



ORIGINAL ARTICLE

Eating behaviors, body image, perfectionism, and self-esteem in a sample of Portuguese girls

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Objective: Eating disorders are an increasingly prevalent health problem among adolescent girls. It is well known that biological, psychosocial, and family-related factors interact in the development of this group of disorders. However, the mechanisms underlying the interaction between these variables are still poorly understood, especially in Portuguese adolescents. The aim of this study was to investigate the relationship between eating behaviors, body dissatisfaction, self-esteem, and perfectionism in a sample of Portuguese girls.

Method: A community sample of 575 Portuguese girls attending secondary school, answered self-report questionnaires including data on weight, height, and the Portuguese versions of the Contour Figures Rating Scale, the Child and Adolescent Perfectionism Scale, the Children Eating Attitudes Test, and the Rosenberg Self-Esteem Scale. SPSS version 20.0 for Windows was used for statistical analyses.

Results: High scores in the Children Eating Attitudes Test were associated with significantly higher levels of body dissatisfaction ($r = 0.339$), socially prescribed perfectionism ($r = 0.175$), self-oriented perfectionism ($r = 0.211$), and low self-esteem ($r = -0.292$) (all $p < 0.001$). Self-oriented perfectionism partially mediated the relation between body dissatisfaction and disordered eating behaviors.

Conclusion: In this sample, dysfunctional eating behaviors appeared to correlate strongly with body dissatisfaction, low self-esteem, and perfectionism in girls. These themes should be addressed among female adolescents in the community.

Keywords: Eating behaviors; body image; perfectionism; self-esteem

Introduction

Eating disorders are an increasingly prevalent public health problem among adolescents and young women, and are associated with the potential for serious physical problems, such as hypothermia, hypotension, electrolyte imbalance, endocrine disorders, and kidney failure.¹ Women with eating disorders are also at risk of long-term psychological and social problems, including depression, anxiety, substance abuse, and suicide.²

Personal, behavioral, and socioenvironmental factors have been identified as risk factors for eating disorders.³ Considering socioenvironmental factors, images of women in the media and popular culture apply considerable pressure to be thin on vulnerable young girls and women, for whom it is difficult to live up to these expectations, regardless of their natural body shape.⁴ In this context, there is a large amount of evidence that many girls in Western societies experience considerable dissatisfaction with their body size, with a particular wish to be thinner.⁵

Although not an exclusively female concern, body dissatisfaction predominates in women.⁶

Previous Portuguese research has focused on the relationship between perfectionism and disordered eating attitudes and behaviors, both in adolescent and adult samples.^{7,8} Results show that this personality trait is simultaneously a correlate and a risk factor for eating pathology. Other studies have also identified perfectionism as a key risk factor, and some go as far as to suggest that eating disorders may be an expression of perfectionism.⁹ Specifically, in adolescent samples, self-oriented and socially prescribed perfectionism are two dimensions of perfectionism associated with higher total Eating Attitudes Test (EAT) scores.^{7,10,11} A study aimed at determining the nature of the relationship between perfectionism and psychopathological conditions, including eating disorders, found that an increase in concern over mistakes was associated with anorexia and bulimia but not with other disorders. This suggests that perfectionism may be more predictive of disordered eating than of other pathologies, including obsessive-compulsive disorder, and may work in concert with low self-esteem (SE) in women.¹²

Indeed, SE has been implicated as a variable in disordered eating behaviors. During adolescence, the building of one's body image can greatly shape SE as one reaches adulthood. The relationship between SE and body dissatisfaction among adolescents is fairly strong, and the weight of appearance in making self-evaluations is of paramount

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importance in adolescence, especially when the level of SE is low.¹³ Both low SE and body dissatisfaction have been found to correlate with higher levels of unhealthy weight-control behaviors and to increase the risk of developing eating disorders in adolescence.¹⁴

The contribution of both perfectionism and SE to eating disorders has also been studied,¹⁵ revealing that the confluence of perfectionism, body dissatisfaction, and low SE promotes development of bulimic symptoms. Specifically, perfectionists with low SE who are dissatisfied with their bodies are more likely to binge eat because they doubt their ability to lose weight, which results in negative affect and consequent increased risk of binge eating. More recently, some authors studied the association between eating disorders, depression, SE, and perfectionism, and demonstrated that high levels of depression and low SE were present in young adolescents with disturbed eating behaviors, but high levels of perfectionism was not.¹⁶

In the present study, we intend to analyze the role of perfectionism in disordered eating behaviors, taking into account and controlling for the effect of other variables - body mass index (BMI), body dissatisfaction, and SE - in a sample of Portuguese adolescent girls.

Method

Participants and procedure

The voluntary nature and general format of the study were explained and informed consent was obtained from the parents of the participants. Confidentiality was ensured in accordance with Portuguese law (Law no. 67/1998).

Five hundred and seventy-five girls from four secondary schools (grades 7-12) in the urban area of Coimbra, Portugal, participated in the study. The schools were randomly selected, so that all social and cultural backgrounds were represented. The adolescents completed questionnaires assessing self-reported weight and height, body image, perfectionism, SE, and eating behaviors.

The mean age was 15.77 ± 1.561 years (range: 11-18). Three age groups were formed: 11-13 years ($n=112$, 19.5%); 14-16 years ($n=237$, 41.2%); and 17-18 years ($n=226$, 39.3%). Three groups were also formed on the basis of school grades: 7th-9th ($n=93$, 16.2%); 10th-11th ($n=279$, 48.5%); and 12th ($n=203$, 35.3%). Total Children Eating Attitudes Test (ChEAT) mean scores and other variables were not significantly different between age and school grade. The mean BMI was 20.42 ± 2.866 kg/m² (range: 14.03-31.99).

Measures

Children Eating Attitudes Test (ChEAT)

The Portuguese version of the ChEAT was used.¹⁷ The ChEAT is rated on a Likert-type scale from 1 (never) to 6 (always). The most symptomatic response is recoded into a score of 3 (always), 2 (usually), or 1 (often). The remaining choices (sometimes, rarely, and never) receive a score of 0. Therefore, ChEAT scores can range from

0 to 78, with higher scores indicating higher eating behavior disturbance. We used the total ChEAT scores for our analysis.

Child and Adolescent Perfectionism Scale (CAPS)

The Portuguese version of the CAPS was used.¹⁸ This is a self-report questionnaire composed of 22 items based on a multidimensional conceptualization of perfectionism. It assesses self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP). The subject is asked to rate each item on a five-point Likert-type scale ranging from false - not at all true of me (score 1) to very true of me (score 5). The total possible score is 110.

Contour Drawing Figure Rating Scale (CDFRS)¹⁹

The CDFRS consists of nine male and nine female figures, incrementally ranging from thin to obese. Its test-retest reliability in our sample was good ($r = 0.839$, $n=121$). For the purpose of this study, participants were asked to identify the figure that represented their current body size and their ideal body size. Answers range from 1 (smallest figure) to 9 (largest figure). The variable body image dissatisfaction was computed by the difference between ideal and current body image, which varied from -6 to 7.

The Rosenberg Self-Esteem Scale (RSES)

The RSES is the most widely used scale for the evaluation of SE in adolescents and adults.²⁰ It is a 10-item Likert-type scale, with items answered on a four-point scale from strongly agree to strongly disagree. Higher scores denote higher SE. The Portuguese version of the RSES has good reliability ($\alpha = 0.86$) and temporal stability ($r = 0.90$).²¹

Statistical analysis

SPSS version 20.0 was used. Descriptive statistics were used to describe demographics and means/frequencies. The Student *t*-test for paired samples and one-way analysis of variance (ANOVA) were used as appropriate. To calculate associations, Pearson correlation coefficients were used and analyzed following Cohen's criteria: 0.10 = poor, 0.30 = moderate, and 0.50 = high correlation. Body dissatisfaction log-converted. Multiple (hierarchical) regression and mediation analyses were performed using bootstrapping methodology. Durbin-Watson, variance inflation factor (VIF), and tolerance collinearity tests were performed to investigate multicollinearity among variables entered in the regression models.

Results

Correlations

Total ChEAT scores all correlated positively and significantly with SPP and SOP and body dissatisfaction (BD) and negatively and significantly with SE. BMI correlated significantly with total ChEAT and BD (Table 1).

Table 1 Correlations between eating behaviors, body mass index, perfectionism dimensions, and self-esteem

	BMI	ChEAT	CAPS	SPP	SOP	SE	BD
BMI	1						
ChEAT	0.133*	1					
CAPS	NS	0.235*	1				
SPP	NS	0.175*	0.812*	1			
SOP	NS	0.211*	0.847*	0.378*	1		
SE	NS	-0.292*	-0.096*	-0.159*	NS	1	
BD	0.539*	0.339*	0.140*	0.123 [†]	0.111 [†]	-0.192*	1

BD = body dissatisfaction; BMI = body mass index; ChEAT = Total Children Eating Attitudes Test; CAPS = Total Children and Adolescent Perfectionism Scale; NS = non-significant; SE = self-esteem; SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism.

* $p < 0.001$; [†] $p < 0.05$.

Mean comparisons

Regarding RSES, total CAPS, and its dimensions, participants were distributed across three groups on the basis of mean (M) and standard deviation (SD) as follows: group 1 (low), $M - 1SD$; group 2 (moderate), $M \pm 1SD$; group 3 (high), $M + 1SD$. The body satisfaction groups were formed as follows: group 1, want to be thinner (negative scores between current body size and ideal body size); group 2, satisfied (no differences between current body size and ideal body size); and group 3, want to be fatter (positive scores between current body size and ideal body size).

Only variables showing significant correlations (Table 1) were considered for ANOVA.

Body satisfaction groups

The three body satisfaction groups presented significant mean differences in BMI, total ChEAT, SPP, and SE. Total CAPS and mean SOP scores were not significantly different between groups (Table 2).

Mean total ChEAT scores decreased significantly across BD groups 1 (want to be thinner), 2 (satisfied) and 3 (want to be fatter). BMI and total ChEAT scores were significantly higher in group 1 than in groups 2 and 3. Regarding SPP, the only significant difference was in groups 1 vs. 2. Concerning SE, groups 2 and 3 were statistically different.

Self-esteem groups

Significant mean differences were found between the three SE groups and all other correlated parameters analyzed, except CAPS (Table 3).

There were no significant differences between total CAPS and the three SE groups. Regarding total ChEAT and BD, mean scores decreased through SE groups 1 (low SE), 2 (moderate SE), and 3 (high SE). Concerning SPP, groups 1 vs. 3 and 2 vs. 3 were significantly different.

Total perfectionism/SPP/SOP groups

Significant mean differences were found between the three total CAPS and SPP groups based on total ChEAT, BD, and SE. No significant mean differences were found with BMI for CAPS (Table 4).

Considering total perfectionism groups, mean total ChEAT scores increased significantly through groups 1 (low), 2 (moderate), and 3 (high). Regarding BD, groups 1 vs. 3 and 2 vs. 3 showed significantly increased mean differences. Mean SE scores were not significantly different across groups.

Concerning SPP groups, mean SE scores decreased significantly through groups 1, 2, and 3. Total ChEAT scores in group 1 showed significantly lower means than in groups 2 and 3. Group 3 reported significantly higher BD than groups 1 and 2.

In relation to SOP, group 1 showed significantly lower scores on the total ChEAT than group 3. BD and SE did not differ significantly between groups.

Regression

Multiple regression analysis was used to investigate how much of the ChEAT (dependent variable) variance was explained or predicted by the set of correlated variables (Table 1) and to evaluate the relative contribution of each

Table 2 Eating behaviors, body mass index, perfectionism dimensions, and mean self-esteem scores stratified by body dissatisfaction groups (one-way ANOVA)

	Want to be thinner n=321	Satisfied n=191	Want to be fatter n=59	F	p-value	Post-hoc** [†]
BMI	21.67±2.791	18.97±2.137	18.12±1.524	95.00	< 0.001	1 [†] > 2 [‡] , 3 [‡]
ChEAT	9.87±8.445	5.43±5.165	5.79±4.838	25.77	< 0.001	1 [†] > 2 [‡] , 3 [‡]
CAPS	67.49±14.662	64.70±13.884	62.57±13.586	4.126	< 0.05	NS*
SPP	27.57±8.410	25.31±7.714	25.45±8.242	5.21	< 0.05	1* > 2 [§]
SOP	39.92±9.122	39.37±9.179	37.13±8.224	2.287	NS	-
SE	19.20±4.956	22.06±4.700	18.68±3.771	24.24	< 0.001	1* < 2 [‡] , 2* > 3 [‡]

Data presented as mean ± standard deviation.

1 = want to be thinner; 2 = satisfied; 3 = want to be fatter.

BMI = body mass index; CAPS = Total Children and Adolescent Perfectionism Scale; ChEAT = Total Children Eating Attitudes Test; M = mean; NS = non-significant; SD = standard deviation; SE = self-esteem; SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism.

* Tamhane's test; [†] Least significant difference; [‡] $p < 0.001$; [§] $p < 0.05$.

Table 3 Eating behavior, body dissatisfaction, and perfectionism dimension mean scores, by self-esteem groups (one-way ANOVA)

	Low (n=97)	Moderate (n=386)	High (n=85)	F	p-value	Post-hoc* [†]
ChEAT	12.36-9.965	7.31±6.649	5.94+5.649	23.09	< 0.001	1 [†] > 2 [‡] , 3 [§]
BMI	20.78-3.140	20.37±2.844	20.13+2.616	1.165	NS	-
BD	-1.33-1.612	-0.69±1.255	-0.61+0.989	10.44	< 0.001	1 [†] > 2 [‡] , 3 [§]
CAPS	67.85-15.955	66.00±13.464	64.34+16.32	1.36	NS	-
SPP	28.06-9.113	26.79±7.857	24.14+8.572	5.49	0.004	1* > 3 [‡] , 2 > 3 [§]

Data presented as mean and standard deviation.

1 = low; 2 = moderate; 3 = high.

BD = body dissatisfaction; BMI = body mass index; CAPS = Total Children and Adolescent Perfectionism Scale; ChEAT = Total Children Eating Attitudes Test; M = mean; NS = non-significant; SD = standard deviation; SPP = socially prescribed perfectionism.

*Tamhane's test; [†]Least significant difference; [‡]p < 0.001; [§]p < 0.05.

independent variable. Multiple hierarchical regression analysis was also applied to ascertain whether perfectionism dimensions remained significant predictors of total and dimensional ChEAT scores after the other predictors' variance had been removed.

Dependent variable: total ChEAT

The model including BMI, BD^(log), SE, SPP, and SOP explained 19.1% of the total ChEAT score variance (adjusted R² = 0.191; F_{5,539} = 26.690, p < 0.001). BD^(log) (Beta = -0.329; p < 0.001), SOP (Beta = 0.135; p = 0.001), and SE (Beta = -0.205; p < 0.001) were independent significant predictors of total ChEAT score. On squaring partial correlations, i.e., partialling out the effect of all other predictor variables, the three predictors alone explained -8.46, 1.87, and -4.84% of the outcome variance respectively.

Entered first in the hierarchical regression models, the BD^(log) and SE block explained 15.3% of the total ChEAT

variance (F_{2,558} = 50.570, p < 0.001). Entered afterwards, SOP accounted for 18.2% of the variance, which represents a significant increment of 2.9% (F_{1,557} = 19.753, p < 0.001). Mediation analysis conducted using the bootstrapping methodology²² revealed that SOP (95%CI -4.5915 to -0.3610) partially mediated the relationship between BD^(log) and Total ChEAT, but did not mediate the relationship between SE and Total ChEAT (95%CI -0.0277 to 0.0305). Besides, BD^(log) partially mediated the relationship between SOP and Total ChEAT, as the confidence interval did not contain zero (95% CI 0.0044 to 0.0588). On the other hand, SE did not mediate this relationship (95%CI -0.0229 to 0.0235).

Discussion

The objective of the present study was to analyze the relationship between SE, perfectionism, body image dissatisfaction, and eating behaviors in a large, population-based sample of Portuguese adolescent girls.

Table 4 Eating behavior, body dissatisfaction, and self-esteem mean scores by perfectionism dimension groups (one-way ANOVA)

Total perfectionism						
	Low (n=93)	Moderate (n=385)	High (n=93)	F	p-value	Post-hoc* [†]
BMI	20.50-2.954	20.36±2.872	20.52+2.650	0.170	NS	-
ChEAT	5.49-5.139	7.81±7.378	10.99+8.905	13.232	< 0.001	1 [†] < 2 [‡] , 3 [§] , 2 < 3 [‡]
BD	-0.59-1.570	-0.75±1.230	-1.16+1.298	5.086	0.006	1 [†] < 3 [‡] , 2 < 3 [‡]
SE	20.88-5.398	20.08±4.666	19.55+5.610	1.712	NS	-
Socially prescribed perfectionism						
	Low (n=112)	Moderate (n=355)	High (n=104)	F	p-value	Post-hoc* [†]
ChEAT	6.31-5.389	8.26±7.714	9.29+8.913	4.812	< 0.05	1 [†] < 2 [‡] , 3 [§]
BD	-0.70-1.271	-0.75±1.318	-1.13+1.301	3.438	< 0.05	1* < 3 [‡] , 2 < 3 [‡]
SE	21.47-5.044	20.05±4.676	18.32+5.404	10.930	< 0.001	1 [†] > 2 [‡] , > 3 [§] , 2 > 3 [‡]
Self-oriented perfectionism						
	Low (n=89)	Moderate (n=395)	High (n=86)	F	p-value	Post-hoc* [†]
BMI	20.55-3.111	20.40±2.834	20.30+2.638	0.174	NS	-
ChEAT	5.80-5.874	6.35±6.560	8.65+8.115	8.611	< 0.001	1 [†] < 3 [‡]
BD	-0.45-1.477	-0.47±1.185	-0.68+1.283	1.828	NS	-
SE	20.34-5.356	20.14±4.611	19.84+4.961	0.229	NS	-

Data presented as mean and standard deviation.

1 = low; 2 = moderate; 3 = high.

BD = body dissatisfaction; BMI = body mass index; ChEAT = Total Children Eating Attitudes Test; M = mean; NS = non-significant; SD = standard deviation; SE = self-esteem.

*Tamhane's test; [†]Least significant difference; [‡]p < 0.05; [§]p < 0.001.

The multidetermined etiology of eating disorders requires examination of the contribution of different variables, but, even more importantly, the investigation of how different variables interact together.²³ Our research shows that SOP, SPP, BD, and SE were all involved in dysfunctional eating attitudes and behaviors. These results were confirmed by the significant correlations between different scales, as well as by the significant mean differences between variable groups. Additionally, multiple regression models showed higher values in ChEAT score variance explained by the combination of the correlated variables (BMI, BD, SE, SPP, and SOP). Previous studies have already shown an association of disordered eating with perfectionism in community samples,^{7,8,24} as well as with BD²⁵ and with SE.²⁶ The strength of the present study is its simultaneous attention to all these relevant variables in the same participants.

We observed that total ChEAT scores correlated significantly with BMI, corroborating previous studies that found higher scores on the ChEAT questionnaire²⁷ or other measures of eating pathology²⁸ among overweight vs. normal-weight children.

Previous research has shown that overweight girls are more likely to engage in unhealthy dieting behaviors, express concern about their weight, restrain their eating, and to have greater dissatisfaction regarding their physical appearance than their average-weight peers.²⁹

Considering SE, our research confirmed that high total ChEAT scores were present in girls with low SE, in accordance with previous studies. In fact, low SE has been associated with several psychopathological conditions, including eating disorders,³⁰ anxiety, and depression, as well as with BD.⁵ A longitudinal study in women conducted by Gilbert & Meyer revealed that low SE predicted an increase in BD, and that fear of negative evaluation predicted an increase in bulimic attitudes and depression.³¹

In accordance with other researchers^{10,22} and considering total perfectionism (SOP and SPP), we found positive correlations between total ChEAT scores and this personality trait. Some previous studies also showed that SOP and SPP were associated with disordered eating behaviors in Portuguese adolescents⁷ and young adults.⁸ Total perfectionism correlated positively with BD and negatively with SE. BD is an important risk factor for disordered eating; yet, it is also considered a normative concern in women.³² Welch et al. verified that the two perfectionism dimensions were found to partially mediate and moderate the relation between BD and disordered eating.³³ Recently, some authors suggested that high scores on both perfectionism dimensions are problematic for BD.³⁴

SOP was statistically correlated with total ChEAT scores and negatively correlated with SE and BD. Castro et al. found higher SOP scores in patients with anorexia nervosa than in adolescents from the general population.³⁵ Using multidimensional perfectionism, the authors found that SOP was strongly linked to dietary restraint in young women.³⁶ Recently, a research group found that higher levels of SOP also predicted increased dieting and binge eating in a sample of college women.³⁷

SPP, considered the more maladaptive dimension of perfectionism,³⁸ correlated positively with total ChEAT scores and negatively with SE and BD. Our results depart

from those of McVey et al., who found that SOP, but not SPP (from the children's version of the MPS), was associated with higher levels of dietary restraint and weight/food preoccupation in a sample of young adolescents.²⁶ However, our results are similar to those of other investigations which found that the associations between SPP and eating disturbances are stronger among female college students and young females with high BD.³⁹

Our study makes a significant contribution to the literature because it relates the most known mediators of disordered eating behaviors in adolescents (perfectionism, SE, BMI, and BD). It is clear that all predictor variables (SOP, SPP, BMI, BD, and SE) are inextricably entangled regarding how, and to what extent, they predict disordered eating. In light of the increasing prevalence of obesity in youths, it is important to identify populations at high risk of obesity and to investigate early warning signs of eating disorder development so that interventions may be promptly initiated. In our opinion, promoting a healthy BMI during adolescence is very important, but one should never forget body acceptance, promotion of high SE, and healthy levels of perfectionism to reduce dysfunctional eating behaviors.

Our findings should be considered within the context of several limitations of this study. The first such limitation is the cross-sectional design. In future studies, we will examine the relationship between these variables prospectively, in both genders. Second, the fact that we did not assess depressive symptomatology may also be seen as a limitation, because depression has been linked not only with eating disorders, but also with perfectionism and several other psychopathological states.⁴⁰

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Disclosure

The authors report no conflicts of interest.

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