Original

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Clinical applicability of the Cuestionario de Evaluación de las Relaciones Familiares Básicas (CERFB) in eating disorders: marital and parental relationships in traditional family structures

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ABSTRACT

Introduction: Family interventions occupy a leading position for eating disorders (EDs) among psychological treatments. However, the unavailability of family measures specifically validated in such disorders in Spanish population has been documented, to evaluate family dynamics and design appropriate interventions. This study aims to validate the clinical application of the Cuestionario de Evaluación de las Relaciones Familiares Básicas (CERFB; in English, Basic Family Relations Assessment Questionnaire) in EDs.

Method: One hundred and sixty-nine couples (*N* = 338 participants) with a child with an ED completed the CERFB and other family measures.

Results: The CFA results support the two-factor solution of the original version for general population. Furthermore, measurement invariance across gender results support the configural and metric invariance. Convergent validity is supported by significant correlations between the CERFB and the Dyadic Adjustment Scale and the Parental Bonding Instrument. Reliability is satisfactory for both scales: Marital (α = .90) and Parental (α = .76). Normative data are provided.

Conclusions: The CERFB becomes the only available family measure in EDs for Spanish population offering a broader assessment than existing measures as it comprises both the marital relationship and parenting exercise.

Key words: validation, family relationships, marital relationship, parenting, eating disorders, traditional family

RESUMEN

Introducción: Las intervenciones familiares ocupan una posición destacada entre los tratamientos psicológicos para los trastornos de la conducta alimentaria (TCA). Sin embargo, se ha documentado la falta de medidas familiares específicamente validadas en dichos trastornos en población española, para una evaluación de las dinámicas familiares y el diseño de intervenciones apropiadas. El objetivo de este estudio es validar la aplicación clínica del Cuestionario de Evaluación de las Relaciones Familiares Básicas (CERFB) en los TCA.

Metodología: Ciento sesenta y nueve parejas (*N* = 338 participantes) con un hijo con un TCA completaron el CERFB y otras medidas familiares.

Resultados: Los resultados del AFC confirman la solución bifactorial de la versión original en población general. Asimismo, la invarianza factorial según el género demostró el cumplimiento de la invarianza configuracional y métrica. La validez convergente la determinan las correlaciones significativas entre el CERFB y la Escala de Ajuste Diádico y el Instrumento de Vínculo Parental. La fiabilidad de ambas escalas es satisfactoria: Conyugalidad (α = .90) y Parentalidad (α = .76). Se proporcionan datos normativos.

Conclusiones: El CERFB deviene la única medida familiar disponible en los TCA para población española, ofreciendo una evaluación más amplia que las medidas existentes al comprender la conyugalidad y la parentalidad.

Palabras clave: validación, relaciones familiares, conyugalidad, parentalidad, trastornos de la conducta alimentaria, familia tradicional

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INTRODUCTION

Family therapy is the psychological treatment that occupies the leading position for children and young people with Anorexia or Bulimia Nervosa, in the latest eating disorder (ED) NICE guideline[1]. This stems from clinically relevant research results that determine the efficacy of family interventions for adolescents with such disorders[2,3].

The family in EDs has historically received considerable research attention. However, the Maudsley model approach has given rise to family-based treatments with sufficient empirical evidence considering the family the main resource in the intervention[4-6].

The recent literature focused on the family functioning in EDs and in the nature of the dyadic intrafamilial relationships is reporting greater family dysfunction in EDs in contrast to non-clinical families[7,8]. In particular, a higher marital disharmony and a more deteriorated exercise of parenting[9-13].

In line with the worldwide framework, EDs are placed in Spain as a national priority within the public mental health field to be intervened upon[14] with family interventions[15] considering their high and increasing incidence[16] and associated severity[17,18]. However, we have identified a gap in the assessment literature and experienced in our clinical practice an unavailability of family measures validated in Spanish population with EDs that evaluate constructs other than expressed emotion: Family Questionnaire[19], Level of Expressed Emotion[20], and Brief Dyadic Scale of Expressed Emotion[21]. Measures are necessary to meet the clinical utility focused on the design of family interventions when needed. Likewise, focused on providing evidence of progress in therapy or lack of change in family dynamics[22].

Therefore, also in response to the documented requirement of useful family measures for EDs[7], the present study was designed to provide a valid and reliable tool meeting recommendations regarding assessment in Psychology[23] providing empirical evidence of the psychometric properties of an instrument in a particular population in which it is to be used. What is more, findings regarding the influence of cultural differences in the ED families justify that such clinical specificity of instruments has to be validated[24].

To our knowledge, the Cuestionario de Evaluación de las Relaciones Familiares Básicas (CERFB; in English, Basic Family Relations Assessment Questionnaire)[25] is the first and unique theoretically and empirically developed instrument worldwide focused on the family that simultaneously evaluates the marital relationship and parenting exercise distinguishing between functional and dysfunctional couples and a suitable or unsuitable exercise of parenting, from the basic family relations theory of Linares[26,27]. It is a brief, concise and easy clinically accessible measure of family dynamics in traditional family structures. Linares[28] considers that the coexistence of the conjugal and parenting functions is what represents a family. Therefore, in contemporary families, gender is no longer a determining factor in the structure of couples, nor is the presence of biological or adopted children or offspring conceived through artificial fertilization techniques. Conjugal functions refer to the relationship between the partners forming a couple, while parenting functions refer to the relationship between both parents and their children. In his basic family relations theory, Linares[26,27] describes both functions converge at the family's capacity for relational nurturing, a determining factor in the development of the child's personality and mental health.

The CERFB's original Spanish version for general population has been validated with adequate psychometric properties[25]. In addition, the CERFB has already been administered to an ED population with satisfactory results. Campreciós et al.[10] presented the CERFB as capable of evaluating, through a cut-off point of 55 for the marital relationship and 42 for the parenting exercise, a more disharmonic marital relationship and deteriorated parental relationship in families with a child with an ED in relation to functional families without psychopathological diagnosis. Results which reinforce the existing literature already mentioned in the same line of investigation.

To address these issues, the present study aims to validate the clinical application of the original Spanish version of the CERFB in EDs examining its factorial and convergent validity, and reliability and to provide normative data for this clinical population.

METHOD

Participants

The final sample consisted of 169 couples from 14 autonomous regions of Spain with a traditional family structure, that is, constituted by a mother and a father. Therefore, there were 338 participants equally divided by gender aged 36-75 years (M = 50.74, SD = 5.97). Average cohabitation time was 25.42 years (SD = 6.25) and average number of children was 2.19 (SD = 0.70). Considering the marital status, 95.9% of the couples were married and 3.0% were cohabitant partners; 1.2% missing data. Regarding the couple partners' education, 33.20% had a university degree, 47.10% had a high school degree and 19.70% had only completed compulsory school.

Focusing on the offspring with an ED diagnosis, 3.6% were males and 95.3% females; 1.2% missing data. Their av-

erage age was 19.58 years (*SD* = 4.65). Anorexia Nervosa diagnosis was the most frequent (50.3%) followed by Bulimia Nervosa diagnosis (21.9%) and Eating Disorder Not Otherwise Specified diagnosis (19.5%); 8.3% missing data. The reported illness duration was on average 5.01 years (*SD* = 4.37) and mean body mass index (BMI; kg/m^2) was 20.55 (*SD* = 4.43). This patient sample was in treatment, 61.5% for up to 3 months or 100 days and 33.7% for more than 3 months or 100 days; 4.7% missing data. Comorbidity with the ED was registered in 14.8% of the referrals; 13% missing data. The 80% of the registered comorbidity was with mental disorders and 20% with personality disorders. Mental disorders in other family members were self-reported in 27.2% of the families; 8.3% missing data.

Instruments

Participants self-reported sociodemographic information on their gender, age, residence location, education and on their couple relationship and family (e.g., cohabitation time, marital status, number of children, offspring gender and age), and completed the self-report measures that follow. Clinical ED data regarding diagnosis, according to DSM-IV-TR criteria[29], illness duration and BMI (kg/m^2), was obtained through the staff in charge and clinical records.

The Cuestionario de Evaluación de las Relaciones Familiares Básicas (CERFB)[25] is a 25-item measure of family relations through two scales: Marital (14 items) and Parental (11 items). Items are rated on a Likert-type scale, with scores between 1 (*never*) and 5 (*always*). The Marital score ranges from 0 to 70 and the Parental score from 0 to 55. Higher scores are indicative of greater functionality. Both scales in the original Spanish version in general population show high reliability: Marital (α = .92) and Parental (α = .91).

The Dyadic Adjustment Scale **(**DAS)[30] is a 32-item measure of the perception of dyadic adjustment of couple members through four subscales: Consensus (13 items), Cohesion (5 items), Satisfaction (10 items) and Affectional expression (4 items). The global dyadic adjustment score ranges from 0 to 151. Higher scores are indicative of greater adjustment. Items are rated on a variety of response formats. We used the Spanish translation of Echeburúa and de Corral[31] validated by Santos-Iglesias, Vallejo-Medina, and Sierra[32].

The Parental Bonding Instrument (PBI)[33] is a 25-item measure of two parental dimensions: Care (12 items) and Overprotection (13 items). Items are rated on a Likert-type scale, with scores between 0 (not at all) and 3 (*a lot*). The Care score ranges from 0 to 36 and the Overprotection score from 0 to 39. Higher scores are indicative of greater care and overprotection. The PBI parent form that measures mothers' and fathers' perception of their current relationship with their offspring was administered. We used the translation developed for and validated in Spanish population by Ballús[34].

Sampling and procedure

Participants were selected through a non-probabilistic intentional sampling according to the inclusion criteria defined for the families under study[35]. Inclusion criteria for the families were the following: (a) Spanish nationality; (b) Formed by an heterosexual adult couple (> 18 years) with at least one biological child in common (> 11 years) living with them with a DSM-IV-TR ED diagnosis[29]; (c) Formed by married couples, a domestic partnership or couples that normally live together; (d) The child must not have children; and (e) The families must not have attended family therapy for more than three months.

The families were recruited from nine specialized centers and hospitals with an ED unit in Spain attended by the patients, between 2009 and 2014. Previous presentation of the study to the families, they volunteered to participate. Signed written informed consent was obtained from all participating family members before completing the questionnaires in accordance with the latest World Medical Association Declaration of Helsinki from 2013 and they did not receive compensation for their participation. The Universitat Ramon Llull Ethics Committee reviewed and approved the research protocol.

Data Analysis

Preliminarily, we guaranteed that the CERFB, DAS and PBI scores were free from the influence of potential strange variables such as time in treatment[36], comorbidity with the ED[37,38] and mental health disorders in family members[39]. The *t* Student and Mann-Whitney U tests and an analysis of variance (ANOVA) were used. Results were analyzed under the account of normality. No effect was observed; data analysis proceeded with the total sample.

The CERFB's construct validity was determined using CFA to examine the two-factor structure model that emerged from the EFA in Spanish general population data[25] and is sustained by the basic family relations theory of Linares[26,27]. The model consists of two latent factors that represent two independent constructs, the marital relationship and parenting exercise, which are correlated. The sample size (*N* = 338) exceeds the classical conservative recommendations[40]. Data preparation also included analysis and treatment of missing data and univariate and

multivariate normality. The Relative Multivariate Kurtosis (RMK) value was 1.119, indicating a reasonable adjustment of the data considered collectively. Therefore, the hypothesized model was tested using the maximum likelihood estimation (MLE) method on the variance-covariance matrix of the CERFB items[41].

Goodness-of-fit was assessed with the $\chi 2$ to degrees of freedom ratio ($\chi 2/gl < 5$), Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). According to literature guidelines[42,43], CFI and TLI > 0.90, RMSEA < 0.08, and SRMR < 0.10 suggest an acceptable fit, while CFI and TLI > 0.95, RMSEA < 0.05, and SRMR < 0.08 suggest an excellent fit.

Furthermore, measurement invariance was performed to test whether the two-factor structure could be considered similar for men and women. In line with the widely accepted recommendations and guidelines[44,45], configural invariance, measurement invariance (i.e., metric invariance, scalar invariance) and structural invariance, were tested in that order. For the comparison of these nested models, both the chi-square difference tests ($\Delta\chi^2$) and the CFI difference (ΔCFI) were used. Specifically, a significant $\Delta\chi^2$ and CFI decrease greater than -.01 suggests rejecting the null hypothesis of invariance[44].

To complement the CERFB's construct validity, Pearson's correlations between the CERFB and two widely used family measures, the DAS and the PBI, were examined to evaluate convergent validity. Reliability was established through the internal consistency of the Marital and Parental CERFB scales by computing Cronbach's coefficient alpha and the composite reliability indicator (ρc), as suggested for CFA.

The normative scores for the Marital and Parental CERFB scales in EDs were obtained. Direct, base 10 and typified total scores were scaled in percentiles.

Statistical analyses were carried out using IBM SPSS Statistics Version 21 and, specifically for the CFA and measurement invariance, M-PLUS Version 8.54. The level of significance was set at $p < .05$.

RESULTS

Confirmatory Factor Analysis

The two-factor model showed the following fit indices: $\chi 2/gl = 2.95$, CFI = .92, TLI = .91, RMSEA = .076 [90% CI = .07, .08] and SRMR = .076. Therefore, the hypothesized two-factor model, coherently with the original version of the CERFB for general population, may be considered acceptable. The model consists of 2 latent variables (the Marital and Parental factor) and 25 observed variables (the items). Factor loadings (standardized solution) and factor correlations are presented in Figure 1.

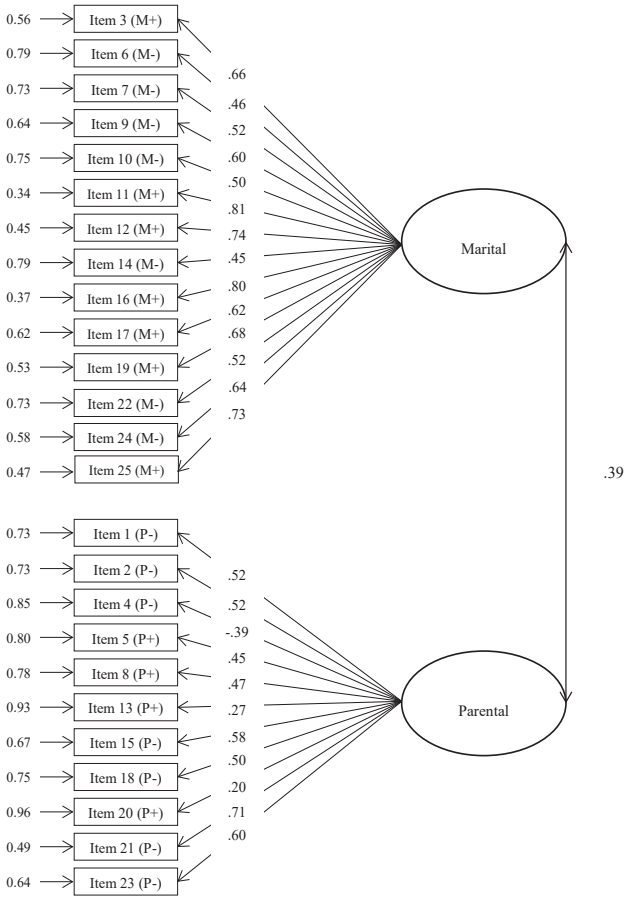

Figure 1 — **Structural representation of the two-factor model of the CERFB in eating disorders. A rectangle reflects a measured variable and an ellipse a latent construct. Numbers on paths from latent constructs to their indicators reflect factor loading coefficients and numbers on the left-hand side reflect the errors of measurement (standardized solution). The bidirectional arrow represents a correlation and unidirectional arrows depict hypothesized directional or causal links. Standardized maximum likelihood parameter estimates.**
M+ = Positive Marital item;
M- = Negative Marital item;
P- = Negative Parental item;
P+ = Positive Parental item.

Measurement Invariance Across Gender

Firstly, the configural invariance (M0), i.e. an unconstrained baseline model in which all parameters differ between males and females, was examined. Secondly, the metric invariance (M1), i.e. a model in which all factor loadings are simultaneously constrained across gender groups, was also examined and compared to M0. The comparison M1 versus M0 shows a non-significant $\Delta\chi^2$ and a CFI decrease not greater than -.01; therefore, this result suggests no significant group differences for factor loadings, supporting metric invariance. In other words, men and women attribute the same meaning to the latent constructs under study. Thirdly, the scalar invariance (M2), i.e. a model in which the intercepts are constrained to be equal across groups, was tested and compared to M0. The result shows a significant $\Delta\chi^2$ and a sufficient CFI decrease to suggest a significant group difference for item intercepts; therefore, scalar invariance was not supported, i.e. the levels of the underlying items (intercepts) should not be considered equal in both groups. As scalar invariance was not supported, structural invariance has not been tested. The fit indices and comparisons among models are reported in Table 1.

Convergent Validity

The correlations that report convergent validity between the CERFB and the DAS and the PBI, offer additional support for the construct validity: positive and significant correlations between the CERFB Marital scale and the DAS total score (r (223) = .78, p < .001) and the CERFB Parental scale and the PBI Care scale (r (233) = .45, p < .001), and a negative and significant correlation between the CERFB Parental scale and the PBI Overprotection scale (r (226) = -.21, p = .001).

Reliability

The analysis of the CERFB's internal consistency in EDs based on the Cronbach's alpha coefficient shows homogeneity among the items of each scale: Marital (α = .90) and Parental (α = .76). We infer that the items are correctly phrased and are useful for measuring what we are measuring. All scale items were tested for effect on the scale's Cronbach's alpha if deleted and none of the items affected the α –level increasing it. Furthermore, the composite reliability indicator also supports the good reliability of both scales: Marital (ρc = .90) and Parental (ρc = .77).

Normative Data

Table 2 shows the normative scores for the Marital and Parental CERFB scales in EDs.

DISCUSSION

The importance of considering the family in the diagnosis and treatment of EDs is nowadays well recognized[2,3,7,8]. However, there is a lack of valid and reliable instruments that widely assess family relationships in such population and new measures are required to fill this gap[7]. Therefore, the main aim of the present study is to validate the CERFB in EDs to determine the clinical applicability, which is itself the main strength as it meets recommendations regarding assessment in Psychology[23], providing empirical psychometric evidence of an instrument in a particular population.

Overall, results suggest adequate psychometric properties consistent with those of the original version in Spanish general population[25]. It is encouraging to see such results in its first expanded use in clinical population with a view to the ongoing process of psychometric evidence accumulation.

Table 1 Tests of the Measurement Invariance Across Gender (Males = 169 vs. Females = 169)

Model	χ^2	*df*	CFI	TLI	SRMR	RMSEA	$\Delta\chi^2$	Δ *df*	Δ CFI
M0. Configural Invariance	1154.60	548	.801	.782	.090	.087	-		
M1. Metric Invariance	1193.36	571	.796	.785	.099	.080	38.76	23	.005
M2. Scalar Invariance	1312.83	594	.764	.762	.099	.085	158.23**	46	.037

Table 2 **Percentiles for the CERFB Marital and Parental scale scores in eating disorders.**

	Marital			Parental		
Percentile	Direct score	Base 10 score	T-score	Direct score	Base 10 score	T-score
1	27.00	0.22	20.54	27.00	0.37	23.06
2	33.00	1.59	27.42			
3	34.00	1.81	28.57	30.00	1.48	28.98
4	35.00	2.04	29.72	31.00	1.85	30.95
5	36.00	2.27	30.87	32.00	2.22	32.92
6	37.00	2.50	32.01			
7				33.00	2.59	34.90
8	38.00	2.72	33.16			
9	39.00	2.95	34.31			
10	41.00	3.40	36.60	34.00	2.96	36.87
15	44.00	4.09	40.05	35.40	3.48	39.63
20	46.00	4.54	42.34	36.20	3.77	41.21
25	47.00	4.77	43.49	37.00	4.07	42.79
30	49.00	5.22	45.78	38.00	4.44	44.77
35	50.00	5.45	46.93			
40	51.00	5.68	48.08	39.00	4.81	46.74
45	53.00	6.13	50.37	40.00	5.18	48.71
50	54.00	6.36	51.52			
55	55.00	6.59	52.67	41.00	5.55	50.69
60	56.00	6.81	53.82	42.00	5.92	52.66
65	57.00	7.04	54.96	43.00	6.29	54.63
70	58.00	7.27	56.11	43.20	6.37	55.03
75				44.00	6.66	56.61
80	60.00	7.72	58.41	45.00	7.03	58.58
85	61.00	7.95	59.55	46.00	7.40	60.55
90				47.00	7.77	62.53
91	63.00	8.40	61.85			
92	64.00	8.63	63.00	48.00	8.14	64.50
93						
94				49.00	8.51	66.47
95	65.00	8.86	64.14			
96	66.00	9.09	65.29	50.00	8.88	68.45
97	67.00	9.31	66.44		9.25	
98	68.00	9.54	67.59	51.00	9.25	70.42
99	69.00	9.77	68.73	51.08	9.28	70.58
100	70.00	10.00	69.88	53.00	10.00	74.37

Note. T-score = typified score. Dark grey area indicates ED family dysfunction in contrast to non-clinical families.

Accordingly, the CFA supports in EDs the validity of the two-factor model, Marital and Parental CERFB scales, proposed by the authors that emerged from the original version for general population[25] and is sustained by the theory[26,27], showing an acceptable model fit[42,43]. Furthermore, measurement invariance results across gender support metric invariance. This suggests that the meaning the Marital and Parental scales comprise, as basic family relations, is recognized the same way by both men and women.

The CERFB shows a good level of convergent validity; as a matter of fact, it is associated as expected with the DAS[30,32] and PBI[33,34]. This set of correlational results, together with the intramarital and intraparental agreement of the clinical families on the perceptions of the marital relationship and parenting exercise in Campreciós et al.[10], complement the construct validity of both CERFB scales first suggested by the factor analysis[22].

Furthermore, the reliability analyses through Cronbach alpha and the Composite Reliability Indicator, suggests good levels for both CERFB scales.

Finally, the CERFBs normative data provided in this study together with the cut-off points established for both scales[10] allow the interpretation of the CERFBs scores in EDs. The results of the present study back up the results of Campreciós et al.[10]: the empirical discriminative capacity of the CERFB in EDs and non-clinical families through a cut-off point of 55 for the marital relationship and 42 for the parenting exercise can be more strongly asserted.

In the set of core procedures for the validation and determination of the normative data both parents' and spouses' scores have been considered together due to the lack of differences between the cut-off points either as a whole or by gender[10]. Also, the ED diagnostic subcategories were not independently considered according to the ongoing debate regarding their value and frequent fluctuation across them[46]. Likewise, in line with the lack of clarification of specific family dynamics[7].

These promising findings must be considered in light of limitations. Namely, sample conditionings limit the generalizability of the results to those families not included in the study, new family forms that arise from separation or divorce. Also, measurement invariance does not support structural invariance, i.e., it is not possible to assume that the patterns between observed and latent variables will be the same across gender.

In response to such limitations, future research should also consider the new family forms with a child with an ED diagnosis through the CERFB-CoP[47], a new version of the CERFB which is being designed and validated and has been adapted to the nowadays family reality: including a Coparenting scale to bypass the Marital scale when applicable. Measurement invariance should also be better examined in depth. Moreover, the present study could be complemented by a longitudinal study that analyses test-retest reliability to determine the consistency over time of the relational evaluation and its predictive validity to determine its use in the evaluation of intervention effectivity[22]. Such results would shed light on the stability of the cut-off points, considering possible family adaptation processes to the ED and therefore, possible eating-related dysfunctions which are expected to spontaneously decrease once the acute phase of the ED is resolved or to rapidly improve with family guidance or therapy. In order to determine the specificity of family relations in EDs it would be convenient to simulatneously clarify the relational patterns of different clinical samples. The extent to which the relational patterns are similar and different between the various psychopathological populations should be addressed[8,11,12,38,48].

In conclusion, the CERFB can be used in the assessment of family dynamics through the marital relationship and parenting exercise in Spanish families with a child with an ED in relation to non-clinical families in both clinical and research contexts. It becomes the first and unique validated measure that broadly assesses the family in EDs in a Spanish population. What is more, its brief and easy use, being only necessary 10 minutes to complete it, is valuable. Likewise, little time is needed to correct and punctuate it. It can be easily incorporated in an assessment system either among other self-report instruments or in combination with an open or semi-structured clinical interview[49]. The consistent use of a valid and reliable instrument that specifically assesses family relationships in EDs is necessary to strengthen the knowledge regarding the theme. The use of the CERFB enables a holistic assessment of EDs considering family relationships, among other issues.

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DECLARATIONS OF INTEREST

The authors declare no conflicts of interest.

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