



# Self-esteem, body shame and eating disorder risk in obese and normal weight adolescents: A mediation model



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## ABSTRACT

**Objective:** To investigate dysfunctional eating behaviors and psychological variables typically associated to eating disturbances such as low self-esteem, perfectionism, shame, perceived parental care and protectiveness in obese and normal weight adolescents and to examine how the main powerful eating disorder risk factors interact with each other which explains eating psychopathology vulnerability.

**Method:** 111 high school students (68 males; age range 13–19 years) classified as obese and 111 age-, sex- and social status-homogeneous normal weight controls were included in the current study. All participants were asked to fill out self-report measures of parental behavior as perceived by the offspring, eating disturbance attitudes and behaviors, self-esteem, perfectionism and shame.

**Results:** Significant differences between the two groups in relation to dysfunctional eating behaviors emerged. Body shame had the strongest relationship to eating problems vulnerability and acted as a mediator in the relationship between low self-esteem and eating disorder risk among both obese and non-obese youngsters.

**Conclusions:** These findings further our understanding of a potential underlying mechanism for eating pathology development in youngsters in general and in obese adolescents in particular, which is of great importance in terms of prevention and treatment.

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## 1. Introduction

Obese individuals have been found to be at greater risk for developing an eating disorder (ED) (Britz et al., 2000; Fairburn, Cooper, Doll, & Welch, 1999; Musaiger et al., 2013). Among the ED types, binge eating disorder has been recognized as a particularly common problem already in overweight children and teens (Isnard et al., 2003; Ranzenhofer et al., 2012; Tanofsky-Kraff, 2008). Empirical evidence has reported a prevalence rates for binge or loss of control eating episodes among obese adolescents ranging from 36.5% to 45% (Decaluwé, Braet, & Fairburn, 2003; Glasofer et al., 2007).

Some evidence has demonstrated that overweight precedes binge eating behavior (Tanofsky-Kraff, 2008; Reas & Grilo, 2007; Decaluwé & Braet, 2003) and that binge eating does not predict obesity onset (Stice, Presnell, Shaw, & Rohde, 2005).

Little is known about which psychological constructs are associated with increased ED vulnerability among overweight people. In a research carried out by Cargill, Clark, Pera, Niaura, and Abrams (1999) using a

sample of obese individuals, a stepwise regression analysis was conducted with EDE-Q Restraint, Obese Self-Image, Activity-Interference, Negative Body Image, Dissatisfaction factors, depression, self-efficacy, and baseline weight to determine which variables were significantly related to binge eating. Negative Body Image, particularly in relation to shame and concern with public appearance, was found to have the strongest relationship to binge eating status. In another study, increased negative affect, experience of teasing, thin-ideal internalization, and decreased perfectionism resulted to be associated with increased eating disturbances in overweight treatment-seeking youth (Eddy et al., 2007). A more recent research showed that regular binge eating in morbidly obese individuals was strongly related to eating concerns and a lack of effortful control (Müller et al., 2012).

However, other well-known risk factors for EDs such as low self-esteem, experiences of shame and perceived poorer family functioning are strongly associated with child and adolescent obesity and may represent key variables in explaining an increased eating pathology risk. In a study carried out by Turner, Rose, and Cooper (2005), overweight female adolescents perceived their fathers as being significantly more overprotective and significantly less caring than those in the normal weight group.

Low self-esteem has been found to be related to a number of potentially modifiable risk factors, including obesity, among US adolescents

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(McClure, Tanski, Kingsbury, Gerrard, & Sargent, 2010). The relationship between obesity and shame has also been demonstrated (Sjöberg, Nilsson, & Leppert, 2005).

So, which psychological variables are associated with ED risk among obese individuals? How do these variables interact with each other in predicting eating problems vulnerability?

Starting from these questions, in the present study we aimed to: 1) examine whether there were differences between obese and normal weight adolescents in dysfunctional eating behaviors; 2) individuate which factors were significantly related to ED risk in both obese and non-obese groups; and 3) investigate if and how the main powerful ED predictors interact with each other in explaining eating disturbance vulnerability, in both samples.

## 2. Materials and methods

### 2.1. Participants and procedure

Adolescents aged 13 to 19 attending public high-schools in Southern Italy were considered eligible to participate in the study. The only inclusion criterion was to be present in the classrooms during the questionnaires administration. In all, 1213 students were enrolled. The Centers for Disease Control and Prevention (CDC; <http://www.cdc.gov/>) BMI-for-age categories were used for the assessment of adolescent weight status (see below measures section). For the current study, only the participants classified as obese ( $N = 111$ ) and age-, sex- and social status-matched normal weight controls ( $N = 111$ ) were included, resulting in a final sample size of  $N = 222$ .

The obese sample consisted of 68 males and 43 females ranging from 13 to 19 years ( $M = 15.5$ ;  $SD = 1.5$ ). Parents' socio-economic status (SES), according to Hollingshead's criteria (Hollingshead, 1975), was calculated from the occupation and educational level of both parents, ranging from 1 = highest to 5 = lowest level of SES. The majority of participants ( $N = 58$ , 52.3%) fell into the low to middle socio-economic class.

The non-obese sample consisted of 111 normal weight participants matched to obese participants for age, sex and social status. Mean BMI was 29.69 ( $SD = 3.43$ ) for obese and 20.37 ( $SD = 1.81$ ) for non-obese participants.

### 2.2. Measures

#### 2.2.1. Demographic data

Participants were asked to fill in a form with information about age, sex and parents' education level.

#### 2.2.2. Parental bonding

The Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) is a 50-item self-report questionnaire to measure parental behavior as perceived by the offspring.

#### 2.2.3. Self-esteem

The Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965) is a 10-item self-report measure assessing the global self-esteem.

#### 2.2.4. Shame

The Experience of Shame Scale (ESS; Andrews, Qian, & Valentine, 2002) is a 25-item questionnaire to assess the frequency of shame experiences over the past year related to one's character, behavior and body.

#### 2.2.5. Perfectionism

The Multidimensional Perfectionism Scale (MPS; Frost, Marten, Lahart, & Rosenblate, 1990) assesses several dimensions of perfectionism: doubts about the individual's own actions, personal standards, organization, excessive concern with mistakes, parental expectations and parental criticism.

#### 2.2.6. Eating disturbance

Eating Disorder Risk Composite (EDRC) scale from the Eating Disorders Inventory-3 were administered (Garner, 2004). The participants filled out the Eating Disorder Symptom Checklist-3 (EDI-3 SC; Garner, 2004), a behavior checklist to assess symptom frequency (e.g. binge eating, self-induced vomiting, use of laxatives, diet pills, diuretics).

#### 2.2.7. Body Mass Index

Each individual was measured in height and weight. According to the Centers for Disease Control and Prevention of the USA Department of Health and Human Services, normal weight falls within the range of >5th and <85th percentile for BMI-for-age; <5th percentile is to be considered underweight, overweight is between >85th and <95th percentile, and individuals are considered obese with  $\geq 95$ th percentile for BMI-for-age.

### 2.3. Data analysis

A chi-square analysis on the abnormal eating behaviors (measured through the EDI-3 SC) was run in order to assess differences between obese and normal weight participants.

The contribution of shame and perfectionism in predicting ED risk was assessed through a series of hierarchical multiple regression analyses performed on ED risk score separately on obese and non-obese

**Table 1**  
Hierarchical Regression Model and Statistics for Dependent Variable (EDI-3 EDRC) in obese ( $N = 111$ ) and non-obese group ( $N = 111$ ).

Step	Dependent variable: EDI-3 Eating Disorder Risk	
	Obese	Non-obese
<i>Step #1</i>		
R <sup>2</sup> (adjusted)	.25	.21
β for gender	.52***	.27**
β for BMI	-.01	.40***
<i>Step #2</i>		
R <sup>2</sup> (adjusted)	.26	.29
β for PBI MC	-.13	-.27*
β for PBI MO	.05	.20
β for PBI PC	-.12	-.15
β for PBI PO	-.03	.17
<i>Step #3</i>		
R <sup>2</sup> (adjusted)	.32	.31
β for RSES	-.29**	-.16
<i>Step #4</i>		
R <sup>2</sup> (adjusted)	.39	.48
β for gender	.22	.22**
β for BMI	-.03	.31***
β for PBI MC	.09	-.24**
β for PBI MO	-.11	.04
β for PBI PC	-.00	-.00
β for PBI PO	.05	.10
β for RSES	-.12	.06
β for ESS character	.04	.03
β for ESS behavior	.01	.03
β for ESS body	.43**	.47***
β for MPS CM	.04	-.19
β for MPS PS	-.02	.16
β for MPS PE	.05	.12
β for MPS DA	.02	.07
Multiple R	.68	.74
F (df = 14, 96)	5.97***	8.16***

Abbreviations: RSES = Rosenberg Self-Esteem Scale; PBI = Parental Bonding Instrument; MC = maternal care; PC = paternal care; MO = maternal overprotectiveness; PO = paternal overprotectiveness; ESS = Experience of Shame Scale; MPS = Multidimensional Perfectionism Scale; CM = concern over mistakes; PS = personal standard; PE = parental expectations; DA = doubts about actions; O = organization.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

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