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Psychometric Properties of the Spanish version of the Detail and Flexibility Questionnaire (DFlex)

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Method Article

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Abstract

Backgroud:

Cognitive inflexibility and deficits in central coherence are well-established endophenotypic traits in eating disorders (EDs), significantly impacting clinical outcomes and therapeutic engagement To assess these dimensions, the Detail and Flexibility Questionnaire (DFlex) was developed and validated in several languages. The aim of this study was to validate the Spanish version of the DFlex in individuals with EDs and in general population, examining its psychometric properties and ensuring its reliability and validity.

Methods

confirmatory factor analyses, internal consistency, predictive and concurrent validity estimates were conducted within individuals with a diagnosis of an eating disorder (n = 113) and individuals from general population (n = 175).

Results

The original 24-item version showed inadequate fit. Following a systematic refinement process based on statistical performance and content validity, a 10-item brief version (5 items per subscale) was developed. The Spanish DFlex-brief demonstrated satisfactory model fit, adequate internal consistency (α and ω > .70), and significant correlations with conceptually related measures (e.g., perfectionism, cognitive flexibility). Furthermore, it effectively distinguished between clinical and general populations, with a 67.9% correct classification rate.

Discussion

The Spanish DFlex-brief is a reliable and valid tool for assessing cognitive rigidity and attention to detail. Its brevity and ease of administration make it a valuable instrument for clinical practice and research for assessing cognitive styles characteristic of ED in the Spanish population.

1. INTRODUCTION

Eating disorders (EDs) are serious psychological conditions characterized by disturbances in eating behaviours and an excessive preoccupation with weight and body shape (DSM-5-TR, 2022). Among the most prevalent are anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), and eating disorder not otherwise specified (EDNOS). EDs are complex disorders in which biological, psychological, and social factors interact in their development and maintenance (Gorwood et al., 2016). Within EDs, AN has been the most extensively studied, particularly regarding its cognitive and neuropsychological underpinnings. Among these, inefficiencies in cognitive flexibility and central coherence have been

identified as particularly relevant, as they affect adaptive functioning and global information processing, favouring rigid patterns of thinking and behaviour (Happé & Booth, 2008; Lezak et al., 2012).

Cognitive flexibility, also referred to as set-shifting, is the ability to adapt to changes in the environment by switching between rules, tasks, and mental strategies (Robbins et al., 2012). Beyond this broad conceptualisation, cognitive flexibility includes distinct processes such as attentional set-shifting and reversal learning, which refers to the ability to modify a previously reinforced response when contingencies change. These processes may present differently across distinct types of EDs (Dougherty et al., 2024). Difficulties in this domain are associated with cognitive rigidity and perseverative behaviour, characterised by maintaining a pattern of response even when it is no longer appropriate or effective (Brockmeyer et al., 2021). Evidence suggests that these alterations may represent endophenotypic traits, as they persist in recovered individuals and are also observed in unaffected relatives, indicating that they are not merely a consequence of malnutrition but rather relatively stable cognitive characteristics associated with increased vulnerability to AN (Holliday et al., 2005; Roberts et al., 2010; Kanakam et al., 2013; Tenconi et al., 2010). Cognitive-interpersonal maintenance models further emphasise the importance of addressing these underlying mechanisms in treatment, prioritising the cognitive processes that perpetuate the disorder rather than focusing exclusively on observable symptoms (Treasure et al., 2007; Treasure & Schmidt, 2013).

To evaluate this function, studies have traditionally employed neuropsychological tasks such as the Wisconsin Card Sorting Test (WCST; Berg, 1948) and the Trail Making Test (TMT; Reitan, 1958). The WCST assesses the ability to modify a sorting rule when contingencies change, whereas the TMT evaluates the ability to alternate between different sequences, allowing the identification of cognitive flexibility difficulties and perseverative tendencies, respectively. A meta-analysis demonstrated that individuals with AN make significantly more perseverative errors than healthy controls (Roberts et al., 2007), a finding later confirmed in a subsequent meta-analysis (Westwood et al., 2016). Furthermore, recovered individuals show more errors than controls, although fewer than those in the acute phase (Tchanturia et al., 2012; Tenconi et al., 2010). Unaffected relatives also show poorer performance in this domain, further supporting the hypothesis that these cognitive characteristics may represent an endophenotypic characteristic of the disorder (Roberts et al., 2010; Tenconi et al., 2010).

Although many studies have prioritised the investigation of cognitive flexibility, central coherence has also been identified as a relevant component of the cognitive styles associated with EDs (Dougherty et al., 2024). Central coherence refers to the ability to integrate information globally rather than focusing excessively on details (Happé & Frith, 2006). In AN, a tendency to focus on details without perceiving the broader context has been consistently observed, which may contribute to obsessive patterns related to body image and eating behaviours. The meta-analysis by Lang et al. (2016) confirmed that individuals with AN show poorer performance on tasks involving global processing compared with healthy controls, with a moderate effect size. The similarity in performance between individuals with AN and their unaffected relatives further supports the hypothesis that weak central coherence may also represent an endophenotypic characteristic of the disorder (Kanakam et al., 2013).

Although most studies have focused on AN, difficulties in cognitive flexibility and central coherence have also been reported in other EDs. A meta-analysis by Keegan et al. (2021) found that, although no conclusive evidence could be established regarding the presence of these alterations in BED, individuals with BN present inefficiencies in task switching and central coherence similar to those observed in AN. In addition, recent studies have shown that cognitive flexibility difficulties have also been observed in individuals with BN and purging-type AN, and that this rigidity may contribute to the maintenance of symptoms such as binge eating and purging behaviours over time, even when these behaviours are no longer functional or reinforcing (Singh et al., 2024; Dougherty et al., 2024).

At a clinical level, these cognitive difficulties are reflected in obsessive patterns and ritualised behaviours, such as meticulous calorie counting, constant body checking, and compulsive exercise. Furthermore, individuals with AN often adhere rigidly to their daily routines, experiencing significant anxiety when these routines are disrupted (Roberts et al., 2011). Understanding these cognitive difficulties is essential for developing personalised interventions that may improve treatment outcomes. However, despite their clinical relevance, the assessment of cognitive flexibility and central coherence remains a considerable challenge.

Although neuropsychological tasks such as the WCST and TMT have been widely used to assess cognitive flexibility, and tasks such as the Rey–Osterrieth Complex Figure (ROCF) (Rey, 1941) to evaluate global processing, recent evidence has begun to question the equivalence and convergent validity of these measures. For example, Dougherty et al. (2024) observed that the WCST and TMT were not correlated with one another and did not show consistent associations with BN symptomatology, suggesting that these tasks may capture partially distinct components of the construct or may be sensitive to factors unrelated to the specific cognitive style characteristic of EDs. Moreover, neuropsychological tasks inherently involve multiple cognitive processes simultaneously, making it difficult to obtain a completely “pure” measure of a single executive function such as cognitive flexibility or central coherence.

In addition, despite their widespread use, these batteries present substantial limitations in clinical contexts. Their administration is often lengthy and complex, they require highly specialised professionals, and they may lack sensitivity to detect subtle cognitive difficulties that, although not reaching the threshold of clinical impairment, significantly affect the daily functioning of individuals with EDs (Maria et al., 2020). Furthermore, performance on these tasks may be influenced by state-related variables such as malnutrition, fatigue, or anxiety, making it difficult to distinguish trait-related from state-related alterations (López et al., 2008).

Another instrument that has also been used to assess cognitive styles related to central coherence and attentional flexibility is the Autism-Spectrum Quotient (AQ; Baron-Cohen et al., 2001), a 50-item self-report measure designed to evaluate five domains associated with autistic traits: social skills, communication, imagination, attention to detail, and attention switching. However, although this instrument proved useful in identifying cognitive styles characteristic of the autism spectrum, it showed

limitations in predominantly female populations. Specifically, Hambrook et al. (2008) observed that the Attention to Detail subscale did not adequately differentiate individuals with AN from healthy controls, possibly due to gender-related bias in the item content.

In response to the aforementioned limitations and with the aim of providing a more accessible assessment tool, the Detail and Flexibility Questionnaire (DFlex) was developed by Roberts et al. (2011) at the Institute of Psychiatry, Maudsley Hospital (London). The DFlex is a self-report questionnaire specifically designed to assess cognitive rigidity and attention to detail as everyday manifestations of difficulties in set-shifting and central coherence. Unlike traditional neuropsychological batteries, it does not evaluate performance on standardized tasks but rather captures the subjective expression of these cognitive styles in daily life, offering a complementary perspective to performance-based measures. By adopting this format, the instrument provides an assessment approach that is less dependent on contextual factors or the patient's physical state, thereby helping to address some of the limitations previously described. An additional advantage is that its items do not focus on food, weight, or appearance, which reduces potential confounding by ED-specific symptomatology and enables its application in other clinical conditions characterized by cognitive inflexibility, excessive attention to detail, or obsessive traits.

The instrument comprises 24 items divided into two subscales: Cognitive Rigidity and Attention to Detail. Responses are rated on a 6-point Likert scale ranging from "Strongly disagree" to "Strongly agree," with higher scores indicating greater difficulties in each dimension. In its initial validation, the DFlex showed excellent internal consistency, with Cronbach's alpha coefficients of .91 for Cognitive Rigidity and .88 for Attention to Detail, values reported following factor analysis and item response modeling. The instrument also demonstrated good convergent validity with conceptually related AQ subscales, as well as solid discriminant validity among patients with EDs, recovered individuals, and healthy controls.

Various studies have subsequently validated the DFlex in different cultural contexts, demonstrating adequate psychometric properties and supporting its bifactorial structure. The Italian version, for example, showed adequate internal consistency, with Cronbach's alpha coefficients of .85 for the Cognitive Rigidity subscale and .82 for the Attention to Detail subscale, as well as satisfactory discriminative ability between clinical and healthy control groups (Marchiol et al., 2020). Similarly, the French version demonstrated good internal consistency, with Cronbach's alpha coefficients of .86 for Cognitive Rigidity and .79 for Attention to Detail, alongside evidence of convergent validity with neuropsychological measures and autistic traits in hospitalised individuals with AN (Maria et al., 2020). More recently, a Japanese adaptation of the DFlex also demonstrated good internal consistency, convergent validity with AQ subscales, and support for the original two-factor structure of the questionnaire (Ito et al., 2026). In addition, Giles et al. (2024) proposed a revised abbreviated version of the DFlex with adequate psychometric performance across clinical and community samples.

However, in Spanish-speaking contexts, there is currently no validated self-report instrument specifically designed to assess these dimensions. The availability of a Spanish version of the Detail and Flexibility

Questionnaire (DFlex) would facilitate its application in both clinical and research settings, allowing for a more accessible and efficient assessment of these cognitive styles. Therefore, the present study aimed to validate the Spanish version of the DFlex in individuals with EDs and general population samples, examining its psychometric properties and ensuring its reliability and validity.

2. METHODS

2.1 Participants

Two different samples were included in this study: a clinical sample of individuals diagnosed with an ED and a sample from the general population.

The clinical sample comprised 113 patients with an ED according to the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association), of whom 96.5% were women. Diagnoses were provided by treating clinicians. Participants had a mean age of 27.04 years (*SD* = 11.41; range = 16–62 years). Regarding educational level, four participants had completed primary education, 10 had secondary education, 51 had completed upper secondary education or vocational training, and 48 had attained a university-level education. Patients were recruited from six specialized ED units, including inpatient, daypatient, and outpatient services.

The general population sample included 175 individuals who completed the assessment battery, of whom 82.9% were women. The mean age was 22.87 years (*SD* = 7.10; range = 18–57 years). Regarding educational level, one participant had completed primary education, three had completed secondary education, 37 had completed upper secondary education or vocational training, and 134 had attained university-level education.

2.2 Procedure

Ethical approval

was obtained from the university's Ethics and Research Integrity committees (ref: *blind for review*) as well as from the ethics committees of the participating hospitals. Data from the clinical sample were collected as part of the baseline assessment of a study evaluating an intervention for patients with EDs (ISCRTN registry: *blind for review*).

The translation and adaptation of the instrument into Spanish was conducted by two bilingual individuals: one member of the research team and a professional translator familiar with the study's conceptual framework. Both translators independently produced a Spanish version of the items, which was reconciled into a consensus version. Back-translation was carried out by two research team members and was jointly reviewed with the lead author of the original instrument.

Participants in the clinical sample were recruited from six specialized centers for the treatment of EDs and were fully informed about the purpose of the study. The general population sample was recruited

through social media advertisements and by sharing study information in university classrooms. All participants provided informed consent prior participation, which was anonymous and voluntary. The assessment battery was completed via an online Google Form.

2.3 Measures

Demographic Questionnaire. Sociodemographic and clinical data were collected from all participants: age, gender, educational level, family situation, and the presence or absence of an ED diagnosis.

Autism Quotient Questionnaire (AQ; Baron-Cohen et al., 2001; Spanish validation by Lugo-Marín et al., 2019). This questionnaire assesses the presence of autistic traits. For the purposes of this study, only the Switching subscale was used, which comprises 4 items rated on a 4-point Likert scale (from 1: definitely agree to 4: definitely disagree). This subscale showed a moderate internal consistency in a sample of adults with autism spectrum disorder and in a non-clinical sample (.56 and .68, respectively).

Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Carter et al., 2001; Spanish validation by Peláez-Fernández, 2012). The questionnaire consists of 38 items assessing behaviors, attitudes, and feelings related to eating and body image. It includes four subscales: Restraint, Eating Concern, Shape Concern, and Weight Concern. Items are rated on a 7-point Likert scale (from 0: never to 6: every day). The total score is obtained by averaging the scores of the four subscales; higher scores indicate greater frequency or severity of eating disorder symptoms. The Spanish validation reported acceptable internal consistency for the subscales: Restraint (.86), Eating Concern (.75), Shape Concern (.93), and Weight Concern (.74).

Detail and Flexibility Questionnaire (DFlex; Roberts et al., 2011). This questionnaire consists of 24 items assessing two cognitive profiles and their relationships with daily life in patients diagnosed with AN. It is divided into two subscales: Cognitive Rigidity (12 items) and Attention to Detail (12 items). Items are rated on a 6-point Likert scale (from 1: strongly disagree to 6: strongly agree). The Rigidity subscale score is obtained by summing odd-numbered items, and the Attention to Detail subscale score by summing even-numbered items. Subscale scores range from 12 to 72, with higher scores indicating greater perceived difficulties. In this version, internal consistency was .91 for the Rigidity subscale and .88 for the Attention to Detail subscale.

Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010; Spanish validation by Jaén et al., 2024). This 20-item questionnaire comprises two subscales: Alternatives (13 items) and Control (7 items). The Alternatives subscale assesses the ability to find multiple explanations for a problem and suggests different solutions, while the Control subscale measures the tendency to perceive situations as controllable. Items are rated on a 7-point Likert scale (from 1: strongly disagree to 7: strongly agree). Higher scores reflect greater cognitive flexibility. Internal consistency in the Spanish validation was above .86 for both subscales.

Multidimensional Perfectionism Scale (FMPS; Frost et al., 1993; Spanish validation by Gelabert et al., 2011). This 35-item scale assesses perfectionism across six dimensions: Concern over Mistakes,

Doubts about Actions, Personal Standards, Parental Expectations, Parental Criticism, and Organization. Items are rated on a 5-point Likert scale (from 1: strongly disagree to 5: strongly agree). Higher scores indicate higher levels of perfectionism. The Spanish validation showed internal consistency values ranging from .74 to .91 for the subscales.

2.4 Data analysis

All statistical analyses were conducted using SPSS and SPSS AMOS.

First, a confirmatory factor analysis was performed using the maximum likelihood method with bootstrap resampling (5,000 samples) to assess construct validity. Model fit was evaluated using the chi-square statistic, the Comparative Fit Index (CFI), the Tucker–Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) (Hu & Bentler, 1999). Given that the sample sizes in both groups were smaller than $n = 250$ and that maximum likelihood estimation may affect CFI and TLI values under these conditions, greater emphasis was placed on the SRMR as a fit index that is more robust to estimation methods (Shi & Maydeu-Olivares, 2020).

Internal consistency was assessed using both Cronbach's alpha and McDonald's omega to evaluate the reliability of the instrument.

Predictive validity was examined using logistic regression analyses with the Wald statistic. Predictive capacity was estimated through odds ratios (OR). An OR greater than 1 indicates an increased likelihood of the outcome associated with higher values of the predictor, an OR equal to 1 indicates no association, and an OR lower than 1 indicates a decreased likelihood of the outcome.

Finally, concurrent validity was assessed by examining Pearson correlations between the DFlex subscales and the different variables included in the *Measures* section. Statistically significant correlations were expected, as these variables are theoretically related. In addition, correlations between the full version and the brief version of the instrument were calculated to verify that both versions were strongly associated.

3. RESULTS

3.1. Construct Validity Analysis

First, a confirmatory factor analysis was conducted using all items comprising the original version of the DFlex. The results can be observed in Table 1 for both the general and clinical populations. In this phase, the results were unsatisfactory, showing poor fit.

Table 1
Results of the confirmatory factor analysis including all items of the Spanish translation of the DFlex.

Model	χ^2	df	p	χ^2/df	RMSEA 90 C.I.	SRMR	TLI	CFI
General	582.7	251	< .001	2.32	.087 (.078-.096)	.08	.73	.75
Clinical	480.682	251	< .001	1.92	.090 (.078-.103)	.10	.72	.75

Since the original factor structure did not yield an adequate fit, the items were analyzed from both a statistical and content perspective to achieve a better structure. Out of the original 24 items, those with standardized factor loadings ≤ .45 and standardized residual covariances ≥ 2.58 were systematically eliminated. While statistical criteria guided the item reduction process, content validity and psychometric relevance were evaluated at each step. For instance, item 1 (“Me enfado si la gente no hace las cosas a mi manera”) was removed because its negative phrasing could be potentially confusing to respondents. In other instances, translation issues may have compromised comprehension, as seen in item 8 (“Dedico el mismo tiempo a tareas más o menos importantes”), where the wording altered the original meaning and subsequently impaired its statistical performance. Additionally, items containing multiple premises that hindered comprehension were eliminated, such as item 22 (“Dependo de los demás para que me ayuden a ver las cosas con perspectiva, ya que tiendo a tener una vision bastante cerrada/estrecha de las cosas de mi vida”). This refinement process resulted in a final scale of 10 items (5 per factor) featuring clear and straightforward statements that captured the core of each factor (see Appendix 1). Thus, this brief version was composed of items 5, 7, 15, 19, and 21 for the Cognitive Rigidity factor; and items 6, 14, 16, 18, and 20 for the Attention to Detail factor. In both cases, the original items of each factor were maintained. With this resulting version, another confirmatory factor analysis was performed, the results of which are shown in Table 2. As can be observed, the model fit for the short version of the instrument was satisfactory in both the general and clinical populations.

Regarding explained variance, in the case of the general population sample, the Cognitive Rigidity factor explained 38.2% and the Attention to Detail factor explained 34.8%, with a combined total explained variance of 36.5%. In relative terms, the first factor contributed approximately 24.2% and the second 20.3% to the total variance of the model. The correlation between the factors was r = .60. Meanwhile, in the clinical population, the Cognitive Rigidity factor explained 45.6% and Attention to Detail explained 45.9% of the variance, with a combined total explained variance of 45.75%. In relative terms, each factor contributed practically the same proportion of variance (22.9%). The correlation between the factors was r = .52.

Table 2
Results of the confirmatory factor analysis of the Spanish DFlex-brief version.

Model	χ^2	df	p	χ^2/df	RMSEA 90 C.I.	SRMR	TLI	CFI
General	56.26	34	.010	1.66	.061 (.030-.089)	.05	.93	.95
Clinical	61.05	34	.003	1.80	.084 (.049-.118)	.07	.90	.93

3.2. Reliability Analysis

Secondly, following the CFA of the brief version, the reliability of the scale was studied. Tables 3 and 4 present, for the general and clinical populations respectively, the descriptive statistics and reliability indicators corresponding to the 10 items and the two subscales. In both cases, the indicators are adequate, with internal consistency greater than .70 for both α and ω.

Table 3
Descriptive statistics and reliability of the Spanish DFlex-brief version in a general population sample.

Item	*M*	*SD*	*S*	*K*	λ	r_if	$r_if(c)$	*α-id*
Cognitive rigidity: M = 15.72; *SD* = 5.02; α = .75; ω = .74; *Composite reliability = .75*								
DFLEX5	2.41	1.27	.69	− .45	.57	.70	.53	.70
DFLEX7	3.29	1.54	.30	-1.01	.56	.67	.43	.73
DFLEX15	2.85	1.46	.456	− .78	.46	.65	.42	.73
DFLEX19	3.82	1.46	− .21	− .80	.75	.75	.56	.68
DFLEX21	3.34	1.40	.19	− .77	.71	.77	.61	.66
Attention to detail: M = 14.57; *SD* = 5.09; α = .72; ω = .73; *Composite reliability = .72*								
DFLEX6	2.94	1.70	.37	-1.31	.61	.73	.53	.66
DFLEX14	3.26	1.47	.28	− .82	.55	.67	.46	.69
DFLEX16	2.60	1.35	.84	− .04	.51	.66	.46	.69
DFLEX18	2.45	1.33	.88	.20	.54	.63	.43	.70
DFLEX20	3.33	1.49	.07	-1.10	.72	.74	.55	.65

Note. M = mean; SD= Standard Deviation; S = Skewness, K = Kurtosis, S = Standardized factor loadings; r_if = Item-factor correlation; $r_if(c)$= Corrected item-factor correlation; α-id = Alpha if item deleted

Table 4
Descriptive statistics and reliability of the Spanish DFlex-brief version in a clinical sample.

Item	*M*	*SD*	*S*	*K*	λ	r_if	$r_if(c)$	*α-id*
Cognitive rigidity: *M* = 21.52; *SD* = 5.61; α = .79; ω = .79; *Composite reliability = .81*								
DFLEX5	3.95	1.56	− .48	− .83	.59	.73	.55	.77
DFLEX7	4.42	1.37	− .86	.12	.68	.73	.59	.76
DFLEX15	3.85	1.74	− .15	-1.31	.64	.76	.56	.77
DFLEX19	4.64	1.41	− .91	.03	.66	.71	.55	.77
DFLEX21	4.67	1.42	− .97	.20	.79	.80	.68	.73
Attention to detail: *M* = 17.43; *SD* = 6.12; α = .80;ω = .80; *Composite reliability = .81*								
DFLEX6	3.49	1.85	.01	-1.48	.64	.76	.57	.77
DFLEX14	3.54	1.63	.14	-1.25	.76	.79	.65	.75
DFLEX16	2.97	1.56	.61	− .58	.72	.78	.64	.75
DFLEX18	3.42	1.59	.13	-1.10	.63	.71	.54	.78
DFLEX20	4.02	1.52	− .43	− .80	.64	.71	.55	.78

Note. M = mean; SD = Standard Deviation; S = Skewness, K = Kurtosis, S = Standardized factor loadings; rif = Item-factor correlation; $r_if(c)$= Corrected item-factor correlation; α-id = Alpha if item deleted

3.3. Predictive Validity Analysis

On the other hand, the sum of the 10 items was used to predict ED diagnosis with a logistic regression model, using the general population sample without an ED diagnosis (*n* = 161) and the clinical population sample (*n* = 110) jointly. The proportion of correct classifications regarding an ED diagnosis was 67.9% of cases (χ^2 = 50.74, *p* < .001). The Nagelkerke R^2 indicated a model fit value of .23. The Odds Ratio (OR) indicated a 10% increase in the likelihood of an ED diagnosis for every one-unit increase in the total score. The results can be verified in Table 5.

Table 5
Binary logistic regression predicting the probability of being diagnosed with an eating disorder as a function of scores on the Spanish DFlex-brief (10 items).

Variable	χ^2	R^2	*B*	SE	Wald	*p*	*OR*	CI 95%
Spanish DFlex-brief total score	50.74	.23	.09	.02	39.87	< .001	1.10	1,07-1.13
Constant	-	-	− .36	.5	45.12	< .001	.03	-
Correct classification rate: 67.9%								

Note

² = chi-square; R² = Nagelkerke R²; B = regression coefficient; SE = standard error; Wald = Wald test; p = probability value; OR = odds ratio; CI = 95% confidence interval.

3.4. Concurrent Validity Analysis

The analysis of the relationships between the two Spanish DFlex-brief factors and the different measures employed, as well as their descriptive statistics, can be found in Table 6 (general population) and Table 7 (clinical population). Notably, most correlations were statistically significant. Some exceptions were the Restraint factor of the EDE-Q, which showed no significant correlations in either the general population sample (r = .128; p > .05) or the clinical population (r = .104; p > .05). The Organization factor of the FMPS was only significant in its relationship with Attention to Detail in the clinical sample (r = − .261; p < .01), with the rest of the correlations being close to 0. The Switching factor of the AQ showed similar correlations in the clinical and general populations, except for Cognitive Rigidity in the general population, which was not significant (r = .131; p > .05).

Furthermore, while the correlations between the two factors and the variables of interest are similar in the general population sample, this is not the case in the clinical population. In this instance, we can observe stronger correlations in Cognitive Rigidity compared to Attention to Detail with the different EDE-Q factors (correlation range for Cognitive Rigidity and EDE-Q between r = .385 and r = .486; correlation range for AD and EDE-Q between r = .104 and r = .264), as well as variations in the relationship of the two subscales with perfectionism (for example, Personal Standards with Cognitive Rigidity, r = .370, p < .01; whereas with AD, r = − .033; p > .05).

Additionally, correlations between the original 12-item factors and the short version of 5 items per factor were analyzed. In this regard, in the general population, correlations were greater than .90 (r = .93 for Cognitive Rigidity, and r = .91 for Attention to Detail). This was also the case in the clinical population (r = .92 for Cognitive Rigidity and r = .90 for Attention to Detail).

Table 6
Correlations of the Spanish DFlex-brief with other instruments in the general population.

EDEQ Restriction	***M* (*SD*)**	**DFlex CRigidity**	**DFlex ADetail**
	1.67 (1.56)	**.212****	**.128**
EDEQ Eating concern	1.11 (1.34)	.262**	.241**
EDEQ Shape concern	2.43 (1.80)	.337**	.290**
EDEQ Weight concern	2.12 (1.73)	.290**	.261**
EDEQ global score	1.83 (1.47)	.305**	.254**
AQ Switching	9.35 (2.02)	.131	.312**
CFI Alternatives	69.82 (9.49)	− .149*	− .163*
CFI Control	23.41 (8.08)	.498**	.515**
FMPI Personal standards	21.81 (6.13)	.310**	.182*
FMPI Parental expectations	13.25 (5.52)	.243**	.110
FMPI Parental criticism	8.88 (4.54)	.272**	.196**
FMPI Concern over mistakes	23.81 (9.29)	.486**	.413**
FMPI Organization	22.87 (5.02)	.082	− .014
FMPI Doubt about actions	12.07 (3.54)	.480**	.576**

Table 7
Correlations of the Spanish DFlex-brief with other instruments in the clinical population.

EDEQ Restriction	***M* (*SD*)**	**DFlex CRigidity**	**DFlex ADetail**
	3.17 (1.78)	**.385****	**.104**
EDEQ Eating concern	2.88 (1.47)	.456**	.264**
EDEQ Shape concern	4.22 (1.59)	.434**	.223*
EDEQ Weight concern	3.59 (1.64)	.476**	.243**
EDEQ global score	3.47 (1.47)	.486**	.230*
AQ Switching	9.66 (2.13)	.348**	.351**
CFI Alternatives	65.58 (11.66)	− .103	− .335**
CFI Control	30.08 (7.23)	.639**	.543**
FMPI Personal standards	26.28 (6.23)	.370**	− .033
FMPI Parental expectations	15.21 (5.61)	.247**	.236*
FMPI Parental criticism	11.88 (4.66)	.294**	.390**
FMPI Concern over mistakes	34.75 (8.68)	.595**	.294**
FMPI Organization	23.76 (5.48)	.043	− .261**
FMPI Doubt about actions	14.27 (3.70)	.449**	.610**

4. DISCUSSION

The aim of this study was to adapt the Detail and Flexibility Questionnaire (DFlex) to the Spanish clinical and general population and evaluate its psychometric properties. Both a general population sample and a clinical sample of individuals with EDs were included to provide a brief self-report measure capturing two relevant cognitive styles: Cognitive Rigidity and Attention to Detail.

The CFA of the original 24-item model showed inadequate fit in both groups. Factor loadings and content for all items were subsequently analyzed, and those contributing the highest loadings to the two questionnaire factors were selected. Following this process, 14 items were eliminated, resulting in a brief version with 5 items per factor. The CFA of this brief DFlex version showed satisfactory fit to the model in both samples while preserving the bifactorial structure of the original instrument (Roberts et al., 2011). When comparing item composition across previous adaptations, the Spanish short version aligns with the French version in excluding items 9, 11, and 23; with the Italian version in excluding items 23 and 24; and with the English short version in excluding items 1, 11, and 23. However, some discrepancies were observed. While the French version removes item 7, among others, this item is retained in the Spanish brief version; a similar situation occurs with items 18 and 20 regarding the Italian version, and items 5, 7,

and 15 in the English short version. A possible explanation lies in translation nuances and the cultural interpretation of item content. Notably, items with concise phrasing appear to have functioned better in this adaptation. In any case, correlations between the factors of the long questionnaire and the brief version were high (r > .90), suggesting that this short version captures the most robust items while preserving the constructs of the original instrument (Roberts et al., 2011; Giles et al., 2024). These results align with those presented by Giles et al. (2024), who also proposed an abbreviated format by removing items with lower factor loadings on the Cognitive Rigidity factor, showing that a brief format can improve factorial coherence while maintaining clinical utility, thus avoiding ambiguity in item wording, especially in cultural adaptations.

The Spanish DFlex-brief effectively differentiated between clinical and general populations, identifying a cognitive profile characterized by rigidity and attention to detail typical of individuals with ED. This result is consistent with both the original validation and the Italian adaptation (Marchiol et al., 2020; Roberts et al., 2011). Although the Spanish DFlex-brief is not a diagnostic tool, its ability to rapidly assess these two cognitive styles is highly relevant in clinical practice. Furthermore, because the instrument does not explicitly reference ED symptoms, it could potentially be applied to other conditions characterized by rigid perfectionism, such as autism spectrum disorder, obsessive-compulsive disorder, anxiety, and depression.

Reliability of the Spanish DFlex-brief was adequate in both samples (α = .72 − .80; ω = .73 − .80), consistent with previous DFlex adaptations and with expectations for brief measures (Roberts et al., 2011; Marchiol et al., 2020; Maria et al., 2020).

Regarding convergent validity, Cognitive Rigidity showed stronger and more consistent associations with ED symptomatology across both populations. This pattern aligns with clinical models where rigidity is linked to inflexible rules, ritualized behaviors, and difficulty abandoning maladaptive strategies, which may reinforce weight- and shape-related concerns and ED maintenance (Fairburn & Beglin, 1994; Carter et al., 2001; Peláez-Fernández, 2012; Roberts et al., 2011). Moreover, compared to the French version, the Spanish adaptation showed slightly higher correlations between Cognitive Rigidity and EDE-Q scales (Spanish r = .39 – .48 vs. French r = .24 – .39). For Attention to Detail, significant positive correlations were observed with the global EDE-Q score and most subscales, except Restraint, differing from the French version (Spanish r = .10 – .26 vs. .French r = 26 – .43). This suggests that attention to detail may relate more to specific forms of cognitive control (e.g., focusing on body details or daily routines) than to behavioural restraint, with expression varying by ED subtype, clinical state, or environmental demands.

In our study, as expected, both Spanish DFlex-brief dimensions were positively related to the AQ Switching subscale in the clinical sample. In the general sample, however, only Attention to Detail related positively to this subscale. This discrepancy may reflect the convergence of autistic traits and ED-related cognitive profiles: in patients with EDs, attentional switching difficulties co-occur with pronounced cognitive rigidity and detail bias, whereas in the general population, autistic traits are typically less intense and may manifest primarily as a local processing bias without the same functional rigidity (Huke

et al., 2013). Furthermore, the DFlex appears more sensitive in clinical ED populations, which may account for weaker associations with attention switching in non-clinical samples.

Regarding the Cognitive Flexibility Inventory (CFI), the Alternatives subscale correlated negatively with Attention to Detail in both populations, but not with the Cognitive Rigidity subscale of the Spanish DFlex-brief. This suggests that the ability to generate explanatory alternatives/solutions (CFI) and the tendency to maintain routines or resist change in daily life (DFlex) represent dimensions that may be related but are not equivalent to cognitive flexibility. In this context, the negative association observed between Alternatives and Attention to Detail indicates that a greater tendency to generate multiple alternatives is associated with a cognitive style less focused on detail, consistent with the distinction between global and local processing. Furthermore, the Control subscale showed high positive correlations with both Spanish DFlex-brief factors in both populations. These findings suggest that a heightened sense of control may manifest as overcorrection, perfectionism, or adherence to routines and rules—features that converge with the rigidity and focused attention to detail captured by the DFlex (Kanakam & Treasure, 2013; Robbins et al., 2012).

Both Spanish DFlex-brief factors were positively associated with the Concern over Mistakes and Doubts about Actions dimensions of the FMPS in both samples. These findings are consistent with theoretical models suggesting that perfectionism is closely related to rigid cognitive styles, self-control, and rumination over errors (Frost et al., 1993; Gelabert et al., 2011; Kanakam & Treasure, 2013). The Concern over Mistakes and Doubts about Actions dimensions of the FMPS reflect an orientation toward error avoidance, checking, and uncertainty about one's own performance, which are considered central components of clinical perfectionism and maladaptive perfectionist concerns. From this perspective, worry about making mistakes and doubts about actions may foster perseverative mental processes—rumination, checking, and verification—that increase reliance on rigid rules and a focus on concrete details as a means of reducing uncertainty, thereby explaining their association with the cognitive rigidity and attention to detail captured by the DFlex. By contrast, the Organization dimension of the FMPS showed no association with the Attention to Detail subscale of the Spanish DFlex-brief in the general sample and only weak, negative correlations in the ED sample. This divergence may reflect the fact that the two instruments capture different facets of “order” or “attention”. Specifically, the Organization subscale usually reflects a preference for precision, order, and planning—characteristics often associated with more adaptive or functional aspects of perfectionism (i.e., conscientiousness and structure)—whereas Attention to Detail in the DFlex is intended to capture a local processing bias (weak central coherence) associated with cognitive perseveration and difficulties integrating global information, traits that are especially pronounced in certain clinical profiles, such as EDs.

From an applied perspective, the Spanish DFlex-brief stands out for its ability to differentiate between general and clinical populations, reinforcing its utility for identifying cognitive dimensions commonly affected in patients with EDs. This scale may be particularly useful for characterizing relevant cognitive styles during initial assessment, clinical monitoring, or research contexts, especially when time constraints limit the use of longer instruments. Moreover, information derived from its use may help

inform interventions targeting cognitive flexibility, the reduction of rigidity, and global processing, which have shown promising results in the treatment of anorexia nervosa (Davies & Tchanturia, 2005; Tchanturia et al., 2013; Brockmeyer et al., 2021).

Despite the promising clinical utility of the shortened 10-item version of the Spanish DFlex-brief, several limitations must be acknowledged. First, both the preliminary validation of the translation and the item reduction process were conducted within the same sample. While the statistical and conceptual steps to reach these 10 items were carefully considered, this approach warrants caution. Consequently, our findings regarding the 10-item structure should be considered an initial step specific to this translation. Future studies utilizing larger, independent, and more diverse samples are essential to further explore these psychometric properties and to determine whether this reduced structure remains stable across other cultural contexts, or whether alternative linguistic adaptations of the items influence factor stability.

Second, the sample was characterized by a low proportion of male participants, which limits the generalizability of the findings and precluded the examination of factorial invariance by sex. Finally, the study relied solely on self-report data and lacked a test-retest design, meaning that objective neuropsychological correlates and the instrument's temporal stability remain to be evaluated. Despite these limitations, notable strengths of this work are the inclusion of a clinical sample with rigorous diagnosis and a general population sample. Future lines of research should expand the psychometric evaluation of the Spanish DFlex-brief by incorporating objective neuropsychological measures, assessing test-retest reliability, evaluating its sensitivity to clinical change during treatment, and establishing measurement invariance across both sex and different ED diagnoses.

Conclusion

The Spanish DFlex-brief shows good factor fit, adequate reliability, and high correspondence with the dimensions of the original long format, while preserving its bidimensional structure. Moreover, it effectively differentiates between clinical and general populations. Overall, these findings support its usefulness as a brief instrument for both research and clinical practice, providing a validated tool for assessing cognitive styles characteristic of ED in the Spanish population.

Abbreviations

AN
Anorexia Nervosa
AQ
Autism-Spectrum Quotient
BED
Binge Eating Disorder
BN

Bulimia nervosa
CFI
Cognitive Flexibility Inventory
CFI
Comparative Fit Index
EDs
Eating disorders (EDs)
EDNOS
Eating Disorder Not Otherwise Specified
EDEQ
Eating Disorders Examination Questionnaire
DFlex
the Detail and Flexibility Questionnaire
FMPS
Multidimensional Perfectionism Scale
OR
Odd Ratios
RMSEA
Root Mean Square Error of Approximation
ROCF
Rey–Osterrieth Complex Figure
SRMR
Standardized Root Mean Square Residual
TLI
Tucker–Lewis Index
TMT
Trail Making Test
WCST
Wisconsin Card Sorting Test

Declarations

- **Ethics approval and consent to participate**

The Ethics and Research Integrity Committee of the Miguel Hernandez University, as well as the Ethics and Research Integrity Committee of the hospitals where ED specialized units participated approved the conduct of this study. All participants were provided with the Information Sheet and gave their consent to participate.

- **Consent for publication**

Not applicable

- **Availability of data and materials**

The data are not publicly available due to participant confidentiality but are available from the corresponding author on reasonable request.

- **Competing interests**

The authors declare that they have no competing interests.

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- **Authors' contributions**

JM and YQ designed the study; AR, SP, KL, EL and MCN collected the data and helped with the writing; JM, RSM and AR carried out the analysis and interpreted the results; MR supervisión; YQ, JM and MR reviewed the paper for intellectual content; all authors reviewed the final manuscript and gave their consent.

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