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Construction and validation of the emotional development on early primary education scale (EDEPES-28)

Construcción y validación de la escala de desarrollo emocional en educación primaria inicial (EDEEPI-28)

María Priego-Ojeda [1*]
Èlia López-Cassà [2]
Núria Pérez-Escoda [2]
Gemma Filella-Guiu [1]

[1] Universidad de Lleida, Spain
[2] Universidad de Barcelona, Spain
* Corresponding author. E-mail: maria.priego@udl.cat

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ABSTRACT

While it is well-known that being emotionally competent contributes to improving the well-being and academic performance of students, there are few validated Spanish instruments that can assist teachers in assessing emotional competencies in early primary education children. In this study, we present the development and validation of the Emotional Development on Early Primary Education Scale (EDEPES) for students aged between 5 and 8 years. The study included a sample of 1113 students enrolled in the first and second grades of primary education in different educational centers in Spain. A preliminary

version of the questionnaire with around 41 items was distributed, along with measures of anxiety (CAS) and academic performance (average score). These measures were taken at two time points with a 6-month interval. The results supported a 4-factor model of 28 items, comprising emotional competencies of emotional awareness, emotion regulation, emotional autonomy, and social competence, along with a higher-order factor to measure overall emotional competence. The EDEPES-28 demonstrated satisfactory reliability and criterion validity, showing significant associations with anxiety and academic performance. Furthermore, the results supported the assumptions of measurement invariance, revealing gender differences in both courses, with these distinctions being more pronounced in the second course, and girls obtaining higher scores. In conclusion, the EDEPES-28 proves to be a useful and easy-to-use instrument for teachers to assess the emotional competencies of early primary education students.

Keywords: emotional competencies, emotion regulation, primary education, teachers, questionnaire development and validation, psychometric properties

RESUMEN

Aunque es bien sabido que ser emocionalmente competente contribuye a mejorar el bienestar y el rendimiento académico de los alumnos, existen pocos instrumentos españoles validados que puedan ayudar a los docentes a evaluar de manera sencilla las competencias emocionales en niños y niñas de ciclo inicial de educación primaria. En este estudio, presentamos el desarrollo y validación de la Escala de Desarrollo Emocional en Educación Primaria Inicial (EDEEPI) para el alumnado de entre 5 y 8 años. El estudio incluyó una muestra de 1113 estudiantes escolarizados en primero y segundo curso de educación primaria en diferentes centros educativos de España. Se distribuyó una versión preliminar del cuestionario de unos 41 ítems, recogiendo además medidas de ansiedad (CAS) y de rendimiento académico (media académica). Estas medidas fueron tomadas en dos tiempos con una separación de 6 meses. Los resultados apoyaron un modelo de 4 factores de 28 ítems, que comprende las competencias emocionales de conciencia emocional, regulación emocional, autonomía emocional y competencia social, junto con un factor de orden superior para medir la competencia emocional global. El EDEEPI-28 demostró una fiabilidad y validez de criterio satisfactorias, mostrando asociaciones significativas con la ansiedad y el rendimiento académico. Además, los resultados respaldaron los supuestos de invarianza de medida, revelando diferencias de género en ambos cursos, siendo estas más acentuadas en segundo curso, con mayores puntuaciones para las niñas. En conclusión, el EDEEPI-28 demuestra ser un instrumento útil y de fácil uso para que el profesorado pueda evaluar las competencias emocionales del alumnado de ciclo inicial de educación primaria.

Palabras clave: competencias emocionales, regulación emocional, educación primaria, profesorado, desarrollo y validación de cuestionario, propiedades psicométricas

INTRODUCTION

Emotional competence was originally defined as "the ability to deal effectively with emotional information—that is, with one's feelings and desires" (Buck, 1990, p.302). In contrast, emotional intelligence (EI) was simultaneously defined by Salovey and Mayer (1989, p.189) as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions". As the term emotional intelligence gained importance in the research community, it evolved into a comprehensive concept encompassing various aspects related to emotional competencies. This led to several research streams, often oscillating between the conception of emotional intelligence as a trait (Petrides & Furnham, 2001) or as an ability (Salovey & Mayer, 1989).

Regardless of the theoretical approach, it is evident that emotional intelligence plays a crucial role in the relationship with mental health and well-being (Fernandez-Berrocal & Extremera, 2016). These benefits are noticeable across diverse populations, with particular significance in children and adolescents. This recognition has prompted scientific contributions emphasizing the necessity of incorporating emotional education within formal education, acknowledging its positive impact on schools and its pedagogical value in students' personal and social development (Durlak et al., 2011).

Numerous studies confirm that possessing strong emotional competencies is associated with positive outcomes for students, including lower levels of anxiety (Matthews et al., 2016), higher self-esteem, and fewer internalizing symptoms (Schoeps et al., 2021), as well as higher prosocial behavior (Sporzon & Lopez, 2021; Ruvalcaba-Romero et al., 2017). Emotional intelligence is also linked to reduced classroom conflict and student stress (Domitrovich et al., 2017; Pérez-López et al., 2021; Ros-Morente et al., 2017) and improved academic performance (Greenberg et al., 2017; MacCann et al., 2019; Pulido & Herrera, 2017). Furthermore, gender differences have been examined in this context, revealing that boys tend to score higher than girls in emotional intelligence (EI) subscales such as adaptability (Jordan et al., 2010). On the other hand, girls typically report higher scores in intrapersonal and interpersonal variables (Jordan et al., 2010) and demonstrate better abilities in recognizing, regulating, and expressing emotions (Maguire et al., 2016).

Models based on social and emotional learning (SEL) that aim to promote EI within an educational context, such as the framework of the Collaborative for Academic, Social and Emotional Learning (CASEL, 2003), highlight that programs enhancing emotional competencies, such as self-awareness and relationship skills, consistently benefit the well-being of children and adolescents (Taylor et al., 2017). Additionally, projects like PROMEHS, which aims to promote mental health in schools across many European Union (EU) countries, place special emphasis on improving

emotional competencies (Poulou et al., 2022). Even within the current Spanish legislative framework, the Organic Law on Education (LOMLOE) includes emotional education as a pedagogical principle and a key competence to be developed in the educational curriculum. In this regard, the Organic Law 3/2020 explicitly mentions the concept of "emotional education" for the first time, with particular emphasis on the Primary and Compulsory Secondary Education stages (Lozano & Hernández, 2022).

To effectively promote these emotional competencies, the availability of assessment instruments is crucial. These tools aid in determining the initial level of students' emotional competencies, designing educational programs tailored to enhance less developed competencies, and evaluating the impact and effectiveness of these emotional education programs (Bisquerra, 2020; Pérez-Escoda et al., 2021; López-Cassà & Pérez-Escoda, 2022). However, both education professionals and researchers often encounter challenges in finding suitable instruments for accurate evaluation (Bisquerra & López-Cassà, 2021), especially when dealing with young children in the early years of primary school who may struggle to comprehend self-report questions about their own emotions.

Assessing emotional competence in children

Among the various theoretical paradigms used to approach emotional intelligence, multiple measures have been proposed. Questionnaires like the Trait Emotional Intelligence Questionnaire (TEIQue, Petrides, 2001), the Emotional Quotient Inventory (EQ-i, Bar-On, 1997), or the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer et al., 2002), have also been adapted for younger populations for younger populations, including the TEIQue-Child Form (Mavroveli et al., 2008), EQ-i Youth Version (Bar-On & Parker, 2000), and the MSCEIT-Young Version (Rivers et al., 2012).

Some of these adaptations, despite being translated into Spanish, such as the EQ-i Youth Version (Ferrandiz et al., 2012), are directly derived from the adult questionnaire, without considering the differences between the emotional worlds of children and adults. Others, like the MSCEIT or the TEIQue, do not encompass earlier ages corresponding to the initial years of primary school or earlier. Additional questionnaires, such as the Assessment of Children's Emotional Skills (ACES, Schultz et al., 2004), though assessed in younger children, concentrate on specific aspects of emotional competence, such as emotional recognition, and do not offer a comprehensive measure of emotional competence.

Recent works, like those presented by Pérez-González et al. (2022), and Bisquerra and López-Cassà (2021), which offer a synthesis of instruments for assessing emotional competencies, also highlight the need for validated instruments

suitable for accurately evaluating emotional competencies within the early years of primary education. Furthermore, it is crucial that these instruments be tailored to the Hispanic context, offering valuable measures validated or developed based on samples of Spanish-speaking children.

To propose novel approaches to evaluate emotional competencies in Spanish children, the Psychopedagogical Guidance Research Group of the University of Barcelona (GROP, by its acronym in Catalan) has developed the Emotional Development Questionnaire for Primary Education (CDE-9-13, Pérez-Escoda et al., 2021), a questionnaire framed within Bisquerra and Pérez-Escoda's model of emotional competence. This model defines emotional competencies as "a set of abilities, knowledge, skills, aptitudes, attitudes, and values required to understand, express, and appropriately regulate emotional experiences" (Bisquerra & Pérez-Escoda, 2007, p.69). Although framed within the theoretical perspective of emotional intelligence, this model also possesses an open character and considers other perspectives such as Gardner's multiple intelligences theory (2000), neuroscience, positive psychology, and humanistic pedagogy. The model considers five basic emotional competencies: emotional awareness, emotional regulation, emotional autonomy, social competence, and competencies for life and well-being.

Emotional awareness involves the ability to recognize and understand one's own emotions as well as the emotions of others, including the capacity to perceive the emotional atmosphere of a particular context. Emotional regulation encompasses the skill to effectively manage and control emotions. This includes recognizing the connection between emotions, thoughts, and behaviors, utilizing effective coping strategies, and being able to generate positive emotions within oneself, among other factors. Emotional autonomy encompasses various traits and aspects related to the self-management of emotions, including self-esteem, a positive outlook on life, responsibility, critical analysis of social norms, and personal self-efficacy. Social competence is about the ability to establish and maintain positive relationships with others, entailing mastering social skills, effective communication, respect, and pro-social attitudes, among other qualities. Lastly, competencies for life and well-being pertain to the ability to adopt appropriate and responsible behaviors to effectively navigate daily challenges as well as extraordinary life circumstances.

Another recent questionnaire based on this same theoretical framework is the Emotional Competence Assessment Questionnaire (ECAQ, Bartroli et al., 2022), which provided psychometric evidence to measure emotional competencies in small children between 3 and 5 years old. However, neither of these recent instruments covers the first cycle of primary education.

Research objectives

With the aim of addressing the research gap in evaluating emotional competencies in children during the first cycle of primary education, considering a relevant theoretical framework within the Hispanic context, and providing an easy-to-use and concise measure for teachers, the present study introduces a new instrument—the Emotional Development on Early Primary Education Scale (EDEPES). This scale is based on the theoretical model of Bisquerra and Pérez-Escoda (2007) and the GROP.

The specific objectives of the present study are as follows: (1) Investigate the EDEPES initial factorial structure through an exploratory factor analysis (EFA). (2) Conduct a confirmatory factor analysis (CFA) to scrutinize the factorial structure, comparing the results obtained through EFA with the model of emotional competence proposed by Bisquerra and Pérez-Escoda (2007). (3) Develop and propose the final form for the EDEPES. (4) Test the reliability of the final form of the EDEPES. (5) Examine measurement invariance and potential gender differences across all emotional competencies within the different courses of the first cycle of primary school education. (6) Assess criterion validity by exploring the correlations between emotional competencies, children's anxiety levels, and academic performance, as these variables have been observed to have relevant links with children's emotional intelligence.

METHOD

Participants

The sample considered for the factor analysis comprised 1113 primary school students aged 5 to 8 (M = 6.37; SD = .591), from three different Spanish autonomous communities: 90.3% from Catalonia, 1.7% from Navarre, and 8% from the Basque Country. Among them, 547 students were in their first year of primary school (48.8% girls and 51.2% boys), while 566 students were in their second year (50.2% girls and 49.8% boys). Approximately 19.9% of the schools where the students were enrolled were located in rural areas, while 80.1% were situated in urban areas. The minimum sample size was determined based on the recommended item-observation ratios of MacCallum et al. (1999), which suggest ratios between 1:5 and 1:10 to ensure sufficient sample power for factor analysis. Additionally, the suggestions proposed by Hu and Bentler (1999) recommended a minimum sample size of 250 or more. To assess test-retest reliability and criterion validity, a subsample of 430 children (M = 6.34; SD = .571) answered all the questionnaires a second time within a 6-month

interval. This subsample comprised 233 students in their first year of primary school (54.5% girls and 45.5% boys) and 197 students in their second year (43.7% girls and 56.3% boys).

Measures

Emotional development on early primary education scale (EDEPES)

The initial version of the EDEPES, tested in the present article, consisted of 41 items, assessed using a 5-point Likert scale ranging from 0 (never) to 4 (almost always). Taking inspiration from the López-Cassà (2007) observation scale for emotional competence, a non-validated scale designed to propose a preliminary measure of emotional competencies within the model of Bisquerra and Pérez-Escoda (2007), a pool of 83 items was a priori considered. Through careful evaluation by experts, this item pool was subsequently reduced to 41 items that were deemed the most representative of the emotional competencies intended to be assessed. The group of experts consisted of ten professionals from different Spanish universities who had a deep understanding of the theoretical model within the questionnaire.

The preliminary item distribution of the EDEPES aimed to evaluate the five emotional competencies included in the model of Bisquerra and Pérez-Escoda (2007): emotional awareness (17 items), composed by the subscales of emotional expression, emotional recognition, and emotional ambivalence, emotional regulation (6 items), emotional autonomy (7 items), social competence (7 items), and life and well-being competencies (4 items). All the items were formulated in Spanish and underwent preliminary assessment in a pilot test to evaluate language-related issues.

The questionnaire was designed for teachers to fill out by observing and inquiring about individual children's responses and behaviors. The assessment targeted children aged 5 to 8, corresponding to the first cycle of primary education in Spain. The preliminary scale aimed to generate scores for each dimension, as well as for the total measure of emotional competence. Example items include "The student is able to look for solutions to problems with the help of the teacher" and "The student can acknowledge his or her personal qualities". The internal consistency of each dimension and the overall scale will be reported in the results section, as well as the full report of psychometric properties.

Child anxiety scale (CAS)

The CAS Spanish adaptation (Gillis, 2011) was utilized to assess anxiety levels and examine criterion validity. Children completed the scale, which consists of 20 dichotomous items (yes or no questions) yielding a single total score. Example items include, "Can you do things better than most children, or do other children do them better than you?" and "Do you think a lot of bad things happen to you, or do a few bad things happen to you?" Regarding internal consistency, the scale demonstrated a Kuder-Richardson formula 20 (KR20) of 0.58 at Time 1 and 0.66 at Time 2.

Academic performance

The school supplied data on students' academic performance, indicated by their overall average grades on a scale from 0 to 10. The scores from all subjects included in the academic curriculum were utilized to compute the overall average. This quantitative measure was evaluated at two specific time points: the first trimester (Time 1) and the third and final trimester (Time 2), with an interval of approximately 6 months between the assessments.

Procedure

First, after selecting items for the preliminary version of the EDEPES, the project obtained approval from the Ethics Committees of the University of Barcelona, the University of Lleida, and the Catalonian Health Service to ensure the protection of children's data. Second, contact was established with several universities in other autonomous communities, disseminating information about the questionnaire and the project via email. Third, with the assistance of these institutions, researchers established contact with various educational centers. Detailed information about the questionnaire was sent to these centers by email, and a total of 23 schools from different autonomous communities expressed interest in the project. Six of these schools were private, while the others were public. Fourth, teachers within these centers who voluntarily agreed to participate were provided with prior instructions on accurately assessing students using the questionnaire. Seminars and online meetings were conducted to ensure that teachers from all centers had a clear understanding of how to administer the questionnaire. Fifth, parents were asked to provide and sign informed consent before the distribution of the questionnaire. Sixth, after obtaining parental consent, data collection took place online at the end of the first trimester and the end of the third trimester through a private platform from the University of Barcelona. Each student was assigned

a code to guarantee anonymity throughout the entire process and facilitate identification for researchers at the two measurement points. In addition to the EDEPES, demographic questions, in conjunction with the CAS, were distributed to students. Teachers also provided academic performance reports at each assessment point. Seventh, at the conclusion of the study, a general report was provided to teachers and centers as a way of expressing gratitude for their collaboration.

Data analysis

Univariate and multivariate normality were assessed, also exploring the presence of outliers. Subsequently, the full sample was divided into two equal groups using the SOLOMON approach (Lorenzo-Seva, 2022), a splitting method specifically designed for factor analysis to create two equivalent subsamples.

Next, using one of the subsamples, an exploratory factor analysis (EFA) was performed to assess the factor validity of the EDEPES. After determining the recommended number of factors to retain and assigning the selected items to their respective dimensions, a confirmatory factor analysis (CFA) was conducted using the second subsample. Several models were evaluated, drawing inspiration from the initial theoretical model by Bisquerra and Pérez-Escoda (2007), the results of the EFA, and an approach suggested by the authors to strike a balance between the theoretical model and the EFA findings. Model fit was evaluated using the Chi-square test ($\chi 2$), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standard Root Mean Square Residuals (SRMR). CFI and TLI values above 0.90, and RMSEA and SRMR values below 0.08, indicated good model fit (Hu & Bentler, 1999). Differences between models were tested using the Chi-square difference test ($\Delta\chi 2$). Robust maximum likelihood estimation (MLM) was employed for all the models examined. The minimum sample size recommended for CFA using this estimator is 250 or more (Hu & Bentler, 1999).

Reliability analysis was conducted using Cronbach's α, MacDonald's ω, and composite reliability (CR) with values above 0.60 considered adequate (MacDonald, 1999; Taber, 2018). Average variance extracted (AVE) was additionally tested, with values above 0.50 considered satisfactory (Hair et al., 2010). Test-retest reliability was assessed using intra-class correlations (ICC), with values above 0.40 considered fair (Cicchetti, 1994).

The following step involved analyzing measurement invariance (MI) across genders. Configural, metric, and scalar invariance were evaluated with the models compared using the Chi-square difference test ($\Delta\chi 2$). After confirming gender measurement invariance, differences between genders were explored for the

entire sample and within each class group. Lastly, to evaluate criterion validity, bivariate correlations were conducted to examine the relationships of the EDEPES dimensions and the overall emotional competence with children's levels of anxiety and academic performance at Time 1 and Time 2. To do so, total scores for each variable were used. All the analyses were performed using R, primarily utilizing the 'lavaan' package (Rosseel, 2012) and IBM SPSS 26.0.

RESULTS

Exploratory factor analysis

First, univariate normality was examined, with item skewness and kurtosis values falling within the range of ±2, indicating univariate normality. Mardia's test reported significant skewness (59351.98, $p < .001$) and kurtosis (249.69, $p < .001$) values, evidencing the absence of multivariate normality. No missing values were found in the full sample as the questionnaire was distributed online to control this aspect. Mahalanobis distance scores identified the presence of some outliers. However, none of these outliers were extreme values, so all of them were included in the analysis.

Subsequently, the matrix determinant, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), and Bartlett's test were utilized to evaluate the appropriateness of conducting a factor analysis. The matrix determinant was 4.27e-15, Bartlett's test was significant (1084.8, df = 40, $p < .001$), and KMO was .96. These values indicated that the data can be factorized. Before conducting the EFA, the sample was divided into two identical groups using the SOLOMON procedure (Lorenzo-Seva, 2022), resulting in a sample of 557 participants for the EFA and 556 participants for the CFA.

The next step involved performing the EFA. Parallel analysis (PA) was used to determine the number of recommended factors to retain, which was five. Oblimin rotation was also applied since the correlation between the factors was assumed, given the relationship established between the emotional competencies. The initial 5-factor solution yielded a model fit of $\chi2(820) = 18768.16$, $p < .001$, TLI = .782, RMSEA = .09, RMSR = .04. Information pertaining to the preliminary 41-item EDEPES can be found in Supplemental Material 1, which includes data on item skewness and kurtosis values, factor loadings, explained variance, uniqueness, communalities, complexity values, and factor correlations.

Before proceeding with the CFA, items with factor loadings below .40 were decided to be eliminated. Specifically, item 5, which related to the expression of

love, item 17 referring to emotional ambivalence, and item 39 from the life and well-being competencies dimension were removed.

Confirmatory factor analysis

The next step involved performing a CFA on the second subsample to test three different models: Model 1, which was a 5-factor model exclusively based on the theoretical model of emotional competence (Bisquerra & Pérez-Escoda, 2007); Model 2, a 4-factor model inspired from the EFA results; and Model 3, a 4-factor model aimed at finding a balance between the theoretical model and the model suggested by the EFA. In Model 3, it was decided to exclude the subdimension of emotional expression because the only items that showed adequate loadings were those related to negative emotions. Since this subdimension exhibited a negative polarization and did not capture the entire emotional experience, it was agreed to retain only the subdimension related to emotional recognition, which exhibited good factor loadings for both positive and negative emotions. Additionally, two items from the emotional autonomy subscale ("The student can appreciate the differences between people as positive aspects" and "The student can recognize their limitations") were removed due to ambiguity. The wording of these questions led to confusion among experts regarding their appropriate subscale placement, and the results from the EFA also indicated similar factor loadings in two different subscales.

Results for Model 1 indicated robust model fit values of $\chi2(774) = 3901.12$, $p < .001$, CFI = .73, TLI = .72, RMSEA = .10, SRMR = .09. Model 2 demonstrated improved model fit values of $\chi2(590) = 2671.10$, $p < .001$, CFI = .79, TLI = .77, RMSEA = .09, SRMR = .08, with significant differences between the models ($\Delta\chi2 = 1264.80$, $\Delta df = 184$, $p < .001$). Model 3 exhibited the best model fit values, with $\chi2(346) = 1584.13$, $p < .001$, CFI = .84, TLI = .82, RMSEA = .10, SRMR = .06, and significant differences compared to both Model 1 ($\Delta\chi2 = 2326.60$, $\Delta df = 428$, $p < .001$) and Model 2 ($\Delta\chi2 = 1086.70$, $\Delta df = 244$, $p < .001$). Consequently, Model 3 was selected to support the data and validate the structure of the questionnaire. After considering the modification index suggestions (Roseel, 2012), our final model demonstrated fair robust model fit values of $\chi2(336) = 1011.28$, $p < .001$, CFI = .91, TLI = .90, RMSEA = .07, SRMR = .06.

Table 1 presents the items included in each emotional competence dimension of the EDEPES-28, along with their corresponding factor loadings and errors (SE). In our final model, we considered four emotional competencies: emotional awareness, emotional regulation, emotional autonomy, and social competence, along with a higher-order factor that measures global emotional competence.

Table 1
CFA factor loadings for EDEPES-28

Predicted factor	Item	F1	F2	F3	F4	SE
F1. Emotional awareness	1. Can recognize sadness	.75				.02
	2. Can recognize fear	.82				.03
	3. Can recognize joy	.61				.02
	4. Can recognize anger	.67				.03
	5. Can recognize love	.78				.03
	6. Can recognize shame	.85				.03
	7. Can recognize surprise	.82				.03
	8. Can recognize anxiety	.63				.04
F2. Emotional regulation	9. Is able to relax with the teacher's help		.81			.03
	10. Is able to ask for others' help		.71			.03
	11. When feeling a strong negative emotion, he/she is able to distract him/herself by doing a different activity suggested by the teacher		.73			.03
	12. When feeling a strong negative emotion, he/she is able to change the way he/she thinks about what is happening with the help of the teacher		.77			.03
	13. Is able to look for solutions to problems with the help of the teacher		.84			.03
	14. Is able to accept his/her share of responsibility in a conflict with the help of the teacher		.83			.03
F3. Emotional autonomy	15. Can recognize their physical qualities			.64		.02
	16. Can recognize their personal qualities (e.g., sympathy, kindness, etc.)			.75		.02
	17. Can recognize their academic qualities			.65		.02
	18. Can identify the people who like him/her			.70		.02

Predicted factor	Item	F1	F2	F3	F4	SE
F3. Emotional autonomy	19. Can participate actively in activities that are proposed to him/her			.74		.03
	20. Can say no if he/she thinks differently from others			.58		.02
	21. Can enjoy the activities he/she does			.82		.03
	22. Can develop a positive attitude towards change			.76		.02
F4. Social competence	23. Say thank you to others				.78	.05
	24. Ask permission when he/she needs to				.80	.05
	25. Apologize when he/she needs to				.88	.05
	26. He/she usually help others				.82	.05
	27. He/she usually share				.82	.05
	28. Can acknowledge his/her mistakes				.73	.04
Global emotional competence	Emotional awareness	.70				.09
	Emotional regulation		.89			.22
	Emotional autonomy			.92		.34
	Social competence				.90	.39

Note. All factor loadings were significant at $p < .001$. SE: Standard error of factor loadings.

Reliability analysis

Values for the four dimensions of the EDEPES-28 evidenced optimal reliability results for all the emotional competencies: emotional awareness (α = .90, ω = .89, CR = .89, AVE = .56), emotional regulation (α = .91, ω = .88, CR = .88, AVE = .61), emotional autonomy (α = .90, ω = .83, CR = .82, AVE = .49) and social competence (= .92, ω = .90, CR = .90, AVE = .66). Only for emotional autonomy, AVE showed a little bit lower value than .50, reporting good values for the other indicators. Hierarchical omega for the global emotional competence also evidenced optimal internal consistency with a value of .87.

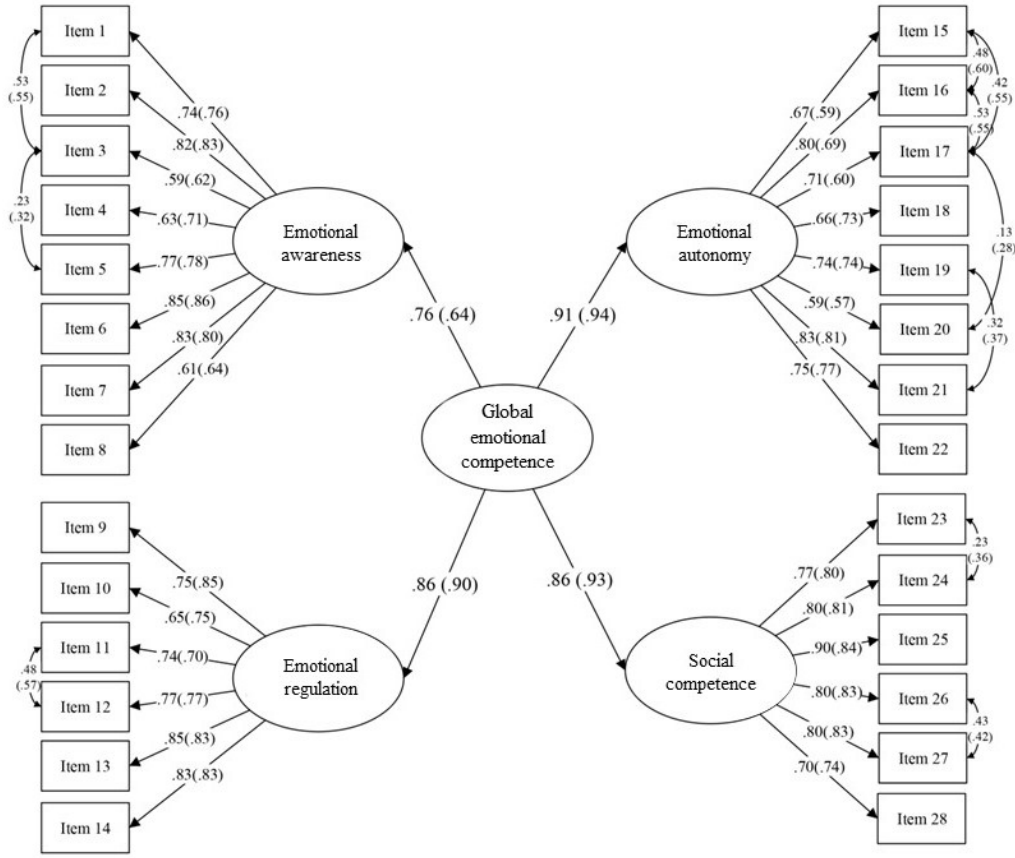
Intra-class correlations were tested to explore test-retest reliability for each emotional competence dimension: emotional awareness (.47 ICC [95% CI (.31, .58), F = 2.02, p < .001]), emotional regulation (.73 ICC [95% CI (.65, .80), F = 4.13, p < .001]), emotional autonomy (.66 ICC [95% CI (.54, .76), F = 3.50, p < .001]), social competence (.66 ICC [95% CI (.56, .74), F = 3.25, p < .001]) and the global emotional competence (.60 ICC [95% CI (.45, .71), F = 2.84, p < .001]). Cicchetti's (1994) guidelines contemplate values between .40 and .59 as fair, so all emotional dimensions evidenced an adequate test-retest reliability.

Measurement invariance and sex differences

Invariance related to sex was tested on our final 4-factor model of emotional competence, following the next steps and utilizing the CFA subsample (N = 556). First, separated models for girls and boys were evaluated, with both reporting adequate model fit (girls: $\chi2(336) = 687.55$, $p < .001$, CFI = .92, TLI = .91, RMSEA = .07, SRMR = .08; boys: $\chi2(336) = 629.04$, $p < .001$, CFI = .92, TLI = .91, RMSEA = .07, SRMR = .06). Figure 1 shows factor loadings for boys and girls, as well as items' variances and covariances.

Figure 1

Model of the EDEPES-28 with factor loadings and covariances for both sexes



Note. Values for girls are inside parenthesis.

Second, configural equivalence was measured by performing a multigroup analysis, exhibiting again fair model fit values ($\chi2(670) = 1934.02$, $p < .001$, CFI = .92, TLI = .91, RMSEA = .07, SRMR = .07). Third, equal factor loadings were assumed for both groups to test metric invariance, and forth, scalar invariance was evaluated fixing both loadings and intercepts. When comparing the models, using the Satorra-Bentler's method (2001), no significant differences were found. Table 2 shows model fit values for the multigroup model and all the constrained models.

Table 2
Sex measurement invariance comparing differences between the multigroup model and the constrained models

Models	χ^2 *(df)*	*TLI*	*CFI*	*RMSEA*	*SRMR*	*AIC*	*BIC*	$\Delta\chi^2$	*p*
Multigroup model: Configural invariance	1934.02 (670)	.91	.92	.07	.07	29431	30287	-	-
Metric invariance	1960.29 (697)	.91	.92	.06	.07	29404	30142	23.69	.647
Scalar invariance	1989.37 (720)	.91	.92	.06	.07	29387	30026	33.63	.070

Table 3
T-test results for sex differences per course

	First year				Second year			
	Boys	**Girls**	**Group differences**		**Boys**	**Girls**	**Group differences**	
	M(SD)	M(SD)	t(p)	Cohen's *d*	M(SD)	M(SD)	t(p)	Cohen's *d*
Emotional awareness	20.01 (5.55)	20.49 (5.74)	-0.99 (.320)	.08	19.78 (6.30)	21.33 (5.99)	-3.00 (.002)	.25
Emotional regulation	15.28 (4.35)	16.26 (4.45)	-2.60 (.009)	.22	15.34 (4.74)	16.78 (3.98)	-3.92 (.001)	.32
Emotional autonomy	21.64 (5.18)	21.72 (5.32)	-0.18 (.852)	.01	21.52 (5.48)	22.74 (4.83)	-2.79 (.005)	.23
Social competence	15.57 (4.82)	16.80 (4.72)	-2.99 (.002)	.25	15.46 (4.50)	17.50 (3.98)	-5.73 (.001)	.48
Global emotional competence	72.51 (17.43)	75.28 (18.28)	-1.81 (.070)	.15	72.11 (17.19)	78.37 (15.50)	-4.55 (.001)	.38

As the findings support measurement invariance, a comparison of mean differences between boys and girls was conducted to explore sex differences in each course for the latent variables of our four emotional competencies as well as the global emotional competence. In the first-year course, differences were found for the subscales of emotional regulation and social competence. Among second-year students, the differences were more prominent, indicating variations in all the subscales and the global emotional competence, with girls exhibiting higher scores. Table 3 presents means and standard deviations for boys and girls in both courses, along with t-test and effect size results.

Criterion validity

Correlations between all the emotional competencies, academic achievement and children's anxiety were explored to assess criterion validity, using a subsample of 430 students. Related with children's anxiety, all the competencies at Time 1 showed significant negative associations with anxiety at Time 1 and Time 2 except for emotional awareness and emotional regulation, which only reported significant links at Time 1. Considering academic performance, all the emotional competencies evidenced positive correlations at both times. Discussed relationships are exposed in Table 4.

Table 4

Correlations for EDEPES-28 subscales and global emotional competence (Time 1) with anxiety and academic performance (Time 1 and Time 2)

	Anxiety (Time 1)	Anxiety (Time 2)	Academic performance (Time 1)	Academic performance (Time 2)
Mean (SD)	7.30 (3.02)	7.17 (3.31)	7.20 (1.24)	7.53 (1.32)
Emotional awareness	-.15**	.00	.30***	.26***
Emotional regulation	-.18***	-.09	.22***	.22***
Emotional autonomy	-.25***	-.18***	.45***	.47***
Social competence	-.17***	-.11*	.28***	.27***
Global emotional competence	-.23***	-.12**	.38***	.37***

Note. * p < .05, ** p < .01, *** p < .001.

DISCUSSION

Although it is well-established that being emotionally competent contributes to the enhancement of students' well-being by reducing conflict and stress (Domitrovich et al., 2017; Pérez-López et al., 2021; Ros-Morente et al., 2017), promoting academic performance (Greenberg et al., 2017; MacCann et al., 2020; Pulido & Herrera, 2017), and fostering a positive classroom environment (Díaz-López et al., 2019; Ruvalcaba-Romero et al., 2017), there are limited Spanish-validated instruments available to assist teachers in evaluating emotional competencies in the first cycle of primary school education. The aim of the present study was to develop and validate the EDEPES, a scale designed to aid teachers in assessing emotional competencies in children within this age group.

The questionnaire was developed within the theoretical model proposed by Bisquerra and Pérez-Escoda (2007) and the GROP, which considers five basic emotional competencies: emotional awareness, emotional regulation, emotional autonomy, social competence, and competencies for life and well-being. This model was selected for its inclusive nature, as it adopts an integrative perspective that extends beyond the confines of emotional intelligence theory and remains open to adjacent theories related to emotional competencies, such as positive psychology and multiple intelligences theory. Additionally, since this model was developed with consideration of the Hispanic context, it offers an interesting and relevant perspective for the foundation of the EDEPES questionnaire.

In light of the first objective, which involved exploring the factorial structure of the questionnaire, the exploratory factor analysis (EFA) suggested a 5-factor model that could align with the theoretical framework. However, contrary to our expectations, some items initially intended for specific factors exhibited higher loadings for others. For example, items initially included to measure social competence loaded on emotional regulation and emotional autonomy. Similarly, certain items considered for emotional autonomy also loaded on emotional regulation. Furthermore, none of the items included in the dimension of competencies for life and well-being loaded for this specific dimension; instead, they showed factor loadings for emotional regulation and emotional autonomy.

Regarding items intended to measure emotional recognition and emotional expression, which are aspects encompassed within emotional awareness the results indicated good factor loadings for all the emotions included in emotion recognition. However, for emotional expression, only negative emotions loaded in one factor, while positive emotions exhibited either small loadings for other factors (e.g., "joy") or similar factor loadings for multiple factors (e.g., "love"). Additionally, we observed that one of the factors consisted of only four items, with most of them showing factor loadings below .40.

Next, after eliminating irrelevant items that didn't show a strong loading for either of the preliminary factors during the EFA, the second objective involved performing a CFA to test three models: one strictly following the theoretical model, one inspired by the results of the EFA, and one hybrid model that we decided to propose to find a balance between the theoretical model and the results suggested by the EFA. After testing the three models, the hybrid model reported the best model fit. This model included 28 items, composing the final version of our questionnaire, the EDEPES-28, fulfilling our third objective.

For this model, four dimensions were proposed. These dimensions do not completely overlap with the model proposed by Bisquerra and Pérez-Escoda (2007), as is the case with other proposals to measure emotional competencies in young children within this theoretical framework, such as the ECAQ (Bartroli et al., 2022). Instead, they redefine the suggested emotional competencies while also considering the data suggestions. The EDEPES-28 includes the dimensions of emotional awareness, measuring the ability to observe and identify one's own and others' emotions; emotional regulation, referring to the ability to control and influence one's own emotions with the help of others or the teacher; emotional autonomy, encompassing the capacity to self-manage, maintain a healthy self-image and self-esteem, and show a positive and assertive attitude; and social competence, entailing effective and respectful communication, as well as the skillful display of prosocial behaviors. These four basic emotional competencies constitute a global emotional competence, which is a higher-order dimension supported by the model.

Related to reliability and considering the fourth objective, all the dimensions included in the EDEPES-28 showed excellent values, with Cronbach's α, MacDonald's ω and composite reliability (CR) above .80. The higher order factor for the global emotional competence also reported an excellent hierarchical ω. Since values above .60 were considered adequate (MacDonald, 1999; Taber, 2018), it can be concluded that the EDEPES-28 exhibited a solid internal consistency. Test-retest reliability was measured with intra-class correlations (ICC), and again the four emotional competencies reported good results, with values above .40 considered fair (Cicchetti, 1994). Additionally, average variance extracted (AVE) was explored to observe how our latent constructs explained the variance of their indicators. Most of the emotional competencies demonstrated values above .50 (Fornell & Larcker, 1981; Hair et al., 2010), with only emotional autonomy showing a slightly lower value of .49. Overall, the results indicated that the EDEPES-28 exhibited good reliability, consistent with other questionnaires developed within the same theoretical model (Bartroli et al., 2022; Pérez-Escoda et al, 2021).

The next objective involved assessing measurement invariance considering gender. The EDEPES-28 demonstrated equivalence across genders, indicating that the factors included in our model have the same meaning when evaluating boys

or girls. None of the previously validated questionnaires within this model have reported results related to measurement invariance (Bartroli et al., 2022; Pérez-Escoda et al., 2021). However, psychometric evaluations of other questionnaires measuring emotional intelligence, such as the EQ-I Young Version (Davis & Wigelsworth, 2017) and the Wong and Law Emotional Intelligence Scale (WLEIS) (Di et al., 2020), have also demonstrated similar results in this regard.

Given the ensured gender measurement invariance, we investigated gender differences across courses. Among first-year students, variations were identified in the competencies related to emotional regulation and social competence. In second-year students, girls exhibited higher scores in all competencies, including global emotional competence. Previous research has consistently highlighted distinctions between boys and girls, with girls expressing more positive emotions (e.g., sympathy) and internalizing emotions (e.g., anxiety), while boys tend to express more externalizing emotions (e.g., anger) (Chaplin & Aldao, 2013).

Other studies have reported that girls demonstrate higher proficiency in pro-social behaviors (Maguire et al., 2016; McTaggart et al., 2021), excel in emotional recognition, emotional regulation, and competent emotional expression (Maguire et al., 2016), and exhibit more accurate discrimination of emotions (Tottenham et al., 2011). A recent study exploring gender differences in emotion regulation in Spain highlighted that, during early childhood, girls tend to score higher than boys (Sanchis-Sanchis et al., 2020). Another study investigating emotional competence within the model proposed by Bisquerra and Pérez-Escoda (2007) reported significant differences in the first cycle of primary education, with these differences becoming more pronounced in the second cycle and diminishing by the third cycle (López-Cassà et al., 2021). These distinctions may be explained by maturation processes that occur earlier in girls than in boys, aligning with the questionnaire findings that reveal more pronounced differences in the second year than in the first year of primary school.

Meeting our latest objective of examining criterion validity, we conducted correlations between the four emotional competencies and the overall emotional competence with anxiety and academic performance. These assessments were carried out twice within a six-month interval. Previous research has underscored meaningful connections between emotional competencies and children's anxiety (Mathews et al., 2016) as well as academic performance (MacCann et al., 2020). Notably, these relationships seem to be more pronounced in younger children, which is why these variables were selected to explore the associations with the emotional competencies proposed by the EDEPES-28.

In relation to anxiety at Time 1, all emotional competencies displayed a negative relationship. However, at Time 2, only emotional autonomy and social competence, along with the overall emotional competence, demonstrated a significant negative

association. This suggests that emotional awareness and emotional regulation may be more closely linked to the current state of anxiety, while competencies such as emotional autonomy and social competence may also be associated with future symptoms of anxiety. Numerous studies have shown negative correlations between emotional competencies and anxiety in both children and adolescents (Mathews et al., 2016; Ros-Morente et al., 2017; Schoeps et al., 2021). Additionally, research indicates that trait emotional intelligence can predict symptoms of anxiety and depression (Russo et al., 2012). Children who report less effective emotional expression, less emotional awareness, and lower emotional self-efficacy tend to exhibit higher anxiety. Thus, it is crucial to develop solid and skillful emotional competencies to enhance children's well-being.

Regarding academic performance, all emotional competencies showed positive associations at both time points. These positive relationships align with findings from previous studies, illustrating that nurturing emotional competencies can positively impact children's academic performance (Greenberg et al., 2017; Huang & Zeng, 2023; Maccann et al., 2019; Pulido & Herrera, 2017; Sporzon & López-López, 2021). Moreover, these benefits extend to adolescents and young adults (Maccann et al., 2019; Merino-Tejedor et al., 2017; Pulido & Herrera, 2017). Based on the results obtained, the EDEPES-28 shows an optimal criterion validity, evidencing relevant links with children's anxiety and academic performance.

Limitations and future considerations

Before presenting our conclusions, several limitations need to be considered. Firstly, we did not employ a random sampling method, and the children who participated were from pre-selected schools interested in establishing a collaboration agreement. Future research should aim to explore more diverse populations, including the evaluation of samples with special conditions, such as children with disabilities or specific diagnoses. This would allow us to observe whether the assessment of emotional competencies yields similar results in populations with special needs.

Secondly, children's emotional competencies were assessed by teachers. Although the questionnaire is designed as a tool for teachers to evaluate emotional competencies, as self-report assessments are especially challenging in children of these ages, it is important to note that despite prior guidance to ensure proper use and reliable assessments, there remains a potential source of bias in this process. While we included a student self-report questionnaire for anxiety and assessed academic performance through evaluations by various teachers, future research should consider developing and incorporating separate questionnaires for students and parents, in addition to the teacher's report. This approach would facilitate the

comparison and contrast of results reported by different sources, providing a more comprehensive insight into the actual emotional competence of children.

Thirdly, criterion validity was only explored concerning the relationship with anxiety and academic performance. Although these variables were selected due to their relevant links with emotional competencies, future research should investigate associations between emotional competencies and other variables of interest, such as the use of specific emotion regulation strategies or children's perception of the classroom climate.

CONCLUSIONS

Despite the limitations presented above, the results indicate that the EDEPES-28 is a reliable instrument for teachers to measure children's emotional competencies during early primary education. The data supported the factorial structure of the proposed hybrid model, inspired by the model developed by the GROP and the results reported by the EFA. The final version of the questionnaire, the EDEPES-28, comprises four emotional competencies: emotional awareness, emotional regulation, emotional autonomy, and social competence, as well as a higher-order factor to measure global emotional competence. Both the four emotional competencies and the global emotional competence demonstrated solid reliability and construct validity. The results related to gender also supported configural, metric, and scalar invariance, with no differences between the multigroup model and the constrained models. Additionally, relevant gender differences were highlighted, particularly in second-year students, with girls showing higher scores in all competencies.

Lastly, results revealed good criterion validity, with emotional competencies displaying negative associations with anxiety and positive links with academic performance. These findings underscore the validity and reliability of the EDEPES-28, making it a useful tool to measure emotional competencies in children within the first cycle of primary school.

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REFERENCES

Bartroli, M., Angulo-Brunet, A., Bosque-Prous, M., Clotas, C., & Espelt, A. (2022). The Emotional Competence Assessment Questionnaire (ECAQ) for children aged from 3 to 5 years: validity and reliability evidence. *Education Sciences*, *12*, 489. https://doi.org/10.3390/educsci12070489

Bisquerra, R. (2020). *Emociones: instrumentos de medición y evaluación*. Síntesis.

Bisquerra, R., & Pérez-Escoda, N. (2007). Las competencias emocionales. *Educación XX1*, *10*, 61-82.

Bisquerra Alzina, R., & Lopez Cassà, E. (2021). La evaluación en la educación emocional: instrumentos y recursos. *Aula Abierta*, *50*(4), 757–766. https://doi.org/10.17811/rifie.50.4.2021.757-766

Buck, R. (1990). Rapport, emotional education, and emotional competence. *Psychological Inquiry*, *1*(4), 301-302. https://doi.org/10.1207/s15327965pli0104_4

Chaplin, T. M., & Aldao, A. (2013). Gender differences in emotion expression in children: a meta-analytic review. *Psychological Bulletin*, *139*(4), 735-765. https://doi.org/10.1037/a0030737

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, *6*, 284-290. https://doi.org/10.1037/1040-3590.6.4.284

Collaborative for the Advancement of Social and Emotional Learning. (2003). *Safe and sound: An educational leader's guide to evidence-based social and emotional learning (SEL) programs*. ERIC Clearinghouse.

Davis, S. K., & Wigelsworth, M. (2018). Structural and predictive properties of the Emotional Quotient Inventory Youth Version–Short Form (EQ-i:YV[S]). *Journal of Personality Assessment*, *100*(2), 197-206. https://doi.org/10.1080/00223891.2017.1280502

Di, M., Deng, X., Zhao, J., & Kong, F. (2022). Psychometric properties and measurement invariance across sex of the wong and law emotional intelligence scale in chinese adolescents. *Psychological Reports*, *125*(1), 599-619. https://doi.org/10.1177/0033294120972634

Díaz-Lopez, A., Rubio-Hernández, F. J., & Carbonell-Bernal, N. (2019). Efectos de la aplicación de un programa de inteligencia emocional en la dinámica de bullying. Un estudio piloto. *Journal of Psychology and Education*, *14*(2), 124-135. https://doi.org/10.23923/rpye2019.02.177

Domitrovich, C., Durlak, J., Staley, K., & Weissberg, R. (2017). Social-emotional competence: an essential factor for promoting positive adjustment and reducing risk in school children. *Child Development*, *88*. https://doi.org/10.1111/cdev.12739

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: a meta-analysis of school-based universal interventions. *Child Development*, *82*(1), 405-432. https://doi.org/10.1111/j.1467-8624.2010.01564.x

Fernández-Berrocal, P., & Extremera, N. (2016). Ability emotional intelligence, depression, and well-being. *Emotion Review*, *8*(4), 311-315. https://doi.org/10.1177/1754073916650494

Ferrándiz, C., Hernández-Torrano, D., Bermejo, R., Ferrando, M., & Sainz Gómez, M. (2012). Social and emotional intelligence in childhood and adolescence: Spanish validation of a measurement instrument. *Revista de Psicodidáctica*, *17*, 309-338.

Filella, G., Morera, M. -J., Pérez-Escoda, N., & Granado, X. (2014). Resultados de la aplicación de un programa de educación emocional en educación primaria. *Estudios sobre Educación*, *26*, 125-147. https://doi.org/10.15581/004.26.125-147

Gillis, J. S., Gómez Fernández, D. E., & Pulido García, M. T. (2011). *CAS: Cuestionario de Ansiedad Infantil: manual*. TEA Ediciones. https://bit.ly/3JhAbYx

Greenberg, M., Domitrovich, C., Weissberg, R., & Durlak, J. (2017). Social and emotional learning as a public health approach to education. *Future of Children*, *27*, 13-32. https://doi.org/10.1353/foc.2017.0001

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55. https://doi.org/10.1080/10705519909540118

Huang, C., & Zeng, X. (2023). Social and emotional development of disadvantaged students and its relationship with academic performance: evidence from China. *Frontiers in Psychology*, *14*, 1170656. https://doi.org/10.3389/fpsyg.2023.1170656.

Jordan, J.-A., McRorie, M., & Ewing, C. (2010). Gender differences in the role of emotional intelligence during the primary-secondary school transition. *Emotional & Behavioural Difficulties*, *15*(1), 37-47. https://doi.org/10.1080/13632750903512415

López-Cassá, E. (2007). *La educación emocional en el segundo ciclo de la educación infantil. Diseño, desarrollo y evaluación de un programa de educación emocional para la prevención y el desarrollo humano*. [Tesis Doctoral]. Universitat de Barcelona (Barcelona).

López-Cassà, E., & Pérez-Escoda, N. (2022). La educación emocional: una necesidad para el bienestar personal y social. En N. Pérez-Escoda & E. López-Cassà (Eds.), *Retos para el bienestar social y emocional* (pp. 23-35). Wolters Kluwer.

Lozano, M. Y., & Hernández Arroyo, S. (2022). Emotional education in legislation: analysis based on minimum contents decrees from LOMLOE. HUMAN REVIEW.

International Humanities Review / Revista Internacional De Humanidades, *13*(2), 1–17. https://doi.org/10.37467/revhuman.v11.4023

Lorenzo-Seva, U. (2022). SOLOMON: a method for splitting a sample into equivalent subsamples in factor analysis. *Behavior Research Methods*, *54*(6), 2665-2677. https://doi.org/10.3758/s13428-021-01750-y

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, *4*, 84-99. https://doi.org/10.1037/1082-989X.4.1.84

Maccann, C., Jiang, Y., Brown, L., Double, K., Bucich, M., & Minbashian, A. (2019). Emotional intelligence predicts academic performance: a meta-analysis. *Psychological Bulletin*, *146*. https://doi.org/10.1037/bul0000219

Maguire, L. K., Niens, U., McCann, M., & Connolly, P. (2016). Emotional development among early school-age children: gender differences in the role of problem behaviours. *Educational Psychology*, *36*(8), 1408-1428. https://doi.org/10.1080/01443410.2015.1034090

Mathews, B., Koehn, A., Movahed Abtahi, M., & Kerns, K. (2016). Emotional competence and anxiety in childhood and adolescence: a meta-analytic review. *Clinical Child and Family Psychology Review*, *19*. https://doi.org/10.1007/s10567-016-0204-3

Mavroveli, S., Petrides, K. V., Shove, C., & Whitehead, A. (2008). Investigation of the construct of trait emotional intelligence in children. *European Child & Adolescent Psychiatry*, *17*(8), 516-526. https://doi.org/10.1007/s00787-008-0696-6

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion*, *3*(1), 97-105. https://doi.org/10.1037/1528-3542.3.1.97

McDonald, R. P. (1999). *Test theory: A unified treatment*. Lawrence Erlbaum Associates Publishers.

McTaggart, V., McGill, R., & Stephens, S. (2022). Gender differences in the development of children's social and emotional competencies during the pre-school year. *Early Child Development and Care*, *192*(12), 1952-1966. https://doi.org/10.1080/03004430.2021.1957859

Petrides, K. V., & Furnham, A. (2001). Trait emotional intelligence: psychometric investigation with reference to established trait taxonomies. *European Journal of Personality*, *15*(6), 425-448. https://doi.org/10.1002/per.416

Pérez-Escoda, N., & Filella, G. (2019). Educación emocional para el desarrollo de competencias emocionales en niños y adolescentes. *Praxis & Saber*, *10*(24), 23-44. https://doi.org/10.19053/22160159.v10.n25.2019.8941

Pérez-González, J. C., Jiménez-Cantón, G., Rodríguez-Donaire, A., & Cejudo-Prado, J. (2022). Vademécum de la evaluación comprehensiva del aprendizaje social y

emocional y de la inteligencia emocional. En N. Pérez-Escoda, & E. López-Cassà (Eds.), *Retos para el bienestar social y emocional* (pp. 247-271). Wolters Kluwer.

Pérez López, R., & Gómez Hurtado, I. (2021). Educando las emociones: investigación-acción sobre un programa de educación emocional para el alumnado de educación primaria. *Investigación en la Escuela*, *104*, 13-28. http://dx.doi.org/10.12795/IE.2021.i104.02

Poulou, M. S., Grazzani, I., Cavioni, V., Ornaghi, V. M., Conte, E., Cefai, C., Camilerri, L., & Bartolo, P. (2022). *Teachers' and students' changes in social and emotional competences following the implementation of PROMEHS: a European program for promoting mental health at schools. educational research applications*. https://bit.ly/3TX92QK

Rivers, S., Brackett, M., Reyes, C., Mayer, J., Caruso, D., & Salovey, P. (2012). Measuring emotional intelligence in early adolescence with the MSCEIT-YV: psychometric properties and relationship with academic performance and psychosocial functioning. *Journal of Psychoeducational Assessment*, *30*, 344-366. https://doi.org/10.1177/0734282912449443

Ros-Morente, A., Filella, G., Ribes, R., & Escoda, N. (2017). Análisis de la relación entre competencias emocionales, autoestima, clima de aula, rendimiento académico y nivel de bienestar en una muestra de escolares de educación primaria. *REOP - Revista Española de Orientación y Psicopedagogía*, *28*, 8. https://doi.org/10.5944/reop.vol.28.num.1.2017.19355

Ruvalcaba Romero, N., Fernández-Berrocal, P., Salazar-Estrada, J., & Gallegos, J. (2017). Positive emotions, self-esteem, interpersonal relationships and social support as mediators between emotional intelligence and life satisfaction. *Journal of Behavior, Health & Social Issues*, *9*. https://doi.org/10.1016/j.jbhsi.2017.08.001

Salovey, P., & Mayer, J. D. (1989). Emotional intelligence. *Imagination, Cognition and Personality*, *9*(3), 185-211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

Sanchis-Sanchis, A., Grau, M. D., Moliner, A. -R., & Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Frontiers in Psychology*, *11*. https://bit.ly/43zV3Dz

Schoeps, K., Tamarit, A., Postigo-Zegarra, S., & Montoya-Castilla, I. (2021). Los efectos a largo plazo de las competencias emocionales y la autoestima en los síntomas internalizantes en la adolescencia. *Revista de Psicodidáctica*, *26*(2), 113-122. https://doi.org/10.1016/j.psicod.2020.12.001

Schultz, D., Trentacosta, C., Izard, C.E., Leaf, P., & Mostow, A. (2004). *Children's emotion processing: the development of the Assessment of Children's Emotion Skills (ACES).*

Sporzon, G., & López, M. C. (2021). Evaluación de la inteligencia emocional y la conducta prosocial y su correlación en alumnado de educación primaria. *Estudios sobre Educación*, *40*, 51-73. https://doi.org/10.15581/004.40.51-73

Taber, K. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*, 1-24. https://doi.org/10.1007/s11165-016-9602-2

Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: a meta-analysis of follow-up effects. *Child Development*, *88*(4), 1156-1171. https://doi.org/10.1111/cdev.12864

Tottenham, N., Hare, T. A., & Casey, B. J. (2011). Behavioral assessment of emotion discrimination, emotion regulation, and cognitive control in childhood, adolescence, and adulthood. *Frontiers in Psychology*, *2*, 39. https://doi.org/10.3389/fpsyg.2011.00039

Supplementary Table 1

Rotated factor loadings from the Exploratory Factor Analysis (EFA), kurtosis and skewness values, explained variance, and correlations between factors (N=557).

Items	Skewness	Kurtosis	F1	F5	F3	F2	F4	h	u2	Co
Exp_1	-.03	-.73	-.06	.13	**.74**	.17	-.10	.67	.32	1.22
Exp_2	.09	-.72	.07	.02	**.84**	.01	-.10	.73	.26	1.04
Exp_3	-.47	.06	.21	.18	.24	**.45**	-.03	.57	.42	2.37
Exp_4	.02	-.93	-.34	.05	**.65**	.16	.18	.51	.48	1.85
Exp_5	-.38	-.10	.30	-.01	.35	.31	.05	.46	.53	2.99
Exp_6	-.12	-.60	.18	.20	**.58**	-.07	-.19	.54	.45	1.72
Exp_7	-.16	-.33	.05	.30	**.48**	.11	.05	.56	.43	1.85
Exp_8	.30	-.47	.07	-.07	**.82**	-.19	.13	.68	.31	1.18
Reco_9	-.20	-.42	-.02	**.80**	-.05	.16	-.02	.70	.29	1.09
Reco_10	-.31	-.05	.01	**.81**	.14	-.08	.04	.77	.22	1.08
Reco_11	-.37	-.37	.09	**.73**	-.17	.29	-.11	.72	.27	1.52
Reco_12	-.42	-.07	.00	**.67**	.09	-.04	.09	.55	.44	1.08
Reco_13	-.52	.31	.13	**.60**	.02	.10	.08	.58	.41	1.18
Reco_14	-.14	-.19	.05	**.80**	.12	-.08	.05	.76	.23	1.07
Reco_15	-.30	.10	.01	**.82**	.05	-.08	.04	.70	.29	1.03
Reco_16	-.04	-.47	.08	**.44**	.28	-.32	.27	.58	.41	3.43
ExpEco_17	.11	.32	.28	.33	.12	-.12	.33	.56	.43	3.45
Reg_18	-.28	-.50	**.63**	.10	.02	.15	-.09	.55	.44	1.22
Reg_19	-.26	-.35	**.48**	-.07	.20	.17	.15	.43	.56	1.91
Reg_20	-.17	-.10	**.77**	-.01	-.03	-.02	.01	.57	.42	1.00
Reg_21	-.11	-.31	**.80**	.02	-.04	-.06	.04	.62	.37	1.02
Reg_22	-.29	-.32	**.65**	-.02	-.01	.14	.17	.60	.39	1.23
Reg_23	-.18	-.26	**.84**	-.02	-.06	-.04	.07	.67	.32	1.02
Au_24	-.41	.29	-.02	.35	.03	.18	**.41**	.49	.50	2.35
Au_25	-.18	-.17	.11	.27	.08	.23	**.44**	.62	.37	2.46
Au_26	-.32	.02	.09	.19	-.06	.14	**.64**	.66	.33	1.34
Au_27	-.47	-.21	-.02	.20	.07	**.62**	.23	.68	.31	1.55
Au_28	-.42	-.16	.25	.21	-.05	**.41**	.15	.55	.44	2.57
Au_29	-.29	.30	**.49**	.06	.05	.02	.39	.60	.39	1.97
Au_30	-.12	.12	**.44**	.20	-.02	-.15	.39	.56	.43	2.67
Sc_31	-.46	-.32	.21	.08	-.02	**.56**	.20	.61	.38	1.59
Sc_32	-.47	.02	**.53**	.20	.13	.21	-.18	.60	.39	2.06
Sc_33	-.64	.25	**.65**	.10	.06	.12	-.18	.54	.45	1.30
Sc_34	-.34	-.24	**.73**	.10	.11	.05	-.12	.65	.34	1.15

Items	Skewness	Kurtosis	F1	F5	F3	F2	F4	h	u2	Co
Sc_35	-.26	-.35	.06	-.02	.00	.34	**.52**	.48	.51	1.76
Sc_36	-.31	-.34	**.54**	.12	.07	.25	.05	.63	.36	1.57
Sc_37	-.33	-.05	**.72**	.08	.03	.09	-.01	.65	.34	1.06
Lwc_38	-.28	-.03	**.45**	.08	.01	.34	.07	.54	.45	2.00
Lwc_39	-.30	-.04	.24	-.08	.05	.34	.27	.34	.65	2.94
Lwc_40	-.4	-.16	.30	.04	.03	**.62**	.04	.68	.31	1.45
Lwc_41	-.06	.07	**.79**	-.04	.00	-.12	.13	.60	.39	1.10
SS loadings			8.3	6.33	3.91	3.5	2.72			
%Var			0.2	0.15	0.1	0.09	0.07			
CumVar			0.2	0.36	0.45	0.54	0.6			
% Explained			0.34	0.26	0.16	0.14	0.11			
Cum %			0.34	0.59	0.75	0.89	1			
F1			1							
F5			0.52	1						
F3			0.2	0.5	1					
F2			0.4	0.39	0.08	1				
F4			0.33	0.36	0.16	0.17	1			

Note. **h2**: communality; **u2**: uniqueness; **com**: complexity; **Exp**: Emotional expression (Emotional awareness); **Reco**: Emotional recognition (Emotional awareness); **ExpReco**: Ambivalence (Emotional awareness); **Reg**: Emotional regulation; **Au**: Emotional autonomy; **Sc**: Social competence; **Lwc**: Life and well-being competences.