# Parental rearing and eating psychopathology

Cristina Herraiz-Serrrano[1]
Teresa Rodríguez-Cano[2]
Luis Beato-Fernández[2]
José Miguel Latorre-Postigo[3]
Luis Rojo-Moreno[4]
Francisco J. Vaz-Leal[5]

[1]Centro de Salud Ciudad Real 3. Ciudad Real
[2]Servicio de Psiquiatría. Hospital General Universitario de Ciudad Real
[3]Departamento de Psicología. Universidad de Castilla La Mancha. Albacete
[4]Facultad de Medicina. Universidad de Valencia
[5]Facultad de Medicina. Universidad de Extremadura

**Introduction.** The aim of the study was to identify the relationship between perceived rearing styles and the clinical expression of Eating Disorders (ED).

**Methods.** One hundred and ninety-six patients diagnosed of an ED and 127 healthy student as controls selected from the Nursing College were evaluated for general psychopathology (STAI, BDI II, RSE), and for abnormal eating attitudes (EAT, EDI-II, BITE). The EMBU ('my memories of upbringing') was administered for the assessment of perceived parental rearing styles and was used a questionnaire to assess familial variables.

**Results.** In relation to the control group, patients with ED perceived greater rejection, overprotection and less warmth than the controls. Patients who perceived greater paternal favoritism, maternal overprotection and low paternal emotional warmth, showed higher levels of anxiety. Paternal affection and maternal attitudes of rejection, overprotection and favoritism were related to lower self-esteem. Regarding abnormal eating attitudes, body dissatisfaction inversely correlated with paternal emotional care and maternal favoritism. The EDI subscales: ineffectiveness, perfectionism and ascetism were associated to parental rejection. Maternal rejection also related with drive for thinness, interoceptive awareness and impulse regulation. Perceived emotional warmth was related with perfectionism. Bulimia subscale and BITE scores were inversely associated to paternal overprotection and affection, and scored significantly higher in paternal favoritism and rejection from both parents.

**Conclusions.** Perceived parental bonding is different in the various subtypes of EDs. Patients diagnosed of Bulimia Nervosa or Eating Disorders Not Otherwise Specified perceived greater rejection, less affection and a greater overprotection than Anorexia Nervosa patients and controls.

**Keywords:** Eating disorders, Rearing, Family relationships, EMBU, Anorexia nervosa, Bulimia nervosa

Correspondence:
Dr. Luis Beato Fernández.
Unidad de Trastornos Alimentarios
Hospital General Universitario de Ciudad Real
13005 – Ciudad Real (Spain)
E-mail: luis.beato@uclm.es

*Actas Esp Psiquiatr 2015;43(3):91-8*

## Relación entre la percepción de la crianza y la psicopatología alimentaria

**Introducción.** El objetivo de nuestro trabajo es identificar cómo los recuerdos de la crianza podrían influir en la expresión clínica de los trastornos de la conducta alimentaria (TCA).

**Metodología.** Administramos una batería de cuestionarios de psicopatología general (BDI, STAI, RSE) y alimentaria (EAT, EDI-2, BITE, BSQ) a 196 pacientes diagnosticados de TCA y a 127 sujetos sanos reclutados de la Escuela de Enfermería. Todos completaron también un cuestionario sobre 'Los recuerdos de mi crianza' (EMBU) y una encuesta de variables familiares.

**Resultados.** En relación al grupo control, los pacientes con un TCA percibían mayor rechazo, sobreprotección y menor afecto que los controles. En el grupo de pacientes, el favoritismo paterno, la sobreprotección materna e inversamente el afecto paterno se relacionaba con la ansiedad estado y rasgo. El afecto paterno, junto al rechazo, la sobreprotección y el favoritismo maternos, también se relacionaba inversamente con la autoestima. Respecto a la psicopatología alimentaria, el rechazo corporal se relacionaba inversamente con afecto paterno y favoritismo materno. La ineficacia, perfeccionismo y ascetismo del EDI con el rechazo global y el rechazo materno con la tendencia a la delgadez, conciencia interoceptiva e impulsividad. El afecto global con perfeccionismo. La subescala bulimia y las puntuaciones del BITE se relacionaban inversamente con sobreprotección paterna y afecto paterno y directamente con favoritismo paterno y rechazo global.

**Conclusiones.** La percepción de la crianza difiere en los subtipos de TCA. Pacientes con bulimia o TCA no especificado recordaban mayor rechazo, menor afecto y mayor sobreprotección que pacientes con anorexia y controles.

**Palabras clave:** Trastornos de la Conducta Alimentaria, Crianza, Relaciones familiares, EMBU, Anorexia nerviosa, Bulimia

## INTRODUCTION

Some investigations have shown a certain association of rearing styles with Eating Disorders (ED).[1] However, few studies have done a comprehensive study on this relationship. We understand that "rearing style" is the type of education relationship maintained by the parents with their children. We can distinguish two rearing dimensions: emotional warmth and control,[2] and when these are combined, four education styles are obtained: *authoritarian, democratic, indulgent and indifferent*. To evaluate the rearing styles, several instruments have been elaborated, such as the "*PBI*" (*Parental Bonding Instrument*)[3] or the "*EMBU*" (*Egna Minnen Beträffande Uppfostram* – my memories of upbringing).[4] Both are based on the *memories* of the children regarding education styles of their parents. Cava, in a study performed in the general population,[1] found that adolescents with ED remembered growing up with less '*emotional warmth*' plus '*overprotection*' and more '*rejection*' by their mother as well as more paternal '*rejection*' than adolescents in the control group, the latter being the dimension showing the greatest relative risk. However, other authors have not found differences between rearing styles of patients with ED compared to healthy controls.[5] Finally, few systematic studies have been performed in control groups and their results show discrepancies that make it difficult to reach valid conclusions. Part of these divergences are due to methodological aspects, as the different measurement instruments used, use of clinical samples (most) or inequality in the social-cultural variables. On the other hand, there are few studies comparing the rearing style with the different psychopathological expression in the different diagnostic subtypes.[6]

The main purpose of our work is to identify if there is a relation between the perception of rearing and the clinical characteristics of ED, evaluated with standardized questionnaires, in a population of patients seen in a specialized out-patient consultation. The secondary objective we propose is 1) to evaluate if there are statistically significant differences regarding the perception of the perception of rearing between the control population and patients with eating behavior disorder and between the different diagnostic subtypes of ED and 2) to study if there is a statistically significant association between perception of rearing and general psychopathological aspects such as anxiety and low self-esteem. Our initial hypothesis is that memories on rearing could be associated with the diagnostic subtype of ED and that these styles are related with a different psychopathological expression.

## METHODOLOGY

This is a case-control study with the participation of 196 patients who consecutively came to the outpatient clinics of the Eating Behavior Disorders Unit (EBDU) of the Hospital General Universitario of Ciudad Real between 1 January 2006 and 31 December 2008 who met the diagnostic criteria of any ED according to the DSM-IV (APA 1994).[7] Successive sampling was performed, including in the study those who were receiving treatment in our unit and who voluntarily accepted to participate. The patients were interviewed by an expert psychiatrist and a semi-structured interview was applied to know other clinical data as toxic consumption, self-injury behaviors or suicidal ideas. All the patients underwent a routine physical examination (analysis, physical study, body mass index (BMI = weight/height $m^2$) and measurement of basic vital signs. They were informed about the study characteristics and were assured about the confidentiality of the data. The actions formed a part of the routine study in the consultation and their application did not modify the usual interventions carried out on the patients. A registry sheet was developed, including the social-demographic data and the tests described below. The control sample consisted in 129 students from the University School of Nursing of Ciudad Real who agreed to participate in the study and collaborate in the performance of the questionnaires. The tests were administered during class hours and the anonymity of all the participants was assured. Two of the students had at risk scores on the questionnaire and although this could mean a bias, they were excluded in the final statistical analysis, the control sample finally being 127 subjects. No subsequent clinical interview was performed with the control group.

### Measurement instruments

We used a semi-structured questionnaire having social-demographic and clinical variables specifically designed for this work. The general psychopathology tests used were "STAI" (*State-Trait Anxiety Inventory*),[8] "BDI" (*Beck Depression Inventory*)[9] evaluating the symptoms present in depression and the "RSE" (*Rosenberg Self-Esteem*)[10] exploring self-esteem. The eating psychopathology scales applied were "EAT-40" (40 items - *Eating Attitudes Test*) validated in the Spanish Population by Castro et al.,[11] "EDI-2" (*Eating Disorders Inventory*),[12] "BITE" (*Bulimic Investigatory Test Edinburgh*) to identify bulimic symptoms[13] and the "BSQ" (*Body Shape Questionnaire*) in its version adapted to the Spanish population.[14] Rearing styles were identified with the "EMBU."[3] This questionnaire was made up of 81 items grouped into 15 Subscales from which 4 dimensions were obtained. The dimension "*Rejection*" included elements of hostility, aggressiveness and indifference; the dimension of "*Emotional Warmth*" was related with signs of parental love and acceptance; that of "*Overprotection*" evaluated the attempts of the parents to control the behavior of their children and that of "*Favoritism*" the attitude of predilection regarding the siblings.

The dependent variables were anxiety determined with the "STAI," self-esteem determined with the "RSE," and eating psychopathology measured with the "EAT," "EDI-2," "BITE" and the "BSQ." Included as independent variables were the subscales of the "EMBU." We used an analysis of the variance to evaluate the differences between the different subscales of the "EMBU" and the diagnostic subtypes. Furthermore, we applied a multiple regression analysis to identify the possible relation between the subscales of "EMBU" with the psychopathological variables.

## RESULTS

A total of 196 cases (43 [21.9%] were analyzed, these corresponding to the diagnosis of "Anorexia Nervosa" -AN-; 74 [37.8%] to the diagnosis of "Bulimia Nervosa" -BN- and 79 [40.3%] to Eating Disorders not otherwise specified" -EDNOS-), and 127 controls. Mean global age was 23.2 years, (standard deviation 5.89, with age range from 13 to 44 years). Age in patients diagnosed of AN was significantly lower than that of the controls and remaining subgroups diagnosed (mean 19.6, F=9.01, gl=3, p<0.001). However, we did not feel the need to make any correction since the questionnaires used did not show changes in their scores based on the patient's age.

No significant differences were found regarding toxics between patients and controls or between the different diagnostic subtypes. Greater suicidal ideation ($Chi^2$ 46,178, gl 3, p<0.001), more self-injury behaviors ($Chi^2$ 31,79, gl 3, p<0.001), and more suicide attempts were found in the three subtypes diagnosed compared with the controls. The latter behavior was, above all, more prevalent in patients with BN and EDNOS ($Chi^2$ 63.88, gl 3, p<0.001).

### Psychopathological variables

Regarding the psychopathological variables, greater global self-esteem was observed in controls when compared with all the diagnostic subtypes (F=58.543, gl=3, p<0.001). Anxiety trait was more evident in patients diagnosed of BN than in AN (F=72.606, gl=3, p<0.001) and than in controls. Anxiety-state was also greater in patients than controls, without observing significant differences between them (F=40.544, gl=3, p<0.001). Mean scores on the "EAT" were significantly higher in the three subgroups of patients than in the controls (table 1).

*Familial Variables:* Mean number of siblings was 2 to 3. No differences were observed between the groups regarding loss of any loved one. Patients described their family relationships more negatively than controls, with higher lever of violence and paternal demands in those diagnosed of BN and greater perception of indifference, rigidity and excessive control in BN and EDNOS (table 2).

*Perception of rearing measured with the "EMBU" in the different ED subtypes*: patients with BN and EDNOS perceived greater '*rejection,*' greater '*overprotection*' and less '*warmth*' than those diagnosed of AN and controls; and the three groups of ED greater '*favoritism*' than the healthy controls (table 3).

Relation of the rearing styles measured with the "EMBU" and psychopathology

We found an inverse relation between '*emotional warmth of the father*' and '*anxiety-state*' (F=20.395; gl 3; p<0.001) and '*trait*' (F=29.336, gl 3, p<0.001). On the contrary, both '*favoritism of the father*' (F=20.395; gl 3; p<0.001; $R^2$=0.183; $R^2$ corrected [$R^2$c]=0.174) and '*overprotection of the mother*' was associated to greater anxiety (F=29.336, gl 3, p<0.001 $R^2$=0.24). '*Paternal emotional warmth*' was related with greater self-esteem (F=24.28, gl 4, p<0.001, $R^2$=0.26; $R^2$c 0.25). On the contrary '*rejection,*' '*favoritism*' and '*maternal overprotection*' are significantly associated with lower scores on the "RSE" (F=24.28, gl 4, p<0.001, $R^2$=0.26; $R^2$c 0.25).

*Regarding the relation between perception of rearing and eating psychopathology*, in the multiple regression analysis, we used anxiety as covariable to control its effect on eating symptoms. Independently of the effect of anxiety, '*rejection of the mother*' (ß=0.151; CI 99% 0.151-0.590) and '*favoritism of the father*' (ß=0.110; CI 95% 0.260-1.958) were associated with the scores on the "EAT," accounting for 54.3% of the variance. Controlling for the effect of anxiety on satisfaction with one's own body image, greater '*paternal emotional warmth*' was associated with lower scores on the "BSQ" and '*maternal favoritism*' was related with greater rejection to one's body shape (F=76.95; gl 3; p=0.000; $R^2$=0.468; $R^2$c=0.462). Greater '*global rejection*' was associated with higher scores in '*ineffectiveness, 'perfectionism' and* '*ascetism*' of the "EDI." Greater '*maternal rejection*' was correlated with higher score in '*tendency to thinness,*' '*interoceptive awareness*' *and* '*impulsiveness,*' but '*paternal rejection*' was not significantly associated with "EDI." A negative relation was found between '*paternal emotional warmth*' and bulimic symptoms, between '*maternal emotional warmth*' and the scales of '*interpersonal mistrust*' and '*social insecurity.*' It was also observed that greater '*global emotional warmth*' was associated with greater '*perfectionism.*' '*Paternal overprotection*' was inversely associated with the Subscale of '*bulimia*' of the "EDI" (table 4).

'*Emotional Warmth*' and '*overprotection*' by the father showed a negative association with bulimic symptoms measured with the "BITE" (β=-0.227, CI 95% -0.341-0.142; p=0.000). On the other hand, '*paternal favoritism*' and '*global rejection*' favored the appearance of these symptoms (β=0.095, CI 95% (0.035-1.023); p<0.05. F=94.199; gl 3; p=0.000; $R^2$=0.519, $R^2$c=0.513; change in $R^2$=0.008).

**Table 1** Mean scores on the EAT and subscales of the EDI

| | Controls | | AN | | BN | | EDNOS | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| EAT | 11.19* | 9.005 | 47.10 | 22.23 | 48.86 | 18.641 | 49.11 | 25.95 |
| EDI | | | | | | | | |
| Drive for Thinness | 3.70*** | 7.82 | 9.69 | 5.863 | 14.63 | 4.974 | 13.24 | 6.279 |
| Bulimia | 0.81*** | 1.879 | 1.64*** | 3.281 | 9.23 | 5.636 | 4.33 | 4.968 |
| Body Dissatisfaction | 6.70*** | 6.843 | 10.92 | 7.143 | 19.58 | 7.570 | 17.12 | 6.994 |
| Ineffectiveness | 2.03*** | 3.053 | 9.31 | 7.729 | 13.11 | 7.451 | 10.80 | 6.674 |
| Perfectionism | 2.72*** | 2.858 | 6.44 | 4.044 | 6.07 | 4.467 | 6.52 | 4.406 |
| Interpersonal Distrust | 2.75*** | 3.243 | 5.28 | 4.425 | 5.25 | 4.588 | 5.36 | 4.507 |
| Interoceptive Awareness | 1.79*** | 3.379 | 8.31 | 6.118 | 13.45 | 6.837 | 11.72 | 6.409 |
| Maturity Fear | 5.28*** | 4.060 | 9.28 | 5.301 | 9.12 | 5.998 | 9.24 | 5.550 |
| Ascetism | 2.04*** | 1.948 | 4.70 | 3.657 | 7.40 | 3.881 | 6.83 | 4.638 |
| Impulse Regulation | 1.51*** | 2.944 | 6.07 | 4.795 | 8.87 | 7.298 | 6.88 | 5.003 |
| Social Insecurity | 2.71*** | 2.952 | 5.81 | 3.903 | 9.33 | 5.437 | 7.69 | 5.363 |

***p<0.001

**Table 2** Familial Variables

| Description of familial setting | | DIAGNOSTIC | | | |
|---|---|---|---|---|---|
| | | Control (%) | AN (%) | BN (%) | EDNOS (%) |
| Family tension | No | 36(31.0) | 17(42.5) | 18(25.4) | 16(21.1) |
| | Discussions | 79(68.1) | 19(47.5) | 34(47.9) | 42(55.3) |
| | Mistreatment | 1(.9) | 4(10.0) | 19(26.8)*** | 18(23.7)*** |
| Relations | Bad | 14 (11.0) | 13(30.2)** | 20(27.0)** | 23(29.1)** |
| | Good | 113 (89.0) | 30 (69.8) | 54 (73.0) | 56(70.9) |
| Father violence | No | 101 (90.2) | 29(74.4) | 42 (67.7) | 45 (71.4) |
| | Yes | 11 (9.8) | 10 25.6)*** | 20(32.3)*** | 18(28.6)*** |
| Indifference | No | 95 (82.6) | 25(62.5) | 26 (40.6) | 29 (43.3) |
| | Yes | 20 (17.4) | 15(37.5)*** | 38(59.4)*** | 38(56.7)*** |
| Father Control | Adequate | 54 (47.4)** | 16 (41.0)** | 19 (29.2) | 24 (35.3) |
| | No control or order | 2 (1.8) | 1 (2.6) | 4 (6.2)** | 0 (.0) |
| | Relaxed rules | 50 (43.9) | 17 (43.6) | 26 (40) | 24 (35.3) |
| | Excessive control | 8 (7) | 5 (12.8) | 16 (24.6)** | 20 (29.4)** |
| Mother Control | Adequate | 57 (48.7)** | 13 (31.7)** | 17 (25.0) | 19 (26.8) |
| | No control or order | 1 (0.9) | 1 (2.4) | 4 (5.9)** | 1 (1.4) |
| | Relaxed rules | 57(48.7) | 20 (48.8) | 30 (44.1) | 33 (46.5) |
| | | 2 (1.7) | 7 (17.1) | 17 (25.0)** | 18 (25.4)** |

**p<0.01. ***p≤0.001

**Table 3** Mean scores on the subscales of EMBU according to the different diagnostic subgroups. Mean (95% CI)

| Sub-Scales EMBU | Control (n=113) | AN (n=43) | BN (n=74) | EDNOS (n=79) |
|---|---|---|---|---|
| **Rejection** | 65.42 (62.95-7.89) | 69.88 (65.20-74.57) | 83.67 (77.96-89.38)** | 81.00 (75.66-6.34)*** |
| Rej. Father | 32.63 (31.34-33.92) | 34.35 (32.31-36.38) | 41.60 (38.36-44.85)*** | 40.01 (37.3-42.93)*** |
| Rej. Mother | 33.07 (31.75-34.39) | 35.77 (32.91-38.63) | 42.01 (39.07-44.95)*** | 41.00 (38.2-43.78)*** |
| **Emotional Warmth** | 106.23 (102.48-109.97) | 102.02 (93.72-110.32) | 83.66 (78.29-89.02) | 90.22 (84.65-95.78) |
| Em. Father | 52.06 (50.07-54.05) | 48.42 (44.26-52.58) | 38.85 (35.76-41.94)** | 42.73 (39.7-45.75)*** |
| Em. Mother | 53.85 (52.01-55.69) | 52.44 (48.68-56.21) | 45.32 (42.61-48.04)*** | 47.34 (44.45-50.2)*** |
| **Overprotection** | 64.19 (61.62-66.76) | 66.79 (62.41-71.18) | 71.60 (67.60-75.60)* | 74.94 (70.9-78.97)*** |
| Overprot. Father | 31.65 (30.35-32.95) | 32.30 (30.05-34.56) | 33.81 (31.69-35.93) | 36.56 (34.4-38.72)*** |
| Overprot. Mother | 32.68 (31.34-34.2) | 34.49 (31.80-37.17) | 37.65 (35.41-39.89)** | 38.15 (35.9-40.46)*** |
| **Favoritism** | 14.51 (13.65-15.38) | 18.24 (17.1-19.4)*** | 17.34 (16.17-18.50)** | 18.16 (17.06-19.3)*** |
| Fav. Father | 7.19 (6.76-7.62) | 9.12 (8.44-9.81)** | 8.55 (7.92-9.18)** | 9.43 (8.79-10.07)** |
| Fav. Mother | 7.40 (6.94-7.86) | 9.12 (8.46-9.78)** | 8.81 (8.14-9.47)** | 8.71 (8.19-9.23)** |

**Total rejection** (Rejection): F=17.010; gl 3; p=0.00. **Rejection Father** (Rej. Father): F=14.315. gl 3, p=0.00; **Rejection Mother** (Rej. Mother): F=14.858, gl 3, p=0.00; **Total Warmth** (Warmth): F=16.960; gl 3; p=0.00. **Emotional Warmth Father** (Em. Father): F=19.231; gl 3; p=0.00; **Emotional Warmth Mother** (Em. Mother) F=10.374; gl 3, p=0.00; **Total Overprotection** (Overprot.): F=8.0660; gl 3; p=0.00. **Overprotection Father** (Overprot. Father): F=5.787; gl 3; p=0.001; **Overprotection Mother** (Overprot. Mother): F=7.764; gl 3, p=0.00; **Total Favoritism** (Favoritism): F=12.807, gl 3; p=0.000. **Favoritism Father** (Fav. Father): F=14.007; gl 3; p=0.000; **Favoritism Mother** (Fav. Mother): F=8.229; gl 3; p=0.00.
**p<0.01, ***p<0.001

## CONCLUSIONS

The principal objective of our study was based on identifying if there was a relation between perception of rearing and eating psychopathology. Our findings support the initial hypothesis that perception of rearing is associated with the diagnosis of ED, differs from the healthy controls and is related with a different psychopathological expression of ED, both in its general eating psychopathology (*'Perfectionism,' 'Ineffectiveness and 'Social insecurity'* of the "EDI") and in the more specific variables (*'Bulimia'* or *'Tendency to thinness'*).

In our work, patients with ED, especially those diagnosed of BN or EDNOS perceived their rearing with greater *'Rejection,' 'Favoritism' and 'Overprotection'* and with less *'Emotional Warmth'* than the control population. In this sense, it has been stated that adolescents who perceive less family communication, less paternal emotional warmth and fewer parental expectations are at risk of developing an ED.[15] In a work performed by Horesh et al.,[16] perception of age, gender or skills inappropriate pressure of the child, and predominance of negative feelings in the family, as hostility towards the child or overprotection by the parents positively correlates with the scores on the "EAT."

In our review, we did not find international studies that used the "EMBU" in patients diagnosed of ED. However, in our country, different groups have used it, with opposing results. They were sometimes performed with heterogeneous samples including different diagnostic subtypes and other samples only included patients diagnosed of AN. Logically, the results vary according to the diagnostic groups included. Among the studies including samples with a specific diagnostic subtype is that performed by Castro et al.[17] on 158 adolescents diagnosed of AN, where the rearing practices and their relation with response to treatment were studied. In this work, the patients with poor short-term

**Table 4** Multiple regression analysis: Relation of the subscales of EMBU with the subscales of EDI, controlling the effect of anxiety. β (CI)

| | Rejection | | Emotional Warmth | | | Overprotection |
|---|---|---|---|---|---|---|
| EDI | Total | Mother | Total | Mother | Father | Father |
| Tendency to thinness | | 0.162 (0.48-0.172)**a) | | | | |
| Bulimia | | | | | -0.181 (-0.111 a -0.026)***g) | -0.285 (-0.271 a -0.079)***k) |
| Interpersonal distrust | | | | -0.184 (-0.107 a -0.023 )***i) | | |
| Ineffectiveness | 0.135 (0.021-0.079)***b) | | | | | |
| Perfectionism | 0.32 (0.033-0.099)***c) | | 0.215 (0.15-0.060) ***h) | | | |
| Interoceptive awareness | | 0.185 (0.073-0.191)***d) | | | | |
| Ascetism | 0.163 (0.011-0.055)*e) | | | | | |
| Impulsiveness | | 0.35 (0.120-0.241)***f) | | | | |
| Social insecurity | | | | -0.236 (-0.146 a -0.065)***j) | | |

**a)** F=153.475; gl2; p<0.001; $R^2$ 0.537; $R^2$ corrected=4.977, change in $R^2$=0.022. **b)** F=241.773; gl2; p<0.001; $R^2$=0.646; $R^2$ corrected 0.643; change in $R^2$=0.015. **c)** F=45.84; gl4; p<0.001; $R^2$=0.411; $R^2$ corrected 0.402; change in $R^2$=0.024. **d)** F=137.361; gl 3; p<0.001; $R^2$=0.610; $R^2$ corrected 0.605; change in $R^2$=0.006. **e)** F=79.629; gl 2; p<0.001; $R^2$=0.412; $R^2$ corrected =0.407; change in $R^2$=0.022. **f)** F=93.517; gl 3; p<0.001; $R^2$=0.554; $R^2$ corrected=0.548; change in $R^2$=0.011. **g)** F=27.94; gl 4; p<0.001; $R^2$=0.298; $R^2$ corrected =0.288; change in $R^2$=0.015. **h)** F=45.85; gl 4; p<0.001; $R^2$=0.411; $R^2$ corrected 0.402; change in $R^2$=0.024. **i)** F=33.697; gl 3; p<0.001; $R^2$=0.277; $R^2$ corrected=0.269; change in $R^2$=0.013. **j)** F=100.96; gl 3; p<0.001; $R^2$=0.573; $R^2$ corrected=0.567; change in $R^2$=0.008. **k)** F=34.81; gl 3; p<0.001; $R^2$=0.283; $R^2$ corrected=0.275; change in $R^2$=0.020].
**p<0.01; ***p<0.001

evolution perceive more '*rejection*' and '*overprotection'* from both parents than those with good evolution. Only the subscale of *'paternal rejection'* and the total scores in the "EAT" were independent predictors of the response to treatment. Patients diagnosed of AN even perceived greater emotional warmth from their parents than the adolescent group of the general population. In this case, the mean age was 14.8 years, so that greater warmth perceived could be due to greater attention given by the parents to their daughters from the onset of the disorder.

Other investigations have analyzed the perception of rearing in heterogeneous samples with different subtypes of eating disorders. Rojo et al.[18] found differences in memory of rearing among adolescents with some ED (both partial and subclinical forms and more severe cases) and controls, in the sense of considering both parents less affectionate, more overprotective and more rejecting. In the population studied, the most significant correlation between rearing practices and ED correspond to paternal and maternal '*rejection,'* although maternal and paternal *lack of emotional warmth"* and paternal '*overprotection'* are also important. Our findings coincide with those of Rojo and also partially with those of Cava[19] who, comparing the rearing styles of a group of adolescents from the general population with those diagnosed with ED, with healthy controls and with a clinical control group found that, according to the memory of their daughters, the mothers of the adolescents with ED had less '*emotional warmth,'* more '*overprotection'* and more '*rejection'* than the mothers of adolescents without this disorders. The patients also remembered their parents as being more rejecting. When relative risk is estimated, high paternal *'rejection'* was the most significant rearing dimension and the one that can predict the development of an ED with greater likelihood. In their study, the sample included women with a mixture of ED and mean age of 15.14±1.69. They did not include the dimension '*favoritism'* of the "EMBU," because this is not maintained in the different cultures. They also did not analyze the differences in the rearing styles between diagnostic subgroups. On the contrary, our study studied the four classical dimensions of the "EMBU" and higher scores were found in '*favoritism'* in the three diagnostic subgroups than in the controls. In the case of the patients diagnosed of anorexia, the explanation could be similar to that given by Castro (greater attention to an ill daughter), but in the BN and EDNOS, coinciding with

greater scores in *'overprotection,'* the greater favoritism perceived could be related with aspects of the mentioned overprotection. The scores on the subscale '*emotional warmth'* were not different between patients with AN and controls although they were less in patients diagnosed of BN and EDNOS than in those diagnosed of AN and the controls. In our case, mean age of the patients with AN was 19 years, which could justify the difference found. In general, the previous studies reviewed that found differences between patients and controls have been conducted in older patients, or with different diagnostic subtypes of ED.[16,20]

However, the aspect we consider as most novel in our research, as there is no previous reference in the literature, is the relationship we establish between the rearing styles with the psychopathological expression of the EDs. This is especially useful when considering the high diagnostic instability of the diagnostic subtypes in ED. In our work, the dimension of *'rejection'* from the father was associated with the dimensions of *'Ineffectiveness,' 'Perfectionism'* and *'Ascetism'* of the "EDI," which are not exclusive of any specific subtype of the ED. Therefore, global rejection by the father would be a non-specific facilitating factor of ED. However, perceived maternal *'rejection'* was associated to greater *'Interoceptive awareness,' 'Impulsiveness'* and with a more specific subscale of the restricting type EDs, as the *'Tendency to thinness.'* Perception of lack of *'warmth'* from the mother was correlated with greater scores on the social dimension of the EDI (*'Interpersonal mistrust'* and *'Social insecurity'*). However, greater emotional warmth by the father protected against bulimic symptoms. Equally, the *'emotional warmth'* of the father was related with less rejection to the body shape (BSQ). Paternal *'overprotection'* was associated with less frequency of bulimic symptoms, measured both with the "EDI" and the "BITE." The finding that '*paternal overprotection*' can have beneficial effects regarding the frequency of bulimic symptoms is interesting. This could be explained in two ways: in the first place, the overprotection may imply greater parental control, which would explain the lower number of purgative behaviors. Another possible explanation would be that the appearance of bulimic symptoms could possibly increase initial paternal overprotection, which in some way would increase the sensation of receiving warmth by the daughter. In our culture, the father usually is less involved in the affective demands of the children in the family and in this case overprotection could have a more profound effect related with affective satisfaction of the patient that would relieve the eating symptoms in some way. Although some evidence has been reported on '*paternal overprotection'* in ED,[21] most of the investigations relate them with low care and high maternal overprotection.[22] Among the latter, we emphasize the results of Cava who also found that adolescents in the general population diagnosed of an ED had had more maternal overprotection measured with the "EMBU." These results would support the observations of many clinicians who described anorexia as an expression of the difficulty of autonomy of some daughters overprotected by their parents.

The depressive disorders have been related with rearing practices with low emotional warmth and overprotection[23] and also was strong rejection and poor emotional warmth.[24] In the above-mentioned work, Rojo et al.[18] found that, although controlling for the effect of psychiatric comorbidity, rejection of both parents and maternal emotional warmth would remain significantly associated with the presence of ED. This can suggest that these rearing factors could have both a direct as well as indirect effect on EDs. In our study, perception of emotional warmth from the father appeared as a protective factor against anxiety. On the contrary, both favoritism of the father as well as maternal overprotection would favor greater anxiety. Theoretically, depressive symptoms or current anxiety could condition the retrospective perception of rearing. In this sense, Livianos et al. indicated that all of the scales of "EMBU" are invariants before the changes in emotional state, both of depressive patients as well as patients with anxiety disorders, so that the "EMBU" appears as a valid instrument for the retrospective evaluation of rearing in the clinical populations and the stability of "EMBU" regarding changes in mood state was demonstrated.[25]

In our work, emotional warmth of the father was also related with greater self-esteem while maternal rejection, overprotection and favoritism decreased self-worth feelings. Elevated global self-esteem is an important protective factor for the development of pathological body dissatisfaction[26] which in turn could favor the appearance of an ED.

Our study has methodological limitations that need to be indicated such as the use of self-administered tests, without an associated diagnostic clinical interview, which entails the tendency to under-detect socially undesirable behaviors or to under-detect the "subjectivity" of the 'memories.' However, in this regards it has been argued that the perception one has of rearing can be more important for the subjects than the real educational style.[27]

Another aspect that supposes a limitation in our study is the difference in age and cultural level between the patient sample in the control group. In this point, it is especially important to state that we were evaluating memories on the family relationships which could be affected by recent events of the family situation in which the subject may be involved at the time of the study. There is also the possibility of a bidirectional influence between parents and children, since certain behaviors of the children can cause parental responses of rejection and control.

In summary, based on the results obtained in our study we can conclude that:

There seems to be a perception of different rearing in the different subtypes of ED. The patients with BN and

EDNOS remember rearing with greater rejection, less emotional warmth and greater overprotection in patients diagnosed of anorexia and the controls.

We found a relationship between perception of rearing and psychopathology, both general and eating. Paternal warmth protects against anxiety in favor self-esteem. Overprotection favors persistence of general and eating psychopathology, especially paternal overprotection which is related with persistence of depressive symptoms, tendency to thinness, perfectionism and dissatisfaction with the body image.

**REFERENCES**


1. Cava G. Conexión entre crianza anómala y trastornos de la conducta alimentaria. [tesis doctoral]. Universidad de Valencia. 2001.
2. MacCoby EE, Martin JA. Socialization in the context of the family: parent-child interaction. In: Handbook of Child Psychology. Nueva York: Wiley. Hetherington EM, 1983.
3. Parker G, Tupling H, Brown LB. A parental Bonding Instrument. Br J Med Psycho. 1979; pp. 52.
4. Perris C, Jacobsson L, Lindstrom H, Von Knorring L, Perris H. Development of a new inventory assessing memories of parental rearing behaviour. Acta Psychiatr Scand. 1980;61(4):265-74.
5. Russell J, Kopec-Schrader E, Rey J, Beaumont P. The Parental Bonding Instrument in adolescent patients with anorexia nervosa. Acta Psychiatr Scand. 1992;86:236-9.
6. Casper RC, Troiani M. Family functioning in Anorexia nervosa differs by subtype. Int J Eat Disord. 2001;30:338-42.
7. APA; American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, DSM-IV. Washington DC, 1994.
8. Spielberger CD, Gorsuch RL, Lushene RE. Cuestionario de ansiedad estado-rasgo. (3rd. Ed.). 1988. Madrid: Publicaciones de Psicología Aplicada, TEA.
9. Vázquez C, Sanz J. Fiabilidad y valores normativos de la versión española del inventario para la depresión de Beck de 1978. Clínica y Salud. 1997;8(3):403-22.
10. Baños RM, Guillen V. Psychometric characteristics in normal and social phobic samples for a Spanish version of the Rosenberg Self-Esteem Scale. Psychol Rep 2000 Aug;87(1):269-74.
11. Castro J, Toro J, Salamero M, Guimerá E. The Eating Attitudes Test:validation of the Spanish versión. Psychological Assessment. 1991;7:175-90.
12. Corral S, González M, Peña J, Seisdedos N. EDI-2. Eating Disorder Inventory-2. Tea Ediciones, S.A., 1998.
13. Henderson M, Freeman A. Self-rating Scale for Bulimia. The BITE. Br J Psychiatry. 1987;150:18-24.
14. Raich RM, Mora M, Soler A, Avila C, Clos I, Zapater L. Adaptación de un instrumento de evaluación de la insatisfacción corporal. Clínica y Salud. 1996;7:51-66.
15. Loth KA, Neumark-Sztainer D, Croll JK. Informing Family Approaches to Eating Disorder Prevention: Perspectives of Those Who Have Been There. Int J Eat Disord. 2009;42(2):146-52.
16. Horesh N, Apter A, Ishai J, Danzinger Y. Abnormal Psychosocial situations and Ealing Disorders in adolescence. Am Acad Child and Adolesc Psychiatry. 1996;35(7):921-7.
17. Castro J, Toro J, Cruz M. Quality of rearing practices as predictor of short-term outcome in adolescent anorexia nervosa. Psycholog Med. 2000;30:61-7.
18. Rojo Moreno L, Livianos Aldana L, Conesa Burguet L, Cava G. Disfunctional Rearing in Community and Clinic based populations with Eating problems. Prevalence and Mediating Role of Psychiatric Morbidity. Eur Eat Disord Rev. 2006;14:32-42.
19. Cava G, Rojo L, Livianos L. Influencia de la percepción de la Crianza en el desarrollo de los Trastornos de la Conducta Alimentaria. Anorexia Nerviosa. Barcelona : Ariel, 2003; pp.147-63.
20. Calam R, Waller G, Slade P, Newton T. Eating Disorders and perceived relationships with parents. Int J Eating Disord. 1990;9:479-85.
21. Le Grange D, Lock J, Loeb K, Nicholls D. Academy for Eating Disorders Position Paper: The role of the family in Eating Disorders. Int J Eat Disorders. 2010;43(1):1-5.
22. Shorebridge P, Gowers SG. Parental high concern and adolescent onset of Anorexia nervosa: A case-control study to investigate direction of causality. Br J Psychiatry. 2000;176:132-7.
23. Duggan C, Sham P, Minne C, Lee A, Murray R. Quality of parenting and vulnerability to depression: results from a family study. Psychol Medicine. 1998;28:185-91.
24. Rojo L, Livianos L, Conesa L, Cervera G, Dominguez JA. Rearing Style and depressive disorders in adulthood. A controlled study in a Spanish clinical sample. Soc Psychiatr Psychiatr Epidemiol. 1999;34:548-54.
25. Livianos Aldana L, Rojo Moreno L, Cuquerella, MA, Rodrigo Montó G. El efecto del estado de ánimo en la percepción de la crianza. Archivos Psiquiatría. 2001;64(2):155-64.
26. Beato L, Rodriguez T, Belmonte A, Martínez C. Risk Factors for eating disorders in adolescents. A Spanish community-based longitudinal study. Eur Child Adoles Psychiatry. 2004;13:287-94.
27. Perris C, Arrindell WA, Perris H, Eisemann M, Van der Ebde J, Von Knorring L. Perceived depriving parental rearing and depression. Br J Psychiatry. 1986;148:170-5.