

Parental bonding and eating psychopathology in bulimia nervosa: personality traits as possible mediators

SECONDO FASSINO,¹ FEDERICO AMIANTO,¹ GIUSEPPE ROCCA,² GIOVANNI ABBATE DAGA¹

¹Regional Pilot Centre for Eating Disorder of Neuroscience Department, Psychiatry Section, University of Torino, Torino (Italy)

²Neurosciences Department, Psychiatry Section, University of Torino, Torino (Italy)

SUMMARY. **Aims** – The relationship between eating disorders, attachment, personality traits and eating psychopathology remains unexplored. This study tested the mediating role of temperament and character between parental bonding and psychopathology in bulimic women. **Methods** – 154 bulimic subjects and 154 healthy controls were compared using Parental Bonding Instrument (PBI), Temperament and Character Inventory (TCI), Eating Disorder Inventory-2 (EDI-2), and Beck Depression Inventory (BDI). Multiple regression analysis tested the mediation of personality traits between parenting and eating psychopathology. **Results** – Bulimic subjects displayed low maternal and paternal care and low self-directedness, and high novelty seeking and eating psychopathology. Maternal care was negatively related to social insecurity, inadequacy and impulsiveness. Paternal care predicted novelty seeking, self-directedness, interoceptive awareness, impulsiveness, and asceticism. The mediation effect of self-directedness between paternal care and psychopathology was significant, not the one of novelty seeking. **Conclusions** – Parental care is lower in bulimic than in control women even when controlled for possible confounding variables. Some eating psychopathology traits are related to maternal and paternal care, but not the bulimia subscale. Paternal care is also related to temperament and character traits which are related to eating psychopathology. Self-directedness mediates with different degrees between parenting and eating psychopathology. Clinical implications are discussed.

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INTRODUCTION

The familial climate is considered a strong predictive factor in the development of eating disorders (EDs; Laliberte *et al.*, 1999). Parenting dynamics are heavily influential on family climate (Hedlund *et al.*, 2003). In fact studies on healthy women support a correlation between parenting and pathological eating behaviours (Furnham & Adam-Saib, 2001; Mujtaba & Furnham, 2001).

Some evidences support an influence of parenting on specific characteristics of eating disorders. High parental overprotection was found influential on the development of EDs in abused women (Romans *et al.*, 2001), and was associated with suicidal behaviour (Yamaguchi *et al.*, 2000) and compulsiveness (De Panfilis *et al.*, 2003) in ED patients. Low levels of care from both parents are a negative prognostic factor for recovery of anorexic patients (Bulik *et al.*, 2000). A lower parental care was also an independent predictor of severity of bulimia nervosa (Sullivan *et al.*, 1996).

Moreover different parenting dynamics characterize eating disorders subtypes. Anorectic daughters reported receiving more care from their mothers than their fathers but also more maternal control, intrusiveness, and overprotection (Di Pentima *et al.*, 1998). Bulimic women con-

Address for correspondence: Professor S. Fassino, Service for Eating Disorders, Neurosciences Department, Psychiatry Section, University of Torino, Via Cherasco 11, 10126, Torino (Italy).

Fax: ++39-011-673473

E-mail: secondo.fassino@unito.it

sidered their parents to be both caring and overwhelming (Sordelli *et al.*, 1996), especially with regard to their fathers (Fosse & Holen, 2006) or, at a minimum, different from those of controls (Leung *et al.*, 2000).

Nevertheless, literature suggests a complex relationship between EDs and parental bonding supported by the inconsistency of some findings (Russell *et al.*, 1992; Laporte *et al.*, 2001; Kent & Clopton, 1992) which may derive also from self-administration biases related to an 'effort after meaning' effect (Wade *et al.*, 2001).

The effect of parenting on the expression of an eating disorder may not be a direct one. Parental control has been linked to eating psychopathology with the mediation of core beliefs (Turner *et al.*, 2005; Leung *et al.*, 2000; Meyer & Gillings, 2004) and maladaptive perfectionism (Soenens *et al.*, 2008).

Few studies have explored the relationship of parenting with personality traits evidencing a significant relationship between maternal affectionless control with high levels of harm avoidance and low levels of self-directedness in healthy women (Otani *et al.*, 2009) and a possible mediation effect of personality between rearing and depression (Avigianou & Zafiropoulou, 2008; Enns *et al.*, 2000). With regard to EDs, high levels of harm avoidance and low levels of self-directedness have been related to low levels of parental care in anorectic women (Bulik *et al.*, 2000) while Eggert *et al.* (2007) found that an insecure attachment style was indirectly related to eating symptoms, with a full mediation effect of neuroticism and extraversion.

Bulimic women assessed with the Temperament and Character Inventory (TCI; Cloninger *et al.*, 1993) are characterised by a specific personality pattern (Fassino *et al.*, 2002), which is extensively related to their eating psychopathology (Fassino *et al.*, 2003a; Picot & Lilienfeld, 2003). Thus, it is possible that personality traits mediate between parental bonding and eating psychopathology in bulimic women.

- 1) This study investigates a large randomly-selected sample of bulimic outpatients in their acute phase of disease to determine whether their perception of parental bonding differed significantly from that of healthy controls.
- 2) A previous study (Wonderlich & Swift, 1990) revealed that, controlling for mood symptoms, no significant differences in parental rearing appeared between ED and healthy subjects. Therefore, the present study controls these differences for current depressive feelings and time since recollection.
- 3) It also explores the correlation between parental bonding pattern, personality traits, and eating psychopathology

4) and, finally, it tests the mediating role of TCI personality traits between parental bonding and eating psychopathology.

METHODS

Participants

All 155 women currently affected with a DSM-IV-TR bulimic disorder (purging type) consecutively referred for a first assessment visit to the Pilot Regional Centre for Care and Study of the Eating Disorders of the University of Torino between June 2003 and March 2006 were asked to participate in this study.

The inclusion criteria were current DSM-IV-TR diagnosis of BN (i.e. active phase of the disease), female sex, knowledge of the Italian language, and absence of psychosis or severe mental retardation. Patients were assessed using the *Structured Clinical Interview for DSM-III* (SCID; Spitzer *et al.*, 1990). One woman affected with a current psychotic disorder was excluded from the study. The final sample included 154 Caucasian women with BN (age = 32.71 ± 10.4 y; educational level = 11.8 ± 5.3 years of formal education). Forty-seven patients (30%) had a lifetime history of anorexia nervosa generally (N = 37; 78%) corresponding with the outburst of the disorder, 18 (12%) had a lifetime history of binge-eating disorder.

After the first assessment visit, all subjects completed the *Parental Bonding Instrument* (PBI; Parker *et al.*, 1979), the *Temperament and Character Inventory* (TCI; Cloninger *et al.* 1993), the *Eating Disorder Inventory II* (EDI-2; Garner, 1993), and the *Beck Depression Inventory* (BDI; Beck *et al.*, 1974).

The control group consisted of 154 Caucasian women (age = 24.36 ± 3.6 y) recruited from students at various high schools and universities in Turin. Control subjects were all screened to ensure the absence of axis I and II disorders or any clinical medical conditions using the SCID and a clinical interview. The control subjects were matched with the probands for ethnicity, social background, and educational level (all subjects were Caucasian, had a middle-class social background and educational level of 12.4 ± 4.1 years of formal education).

All women provided written informed consent for participation in the study and were assured that confidentiality would not be breached in any way. The research methods were reviewed and approved by the institutional review board at San Giovanni Battista Hospital in Turin, Italy.

Statistical analyses

A MANOVA was performed to compare all variables between bulimic subjects and the control group. PBI, TCI and EDI-2 scores were also compared with MANCOVA controlling for age, BMI, and BDI. This was done to reduce recollection biases of bond patterns which is an intrinsic limit of PBI and the biases of TCI and EDI-2 assessment possibly related to mood, age and BMI differences. Correcting for the assessment biases reduced the possible casualty of between-group differences, nevertheless a Bonferroni correction for multiple comparisons was applied with $p < .002$.

To perform a considerable variable reduction only the variables which significantly differed between groups at this step were considered in the further regression analysis.

Linear correlation of PBI and TCI scores that significantly differed between participants and controls (i.e., parenting features that may influence the expression of the disorder) with eating psychopathology were explored for BN subjects using a multiple backward linear regression with PBI scores as independent variables on TCI and EDI-2 and TCI scores on EDI-2 scores. Correlations in the controls' group were performed only for those variables which were considered in the mediation model for the BN group. At this step a significance level of $p < .05$ was accepted since data reduction has been previously performed and because of the explorative aims of the analysis.

A series of multiple linear backward regression analyses were performed to explore the mediating role of TCI between PBI and EDI-2 with respect to the previous multiple models.

To establish mediation Baron & Kenny (1986) indicate four requirements:

- 1) the total effect of the independent variable (PBI) on the dependent variable (outcome; EDI-2) must be significant,
- 2) the path from the independent variable to the mediator (TCI) must be significant,
- 3) the path from the mediator to the dependent variable must be significant,
- 4) the independent variable and the mediator must not be caused by the outcome variable. If these conditions all hold in the predicted direction, the effect of the independent variable on the third variable must be reduced when the mediator has been controlled. For a complete mediation the independent variable no longer has any effect on the dependent variable, unless there is a "partial mediation". The amount of mediation is usually called an "indirect effect" and is measured as the prod-

uct between the regression coefficients of the second and third regression. For a more detailed description of the mediation model please see: <http://davidakenny.net/cm/mediate.htm>.

Based on the suggestion of Baron & Kenny (1986), regression analyses were not performed using the stepwise method. If no correlation appeared between PBI or TCI and EDI-2 scores in the first linear correlation analysis, the mediation model was excluded at step 1 or 2 and, thus, succeeding analyses were not performed. As regards the (4) assumption, the present study explores the hypothesis that parenting influenced personality traits development in childhood (according with the psychobiological model; Cloninger *et al.*, 1993) and that it may have influenced eating psychopathology with their mediation. Except for the possible "effort after meaning" effect (Wade *et al.*, 2001), childhood parenting foreruns both personality development and eating psychopathology expression, while it has been evidenced that personality traits represent risk factors for (and thus forerun) the development of an eating disorder (McEwen & Flouri, 2009; Furnham & Adam-Saib, 2001) and persist after remission (Holliday *et al.*, 2006; Bloks *et al.*, 2004). Being this a cross-sectional study this assumption is thus based on these literature evidences (and on clinical experience) and not on the design of the study itself. The Sobel test (<http://www.danielsoper.com/statcalc/calc31.aspx>) was applied to measure the significance of the indirect effect. The statistical analyses, except for Sobel test, were performed using SPSS software (SPSS Inc., Chicago, IL).

RESULTS

MANOVA and MANCOVA comparison

Table I compares the bulimic and control groups by MANOVA for all variables and MANCOVA controlled for age, BMI and BDI of parental bonding, personality, and eating psychopathology characteristics.

Some items were excluded from further analyses because they did not significantly differ between BN and control women after the controlled analysis: among parental bonding traits maternal and paternal overprotection, among personality dimensions harm avoidance, reward dependence, persistence, cooperativeness and self-transcendence, among eating psychopathology traits perfectionism, interpersonal distrust and maturity fears.

Table I – Age, BDI and BMI t-test and controlled MANCOVA comparison between bulimic and control women.

	Bulimic Women		Control Women		MANOVA		MANCOVA	
	Mean ± SD	Mean ± SD	F	p	F	p		
Age	31.13 ± 8.2	24.36 ± 2.8	82.78	.000	–	–		
BMI (body mass index)	22.69 ± 3.5	20.04 ± 1.6	6.05	0.14	–	–		
BDI	15.12 ± 1.1	4.01 ± 4.1	186.05	.000	–	–		
PBI								
Maternal Care	21.07 ± 9.8	29.20 ± 7.0	65.20	.000	11.38	.001		
Maternal Overprotection	18.67 ± 9.2	13.07 ± 7.6	31.21	.000	2.76	.097		
Paternal Care	18.34 ± 10.0	26.55 ± 7.3	60.25	.000	16.49	.001		
Paternal Overprotection	17.79 ± 11.1	12.76 ± 12.0	14.84	.000	1.12	.291		
TCI								
Novelty Seeking	22.30 ± 6.3	18.46 ± 5.07	31.85	.000	30.14	.001		
Harm Avoidance	23.99 ± 6.3	17.89 ± 6.9	59.57	.000	4.27	.040		
Reward Dependence	15.91 ± 3.8	15.42 ± 3.9	1.15	.285	2.32	.129		
Persistence	4.34 ± 1.8	4.54 ± 1.9	.78	.378	.19	.667		
Self-Directedness	18.44 ± 7.7	29.47 ± 7.7	141.43	.000	25.01	.001		
Cooperativeness	29.36 ± 7.15	32.39 ± 7.0	13.05	.000	.65	.422		
Self-Transcendence	14.03 ± 6.0	12.35 ± 6.3	5.24	.023	1.03	.310		
EDI-2								
Drive to Thinness	15.55 ± 5.2	1.28 ± 1.9	566.15	.000	227.49	.001		
Bulimia	10.16 ± 5.2	0.79 ± 1.2	306.94	.000	135.30	.001		
Body Dissatisfaction	17.34 ± 7.18	6.07 ± 5.1	177.74	.000	76.77	.001		
Inadequacy	11.90 ± 7.5	1.93 ± 2.5	169.71	.000	12.51	.001		
Perfectionism	6.51 ± 4.7	3.21 ± 2.4	45.35	.000	4.51	.035		
Interpersonal Distrust	5.87 ± 4.6	2.29 ± 2.3	55.97	.000	.37	.541		
Interoceptive Awareness	11.95 ± 6.7	1.59 ± 1.8	230.03	.000	51.71	.001		
Maturity Fears	6.63 ± 5.5	4.51 ± 3.1	13.15	.000	.16	.686		
Asceticism	8.27 ± 4.3	2.84 ± 1.6	151.44	.000	29.56	.001		
Impulsiveness	9.09 ± 7.1	1.49 ± 2.0	116.90	.000	13.01	.001		
Social Insecurity	8.55 ± 4.8	2.66 ± 2.6	126.02	.000	12.73	.001		

SD = Standard Deviation; BDI = Beck Depression Inventory; PBI = Parental Bonding Instrument; TCI = Temperament and Character Inventory; EDI-2 = Eating Disorders Inventory-2.

Bold characters evidence significant between-group differences which are considered in the further analysis.

Multiple linear regression analysis in bulimic subjects

Table II displays the significant results of multiple regression analysis of PBI on EDI-2 scores for the BN group.

Linear Regression analysis between PBI and TCI evidenced that only paternal care was significantly related to

those personality traits which significantly differed between groups. Paternal care significantly predicted novelty seeking ($B = -.122$; $t = -2.315$; $p = .022$) and self-directedness ($B = .145$; $t = 2.335$; $p = .021$).

Table III displays the significant results of multiple regression analysis of TCI on EDI-2 scores for the BN group.

Table II – Multiple regression analysis of PBI with EDI-2 scores.

PBI	EDI-2	Multiple regression		
		B	t	p
Maternal Care	Inadequacy	-.135	-2.211	.029
	Impulsiveness	-.129	-2.226	.028
	Social Insecurity	-.125	-3.193	.002
Paternal Care	Interoceptive Awareness	-.176	-3.344	.001
	Impulsiveness	-.114	-1.989	.049
	Asceticism	-.074	-2.132	.035

PBI = Parental Bonding Instrument; EDI-2 = Eating Disorders Inventory-2.

Table III – Multiple and multivariate regression analysis of TCI with EDI-2 scores.

PBI	EDI-2	Multiple regression		
		B	t	p
Novelty Seeking	Impulsiveness	.288	3.190	.002
	Harm Avoidance	.231	2.585	.011
Harm Avoidance	Body Dissatisfaction	.580	6.742	.000
	Inadequacy	.219	2.555	.012
	Interoceptive Awareness	.156	2.840	.005
	Asceticism	.306	3.408	.001
	Impulsiveness	.391	7.224	.000
Reward Dependence	Social Insecurity	-.393	-2.626	.010
	Impulsiveness	-.303	-3.009	.003
Self-directedness	Social Insecurity	-.178	-3.452	.001
	Drive to Thinness	-.164	-3.026	.003
	Bulimia	-.251	-3.531	.001
	Body Dissatisfaction	-.595	-9.474	.000
	Inadequacy	-.354	-5.484	.000
	Interoceptive Awareness	-.205	-4.808	.000
	Asceticism	-.450	-6.855	.000
	Impulsiveness	-.352	-8.360	.000
	Social Insecurity	-.127	-2.241	.027
	Drive to Thinness	-.245	-2.903	.004
Cooperativeness	Inadequacy	-.176	-2.329	.021
	Interoceptive Awareness	-.105	-2.155	.033
	Asceticism	-.441	-6.047	.000
	Impulsiveness	-.275	-5.435	.000
	Social Insecurity			

TCI = Temperament and Character Inventory; EDI-2 = Eating Disorders Inventory-2.

Mediation of personality traits between parenting and eating psychopathology

Table IV presents the results of the multiple backward linear regression analysis testing the mediation model of TCI between PBI and EDI-2 in BN and control women.

The regression analysis suggested a complete mediation of novelty seeking between paternal care and impulsiveness nevertheless the Sobel test evidenced only a trend towards significance (Sobel test = 1.868; $p < .06$). Self-directedness completely mediated between paternal care and both asceticism (Sobel test = 2.099; $p < .036$) and

impulsiveness (Sobel test = 2.212; $p < .027$). Instead, the mediation of self-directedness between paternal care and interoceptive awareness was only partial (Sobel test = 2.148; $p < .032$).

DISCUSSION

The present study correlates childhood parental bonding to personality and psychopathology traits in bulimic individuals. The use of a self-assessed instrument for measuring parenting is a difficult to overcome limitation

Table IV – Personality traits as mediators between parental care and eating psychopathology in BN women.

Regression analysis with PBI and TCI as independent variables	Bulimic Women			Control Women		
	B	t	p	B	t	p
Independent variable (PBI) → Mediator (TCI) → Outcome (EDI-2)						
Paternal Care → Novelty Seeking → Impulsiveness						
Paternal Care	-.065(.058) ^a	-1.117	.266	-.023(.029)	-.776	.439
Novelty Seeking	.268(.094)	2.858	.005	.037(.043)	.870	.386
Paternal Care → Self-directedness → Asceticism				.021(.023)	.915	.362
Paternal Care	-.065(.058) ^a	-1.117	.266	.037(.043)	.870	.386
Novelty Seeking	-.185(.046)	-3.980	.001			
Paternal Care → Self-directedness → Interoceptive Awareness				-.008(.027)		.763
Paternal Care	-.120(.051)	-2.346	.020	-.045(.027)	-.303	.099
Self-directedness	-.308(.069)	-4.427	.001		-1.664	
Paternal Care → Self-directedness → Impulsiveness						
Paternal Care	-.033(.053)	-.626	.533	-.018(.029)	-.630	.530
Self-directedness	-.445(.072)	-6.178	.001	-.030(.030)	-1.015	.312

in any cross-sectional study. Correcting the bias represented by current depressive feelings ensured a better focus on the relationship between parental bond pattern and eating psychopathology, but it excluded a psychopathology trait that is relevant for these subjects from the analysis. Moreover, it was not possible to overcome the recall biases consequent to different degrees of awareness and the unavoidable subjectivity of judgement about the parental relationship. Nevertheless present findings are consistent with literature evidences on personality (Fassino *et al.*, 2002) and psychopathology patterns (Bulik *et al.*, 2000; Fassino *et al.*, 2003a) of BN women and add some knowledge in the field of parenting influences on bulimia nervosa.

Personality and psychopathology profile

Wonderlich & Swift (1990) sustained that parenting was not significantly different from controls if depressive symptoms and age were considered, because these confounding factors may have negatively influenced the retrospective perception of participants. Instead, our study confirms that bulimic participants report poor caring attitudes in their mothers and fathers (Di Pentima *et al.*, 1998; Laporte *et al.*, 2001). Hence, a defective parenting may be somewhat relevant for the pathogenesis of the disorder.

Although maternal and paternal intrusiveness has been described as characteristic of ED women (Di Pentima *et al.*, 1998; Bulik *et al.*, 2000; Yamaguchi *et al.*, 2000; Romans *et al.*, 2001), the present study evidenced a strong relationship of this trait with depressive feelings. Current mood of bulimic women may have influenced the recall of parents' overcontrolling attitudes. Alternatively, maternal and paternal overcontrol in infancy may represent a liability towards current depressive symptoms. The transversal design of this study made it impossible to test these hypotheses which need further consideration in perspective studies (Russell *et al.*, 1992).

Relationship of parental care with eating psychopathology

Parental care correlates with personality and psychopathology traits of BN women. The cross-sectional design of this study does not support the *a priori* direction of this relationship. Nevertheless, the PBI assesses patients' recollections of past events while the other tests assessed patients' current self-perception. Thus, their cor-

relation should reflect the influence that past parenting on current personality and/or psychopathological traits.

Low levels of maternal care in infancy are strongly related to social insecurity and inadequacy. Previous studies have described disturbed social patterns in bulimic women (Miotto *et al.*, 2002), which may be responsible for difficulties in the therapeutic relationship with these patients (Fassino *et al.*, 2003c; Tereno *et al.*, 2008). Mothers who are weak, blaming (Fassino *et al.*, 2003b; 2009), and provide poor levels of care may not offer an adequately trusting relationship, thereby producing social insecurity and relational withdrawal (Eggert *et al.*, 2007).

Impulsiveness is related to both maternal and paternal care and to all personality traits of bulimic women. This trait represents a core feature of bulimia nervosa (Fassino *et al.*, 2004) another related disorder (i.e. borderline personality disorder or impulse control disorders). The disposition towards impulsiveness is related to the temperament dimension of novelty seeking, while its expression is modulated by the levels of self-directedness (Svrakic *et al.*, 2003).

Low levels of paternal care may also influence the ability of daughters to recognise their feelings and emotions and to distinguish them from physiological sensations. The interoceptive awareness has been already evidenced as a core element of bulimic psychopathology (Fassino *et al.*, 2004). The development of an adequate interoceptive awareness is a function of the father-daughter relationship during the development of a daughter's body-self (Turner *et al.*, 2005). The relationship of its defective development in BN women with low paternal care is consistent with recent findings relating emotional awareness with core beliefs of abandonment and emotional inhibition in ED women (Lawson *et al.*, 2008).

Also the tendency towards self-sacrifice (i.e. ignoring their own physiological needs, feelings and emotion) with purpose of atonement represented by asceticism is related to poor paternal care.

Relationship of paternal care with daughters' personality traits

Maternal care does not correlate with any personality trait which distinguishes BN from control women. The influence of maternal care on the development of BN daughters' personality follows common paths with controls.

Instead a relationship of paternal care with novelty seeking and self-directedness does exist. This may suggest some influence of paternal parenting on the development of these traits, which may follow genetic (endophe-

notype transmission; Day *et al.*, 2009) or relational paths. Nevertheless, the possibility that this relationship is mediated by a factor (f.i. attachment), external to the present model, has to be considered.

Personality as mediator between parenting and eating psychopathology

Personality significantly mediate, at different degrees, between parenting and eating psychopathology. Novelty seeking do not mediate the influence of paternal cares on impulsiveness. In fact, this trait is temperamental and thus only partially influenced by parenting. Moreover the relationship of novelty seeking with parenting may partly be consequent to its negative correlation with self-directedness development which has been evidenced by literature (Svrakic *et al.*, 2003). Instead, self-directedness, whose development is influenced by relationships and parenting (Svrakic *et al.*, 2003), mediates the influence of parental cares on impulsiveness and asceticism. The expression of these two core elements of eating psychopathology thus result indirectly related to parenting.

Finally the mediation of self-directedness on asceticism is significant but only partial. This implies that, according to the abovementioned literature findings (Lawson *et al.*, 2008; Turner *et al.*, 2005) that paternal parenting exerts also a direct effect on the self-perception of the bulimic women and not only an influence mediated by character development.

FINAL CONSIDERATIONS

Bulimic women recall an insufficiently caring parenting from both parents not justified by their current mood, age and BMI. A high variability of parenting features among bulimics' families and the high subjectivity of daughters' evaluation, with possible "effort after meaning" (Wade *et al.*, 2001) or denegation effects, may account for discording literature findings (Kent & Clopton, 1992; Russell *et al.*, 1992; Laporte *et al.*, 2001).

Specific personality and psychopathology traits of BN women are related to recollections of low levels of parental care (Di Pentima *et al.*, 1998; Bulik *et al.*, 2000). The present findings evidence that character development mediates the influence of defective paternal parenting on eating psychopathology. Nevertheless both maternal and paternal cares also directly relate to eating psychopathology expression. The present findings shed a light on the complex paths of influence of parenting on eating psy-

chopathology of bulimic daughters. In fact, BN is a complex and multifactorial disease, and the lack of relationship between parenting and bulimic symptoms, which are the most explicit expression of the disorder (Raffi *et al.*, 2000), sustains that parents who exhibit low levels of care cannot be the exclusive determinants of its onset.

Clinical implications

It is not possible to modify past care attitudes among parents in order to reduce their effects in the present. Moreover the present study does not include the assessment of current parent-daughter relationship. Nevertheless current family environment and parent-daughter dynamics are related with childhood parenting (Hedlund *et al.*, 2003).

Those BN women who still live at home or in situations where family relations are still relevant (NICE, CG9), may benefit from more appropriate levels of care from both parents (neither an overcompensation nor a continuation of childhood inadequate parenting), resulting from the modification of those deficiencies of the current parent-daughter relationship based on childhood inadequate parenting (Bulik *et al.*, 2000; 2003; Yamaguchi *et al.*, 2000; Heru, 2006; Tereno *et al.*, 2008). As evidenced for other mental disorders, the improvement of parent-daughter relationship may also prevent the burn of family resources (Magliano *et al.*, 2009).

Future perspectives

'Low levels of care' as tested by PBI is a generic definition of complex bonding aspects. Further studies should address in more detail the parents-daughter bonding dynamics that are relevant to the development of daughters' pathological traits. Assessment of family functioning and early parenting characteristics based on hetero-evaluation instruments and the assessment of siblings reports will overcome some assessment biases. In addition, the predictive value of parental bonding on therapeutic outcome must be specifically addressed in bulimic women, in a manner similar to what has been done for anorectic patients (Bulik *et al.*, 2003). Further studies may directly compare parental bonding patterns in different types of ED or other Axis I disorders to ascertain disorder-specific correlations.

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