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Quality of Family Relationships as Protective Factors of Eating Disorders: An Investigation Amongst Italian Teenagers

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Abstract The study here presented aims to investigate the links between quality of family relationships and some prodromes in eating disorders. A sample of 1,083 subjects took part in the study by filling PBI, FACES and EDI questionnaires. In order to clarify the role played by family relationships in the onset of EDs, two subgroups (*high risk–low risk*) were individuated by using the EDI cut-offs as discriminator factors and tested separately from the main sample. The results revealed some significant relationships between the analysed dimensions. It was shown that by increasing the values from the parents' caring style scale and the real family's cohesiveness scale the probability for subjects to fall into the *high risk* group decreases. Also, by increasing the family adaptability's values, an increase of the probability for subjects to fall into the *high risk* group occurs. These results support the implementation of preventive and therapeutic plans to promote health and quality of life of adolescence.

Keywords Quality of family relationships · Risk of eating disorder · Health promotion · Prevention

Introduction

Eating disorders constitute a social epidemic and a serious health and social issue in Western countries; they are believed to be linked to severe physical damage and are the first cause of death for mental illness (Crow et al. 2009).

There is no accepted estimate of the prevalence of anorexia and bulimia because of the lack of uniformity of the studies that have been carried out, and definition difficulties. The first epidemiological study with a representative sample was carried

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out between 2001 and 2003 by Hudson et al. (2007) in the USA, with the following results for female participants: 9 % affected by anorexia nervosa, 1.5 % affected by bulimia nervosa, and 3.5 % affected by binge eating disorder. For male participants it was found that 0.3 % of participants were affected by anorexia nervosa, 0.5 % affected by bulimia nervosa and 2 % by binge eating disorder. According to the statistics from the Italian Health Office (2003–2009), since 1970s the number of people suffering from eating disorders increased significantly. The values at present are as follows: anorexia nervosa 0.3–0.5 %, bulimia nervosa 1–3 %, and other eating disorders 6 %.

These data strongly support the need for further research on the protective factors in eating behaviour. Firstly, we believe that investigation into why some people develop eating disorders whilst other people do not, would help to clarify the etiology of the disease and also, it would allow bringing into action more effective treatments. Secondly, further research could be used by the Health Department Office for implementing more effective intervention and prevention plans (Striegel-Moore and Bulik 2007).

Bulimia and anorexia have been identified as "culturally specific syndromes" and as being a by-product of modern society (Gowen et al. 1999; Miller and Pumariega 2001; Keel and Klump 2003). The high-calorific diet that came with the post-war well-being in Western countries put high emphasis on external appearance and body image (Polivy and Herman 2002). Sometimes the extreme attention to the body is linked to the experience of a deep dissatisfaction of one's own physical appearance and, in general, this affects the quality of life in a negative way (Lee et al. 2012).

Recent studies aimed at explaining the causes of eating disorders (EDs) and were concerned with the development of etiologic models. Despite the fact that research was carried out in some very different settings, it seems that it overall agreed upon the complexity of EDs, which onset results from the co-occurrence of different factors of risk such as cultural environment, psychological traits, and emotional relationships within and outside the family nucleus.

Previous research described the development of EDs as the failure of the teenager to successfully perform the individuation process from a rigid and oppressive parenthood. One of the most typical characteristics in these families was a *high closeness* amongst family members, a *cognitive and affective intrusiveness*, *rigid and homeostatic relationship* characterised by fear for the natural changes that occur with growth (Bruch 1974; Minuchin et al. 1980; Selvini Palazzoli 1997). In the last few years several studies attempted to clarify the role that family functioning plays in the development of EDs.

However, results were contrasting. The Academy for Eating Disorders has recently expressed its official position on this, stating that "*whereas family factors can play a role in the genesis and maintenance of eating disorders*, *current knowledge rejects the idea that they are either the exclusive or even the primary mechanisms that underlie this risk. Thus*, *the AED stands firmly against any etiologic model of eating disorders in which family influences are seen as the primary cause of anorexia nervosa or bulimia nervosa*" (Le Grange et al. 2010; p. 1). This position, while raising some concerns about a specific line of study, also addresses EDs as a complex disorder whose occurrence depends on the co-presence of several factors. Since the early studies run by Bruch and Minuchin, the peculiarity of EDs family functioning was described as a potential co-cause in the aetiology and development of EDs although not as the only cause.

Research in this specific area has yielded evidence for and against the hypotheses regarding the impact of family relations on EDs genesis. For instance, some studies

that focused on family cohesiveness and adaptability did not find any significant differences between the functioning of families of subjects affected by anorexia and families of healthy subjects (Gowers and North 1999; Kagan and Squires 2006). Other studies have examined the relationship between parental control and severity of disordered eating and behaviour, but failed to find significant results (Furnham and Adam-Saib 2001; Swanson et al. 2010a).

Likewise, some researchers suggested that the link between eating disorder and family functioning is mediated by specific factors such as negative family food-related experiences (Kluck 2008), and mothers' and daughters' perceptual body size distortion and body dissatisfaction (Benninghoven et al. 2007). Therefore, some dynamic family factors may have a more non-specific effect on general psychopathology, rather than on the development of eating disorders (Laliberté et al. 1999; Erola et al. 2007).

On the other hand, some authors comprehensively argued that the family environment has an important influence in the etiology of EDs.

Further investigation focused on family relationship patterns by testing families where either one of the children was affected by EDs, or where some factors of risk occurred. The factors observed were as follows: high levels of chaos and overprotection (Cuffe et al. 2005; Crisp et al. 2006; Onnis 2010); rigidity in family rules (Kyle et al. 2009); low cohesiveness, low emotional expression, and high levels of control (Haworth-Hoeppner 2000; Latzer et al. 2002; Claes et al. 2004; Onnis et al. 2011); poor communication, conflict, criticism, and hostility as well as a lack of supportive interactions (Emanuelli et al. 2004; Onnis 2004); eating or other challenging behaviours related conflict as well as a reduced expressiveness such as withdrawal or conflict avoidance (Sim et al. 2009; Onnis 2010).

Some other studies have also looked at the family environment in non-clinical samples of participants and found that an increase in the perception of family dysfunction led an eating pathology to become more severe (Wisotsky et al. 2003).

According to the literature, it seems that the relationship between subjects affected by EDs and their mothers has been more extensively investigated than the relationship with fathers. One of the leading threads seems to be the occurrence of a totalitarian relationship with mothers who are highly controlling and unable to encourage their children (usually daughters) in undertaking the process of individuation and self-expression (Calam et al. 1990; Haworth-Hoeppner 2000; Soenens et al. 2008; Hsiu-Lan and Mallinckrodt 2009, Swanson et al. 2010b).

Also, a lack of homogeneity was noticed in the studies that investigated the relationships between daughters and fathers. In fact, some studies identified the father's absence and emotional distance as a factor of risk, or described weak fathers who were not able to help their daughters to disengage from a symbiotic relationship with their mothers (Selvini Palazzoli 2006). However, there is a number of studies which used the Parental Bonding Instrument (Parker et al. 1979) that partially rejected the idea that the absence of the father could be a factor of risk. These studies observed that a similar style occurred in the relationship between female subjects affected by EDs, and their father and mother. This relationship was usually defined by high control and low emotional care styles (Calam et al. 1990; Fitzgerald and Lane 2000; Haworth-Hoeppner 2000; Gutzwiller-Jurman 2000; Panfilis et al. 2003; Soenens et al. 2008; Hsiu-Lan and Mallinckrodt 2009; Swanson et al. 2010a, b).

In the European contexts two important research groups are studying the family influences on eating disorders and the relationship between individual problem and family organization. The first is the London Maudsley Hospital Group (Eisler et al. 1997, 2000, 2007; Eisler 2005), the other is the Rome University Group (Onnis et al. 1994, 2008; Onnis 2004). However, only few published studies have involved Italian adolescents and have been carried out within the framework described above (Onnis 2010; Onnis et al. 2011; Abbate Daga et al. 2007).

The research herein presented aimed at filling this gap by investigating the co-occurrence of some prodromes in eating disorders (for example a drive for thinness, body dissatisfaction, bulimia) and some specific characteristics of family functioning (for example family cohesion and parent affectivity) in a sample of Italian teenagers. We used the term 'prodrome' to identify symptoms that can indicate the future onset of disorder and the term 'protective factor' and 'risk factors' to identify factors that can decrease or increase the probability of developing the disorder (Stice et al. 2010).

Method

The Data Analysis was run in two stages. In the first stage the sample (N=1083) was divided by gender and BMI levels (high, medium-high, medium-low, and low BMI) (WHO 2007) and an explorative descriptive data analysis was run in order to explore some existing relationships and to investigate the occurrence of the variables previously mentioned.

In the second stage a sub-sample of 213 participants was divided into two sub-groups of subjects (*high risk* and *low risk* subjects), in order to verify our research hypothesis.

High risk subjects were considered to be all those who had obtained results higher than the cut-offs for at least 8 out of 11 dimensions (n=95) in the EDI questionnaire. These results were then compared to the results obtained from a sample of randomly selected subjects who did not satisfy the critical condition but who belonged to the same social and age group (n=118).

A sub sample from the total group was randomly extracted in order to balance the number of subjects falling into the *high risk* and *low risk* conditions.

Measures

A *demographic questionnaire* was constructed in order to collect some personal and social information like age, gender, weight, and height.

To assess the relationship between the participants and their parents, a *Parental Bonding Instrument* (Parker et al. 1979) was completed. The *PBI* is a test composed of 25 items that was constructed under the Theory of Attachment, and which investigates the perception of individuals upon their relationship with parents. The data obtained were interpreted upon two bi-polar factors, which are the caring and the control dimension. The intersection amongst the values from the two dimensions shows the relations amongst four different factors: affectionate constraint, affectionless control, optimal parenting, and neglectful parenting.

To assess family relationships each participant completed the *Family Adaptability and Cohesion Evaluation Scales* (Olson et al. 1982), which is a self-report questionnaire

providing information on the history of the family through its several stages. This scale allows investigating family relationships along the two dimensions of cohesiveness and adaptability. Finally, the participants were asked to complete an Italian version (by Trombini, Rizzardi, Trombini, 1994) of the *Eating Disorder Inventory* (EDI, Garner 1991) in which a self-evaluation test of anorexia and bulimia prodromic symptoms is presented. The test is composed of 91 items divided by 11 scales (drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, maturity fears, asceticism, impulsiveness, and social insecurity).

Participants

The data collection was carried out by administering the questionnaires mentioned above to a sample of students aged between 14 and 19 years (M=15.9; DS=1.4). The sample was composed of 1,083 participants (55 % girls, 45 % boys) from some high schools in Cagliari (Italy) and the surrounding area, through a non-probability dimensional sampling.

Table 1 shows the other sample's characteristics. The results shown in Table 1 partly confirm the epidemiological data previously mentioned, and also reveal a high

Table 1 Sample composition

	Subset	*N* (%)	Min-Max	Mean	Sd
Sample *N*=1083					
Weight			35–97 Kg	57,18	10,73
Height			141–193 Cm	166,53	8,58
BMI			13,39–35,16	20,53	3,04
<17,5		148(13,9)			
17,6 through 18,5		139(13,1)			
18,6 through 24,9		696(65,4)			
>25		81(7,6)			
High risk/low risk (*n*=213)					
Weight	High risk		35–94Kg	55	10,4
	Low risk		38–90Kg	59,9	12,3
Height	High risk		145–180Cm	161,8	7,3
	Low risk		150–190Cm	166,9	8,7
BMI	High risk		15,42–34,34	21	3,4
<17,5		8(8,6)			
17,6 through 18,5		13(14)			
18,6 through 24,9		6 1(65,6)			
>25		11(11,8)			
	Low risk		16,02–31,22	21,3	3,4
<17,5		13(11,1)			
17,6 through 18,5		7(6)			
18,6 through 24,9		79(67,5)			
25		18(15,4)			

occurrence of either overweight or underweight conditions in both female and male subjects.

The sample of teenagers involved has not been subjected to any previous clinical evaluation. However, according to the statistics from the Italian Health Office (2003–2009), we assumed that the incidence of the following disorders was 0.3–0.5 % for anorexia nervosa, 1–3 % for bulimia nervosa, and 6 % for other eating disorders (Table 1).

Results

Relations Amongst Study Variables

Multivariate Analysis of Variance

At a first stage, a preliminary assessment of linear relations between the variables was conducted.

A first MANOVA Analysis on the whole sample (N=1083) was run for the factors identified through the PBI questionnaire: affectionate constraints, affectionless control, optimal parenting, and neglectful parenting. These dimensions were used to evaluate relationships between children and their mothers and relationships between children and their fathers.

The factor named "*relationship between child and mother*" (Wilks' Lambda= 0.938, df=33,2890, p. < .01) showed a significant effect in relation to the variables *drive for thinness* [F(3, 991)=4.508, p<.01], *body dissatisfaction* [F(3, 991)=5.662, p<.01], *perfectionism* [F(3, 991)=3.982, p<.01], *ineffectiveness* [F(3, 991)=4.453, p<.01], and *social insecurity* [F(3, 991)=5.828, p<.01].

The factor named "*relationship between child and father*" showed a multivariate effect (Wilks' Lambda=0.912, df=33,2890, p<.001), which was therefore confirmed by the significance level for the scales of *bulimia* [F(3,991)=8.152, p<.01], *interoceptive awareness* [F(3,991)=17.379, p<.01], *asceticism*[F(3,991)=6.270, p<.01], *interpersonal distrust* [F(3,991)=5.890, p<.01], *impulse regulation* [F(3,991)=15.273, p<.01], *ineffectiveness* [F(3,991)=10.714, p<.01], and *social insecurity* [F(3,991)=7.575, p<.01].

In order to evaluate the effect of family functioning (FACES) on the EDI scales, a second MANOVA analysis with the four levels of cohesiveness (disengaged, separated, connected, and embroiled) and adaptability (rigid, structured, flexible, and chaotic) was carried out.

The factor "*family functioning*" showed significant multivariate effects only for the cohesiveness factor's principal effect (Wilks' Lambda=0.833, df=33,2893, p<.001), which was also confirmed by the univariate effects for the *drive for thinness* [F(3,992)=3.911, p<.01], *bulimia* [F(3,992)=3.755, p<.01], *interoceptive* awareness [F(3,992)=15.868, p<.01], *asceticism* [F(3,992)=6.106, p<.01], *body dissatisfaction* [F(3,992)=6.778, p<.01], *interpersonal distrust* [F(3,992)=8.901, p<.01], *impulse regulation* [F(3,992)=13.107, p<.01], *ineffectiveness* [F(3,992)=20.578, p<.01], *maturity fears* [F(3,992)=3.120, p<.05], and *social insecurity's* [F(3,992)=20.060, p<.01] scales .

Figures 1, 2, 3 and Tables 2, 3, 4 show the significant results emerged through the Bonferroni's post-hoc comparisons (p<*0,01*).

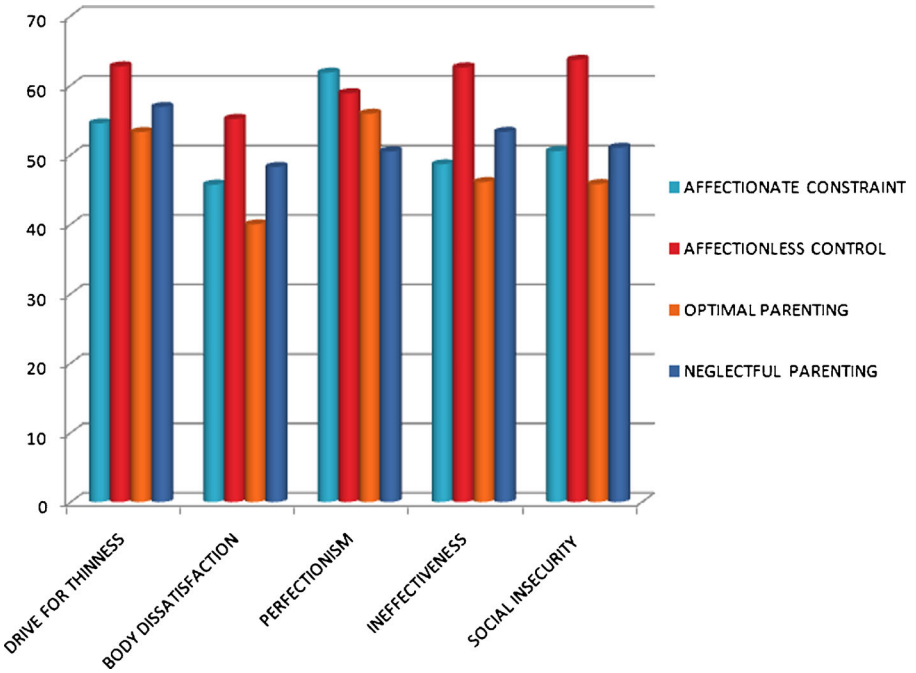

Fig. 1 Relationship between child and mother according to the EDI scales

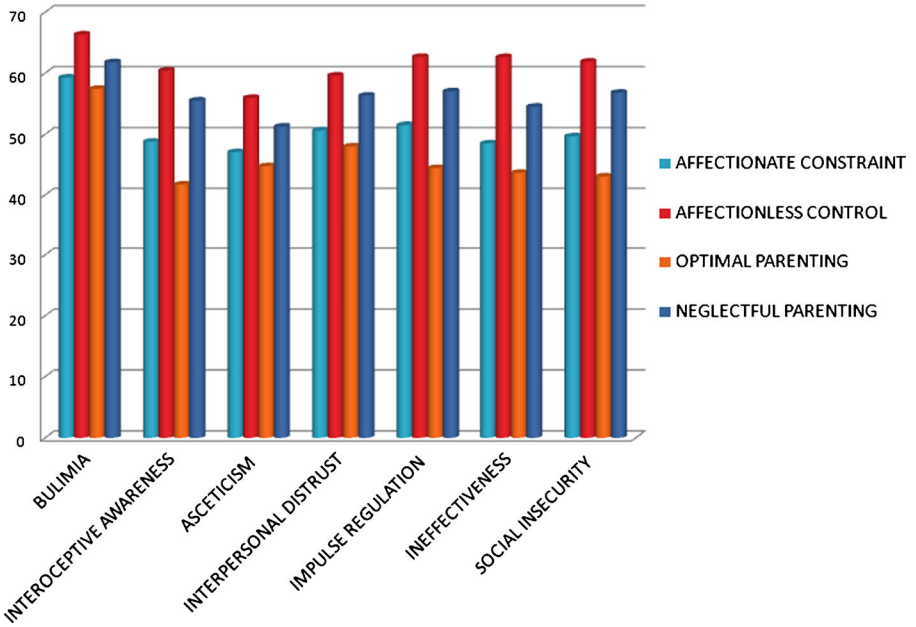

Fig. 2 Relationship between child and father according to the EDI scales

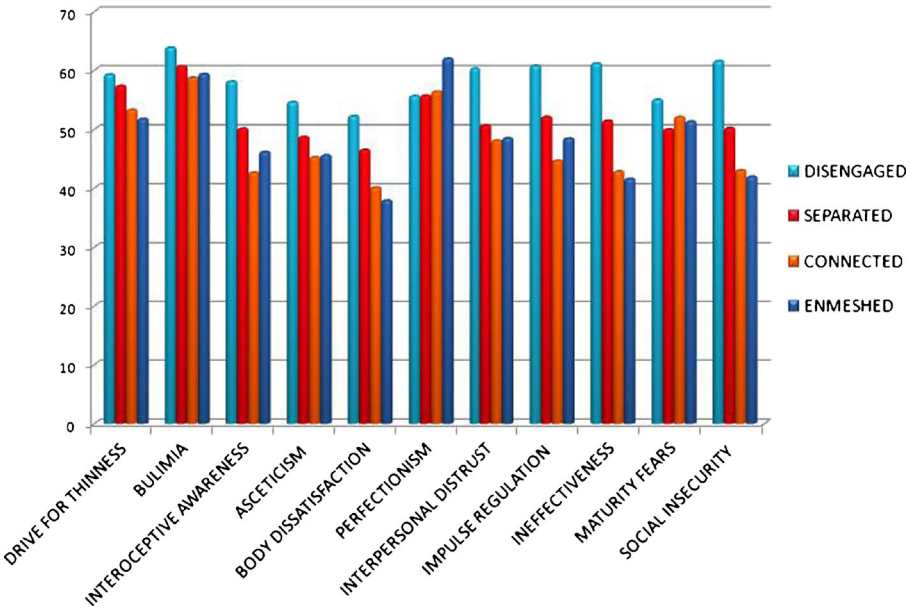

Fig. 3 Relationship between family cohesion and the EDI scales

Logistic Regression

In order to verify our hypotheses on the EDs predictor factors, a binomial logistic regression was carried out. Logistic regression allowed investigating which one of the

Table 2 Relationship between child and mother according to the EDI scales. Mean differences and statistical significance among groups (Bonferroni test)

Dependent variable	(I) Typology relationship child–mother	(J) Typology relationship child–mother	Means difference (I-J)	Sig.
Drive for thinness	2 Affectionless control	1 Affectionate constraint	8,0777(*)	,005
		3 Optimal parenting	8,9026 (*)	,000
Body dissatisfaction	2 Affictionless control	1 Affectionate constraint	9,9302(*)	,003
		3 Opftmal Parenting	14,9390(*)	,000
		4 Neglectful Parenting	7,3142(*)	,033
	4 Neglectful parenting	3 Optimal parenting	7,6247	,011
Perfectionism	4 Neglectful parenting	1 Affectionate constraint	−10,2347(*)	,005
		2 Affectionless control	−8,6888(*)	,005
Ineffectiveness	2 Affectionless control	1 Affectionate constraint	14,8943(*)	,000
		3 Optimal parenting	17,1994 (*)	,000
		4 Neglectful parenting	10,2586(*)	,000
	3 Optimal parenting	4 Neglectful parenting	−6,9407(*)	,015
Social insecurity	2 Affectionless Control	1 Affectionate constraint	12,7721(*)	,000
		3 Optimal parenting	17,2131 (*)	,000
		4 Neglectful parenting	12,5878 (*)	,000

Table 3 Relationship between child and father according to the EDI scales . Mean differences and statistical significance among groups (Bonferroni test)

Dependent variable	(I) Typology relationship child–father	(J) Typology relationship child–father	Means difference (I-J)	Sig.
Bulimia	2 Affectionless control	1 Affectionate constraint	7,4593(*)	,000
		3 Optimal parenting	9,5371(*)	,000
		4 Neglectful parenting	4,9605(*)	,030
	4 Neglectful parenting	3 Optimal parenting	4,6265(*)	,041
Interoceptive awareness	1 Affectionate constraint	3 Optimal parenting	7,2259(*)	,017
	2 Affectionless control	1 Affectionate constraint	11,6529(*)	,000
		3 Optimal parenting	18,8788(*)	,000
	3 Optimal parenting	4 Neglectful parenting	−13,9258(*)	,000
Asceticism	1 Affectionate constraint	2 Affectionless control	−9,5 178(*)	,003
	2 Affectionless control	3 Optimal parenting	11,8111(*)	,000
Interpersonal distrust	1 Affectionate constraint	2 Affectionless control	−8,6797(*)	,003
	2 Affectionless control	3 Optimal parenting	11,5039(*)	,000
	3 Optimal parenting	4 Neglectful parenting	−8,2440(*)	,003
Impulse regulation	1 Affectionate constraint	2 Affectionless control	−11,0893(*)	,000
	2 Affectionless control	3 Optimal parenting	7,3872(*)	,022
		3 Optimal parenting	18,476 5(*)	,000
	3 Optimal parenting	4 Neglectful parenting	−12,5455(*)	,000
Ineffectiveness	2 Affectionless Control	1 Affectionate Constraint	14,1322(*)	,000
		3 Optimal parenting	19,1321(*)	,000
		4 Neglectful parenting	8,6607(*)	,002
	3 Optimal parenting	4 Neglectful parenting	−10,4714(*)	,000
Social insecurity	2 Affectionless control	1 Affectionate constraint	11,7618(*)	,000
	2 Affectionless control	3 Optimal parenting	18,733 1(*)	,000
	3 Optimal parenting	1 Affectionate constraint	−6,9713(*)	,033
		4 Neglectful parenting	−13,5244(*)	,000

two family functioning scales between FACES and PBI would best predict the probability for subjects to fall in the group of high risk subjects (labelled 1) or in the group of low risk subjects (labelled 0). The analysis was carried out for the two balanced subgroups (N=213) of *subjects at risk* (N=95) and of *subjects not at risk* (N=118).

The predictor variables were entered in the logistic regression equation in two steps by using the Stepwise Backward Conditional Method. In the first step the following scales were entered as variables: *mother's caring style*, *mother's control*, *father's caring style*, *real family's cohesiveness*, *real family's adaptability*, *ideal family's cohesiveness*, *and ideal family's adaptability.* In the second step the two-way interaction effects referred to the prediction variables from the first block were entered as variables. However, it was observed that inserting the two-ways interaction effects of the predictor variables did not produce any improvement in the model's adaptability indexes in the second block. For this reason, it was decided to focus on the main effect showed by the single predictors in step 1.

Table 4 Relationship between family cohesion and the EDI scales. Mean differences and statistical significance among groups (Bonferroni test)

Dependent variable	(I) Typology real cohesion	(J) (I) Typology real cohesion	Means difference (I-J)	Sig.
Drive for thinness	1 Disengaged	3 Connected	5,9818(*)	,019
		4 Enmeshed	8,1514(*)	,003
	2 Separated	4 Enmeshed	6,5646(*)	,046
Bulimia	1 Disengaged	S Connected	4,6554(*)	,026
		4 Enmeshed	5,2925(*)	,031
Interoceptive awareness	1 Disengaged	2 Separated	8,3778(*)	,000
		3 Connected	15,1081(*)	,000
		4 Enmeshed	12,7600(*)	,000
	2 Separated	3 Connected	6,7303(*)	,030
Asceticism	1 Disengaged	3 Connected	9,9620(*)	,000
		4 Enmeshed	10,0574(*)	,003
	3 Connected	1 Disengaged	−9,9620(*)	,000
Body dissatisfaction	1 Disengaged	3 Connected	12,0858(*)	,000
		4 Enmeshed	15,1371(*)	,000
	2 Separated	4 Enmeshed	9,5728(*)	,006
Interpersonal distrust	1 Disengaged	2 Separated	9,4106(*)	,000
		3 Connected	12,3854(*)	,000
		4 Enmeshed	12,1825(*)	,000
Impulse regulation	1 Disengaged	2 Separated	9,2331(*)	,000
		3 Connected	16,4769(*)	,000
		4 Enmeshed	12,5296(*)	,000
Ineffectiveness	1 Disengaged	2 Separated	9,6968(*)	,000
		3 Connected	18,0715(*)	,000
		4 Enmeshed	20,1344(*)	,000
	2 Separated	3 Connected	8,3747(*)	,003
		4 Enmeshed	10,4377(*)	,001
Socia1 insecurity	1 Disengaged	2 Separated	11,7233(*)	,000
		3 Connected	19,2442(*)	,000
		4 Enmeshed	20,8213(*)	,000
	2 Separated	3 Connected	7,5209(*)	,013
		4 Enmeshed	9,0980(*)	,007

The results (Table 2) show that the model adapts well to the data from the fourth step of the *Stepwise Backward Conditional method*, as testified from the tetrachoric table with the values observed and predicted by the model (*high risk*/*low risk*). The percentages for the values that were correctly predicted by the regression on the fourth step were =72 %, sensitiveness =58.3 %, and specificity=82.6 %. The goodness of the model is shown by the *fit index values* (Omnibus Tests χ^2= 52.680; df=5; p>.001; Hosmer and Lemeshow Test χ^2=12.860; df=8; p>.05; −2 log Likelihood=211.627; Cox & Snell R Square=.239; Nagelkerke R Square=.320).

Table 5 Logistic regression model predicting the risk variable (high risk =1—low risk=0)

Predictors		B	E.S.	Wald (df=1)	OR	95,0 % CI for OR lower	upper
Step 4	Mother care	−,058	,028	4,393**	,943	,893	,996
	Father care	−,063	,028	5,099**	,939	,889	,992
	Real cohesion	−,089	,027	10,805**	,915	,868	,965
	Real adaptability	,068	,033	4,270*	1,070	1,004	1,142
	Ideal Adaptability	,045	,023	3,794	1,046	1,000	1,095

OR odds ratio, *CI* confidence interval

*$p<.05$, **$p<.01$

The odds ratio was measured for each one of the predictor factors referred to the increase or decrease of the probability for the subjects to fall into the group of subjects at risk of EDs. For the fourth step of the model, it was found that by increasing by one unit the mother's caring style scale (B=−.058, OR=.943; $p<.001$), the father's caring style scale (B=−.063, OR=.939; $p<.001$), and the real family's cohesiveness scale (B=−.089, OR=.915; $p<.001$), the probability for subjects to fall into the high risk group decreases. On the other hand, by increasing by one unit the real family adaptability's values, an increase of the probability for subjects to fall into the group of *subjects at risk* occurs. However, in this case the error probability is greater. The *ideal family's adaptability* scale did not produce a significant effect (Table 5).

Discussion

The aim of this study was to investigate the co-occurrence of some early indicator that can initiate the onset of an eating disorder (such as drive for thinness, elevated body dissatisfaction, elevated level of bulimia) and specific indicators of quality of family relationships (such as level of family cohesiveness, family adaptability, mother's care and protection, and father's care and protection) in a sample of non-referred adolescent population.

Firstly, we would like to make a comment about the high number of teenagers with overweight or underweight problems in our sample. The deviation of teenagers from the normal weight range cannot be linked to the presence of eating disorders in young people, neither to a general increase of eating disorders, but it can be a stimulus for reflection on weight problems amongst Italian teenagers. In fact, since both the conditions of obesity and thinness have become more common, we should meditate on this and on the importance of weight and nutrition in adolescence as factors that affect life quality.

In the first stage of the data analysis the factors of the drive for thinness, body dissatisfaction, perfectionism traits, feeling of ineffectiveness and social insecurity showed higher values for all those subjects who have an affectionless control relationship style with their mother (for what concerns perfectionism, an affectionate constraint relationship style also seem to play an important role). According to the

results, for what concerns the relationship with fathers, higher levels of bulimia, asceticism and mistrust in interpersonal relationships are shown by those subjects who have an affectionless control relationship style. Optimal paternal parenthood (differently from the avoidant style that binds from both the emotional and affectionless control points of view), constitutes a protection's factor from the occurrence of low levels of interoceptive awareness and high levels of impulsiveness, ineffectiveness, and social insecurity. Finally, for what concerns the relations between family functioning and the Eating Disorder Inventory's dimensions, it emerged that the cohesiveness dimension plays a central role. Significantly higher levels of drive for thinness, body dissatisfaction, bulimia, asceticism, interpersonal relationships insecurity, impulsiveness, ineffectiveness, maturity fears, and social insecurity, and lower levels of interoceptive awareness, were observed in subjects who reported very low levels of family cohesiveness and who experienced disengaged relationships.

The application of a binomial logistic regression to the two subgroups of high risk e low risk subjects allowed identifying some specific protective factors. It was observed that by increasing the level of maternal and paternal caring, and of the family cohesiveness' level, the subjects seem to have less probability to fall into the high risk category. The same probability increases when high levels of adaptability occurs (they indicate a general family's tendency to rigidity and low adaptability to internal and external changes).

Despite having a not so significant value of OR which therefore requires some careful interpretation, we think that these results open some new developments in the matter that will be useful for some future research.

In general, our results do not confirm the hypothesis that paternal absence might be a factor of risk. In fact, it was observed that individuals who showed critical scores in the dimensions of EDI perceived no differences between the paternal parenting style and the maternal parenting style. Also, some recent studies where the Parental Bonding Instrument (Parker et al. 1979) was used partially rejected the idea that the absence of the father is a factor of risk. They observed that similar relationship styles between female subjects affected by EDs and fathers, and between the same subjects and their mothers occurs, and that these styles are defined by high control and low emotional care (Calam et al. 1990; Haworth-Hoeppner 2000; Soenens et al. 2008; Hsiu-Lan and Mallinckrodt 2009). This pattern was observed in people suffering from bulimia (Rorty et al. 2000; Fosse and Holen 2006), obesity (Turner et al. 2005), and anorexia (Canetti et al. 2008).

Another hypothesis which failed to be confirmed is the one about family enmeshment. In our sample it seems that a critical role is played by poor family cohesiveness and the perception of emotional disengagement (Haworth-Hoeppner 2000; Latzer et al. 2002; Claes et al. 2004).

It would be very interesting to reflect on the possible relationship between some paternal styles (over controlling versus disengaged) and family functioning (disengagement versus enmeshment), and the onset of EDs. Furthermore, it would be worthy investigating these results more in depth, particularly for what concerns the extent of the modern-day changes in the organization of families (such as a greater occurrence of dual earner families, the homogenization of parental styles, etc.) affect the occurrence of EDs.

To conclude, we would like to indicate some methodological limits of this study and also some further research development.

We think that our results show some limits which we hope others will pick up where we have left off. One of these limits was the failure in carrying out a clinical assessment of the participants. Although the EDI questionnaire allowed identifying a group of subjects at risk, none of the participants had a diagnosis of eating disorders. According to the statistics from the Italian Health Office we assumed that bulimia nervosa, anorexia nervosa, and other eating disorders had an incidence in our sample. However, this assumption could have produced some bias in the evaluation of the factors of risk. Therefore, it would be of primary importance for further research to fill this gap by providing a clinical assessment of subjects regarding a diagnosis of EDs.

This would help to clarify the effect of family and relationships factors on EDs as well as the differences among anorexia, bulimia, and obesity.

A further limit can be represented by the fact that the results suggested some specific relationships amongst family functioning, parental care, and control, and some psychological constellations associated to EDs. In fact, they consider that emotional support from both parents, family cohesiveness, emotional closeness to parents, and affective family bonds in general are positive factors that protect individuals from developing EDs. However, the results neither clarify the role of any other co-occurring variables (e.g. relationships with siblings or friends, anxiety levels, sensitiveness and suggestibility to mass media influence, etc.) nor identify some causal relations amongst the variables (e.g. it was not possible to observe if fathers or mothers' overprotection styles affect the subjects' tendency to control their own weight and to feel dissatisfied with their own body, or whether the subjects' problematic behaviours and attitudes towards their body make parents be more controlling). Therefore, further research is required in order to clarify which cultural and relationship factors might cause the onset of EDs.

Likewise, similarly to the vast majority of the studies that have investigated the link among psychological factors, family relationships and EDs, this study has evaluated the two factors of family functioning and parental behaviours only through self-report measures completed by the children. It is thought that the participant's answers, due to the nature of the issues, might be affected by cognitive bias such as denial, idealization, and social desirability. Some qualitative investigation which test the family members individually, and also the family as a group might be run in order to overcome this limit in the research. According to this, further research should also investigate the whole family nucleus and carry out some direct evaluation of the relationships within the family through in-depth interviews or direct observation.

This study also showed some strength. In fact, it represents a step forward into the identification of some critical areas from which further research could depart, and also from which to make effective intervention and prevention plans. Moreover, the results stress the importance of understanding EDs in all their complexity and in carrying out further research in both the epidemiology and etiology of EDs. This would allow understanding which factors are involved in the EDs' onset and in designing some more effective intervention and prevention plans, and also in converting life experience, relationships, habits, and behaviours from factors of risk to factors of protection.

Our results demonstrate the important role played by the experience of an emotional investment in food and body burdens, acknowledge the complexity of the issue, and provide some useful instructions on how to deal with EDs.

A first point of investigation for further research would be to adopt a multidisciplinary approach that considers the different levels of reality in subjects affected by Eds. A central role should be given to individuals' life contexts as well as to their symptoms.

Furthermore, the therapists should help their patients to discriminate, integrate, and express their feelings and internal states related to the difficulties they experience in their relationships. Also, they should consider the situation in the patients' family and work with the entire family in order to provide some emotional support to all members and to involve the whole family in the process of coping and change (Day et al. 2011; Eisler et al. 2000, 2007; Onnis et al. 2008, 2011).

It would be also necessary to develop some strategies for health promotion involving pupils, parents and teachers since nursery school age.

This research suggests that the relationship between parents and teenagers should be the focus for some specific prevention projects for parents in which some strategies of intimacy building, conflict solving, psychological vulnerability management, and a positive maternal and paternal role are promoted. These goals will be best achieved through an approach that embraces some 'resource-based' rather than 'deficit-based' family models, and that elicits some areas of competency rather than areas of family dysfunction. Only under this perspective the families involved would feel part of the solution rather than part of the problem, and would cooperate more proactively to the achievement of their goals (Sim et al. 2009).

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