.5%) patients met diagnostic criteria for Anorexia Nervosa (AN) (of which 23 were restricting type and 18 binge-purge type); 51 (30.5%) met diagnostic criteria for BN; and 75 (44.9%) for an Eating Disorder Not Otherwise Specified (EDNOS) (of which 59, 35.1%, were Binge Eating Disorder, BED). Participants had a mean age of 31.5 years (SD $\pm$ 10.4 years) and an average 13.2 years of education (SD $\pm$ 3.1 years). The mean BMI was 25.4 kg/m² (SD $\pm$ 9.6 kg/m²).

The six dimensions of perfectionism were all directly correlated with each other, with the exception of organization (which was not correlated with perceived criticism and parental expectations). Self-esteem and concerns over weight and shape were inversely (the former) and directly (the latter) correlated with three dimensions of perfectionism (perceived criticism, parental expectations, and doubting about actions). Furthermore, concerns over weight and shape and self-esteem were inversely correlated with each other.

The odds of having suffered from bulimic symptoms during the four weeks prior to the interview was positively associated with concerns over weight and shape (with borderline significance: p = 0.093) and with the three dimensions of perfectionism: perceived criticism, parental expectations, and (with borderline significance) personal standards (Table 1). Concerns over weight and shape were also associated with the number of binge episodes during the four weeks prior to the interview (Table 1): those in the upper half of distribution had an average of 10.7 episodes (95% CI 2.7-18.6) more than those in the lower half of the distribution.