

A case–control study to differentiate parents' personality traits on anorexia nervosa and affective disorders

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Abstract

Eating disorders (ED) and affective disorders (AD) in adolescent population and several investigations have pointed out that specific family dynamics play a major role in the onset, course, and maintenance of both disorders. The aim of this study was to extend the literature of this topic by exploring differences between parents' personality traits, coping strategies, and expressed emotion comparing groups of adolescents with different mental conditions (anorexia nervosa vs. affective disorder vs. control group) with a case–control study design. A total of 50 mothers and 50 fathers of 50 girls with anorexia nervosa (AN), 40 mothers and 40 fathers of 40 girls with affective disorder (AD), and 50 mothers and 50 fathers of 50 girls with no pathology that conformed the control group (CG) were measured with the Temperament and Character Inventory (TCI), the COPE Inventory, the Family Questionnaire (FQ), and psychopathology variables, anxiety, and depression. Both parents of girls with AN showed a significant difference in personality, coping strategies, and expressed emotion compared to both parents in the CG, while they presented more similarities to parents of girls in the AD group. Identifying personality traits, expressed emotion, coping strategies, and psychopathology of parents and their daughters will allow improvements in the interventions with the adolescents, parents, and families.

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KEY WORDS

affective disorder, anorexia nervosa, coping, expressed emotion, parents, personality

INTRODUCTION

Eating disorders (ED) and affective disorders (AD) in adolescent population present some common aspects which can mainly be ascribed to the manifestation of depressive symptoms. Both categories are characterized by a multifactorial etiology, which appears to be clearly related to the socioeconomic and cultural environment where adolescents develop (Huryk et al., 2021; Vadivel et al., 2023). AD and ED symptoms tend to co-occur and increase during adolescence, a crucial period of biopsychosocial development where individuals undergo major life changes (Ferreiro et al., 2014; Garcia et al., 2020; McClelland et al., 2020; Schaumberg et al., 2019). The prevalence of EDs among children and adolescents has been extensively demonstrated, ranging between 5.5 and 17.9% among young women, and between 0.6 and 2.4 among young men (Silén & Keski-Rahkonen, 2022). Also ADs are shown to be widely present among young people, with a prevalence between 9.3 and 11.9% (Connor et al., 2022; Millman et al., 2018). There is evidence of higher prevalence of anorexia nervosa (AN) and AD in women, both in the general population and among adolescents (Chang & Kuhlman, 2022; Garcia et al., 2020; Hambleton et al., 2022). Specific family dynamics play a major role in the onset, course, and maintenance of both disorders. In AN, several intrafamilial risk factors have been identified (Solmi et al., 2020), such as increased family food intake, higher parental demands, emotional reactivity, low familial involvement, family discord, history of EDs and/or psychiatric disorders in the family, alcohol and/or drug abuse, dysfunctional interaction during the feedings, attachment insecurity, or dependence (Del Casale et al., 2023; Himmerich et al., 2019). In the case of AD, influential factors include socioeconomic status (Koch et al., 2022), inadequate psychosocial functioning of the family, parental psychopathology, marital relationships, perception of family conflicts (Bravo-Andrade, 2021; Connor et al., 2022; Fosco & Lydon-Staley, 2020), family cohesion, acceptance and expression of feelings and emotions, hostility, stress, child attachment, and temperament (Inguglia et al., 2022; Narmandakh et al., 2021).

Personality is another core factor which influences individuals' perception of well-being (Cloninger & Zohar, 2011) and has been studied as a risk factor for both AN and AD (López-Mora & González-Hernández, 2021; Rajewska-Rager et al., 2022). Indeed, personality traits play an important role in a person's behavioral, cognitive, and emotional patterns. These traits are associated with emotion regulation (i.e., dealing with the own emotions regarding to the onset, intensity, and duration), and the development of coping strategies to manage stressful situations (Carver & Connor-Smith, 2010). While appropriate coping-strategy selection may increase resilience to disorders, maladaptive coping such as avoidant coping with behavioral and mental disengagement, denial or resorting to substance abuse, may arguably increase vulnerability and also have repercussions on family dynamics (Afshar et al., 2015; Feggi et al., 2016; Gárriz et al., 2015; Hwang et al., 2020; Lilenfeld, 2011; Richardson et al., 2021). When caring for someone with AN or depression, family interactions tend to be characterized by constant but unresolved conflicts and might be challenging, due both to illness related, and non-illness related factors (Curzio et al., 2018; Fosco & Lydon-Staley, 2020; Goshen et al., 2023). These families tend to report high levels of guilt, self-blame, and stress when dealing with stigma, prejudices, and stereotypes. They might be afraid of how their child will cope with the suffering (Pellegrini et al., 2021), especially since self-harm and suicide ideation are known to be present in both illnesses (Williams-Kerver et al., 2020; Yap et al., 2014; Zappitelli et al., 2013). In this regard, personality traits have also been studied in parents of adolescents with these

disorders (Simões, 2021) to explore the relationship between parental coping style and the progress of their children's pathologies (Connor et al., 2022; Inguglia et al., 2022; Narmandakh et al., 2021).

Regarding adolescents with eating disorders, mothers' and fathers' personality traits have been addressed in various studies with the aim of better understanding the influence they might have on the onset, maintenance, and prognosis of the pathology (Amianto et al., 2012, 2015; Monteleone et al., 2021; Woodside et al., 2002). For example, personality traits in mothers, as low self-directness; and fathers, as high harm avoidance, of girls with EDs have been related with the pathology of their daughters (Fassino et al., 2002, 2004, 2009). Indeed, ED symptoms and behaviors have been associated with high level of caregiver burden and distress (Rienecke et al., 2017), what may lead parental figures to adopt coping strategies than can affect the maintenance of the ED, especially in mothers, adopting self-sufficient problem focused strategies to cope with situations in the process (Parks et al., 2018), as evidenced when targeting the mechanisms of symptom accommodation, or high levels of expressed emotion (EE), being more involved than the fathers, which may result in hostility and over-involvement (Anastasiadou et al., 2016; Le Grange et al., 2011).

Regarding adolescents with affective disorders, little research is available on the evaluation of the influence of parents' personality on AD development. However, family is considered the first institution where children and adolescents' personalities develop, necessarily influenced by the interaction with their parents' personality (Akingbuwa et al., 2020; Bravo-Andrade, 2021; Narmandakh et al., 2021). A study found that parental personality was related to symptoms of depression and anxiety disorders in offspring in their children 2 years later (Steinsbekk et al., 2019). There is evidence that the origins of EE partially reside in the relative's personality (Millman et al., 2018). Indeed, parental EE in adolescents with ADs has been investigated and different studies have shown that high EE levels are associated with a higher risk of relapse and this attitudes toward their children is believed to play an important role in the development and perpetuation of mental disorders in offspring (Connor et al., 2022; Fahrner et al., 2021; Han & Shaffer, 2014; Nurany et al., 2022). Considering the strong relationship between personality traits and coping strategies, it was found that promoting parents' self-efficacy to facilitate their coping strategies might lead to minimize depressive symptoms and mental health risks in their children (Cash, 2019; Inguglia et al., 2022; Kao et al., 2021; Lagacé-Saguin & Gionet, 2009; Simpson et al., 2018).

Various studies have investigated parents' personality of adolescents with eating disorders, however, there is less knowledge about parents' personality of adolescents with affective disorders. Although the personality traits of parents with a psychological disorder can influence the severity of the symptoms, the parent-child relationship, the family's environment, and treatment outcomes, no research has investigated the comparison of parents' personality, expressed emotion, and coping strategies in the case of EDs and ADs. This is the first study comparing parents' personality of two groups of adolescents with a clinical diagnosis, EDs and ADs, with a control group of parents of adolescents without any pathology. Assessing parental personality traits and parents' coping responses to their children's illness may help to develop and asset specific psychological interventions which target parental responses as a mean to facilitate their daughter's health improvement.

Aims of the study

Given these assumptions, the aim of this study was to examine and identify the differences between parents' personality traits, coping mechanisms, and expressed emotion comparing groups of adolescents with different mental conditions (eating disorder vs. affective disorder vs. control group). It was expected that (a) at the onset of the illness, parental personality traits

would be different between the different groups; (b) at the onset of the pathology, EE and coping responses would be similar among the parents of the groups of adolescents with psychiatric disorders, but different from the control group; (c) mothers' and fathers' psychopathology would be similar between the groups of adolescents with psychiatric disorders but different from the control group.

METHOD

Participants

The sample was made up by the parents of 140 female adolescents, aged between 12 and 17, that were matched by gender and parents' socioeconomic status. More specifically, the sample was made up by 50 mothers (age range: 37–56, $M_{\text{age}} = 45.4$; $SD_{\text{age}} = 4.84$) and fathers (age range: 35–58, $M_{\text{age}} = 47.51$; $SD_{\text{age}} = 4.84$) of adolescents diagnosed with anorexia nervosa, and by 40 mothers (age range: 35–55, $M_{\text{age}} = 45.49$; $SD_{\text{age}} = 4.96$) and fathers (age range: 41–57, $M_{\text{age}} = 47.88$; $SD_{\text{age}} = 4.91$) of adolescents with affective disorders and by a group of 50 mothers (age range: 42–55, $M_{\text{age}} = 48.30$; $SD_{\text{age}} = 3.53$) and fathers (age range: 44–58, $M_{\text{age}} = 47.86$; $SD_{\text{age}} = 4.91$) of adolescents without any of the previously mentioned disorders.

Adolescent daughters were matched by age (age range: 12–17, $M_{\text{age}} = 14.78$; $SD_{\text{age}} = 1.43$) and in both clinical groups they were diagnosed with an ED or an AD in the previous year. Differences in ED and AD for illness duration were not found (ED = 10.3 months ($SD = 7.41$) vs. 11.70 months ($SD = 6.02$)). ED participants presented the following diagnoses: anorexia nervosa (AN) restrictive subtype ($n = 35$, 70%), AN purgative subtype ($n = 8$, 16%), and other specified feeding and eating disorder ($n = 7$, 14%). AD participants presented the following diagnoses: major depressive disorder ($n = 36$, 90%); dysthymia ($n = 3$, 7.5%); adjustment disorder with depressive symptoms ($n = 1$, 2.5%). As expected, differences were found in the body mass index (BMI) in the adolescents with AN versus the other two groups $BMI_{\text{AN}} = 16.07$ ($SD = 1.74$) vs. $BMI_{\text{AD}} = 22.41$ ($SD = 2.95$) vs. $BMI_{\text{CG}} = 21.18$ ($SD = 2.66$). The parental socioeconomic status of the AN group was 68% ($n = 34$) high, 12% ($n = 6$) medium, and 20% ($n = 10$) low. Other groups were similar, in the AD group 47.5% ($n = 19$) was high, 42.5% ($n = 17$) medium, and 10% ($n = 4$) low; while in the CG group 72% ($n = 36$) was high, 20% medium ($n = 10$), and 8% ($n = 4$) low.

For all groups, adolescent exclusion criteria were the presence of metabolic disorders that could affect the BMI and psychosis. In addition, the exclusion criterion for the group with AD and the CG was presenting a diagnosed eating disorder. The inclusion criterion for the AN and AD group was presenting an early stage of the illness at first diagnosis (a year or less of illness duration to reduce bias due to retrospective recall). For the CG group, the lack of an ED or AD was considered as an inclusion criterion.

Procedure

The data reported in this research were derived from the *Eating Disorders and Obesity Risk Factors Study* (ANOBAS study; PSI2011-23127). The study was approved by the Autonomous University of Madrid Ethics Committee (Ref Code. R-0009/10) and by the Niño Jesus Hospital Ethics Research Committee (CEI 25-673).

Regarding the sample size, taking into account weight concerns assessed through the Eating Disorders Inventory (Garner, 1991), considered as one of the most well-supported risk factors for ED, a mean effect size of $AUC = 0.746$ was found in one of the main reviews about risk factors in this pathology (Jacobi et al., 2004). Based on that mean effect size, the

Cohen's d was calculated ($d=0.936$). The G*Power program was used in order to calculate the sample size needed to detect this effect, obtaining an estimated sample size per group of 27. Based on these suggestions, a sample size of 40 or 50 was considered enough to reach good effect sizes.

Participants gave their written consent after being informed on the objective and procedures of the study. Participation was voluntary and no form of compensation was offered. All the adolescents were interviewed using Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-PL; Kaufman et al., 1997; Ulloa et al., 2006) to assess current and lifetime psychopathology in all of the adolescents, and with the Eating Disorder Inventory (EDI-2; Garner, 1998) to verify the absence of eating disorders in the adolescents with affective disorders and vice versa, and the control group had not any pathology, and to reduce confounding variables. Sociodemographic and clinical variables were collected for the adolescents' participants; the detailed protocol and recruitment procedure in full have been described elsewhere (Sepúlveda et al., 2022).

Measures

Parents' age, educational level, and job status were the variables taken into account. The socioeconomic status of the family was calculated following the Hollingshead formula (Hollingshead & Redlich, 1958). This scale considers the work status of parents and their education level.

Both mothers and fathers of each group completed the questionnaires below.

Expressed emotion

The Family Questionnaire (FQ; Wiedemann et al., 2002; Sepúlveda et al., 2014) is a brief self-report questionnaire, composed of 20 items that evaluate family members' levels of EE. Responses to items are given using a Likert-type scale ranging from 1 (*never*) to 4 (*frequently*). The FQ is made up of two subscales: Criticism (CC) and Emotional Over-involvement (EOI) and the total scores on each subscale range from 10 to 40 with higher scores indicating higher EE. Acceptable reliability coefficients have been reported for the original version, with Cronbach's α values of 0.92 and 0.80 for the CC and EOI subscales, respectively. Similar reliability coefficients have been found for the Spanish version (Sepúlveda et al., 2014). In this study, Cronbach's α was 0.81 for the CC scale and 0.80 for the EOI scale. The cut-off point proposed for each scale is 23 for CC and 27 for EOI.

Temperament

The Temperament and Character Inventory Revised (TCI-R-67; Cloninger, 1999; Pedrero Pérez, 2009) personality questionnaire consists of eight scales. The internal consistency of each of the scales and their correlations with those of the initial questionnaire are adequate. The temperament dimensions were Novelty Seeking ($\alpha=0.79$), Harm Avoidance ($\alpha=0.80$), and Reward Dependence ($\alpha=0.86$) and the character dimensions were Persistence ($\alpha=0.82$), Self-directedness ($\alpha=0.85$), Cooperativeness ($\alpha=0.79$), Self-Transcendence ($\alpha=0.80$), and Exploratory Excitability ($\alpha=0.65$). The values calculated for this study in the temperament dimensions were Novelty Seeking ($\alpha=0.61$), Harm Avoidance ($\alpha=0.79$), Reward Dependence ($\alpha=0.62$), and Persistence ($\alpha=0.71$) and in the Self-Direction Character Dimensions ($\alpha=0.70$),

Cooperativeness ($\alpha=0.68$), Self-Transcendence ($\alpha=0.55$), and Exploratory Excitability ($\alpha=0.78$).

Coping

The COPE Inventory (Carver et al., 1989) consists of 60 items which are answered on a 4-point Likert scale (from 1 = *usually do not do this at all* to 4 = *usually do this a lot*) and has been adapted to Spanish by Crespo López and Cruzado Rodríguez (1997). The 14 coping strategies can be grouped into four categories (Litman, 2006) (a) self-sufficient emotion focused coping (restraint, positive reinterpretation, acceptance, humor, and religion); (b) self-sufficient problem focused coping (planning, active coping, and suppression of competing activities); (c) socially-supported coping (emotional social support, instrumental social support, and venting); and (d) avoidant coping (behavioral disengagement, mental disengagement, denial, and substance use). The first three factors are considered adaptive strategies while the fourth one is considered maladaptive. Higher scores indicate greater use of the strategy. Cronbach's alphas in the 14 original subscales ranged from 0.62 to 0.92, except for Mental Disengagement, which was 0.45. In the Litman study, the questionnaire presented good reliability for the four categories (Mdn = 0.73). For the current sample, the Cronbach's alpha values were 0.68 for self-problem, 0.72 for self-emotion, 0.65 for social, and 0.70 for avoidant coping.

Anxiety

The State and Trait Anxiety Inventory (STAI; Spielberger, 1970; Seisdedos, 1982) consists of 40 items designed to assess the level of anxiety at the time of evaluation (anxiety-state) and the level of anxiety as a trait (anxiety-trait). The internal consistencies of these questionnaires are 0.86 and 0.86, respectively. The Spanish version had internal consistency between 0.83 and 0.92. The range of scores for each scale is 20–80. The authors of the questionnaire indicate the 75th percentile as the only cut-off point to establish the clinically significant anxiety criterion. A cut-point of 30 for the state subscale and 25 for the trait subscale in female participants and 25 for the state and 30 for the trait subscale in male participants have been suggested to detect clinically significant symptoms (Guillén-Riquelme & Buéla-Casal, 2014).

Depression

The Beck Depression Inventory (BDI; Beck et al., 1961; Vázquez & Sanz, 1999). The Spanish version was used to evaluate depressive symptoms in mothers and fathers. Scores of 20 or more indicate risk of depression. The original version of the inventory presents good reliability ($\alpha=0.92$). The Spanish version had high internal consistency ($\alpha=0.89$). For the current sample, the Cronbach's alpha was 0.92.

Statistical analysis

Differences between mothers and fathers in sociodemographic characteristics, coping strategies, expressed emotion, and personality characteristics were investigated by mean differences of the independent sample *t* test for continuous variables and the chi-squared test for each categorical variable through the IBM SPSS Statistics (Version 25) predictive analytics software.

The contrast between AN parents, AD parents, and the control parents of the control group was assessed to examine differences in personality, coping strategies, and EE between the three groups (AN group vs. AD group vs. CG). For this, different comparisons were carried out and Holm's Sequential Bonferroni Procedure (Holm, 1979), which deals with familywise error rates for multiple hypothesis tests, was applied and p was adjusted with Bonferroni correction for multiple comparisons ($p \leq 0.003$). Post-hoc analyses were used to compare scores between groups and Cohen's d was performed for effect size.

RESULTS

Sociodemographic characteristics

Differences in the age means of parents were found between the two clinical groups and the non-clinical group. Parents of adolescents with AN or AD were statistically significant older than parents in the non-pathology group. No difference in socioeconomic status was found (see Table 1).

Differences between groups in personality, expressed emotion, and coping strategies

Table 2 displays mothers' scores in the AN group (AN_{mo}) versus AD group (AD_{mo}) and the control group with no pathology (CG_{mo}). In comparison, AN_{mo} presented lower scores in the temperament dimensions of NS and HA and in the character dimensions of ST and CO; while they presented higher scores in the temperament dimensions of RD and P, and in the character dimension of SD.

Fathers in the AN group (AN_{fa}) presented lower scores compared with the other two groups of fathers (AD_{fa} and CG_{fa}) in temperament traits of NS and HA; while they showed lower scores in the character trait of CO. Higher scores were found in the temperament dimensions of RD and P, and in the character dimension of ST. Mothers and fathers in the AN group presented the same profile (See Table 3).

Regarding coping strategies, AN_{mo} showed higher scores than AD_{mo} and CG_{mo} in socially-supported coping, self-sufficient problem focus, and lower scores in avoidant coping strategies. Differences were not found between the groups of mothers in self-sufficient emotion focus (see Table 2).

Fathers in the three groups presented differences in some coping strategies. AN_{fa} showed higher scores in socially-supported and lower scores in avoidant coping, while they showed no differences with AD_{fa} in self-sufficient problem focus and no differences between the three groups in self-sufficient emotion focus were found.

Regarding the level of expressed emotion (EE) of mothers in the dimension of critical comments, no differences were found between AN_{mo} and CG_{mo} , but they presented lower significant statistical scores compared with AD_{mo} , and in the emotional overinvolvement dimension. AN_{mo} showed no differences compared with AD_{mo} , being in both clinical groups higher than CG_{mo} .

Fathers presented the same profile of EE between AN_{fa} , AD_{fa} , and CG_{fa} in both dimensions. AN_{fa} presented the same level of critical comments than CG_{fa} and the same level of emotional overinvolvement with AD_{fa} . AN_{fa} presented the highest score of emotional overinvolvement.

TABLE 1 Differences in sociodemographic characteristics between groups.

Parents	AN N=50		AD N=40		CG N=50		AN vs. AD		AN vs. CG		AD vs. CG	
	Mean (SD)		Mean (SD)		Mean (SD)		F	p	F	p	F	p
Father's age	47.54 (4.79)		47.86 (4.91)		51.02 (4.41)***		7.53	<0.001	0.95	0.99	<0.001	0.015
Mother's age	45.55 (3.62)		45.49 (4.96)		48.3 (3.54)**		8.23	<0.001	0.99	0.99	<0.001	0.005
Socioeconomic Status	N (%)		N (%)		N (%)		F	p	F	p	F	p
	I	6 (12)	4 (10)		4 (8)		17.13	0.15	—	—	—	—
	II	4 (8)	7 (17.5)		3 (6)							
	III	6 (12)	10 (25)		7 (14)							
	IV	10 (20)	11 (27.5)		11 (22)							
	V	24 (48)	8 (20)		25 (50)							

Note: The significant values after Bonferroni correction are in bold. I= Very low; II= Low; III= Average; IV= High; V= Very high. Significance **p≤0.003; ***p≤0.001. Abbreviations: AD, Affective Disorder; AN, Anorexia Nervosa; CG, Control Group; M, Mean; SD, Standard Deviation.

TABLE 2 Differences in TCI, COPE and FQ Scores in mothers between groups: Significant dimensions.

	AN _{mo} (n=50)	AD _{mo} (n=40)	CG _{mo} (n=50)	F	Posthoc	AN vs. AD Cohen's d	AN vs. CG Cohen's d	CG vs. AD Cohen's d
TCI								
NS	15.34 ± 4.02***	26.12 ± 5.40***	26.28 ± 5.18***	F = 74.48; p < 0.001	AN < AD = CG	2.26	2.36	0.03
HA	18.62 ± 5.58**	20.82 ± 2.54	20.53 ± 2.61**	F = 4.01; p < 0.02	AN < AD = CG	0.51	0.44	0.11
RD	30.45 ± 5.78***	22.18 ± 2.82***	22.06 ± 2.57***	F = 63.07; p < 0.001	AN > AD = CG	1.82	1.88	0.04
P	25.49 ± 4.94***	19.73 ± 4.88***	18.82 ± 4.04***	F = 28.66; p < 0.001	AN > AD = CG	1.17	1.48	0.20
SD	34.87 ± 4.73***	27.14 ± 4.09***	26.86 ± 3.30***	F = 56.48; p < 0.001	AN > AD = CG	1.75	1.96	0.08
CO	33.89 ± 3.30***	24.32 ± 3.72***	24.49 ± 3.34***	F = 105.89; p < 0.001	AN > AD = CG	2.58	2.67	0.04
ST	14.42 ± 5.36***	22.91 ± 4.68***	22.49 ± 3.030***	F = 50.42; p < 0.001	AN < AD = CG	1.69	1.81	0.10
COPE								
Avoidant	14.44 ± 4.02	21.76 ± 5.2	20.51 ± 3.85	F = 39.1; p < 0.001	AN < AD = CG	1.72	1.76	–
Socially-supported	30.22 ± 5.58	24.79 ± 6.15	27.34 ± 6.23	F = 14.86; p < 0.001	AN > AD = CG	0.88	0.46	–
SS. Problem focus	51.51 ± 9.98	43.97 ± 10.18	44.55 ± 8.97	F = 7.89; p < 0.001	AN > AD = CG	0.76	0.87	–
SS. Emotion focus	39.08 ± 10.49	41.32 ± 8.45	40.28 ± 6.74	F = 0.642; p = 0.528	–	–	–	–
FQ								
CC	21.69 ± 14.80	22.68 ± 5.87	18.33 ± 4.73	F = 2.29; p < 0.105	–	–	–	–
CC – Risk (%)	9.9	13.7	5.3	χ ² = 11.26; p < 0.004	–	–	–	–
EOI	25.98 ± 3.34	26.38 ± 5.72	18.19 ± 3.58	F = 51.27; p < 0.001	AN = AD > CG	0.08	2.25	1.69
EOI – Risk (%)	14	15.5	0	χ ² = 32.05; p < 0.001	–	–	–	–

Note: The significant values after Bonferroni correction are in bold.

Abbreviations: AD_{mo}, affective disorder mothers; AN_{mo}, anorexia nervosa mothers; CC, critical comments; CG_{mo}, control group mothers; CO, cooperativeness; EOI, emotional overinvolvement; HA, harm avoidance; NS, novelty seeking; P, persistence; RD, reward dependence; S.S, self-sufficient; SD, self-directedness; ST, self-transcendence.
p < 0.003. *p < 0.001.

TABLE 3 Differences in TCI, COPE and FQ Scores in fathers between groups: Significant Dimensions.

	AN _{fa} (n=50)	AD _{fa} (n=40)	CG _{fa} (n=50)	F	Posthoc	AN vs. AD Cohen's d	AN vs. CG Cohen's d	CG vs. AD Cohen's d
TCI								
NS	14.86 ± 3.72**	18.1 ± 6.39**	16.82 ± 3.45**	F = 4.57; p < 0.013	AD > AN = CG	0.62	2.36	0.03
HA	15.98 ± 4.99***	21.7 ± 3.15***	21.05 ± 2.30***	F = 25.13; p < 0.001	AN < AD = CG	1.37	0.44	0.11
RD	27.79 ± 6.25***	23.87 ± 4.86***	23.28 ± 2.23***	F = 12.16; p < 0.001	AN > AD = CG	0.82	1.88	0.04
P	27.58 ± 5.43***	19.30 ± 3.18***	17.95 ± 3.19***	F = 59.16; p < 0.001	AN > AD = CG	1.86	1.48	0.20
SD	35.79 ± 3.65***	26.17 ± 3.17***	27.82 ± 3.14***	F = 84.35; p < 0.001	AN > CG = AD	2.81	1.96	0.08
CO	33.05 ± 3.84***	25.56 ± 3.99***	23.82 ± 3.42***	F = 68.82; p < 0.001	AN > AD = CG	1.91	2.67	0.04
ST	14.16 ± 4.87***	23.17 ± 2.33***	22.05 ± 3.02***	F = 61.76; p < 0.001	AN < AD = CG	2.36	1.81	0.10
COPE								
Avoidant	16.59 ± 2.98	22.52 ± 4.18	20.86 ± 3.66	F = 21.1; p < 0.001	AN < AD = CG	1.63	1.28	–
Socially-supported	29.28 ± 5.4	23.52 ± 5.97	22.73 ± 6.03	F = 14.86; p < 0.001	AN > AD = CG	1.02	1.14	–
SS. Problem focus	52.07 ± 8.92	48.17 ± 9.11	44.56 ± 8.97	F = 5.10; p < 0.008	AN = AD > CG	0.43	0.72	–
SS. Emotion focus	38.48 ± 5.43	41.32 ± 8.46	40.33 ± 8.17	F = 0.543; p = 0.583	–	–	–	–
FQ								
CC	19.72 ± 3.71	21.76 ± 5.37	18.25 ± 4.75	F = 4.99; p < 0.008	AN = CG < AD	–	–	0.69
CC – Risk (%)	8	12.4	6.2	χ ² = 9.54; p < 0.008	–	–	–	–
EOI	26.80 ± 3.82	25.80 ± 5.44	18.13 ± 3.50	F = 48.76; p < 0.001	AN = AD > CG	–	2.37	1.67
EOI – Risk (%)	20.7	10.8	0	χ ² = 27.57; p < 0.001	–	–	–	–

Note: The significant values after Bonferroni correction are in bold.
Abbreviations: AD_{fa}, affective disorder father; AN_{fa}, anorexia nervosa fathers; CG_{fa}, control group fathers; CO, cooperativeness; EOI, emotional overinvolvement; HA, harm avoidance; NS, novelty seeking; P, persistence; RD, reward dependence; S.S., self-sufficient; SD, self-directedness; ST, self-transcendence.
p < 0.003. *p < 0.001.

Differences between parents' groups in psychopathology

Regarding the depressive and anxious symptoms evaluated in the three groups of mothers and fathers, differences were found (Tables 2 and 3). In trait anxiety, the mothers and fathers of the AD group presented higher scores than mothers and fathers of the AN and CG groups. On the other hand, in state anxiety the two groups with daughters with eating disorders or AD showed higher scores than the control group. Finally, regarding depression, mothers showed differences and those of the AN group were comparable to those of the AD group, while both clinical groups showed higher scores than the CG. Fathers showed differences with higher scores in the AD group compared to the other two groups, AN and CG.

Significantly more AD_{mo} (16.4%) than AN_{mo} (9.3%) and CG_{mo} (7.9%) exceeded the clinical cut-off score in the anxiety trait ($\chi^2=14.56$; $p<0.001$), while in the anxiety state significantly more AN_{mo} (14.3%) in comparison with AD_{mo} (13.6%) and CG_{mo} (5%) exceeded the cut-off score ($\chi^2=13.1$; $p<0.001$). In contrast, significant differences between groups in depression were not found (see Table 4).

Fathers that exceeded the cut-off point in trait anxiety were significantly more in the AD group (20.7%) than fathers in the AN group (11.4%) and fathers in CG (12.9%), ($\chi^2=17.27$; $p<0.001$). Regarding state anxiety, significantly more AD_{fa} (20%) exceeded the cut-off score, compared with AN_{fa} (14.3%) and CG_{fa} (12.1%). Significantly more AD_{fa} (3%) compared with AN_{fa} (1%) and CG_{fa} (0%) exceeded the clinical cut-off score for depression (see Table 5).

DISCUSSION

To the best of our knowledge, this is the first study to assess differences in parents' personality, expressed emotion, and coping strategies between mothers and fathers of adolescents with EDs, ADs compared to a non-clinical control group, matched by sex, age, and SES.

The first hypothesis was partially confirmed since significant differences were found among the three groups. Moreover, results revealed that AN_{mo} and AN_{fa} presented lower levels of NS, ST, and HA, while they presented higher levels of RD, P, SD, and CO compared to AD_{mo} and AD_{fa} and CG_{mo} and CG_{fa}. Personality profiles in parents of girls with AN have been studied previously and low ST was found as a risk factor in the ability of parents to support daughters in her suffering (Amianto et al., 2015) and, at the same time, lower levels of NS and HA may be related to the time of evaluation, their daughters being in the early phases of AN. HA affects behavior when negative emotional stimuli are present, especially under conditions of uncertain expectations (Cloninger & Zohar, 2011), so this lower level can allow one to focus on the process of recovery of their daughters. Higher levels of RD and SD have been associated with a goal-directed behavior that can influence coping strategies in these situations that involve higher levels of emotional stress. Parents of adolescents with AN showed the same personality profiles, both in temperament and character. These results are in line with those found in several investigations where it was shown how some personality traits of members of marital relationships tend to converge over time (Spotts et al., 2005; Yang et al., 2015), despite recognizing how individual personality differences are important due to their relationship with physical, mental, social, and relational health (Levine et al., 2020).

The second hypothesis was partially confirmed since no differences were found between any of the three groups in mothers' CC values while, as we expected, the EOI was significantly higher in the mothers of the adolescents with AN and adolescents with AD. With respect to the fathers, contrary to what we expected, the CC level was similar between AN_{fa} and CG_{fa}, but lower than AD_{fa}. The EOI level was higher in the groups of fathers of adolescents with psychiatric disorders (AN_{fa} and AD_{fa}) compared to the fathers of the control group. These findings break the stereotype of overinvolved mothers in contrast with the attitude of criticism

TABLE 4 Differences in STAI and BDI scores in mothers between groups: Significant Dimensions.

Psychopathology	AN _{mo} (n=50)	AD _{mo} (n=40)	CGmo (n=50)	F _{mo} χ^2_{mo}	AN vs. AD Cohen's d	AN vs. CG	CG vs. AD	Posthoc Mothers
STAI – Trait	18.61 ± 18.61***	23.56 ± 10.54***	17.15 ± 9***	F = 3.84; p < 0.023	0.44	0.14	0.65	AN = CG < AD
STAI – Trait Risk (%)	9.3	16.4	7.9	$\chi^2 = 14.56$; p < 0.001	–	–	–	–
STAI – State	26.76 ± 9.21***	26.29 ± 11.87***	16.52 ± 8.08**	F = 16.42; p < 0.001	0.04	1.08	0.96	AN = AD > CG
STAI – State Risk (%)	14.3	13.6	5	$\chi^2 = 13.1$; p < 0.001	–	–	–	–
BDI	9.04 ± 7.11***	11.79 ± 7.46***	5.38 ± 4.45***	F = 10.21; p < 0.001	0.38	0.62	1.04	AN = AD > CG
BDI – Risk	0.8	3.1	0.8	$\chi^2 = 13.1$; p < 0.067	–	–	–	–

Note: STAI and BDI raw scores are reported with standard deviation. Significant differences between AN-G vs. CG vs. AD. The significant values after Bonferroni correction are in bold.
Abbreviations: AD_{mo}, affective disorder mothers; AN_{mo}, anorexia nervosa mothers; CG_{mo}, control group mothers.
p ≤ 0.003, *p ≤ 0.001.

TABLE 5 Differences in STAI and BDI scores in fathers between groups: Significant Dimensions.

Psychopathology	AN _{fa} (<i>n</i> =50) <i>M</i> (SD)	AD _{fa} (<i>n</i> =40) <i>M</i> (SD)	CG _{fa} (<i>n</i> =50) <i>M</i> (SD)	<i>F</i> _{no} / <i>χ</i> ² _{no}	AN vs. AD Cohen's <i>d</i>	AN vs. CG	CG vs. AD	Posthoc Fathers
STAI – Trait	14.39 ± 5.76**	20.34 ± 12.21**	11.46 ± 6.37**	<i>F</i> = 9.18; <i>p</i> < 0.001	0.62	0.5	0.91	AN = CG < AD
STAI – Trait Risk (%)	11.4	20.7	12.9	<i>χ</i> ² = 17.27; <i>p</i> < 0.001	–	–	–	–
STAI – State	15.98 ± 4.99***	21.7 ± 3.15***	13.29 ± 6.82***	<i>F</i> = 12.02; <i>p</i> < 0.001	0.44	1.05	1.04	AN = AD > CG
STAI – State Risk (%)	14.3	20	12.1	<i>χ</i> ² = 12.87; <i>p</i> < 0.001	–	–	–	–
BDI	5.61 ± 4.19***	11.22 ± 11.62***	3.51 ± 2.9***	<i>F</i> = 10.59; <i>p</i> < 0.001	0.65	0.68	0.91	AD > AN = CG
BDI – Risk (%)	1	3	0	<i>χ</i> ² = 6.76; <i>p</i> < 0.034	–	–	–	–

Note: STAI and BDI raw scores are reported with standard deviation. Significant differences between AN-G vs. CG vs. AD. The significant values after Bonferroni correction are in bold.
Abbreviations: AD_{fa}, affective disorder fathers; AN_{fa}, anorexia nervosa fathers; CG_{fa}, control group fathers.
p* ≤ 0.003, *p* ≤ 0.001.

in fathers with higher levels of EOI in both parents of adolescent with AD or AN and might have relevant clinical implications, given that EE is a robust predictor of relapse for several psychiatric disorders, and parents of depressed children and adolescents present higher levels of EE (CC specifically). Fathers usually show less engagement with treatment and several studies have shown that specifically their involvement in treatments improves the outcome from an ED (Treasure et al., 2019). As a measurement of family climate, EE in families of adolescent girls with AN is associated with poorer outcome for patients, and parental levels of EE affected treatment outcomes differently (Ammerman & Brown, 2018; Burkhouse et al., 2012; Del Casale et al., 2023; Nalbant et al., 2020; Nurany et al., 2022). These results confirm the trend in the same direction as other previous research in which overprotective attitudes are present in mothers and fathers of adolescents with psychological disorders and are usually related to anxiety and feelings of hopelessness and uncertainty of the severity of the disorder (Anastasiadou et al., 2016; Parks et al., 2018; Rienecke et al., 2017).

Regarding coping styles, mothers in the AN group showed less avoidance coping than AD_{mo} and CG_{mo} , while they showed higher socially supported and problem-focused coping compared to AD_{mo} and CG_{mo} . These results are in line with those found by Parks et al. (2018) where parents try to cope with a problem as having an adolescent with a disorder so they are over-involved trying to get rid of the problem what could lead to unhelpful strategies toward their daughters' illness. Concerning emotion coping, no differences were found between the three groups, so the hypothesis was not confirmed. Regarding fathers, differences were found between the two groups of adolescents with psychiatric disorders, both in avoidance, and in socially supported coping, while in the emotion-focused coping no differences were found between any group. Finally, in problem-focused coping, the two groups of fathers of adolescents with disorders showed the same level, both being higher than the control group, as had been hypothesized. This may be related to the need for parents to face the situation of having teenage daughters in the early stages of the disorder, being able to focus on problem solving to feel the ability to manage this situation. These results follow the line of the need for interventions aimed at parents to improve their way of coping with the situation in a more effective way and improve the results of the treatment process (Parks et al., 2018; Treasure & Nazar, 2016).

With respect to the third hypothesis it was partially confirmed since higher rates of depression were found in AD_{mo} and AN_{mo} compared with CG_{mo} . Fathers' psychopathology scores showed that AD_{fa} presents higher levels of anxiety trait and depression compared to AN_{fa} and CG_{fa} , but they present no differences compared with AN_{fa} in the anxiety state as we expected.

In synthesis, AD_{mo} and AD_{fa} presented the highest level of anxiety and depression, which are probably influenced by the heightened level of stress experienced when dealing with a child with an anxiety or a depressive disorder. Paternal psychopathology has been associated with adolescent psychological disorders and the mechanism in this relationship should be further explored. These relationships might not be unidirectional, nor confined to the present generation. In fact, there might be an intergenerational link between anxiety and depression, suggesting that a combination of genetic and environmental factors contributes to the well-being of offspring, parents, and the family as a whole (Hawes et al., 2021; Suveg et al., 2022). Moreover, in light of the obtained results, it is possible to infer that AN_{mo} and AN_{fa} patterns are in line with the proposal of the interpersonal maintenance model of EDs, where relational patterns are key in maintaining AN (Schmidt & Treasure, 2010; Treasure et al., 2020; Treasure & Schmidt, 2013), and are characterized by a high level of EE, dysfunctional coping mechanisms, and anxiety or depression in caregivers.

Strengths and limitations

This study contributes to the literature in a very important area at the clinical level due to the high prevalence of both groups of disorders and their different implications and prognoses in the medium and long term. Among the strengths of the study, to the best of our knowledge this is the first study to compare personality, coping strategies, and expressed emotion in parents of adolescents with AN with parents of adolescents with ADs. Moreover, we find that the inclusion of both mothers and fathers represents an advancement for the adaptation of the different treatment models for adolescents with EDs or ADs. On the other hand, it was only the included parents of adolescents with a maximum of a 1-year disorder course in order to reduce bias due to retrospective recall.

Regarding the limitations, firstly, variables were assessed via self-report instruments and thus, they are subject to the limitations inherent to this method, such as socially desirable responding. Secondly, given the cross-sectional nature of the study it does not allow to draw conclusions about the stability of coping strategies. On the other hand, disorders have relatively short duration and it is possible that parental psychological symptoms and adolescents' symptomatology are lower and because of this degeneralizability of these findings is limited.

Thirdly, participants with high socioeconomic status were predominant in this sample what could be a limitation for the generalization of the results and perpetuate the stigmatizing beliefs and stereotypes about who can develop these disorders, specially AN (Huryk et al., 2021).

Clinical implications and future research

This article highlights the importance of including both parents in research on adolescents with psychological disorders in order to identify the differences between both parents and their influence in supporting and improving the treatment of their adolescent children. Although our results are in need of replication and of assess other factors specific to each disorder which are not taken into account in this study, our findings have implications for interventions with parents of adolescents with EDs or ADs. Our results appear to reinforce the idea that is a priority to help parents of adolescents with these disorders to manage the reactions, reduce the level of EE and find the ways to cope with the distress related with the disorder and the treatment process (Nalbant et al., 2020; Parks et al., 2018).

Despite the limitations of this study, our findings suggest future studies to identify the relationship or path from the personality, coping strategies, and expressed emotions of mothers and fathers with the development and maintenance of their daughters' pathology, such as the cognitive interpersonal model of eating disorders (Treasure et al., 2020; Treasure & Nazar, 2016; Treasure & Schmidt, 2013) in AN.

The findings of this research also confirm the need to support mothers and fathers of adolescent girls with eating disorders, as in previous studies to guide them in the task of take care of their daughters, for example with the Maudsley Collaborative Care Skills Training Workshop to develop strategies to improve communication, coping and relationship skills with their daughters (Fox et al., 2017; Macdonald et al., 2014; Sepúlveda et al., 2019), or the Temperament Based Therapy with supports (TBT-S) combining multi-family treatments for EDs with the neurobiological models, targeting the mechanism underlying the etiology of these disorders involving mothers and fathers as supports for the treatment of their daughters (Hill et al., 2022; Knatz Peck et al., 2021; Stedal et al., 2023). In our sample, the disorders have a short duration; so the interventions carried out are the first to treat the pathologies which is an opportunity to address ED related maintaining factors since the early phases of treatment (Treasure et al., 2019).

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