Validation of the emotional development questionnaire for secondary school students (CDE-SEC)

Validación del cuestionario de desarrollo emocional para educación secundaria (CDE-SEC)

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Abstract:

The importance of supporting students' emotional development is increasingly apparent in education, especially in secondary education. In this stage, adolescents experience a variety of changes and needs that require training and emotional support. However, in order to be able to implement effective educational programmes that promote emotional development, it is essential to know the level of emotional competence of students, and assessment instruments that can appropriately evaluate this competence are needed for this purpose. This paper presents the validation of the emotional development questionnaire for secondary school students (CDE-SEC). A sample of 1296 students from years one to four of compulsory secondary education from different schools in Spain was used, although partial samples were used for specific analyses. Several studies were carried out to demonstrate the internal consistency and validity of the instrument: calculation of the reliability coefficient, confirmatory factor analysis, and the correlation of the CDE-SEC with recognised measures of emotional intelligence, personality, adjustment difficulties, social behaviour, and self-esteem. In addition, a regression study was used to calculate the incremental validity. The results indicate that the CDE-SEC is a theoretically well-founded questionnaire with good psychometric characteristics. In short, it is considered to be an optimal tool for assessing the emotional competence of secondary school students and evaluating the effectiveness of educational programmes to promote personal, emotional, and social development.

Resumen:

La importancia de atender al desarrollo emocional del alumnado está cada vez más presente en el ámbito educativo y, especialmente en la educación secundaria. En esta etapa los adolescentes experimentan diversidad de cambios y necesidades que requieren de formación y acompañamiento emocional. Sin embargo, para poder aplicar programas educativos eficaces que promuevan el desarrollo emocional es imprescindible conocer el nivel de competencia emocional de los estudiantes y para ello se necesitan instrumentos de evaluación que puedan valorar apropiadamente esta competencia. En este trabajo presentamos la validación del Cuestionario de Desarrollo Emocional para estudiantes de Secundaria (CDE-SEC). Se ha contado con una muestra de 1296 estudiantes de primero a cuarto de la Educación Secundaria Obligatoria de diferentes centros educativos de España, aunque se han utilizado muestras parciales para análisis específicos. Se han realizado diversos estudios para demostrar la consistencia interna y la validez del instrumento: el cálculo del coeficiente de fiabilidad, un análisis factorial confirmatorio y la correlación del CDE-SEC con medidas reconocidas de inteligencia emocional, personalidad, dificultades de ajuste, comportamiento social y autoestima. Asimismo, se ha estudiado la validez incremental mediante un estudio de regresión. Los resultados indican que el

CDE-SEC es un cuestionario bien fundamentado teóricamente y con buenas características psicométricas. En definitiva, se considera una herramienta óptima para evaluar la competencia emocional de los estudiantes de educación secundaria y para evaluar la eficacia en la promoción del desarrollo personal, emocional y social de programas educativos dirigidos a tal fin.

Palabras clave: competencia emocional, cuestionario, validez, análisis factorial, secundaria.

1. Introduction

Secondary education is a key formative stage for adolescents. During this stage, it is necessary to foster academic and professional development, as well as addressing personal, emotional, and social development (Álvarez-Justel & Álvarez-González, 2022; Pérez-Escoda & Filella, 2019).

Habits and behaviours are acquired during adolescence that shape the course of their life through transitions and behavioural patterns that affect well-being and development (Montes-Solís, 2023). Similarly, young people undergo numerous changes associated with maturational progress, identity building, and academic transitions. They experience changes that are physiological, cognitive, affective-emotional, social, etc. in nature and which require educational support that responds to their emotional and formative needs.

So, emotional education is presented as a key and indispensable element in the integral development of students (Eusebio, 2021) and as a resource to face the challenges of a changing society (Mestres, 2022; Pérez-Escoda & Filella, 2019). Emotional education proposes the development of emotional competences, understood as a collection of knowledge, capacities, skills, and attitudes necessary to understand, express, and regulate appropriately emotional phenomena (Bisquerra & Pérez-Escoda, 2007; Pérez-Escoda & Filella, 2019).

Based on scientific evidence, intervention to improve emotional competences is valuable and useful for adequate social adjustment of students (Cejudo, 2015; Peña-Casares & Aguaded-Ramírez, 2019). Furthermore, developing these competences favours problem solving, learning processes, and interpersonal relationships; it improves prosocial behaviour, as well as student well-being and the school environment (Midgett et al., 2017); and it reduces disruptive behaviour (Álvarez-Justel, 2021; Amutio et al., 2020). Besides, it has a preventive nature that minimises vulnerability, fosters positive tendencies and has a beneficial impact on health and on improving coping strategies (Gómez-Baya et al., 2017; Ros et al., 2018). It is also an important aspect of responsible citizenship (Pérez-Escoda & López-Cassà, 2022).

In this sense, the current educational legislation in Spain (the LOMLOE, the Organic Education Act 3/2020 Amending the Education Act 2/2006) considers emotional competences to be key to a full and comprehensive education. In secondary education, tutorial action and guidance are fundamental aspects of the formative process and of the integral development of the students (Álvarez-Justel & Álvarez-González, 2022; Ferrer-Esteban, 2023). So, according to Álvarez-González (2017), when speaking of an integral education, it is also necessary to propose tutoring and guidance based on the integrated model of tutoring and guidance, which includes, among its objectives, promoting personal and social development (self-knowledge and knowledge of others, autonomy, self-esteem, emotional awareness and regulation, social competence, life competences, etc.). Objectives that coincide with the development of emotional competences.

There has recently been a significant increase in programmes focussing on the development of emotional competences and, therefore, based on emotional education (Sánchez et al., 2018). Álvarez-Justel and Álvarez-González (2015) and Ferrer-Esteban (2023) provide a list of educational programmes that develop different emotional competences in secondary education.

Numerous experiences of the implementation of this type of programmes in secondary education have proven to be effective for students, with significant results for improving educational quality and human development (Rodríguez-Ledo et al., 2018). In the meta-analysis of the impact of programmes for young people, Durlak et al. (2010) discover significant improvements in adaptive

attitudes, positive social behaviour, reduction of behavioural problems, reduced emotional distress and better academic performance; they even contribute to suicide prevention. These programmes algo help to mitigate impact of circumstances that are common in adolescence, such as behavioural and relational problems, bullying, addictive substance use, antisocial behaviour patterns, and decreasing self-esteem (Keefer et al., 2018). Consequently, experts agree on the need to implement educational programmes that develop emotional competences to favour students' health and well-being, their integral development, and their social adjustment.

As has been shown, emotional competences are part of education and human development, especially for adolescents. Designing and implementing effective interventions involves knowing their recipients' starting level of emotional development. A rigorous bibliographic review identified a lack of instruments for these ages; in particular, a lack of instruments with a solid theoretical foundation. Therefore, we proposed creating and validating the emotional development questionnaire for secondary school students (CDE-SEC). The aim was to make available a useful and valid tool that permit the detection of young people's emotional needs and enable the design and/or adaptation of educational interventions in the different years of secondary education. It is a matter of providing an instrument that offers valuable information that makes it possible to guide decisions regarding the most appropriate content and strategies for interventions in the field of education.

1.1. The CDE-SEC instrument

The proposed emotional development questionnaire is based on the pentagonal emotional education model, which defines emotional competence as the set of knowledges, capacities, skills, and attitudes necessary to be aware of, comprehend, express, and appropriately regulate emotional phenomena (Bisquerra & Pérez-Escoda, 2007; Pérez-Escoda & Filella, 2019).

Preparation of this instrument started in 2008 with the creation of the CEE (emotional education questionnaire) (Álvarez, 2001). Since then, a rigorous evaluation process has been followed to offer a valid and reliable instrument that enables to know the level of emotional development of students in secondary education in accordance with the pentagonal model of emotional education (Bisquerra & Pérez-Escoda, 2007). To do so, we designed a new version with a large number of items that was subjected to expert validation. Various pilot studies were performed that made it possible to develop the initial statistical analyses to determine the technical properties of the instrument and adapt its wording to the respondents (Pérez-Escoda, 2016).

In this article, we present the study of the psychometric properties of the emotional development questionnaire for secondary school students (CDE-SEC). The instrument comprises thirty-three items answered on a Likert-type scale, with eleven answer options ranging from 0 ("Disagree fully") to 10 ("Agree fully"). After defining the structure of the scale, it was then computerised to enable online response.

2. Methodology

2.1. Procedures

The students answered the computer-based questionnaires in class with the teacher present. Student participation was voluntary and the schools had the informed consent of the students' families. Owing to limitations of time, availability of the instruments, and permission from the centres, the full set of questionnaires was not administered to all of the students. Consequently, partial samples were used for some of the analyses presented in this study. The size of the sample used for each analysis is shown in section 2.2.

2.2. Participants

To study the descriptive data, structure, composition, and reliability of the CDE-SEC, we used a sample of 1296 students from years one to four of compulsory secondary education (ESO) from different public, private, and state-funded private centres in Spain. The participants were aged between eleven and seventeen ($M = 13.92$, $SD = 1.429$). The distribution by age was as follows: 12 aged eleven, 262 aged twelve, 260 aged thirteen, 256 aged fourteen, 318 aged fifteen, 172 aged sixteen, and 16 aged seventeen. The distribution by school year was as follows: 346 from the first year, 302 from the second year, 253 from the third year, and 395 from the fourth year. 50.2% of the sample were female, and 49.8%, male.

All 1296 participants answered the CDE-SEC. However, only 297 of the them answered the Trait Emotional Intelligence Questionnaire (TEIQue) (Petrides, 2009). This questionnaire was adminis-

tered to study the convergent validity of the CDE-SEC. To observe the correlations of the scales from the questionnaire with the big-five personality traits (extroversion, agreeableness, openness, conscientiousness, and neuroticism), we examined a sample of 256 students who completed the Spanish version of the Big Five Questionnaire for children and adolescents (BFQ-NA).

We analysed the criterion validity of the CDE-SEC based on a sample of 629 students; specifically, we used the relationship between emotional competence and prosocial behaviour and adjustment difficulties according to the Strengths and Difficulties Questionnaire (SDQ). As a second verification of the criterion validity, a sample of 344 participants was used, who also completed the self-esteem scale of Rosenberg (Rosenberg, 1989). Finally, to investigate the incremental validity of the CDE-SEC, we examined a sample of 174 students who had answered the SDQ, BFQ-NA, and CDE-SEC questionnaires, and another of 164 students who fulfilled the self-esteem, BFQ-NA, and CDE-SEC questionnaires.

2.3. Ethical declaration

We followed the recommendations of the Bioethics Committee of the Universidad de Barcelona and the ethical norms established by the Helsinki Declaration of 1964, including all subsequent modifications.

The participating schools notified the families of the research. The parents or guardians of the students were asked to sign informed consent forms and return them to the administrators of the school. The research group signed a research agreement with each educational centre guaranteeing the confidentiality of the results.

2.4. Statistical analysis

For the study, a descriptive analysis of the emotional development questionnaire (CDE-SEC) was performed. We also carried out a factor analysis to identify the items with the highest loadings in the *emotional intelligence* factor. In addition, we analysed the reliability of the questionnaire, its convergent validity, the correlation with the personality dimensions, its criterion validity, and its incremental validity in relation to the big-five personality dimensions. We used IBM SPSS 27 for all the statistical analyses.

- Factor analysis: we forced one unrotated factor using principal components. Elements with loadings of less than .30 in this factor were eliminated.

- Reliability analysis: Cronbach's alpha was used to calculate the reliability of the scale.

- Convergent validity: as stated above, partial samples were used to test the convergent validity. We analysed the correlations between the CDE-SEC and another measure of emotional intelligence, the Trait Emotional Intelligence Questionnaire (TEIQue) and its four subscales.

- Correlations with the personality dimensions: the Pearson zero-order correlation between the CDE-SEC scale and the different personality dimensions measured by the BFQ-NA (Barbaranelli et al., 2003) was calculated.

- Criterion validity: to test the criterion validity of the CDE-SEC, three hierarchical regression analyses were performed. In the first, the dependent variable was the prosocial behaviour measurement with the fifth dimension of the SDQ questionnaire. In the second, the dependent variable was adjustment difficulties, again measured with the SDQ questionnaire. In the third, the dependent variable was self-esteem, measured with the RSES questionnaire. For the three analyses, age and gender were included in the first step and, subsequently, emotional competence.

- Incremental validity: to investigate the incremental validity of the CDE-SEC compared to other measurements whose capacity to predict prosocial behaviour and adjustment difficulties is already established, a hierarchical regression analysis was performed. In the first step, the demographic variables of age and gender were introduced into the regression equation. The second step included the five personality dimensions measured by the BFQ (Barbaranelli et al., 2003): neuroticism, openness, extroversion, conscientiousness, and agreeableness. Emotional competence was added in a third step.

2.5. Measurement instruments

- Emotional competence: the CDE-SEC instrument was used, and its validation is presented in the present study. This evaluates the level of emotional competence of secondary students aged between twelve and eighteen.

- Emotional intelligence: the Trait Emotional Intelligence Questionnaire - Adolescent Short Form (TEIQue-ASF) (Petrides et al., 2006) was applied. This is an adapted version of the short form for adults of the TEIQue developed by Petrides (2009). It was translated into Spanish and adapted by Ferrándiz et al. (2012). According to its authors, this questionnaire has an overall alpha coefficient of α = .83. It consists of thirty items with a seven-point Likert-type scale, ranging from 1 ("Very rarely") to 7 ("Very often"). This questionnaire is divided into four scales: emotionality, self-control, sociability, and well-being. It also provides an overall EI quotient considering all of the scales from the questionnaire. The test was applied to 259 of the participants. In this study, the reliability coefficient of Cronbach was α = .81.

- Personality: the adapted Spanish version of the BFQ-NA (Big Five Questionnaire - Children and Adolescents) (Barbaranelli et al., 2003), which is used to measure the big five personality model in adolescents, was administered. This model was first proposed by Fiske (1949) and then confirmed by McCrae and Costa (1987). It proposes that personality is structured around five central factors: extroversion, agreeableness, openness, conscientiousness, and neuroticism (McCrae & Costa, 1987). The Spanish version of the BFQ-NA was developed by Del Barrio et al., (2006). This instrument displayed adequate psychometric characteristics, with reliabilities (using Cronbach's alpha) of between .78 and .88; and test-retest coefficients between .62 and .84. Furthermore, the confirmatory and exploratory factor analyses displayed a structure with five factors corresponding to the big five (Soto et al., 2011). This test comprises sixty-five items to be answered on a five-point Likert-type scale, with values from one point ("Completely false for me") up to five points ("Completely true to me"). In our study, 259 participants completed this test. The Cronbach's alpha for the scale as a whole was α = .88, while the reliability of the subscales was as follows: conscientiousness α = .84; agreeableness α = .80; neuroticism α = .84; extroversion α = .81; openness α = .86.

- Adjustment difficulties and prosocial behaviour: we administered the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). This is a self-report instrument extensively used to evaluate different mental, emotional, and behavioural problems in children and adolescents. The SDQ comprises twenty-five items, distributed across five subscales (of five items each): emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behaviour. The first four subscales form a total *difficulties* score, while the fifth subscale provides a measure of *prosocial behaviour*. The test has a Likert answer format with three answer options: 1 ("Not true"), 2 ("Somewhat true") and 3 ("Certainly true"). In this study, we used the Spanish version developed by García et al. (2000), which is available online (http://www.sdqinfo.com). The test was administered to 436 of the study participants. The reliability coefficients of the subscales were very similar to those reported by Kersten et al. (2015): emotional symptoms α = .65; conduct problems α = .55; hyperactivity α = .66; peer problems α = .44; prosocial behaviour α = .59; total difficulties score α = .59.

- Self-esteem: the Rosenberg Self-Esteem Scale (RSES) was applied (Rosenberg, 1989). This is a short test with good psychometric properties. It evaluates self-esteem, understood as an overall evaluation of a person's positive or negative view of his or herself. In this study, we used the translation by Martín-Albo et al. (2007). The scale comprises ten items with a four-point Likert-type answer format, from strongly disagree to strongly agree. Five of the items provide positive self-esteem scores, while the other five items are coded inversely. This test was administered to 344 students from the sample. The Cronbach's alpha for the scale in our study was .71.

3. Results

3.1. Factor analysis of the CDE-SEC, descriptors and reliability

The result of the Kaiser–Meyer–Olkin test of sampling adequacy was .88 and Bartlett's test of sphericity was significant (p <.000), indicating that all of the variables were very suitable for factor analysis, and so we then performed a confirmatory factor analysis. We eliminated all items with factor loadings below .30. In total, we eliminated thirteen items, leaving a 33-item scale. The explained variance was 15.8% (See Table 1).

The values of the resulting scale with thirty-three elements ranged from a minimum of 1.22 to a maximum of 9.85, with a mean of 7. The standard deviation was 1.26. The complete CDE-SEC scale displayed

TABLE 1. Factor analysis of the CDE-SEC with one unrotated factor.

Component matrix

Item 20	.705	Item 22	-.454	Item 30	.337	Item 38	-.240
Item 34	.684	Item 24	.453	Item 39	.333	Item 8	-.240
Item 27	-.620	Item 36	-.436	Item 32	-.331	Item 42	-.230
Item 45	.596	Item 46	.422	Item 37	.326	Item 14	-.223
Item 3	.575	Item 10	.392	Item 17	-.321	Item 31	-.197
Item 2	.572	Item 9	-.376	Item 11	.321	Item 4	-.197
Item 7	.560	Item 18	.370	Item 13	-.307	Item 44	-.174
Item 25	-.532	Item 12	.368	Item 29	-.304	Item 21	-.147
Item 6	.517	Item 43	.360	Item 16	.301	Item 40	.103
Item 15	.513	Item 26	-.359	Item 33	-.275	Item 41	-.022
Item 1	.479	Item 5	.356	Item 35	-.265		
Item 28	.455	Item 23	-.339	Item 19	-.262		

Note: $n = 1296$

a reliability measured using Cronbach's α of .87 and a McDonald's omega reliability coefficient of ω = .96.

3.2. Convergent validity

The correlation between the total emotional competence coefficient calculated for the CDE-SEC and the total coefficient of the TEIQue (Petrides, 2009) was $r = .68$. The correlations with the TEIQue subscales of well-being, self-control, emotionality, and sociability were .63, .53, .41, and .24 respectively ($p < .001$ for all of them).

3.3. Correlations with the personality dimensions

The correlations between the CDE-SEC and the five personality traits measured with the BQF-NA (Del Barrio et al., 2006) were as follows: .32 (conscientiousness), .38 (openness), .29 (extroversion), .37 (agreeableness), and -.39 (neuroticism), with $p < .001$ for all of them.

3.4. Criterion validity

The results show that, beyond the demographic variables of age and gender, emotional competence predicted prosocial behaviour ($β = .26, p < .000$). It also predicted adolescents' difficulties of adaptation ($β = -.56, p < .001$) and self-esteem ($β = .66, p < .001$). The total variance explained for prosocial behaviour was 5% when only demographic variables were included and 11% when emotional competence was included. In relation to adjustment difficulties, demographic variables explained 0% of the variance, while adding emotional intelligence increased the explained variance to 31%. For self-esteem, the explained variance went from 4% to 61% (see Tables 2, 3, and 4).

3.5. Incremental validity

We analysed the results obtained from the 173 participants who responded to the three questionnaires that measured prosocial behaviour, personality dimensions, and emotional competence.

TABLE 2. Regression analysis. Prediction of prosocial behaviour based on emotional competence measured with the CDE-SEC.

Predictors	Non-standardised coefficients		Standardised coefficients	t	Sig.		
	B	Standard error	Beta			R^2	ΔR^2
Step 1. Demographic variables						.048	.048
(Constant)	10.497	.820		12.806	.000		
Age	-.116	.056	-.081	-2060	.040		
Gender	-716	.133	-.211	-5393	.000		
Step 2. Emotional competence						.113	.065
(Constant)	3.167	892		8.654	.000		
Age	.009	.055	-.054	-1432	.153		
Gender	.115	.129	-.234	-6.154	.000		
Emotional competence (CDE-SEC)	.002	.002	.257	6.757	.000		

Note: $n = 629$; dependent variable: prosocial behaviour.

TABLE 3. Regression analysis. Prediction of adjustment difficulties based on emotional competence measured with the CDE-SEC.

Predictors	Non-standardised coefficients		Standardised coefficients	t	Sig.		
	B	Standard error	Beta			R^2	Adj. R^2
Step 1. Demographic variables						.003	.003
(Constant)	13.185	2.673		4.932	.000		
Age	.115	.184	.025	.622	.534		
Gender	-.512	.433	-.047	-1.181	.238		
Step 2. Emotional competence						.316	.313
(Constant)	32.615	2.497		13.061	.000		
Age	-.150	.154	-.033	-.977	.329		
Gender	.023	.361	.002	.065	.948		
Emotional competence (CDE-SEC)	-.078	.005	-.565	-16.897	.000		

Note: n = 629; dependent variable: adjustment difficulties.

TABLE 4. Regression analysis. Prediction of self-esteem based on emotional competence measured with the CDE-SEC.

Predictors	Non-standardised coefficients		Standardised coefficients	t	Sig.		
	B	Standard error	Beta			R^2	ΔR^2
Step 1. Demographic variables						.043	.043
(Constant)	25.422	4.245		5.989	.000		
Age	-.172	.288	-.032	-.599	.550		
Gender	2.284	.602	.202	3.794	.000		
Step 2. Emotional competence						.466	.423
(Constant)	7.170	3.366		2.130	.034		
Age	-.121	.215	-.022	-.564	.573		
Gender	1.398	.454	.124	3.082	.002		
Emotional competence (CDE-SEC)	.089	.005	.655	16.397	.000		

Note: n = 344; dependent variable: self-esteem.

- Prosocial behaviour. In the first step, we found that age did not predict prosocial behaviour, but gender did, with female students being more inclined to behave prosocially. In the second step, we obtained that only agreeableness predicted prosocial behaviour. In the third step of the analysis, when emotional competence was measured with CDE-SEC, an additional predictive power of 3% was found.

- Personality dimensions. In the first step, neither gender nor age predicted adjustment difficulties. In the second step, we found that openness was the only one of the personality dimensions to predict prosocial behaviour. In step three, the emotional competence measured with the CDE-SEC contributed an additional predictive power of 34% (see Tables 4, 5, and 6).

- Emotional competence. Neither age nor gender predicted self-esteem. Instead, Instead, three personality dimensions did: conscientiousness, openness and extroversion. As for emotional competence measured with the CDE-SEC, this provided an additional capacity of explanation of 29% (see Table 7).

4. Discussion

The aim of this study is to present the psychometric properties of the CDE-SEC, an instrument that aims to

TABLE 5. Regression analysis. Prediction of prosocial behaviour based on personality and emotional competence measured with the CDE-SEC.

Predictors	Non-standardised coefficients		Standardised coefficients	t	Sig.		
	B	Standard error	Beta			R^2	ΔR^2
Step 1. Demographic variables						.134	.134
(Constant)	12.242	1.592		7.689	.000		
Gender	-.205	.111	-.133	-1.855	.065		
Age	-1.218	.244	-.359	-4.997	.000		
Step 2. Personality						.252	.109
(Constant)	7.364	1.946		3.784	.000		
Gender	-.184	.106	-.119	-1.733	.085		
Age	-1.155	.245	-.340	-4.715	.000		
Conscientiousness	.012	.018	.071	.650	.517		
Openness	-.006	.031	-.020	-.204	.838		
Extroversion	.036	.025	.117	1.425	.156		
Agreeableness	.075	.033	.216	2.280	.024		
Neuroticism	-.010	.017	-.043	-.586	.558		
Step 3. Emotional competence						.281	.029
(Constant)	6.456	1946		3.318	.001		
Gender	-.183	.104	-.119	-1.757	.081		
Age	-1.188	.241	-.350	-4.925	.000		
Conscientiousness	.010	.018	.060	.563	.574		
Openness	-.018	.031	-.057	-.576	.565		
Extroversion	.033	.025	.107	1.335	.184		
Agreeableness	.064	.033	.183	1.943	.054		
Neuroticism	-.003	.017	-.012	-.164	.870		
Emotional competence (CDE-SEC)	.008	.003	.191	2.587	.011		

Note: n = 173; dependent variable: prosocial behaviour.

TABLE 6. Regression analysis. Prediction of adjustment difficulties based on personality and emotional competence measured with the CDE-SEC.

Predictors	Non-standardised coefficients		Standardised coefficients	t	Sig.		
	B	Standard error	Beta			R^2	ΔR^2
Step 1. Demographic variables						.010	.010
(Constant)	9.374	5.392		1.739	.084		
Gender	.400	.374	.082	1.070	.286		
Age	-.510	.825	-.047	-.618	.537		
Step 2. Personality						.214	.204
(Constant)	16.618	6.317		2.631	.009		
Gender	.260	.344	.053	.755	.451		
Age	.137	.795	.013	.173	.863		
Conscientiousness	-.010	.058	-.019	-.174	.862		
Openness	-.311	.102	-.310	-3.045	.003		
Extroversion	.075	.082	.077	.917	.361		
Agreeableness	-.121	.107	-.109	-1.128	.261		
Neuroticism	.139	.054	.190	2.557	.011		

Step 3. Emotional competence						.556	.342
(Constant)	26.466	4.842		5.466	.000		
Gender	.253	.259	.052	.975	.331		
Age	.494	.600	.046	.824	.411		
Conscientiousness	.008	.044	.016	.192	.848		
Openness	-.186	.078	-.185	-2.384	.018		
Extroversion	.106	.062	.108	1.710	.089		
Agreeableness	.005	.082	.004	.061	.951		
Neuroticism	.062	.042	.085	1.500	.136		
Emotional competence (CDE-SEC)	-.088	.008	-.655	-11.272	.000		

Note: n = 173; dependent variable: adjustment difficulties.

TABLE 7. Regression analysis. Prediction of self-esteem based on personality and emotional competence measured with the CDE-SEC.

Predictors	Non-standardised coefficients		Standardised coefficients	t	Sig.		
	B	Standard error	Beta			R^2	ΔR^2
Step 1. Demographic variables						.050	.050
(Constant)	28.602	5.762		4.964	.000		
Gender	-.399	.402	-.077	-.994	.322		
Age	2.315	.889	.201	2.604	.010		
Step 2. Personality						.258	.208
(Constant)	22.205	6.747		3.291	.001		
Gender	-.343	.365	-.066	-.940	.349		
Age	1.138	.846	.099	1.344	.181		
Conscientiousness	-.097	.063	-.173	-1.534	.127		
Openness	.426	.108	.392	3.942	.000		
Extroversion	.165	.087	.160	1.888	.061		
Agreeableness	.033	.120	.028	.272	.786		
Neuroticism	-.164	.058	-.209	-2.835	.005		
Step 3. Emotional competence						.537	.279
(Constant)	12.545	5.435		2.308	.022		
Gender	-.364	.289	-.070	-1.259	.210		
Age	.780	.671	.068	1.162	.247		
Conscientiousness	-.133	.050	-.236	-2.635	.009		
Openness	.298	.087	.274	3.444	.001		
Extroversion	.137	.069	.133	1.982	.049		
Agreeableness	-.055	.095	-.047	-.582	.561		
Neuroticism	-.080	.047	-.102	-1.716	.088		
Emotional competence (CDE-SEC)	.086	.009	.600	9.710	.000		

Note: n = 164; dependent variable: self-esteem.

measure the emotional competence of young people in secondary education.

The results obtained show that the complete scale of 33 items of the CDE-SEC displays a high reliability of .87, measured using Cronbach's alpha.

For the study of convergent validity, the analysis of the correlation between the CDE-SEC and the TEIQue scale (Petrides, 2009) (a widely recognised measure of trait emotional intelligence) confirms that the two questionnaires correlate strongly and positively with each other. Furthermore, the CDE-SEC correlates significantly with all of the subscales of the TEIQue. These results support the hypothesis that the CDE-SEC evaluates emotional intelligence.

Similarly, the correlations between the CDE-SEC and the five personality traits measured with the BQF-NA (Del Barrio et al., 2006) are confirmed. The results show that CDE-SEC correlates negatively with neuroticism and positively with conscientiousness, openness, extroversion, and agreeableness. These results agree with other previous studies on trait emotional intelligence and emotional competence (Petrides et al., 2007; Parodi et al., 2017). As trait emotional intelligence is a transversal personality construct (Petrides et al., 2007), any instrument for measuring it must necessarily correlate substantially with the big five personality traits. The CDE-SEC fulfils this requirement.

The results of the incremental validity study show that emotional competence, measured by the CDE-SEC, predicts prosocial behaviour, young people's difficulties, and self-esteem. The higher their level of emotional competence, the more aware young people are of their own emotions and the needs of others, their relationships are more positive and satisfactory, and their prosocial behaviours increase (González-Yubero et al., 2021; Ruvalcaba-Romero et al., 2017). Similarly, emotional competences increase adolescents' self-esteem as they have resources to face difficulties, and so help with their psychological development (Anto & Jayan, 2016; Cheung et al., 2015). Therefore, emotional competence has a direct impact on the cognitive valuations of life and on adaptive behaviour, as well as with the individual's overall perception of his or her self; findings that have also been identified in other studies (Orozco, 2021; Petrides et al., 2007; Vargas et al., 2018).

In parallel, we observed that while age did not predict prosocial behaviour, gender did, with female stu-

dents being more inclined to behave prosocially. These results agree with others from previous works on gender differences (Hernández-Serrano, 2016; González & Moreno, 2022). We also found that only agreeableness predicted prosocial behaviour. Although this concept is little explored, some researchers have found a correlation between use of cooperative strategies to resolve conflicts and greater agreeableness (Garaigordobil et al., 2016). So, agreeableness probably has a positive influence on adolescents' disposition to resolve conflicts in a prosocial way. Emotional competence measured with the CDE-SEC demonstrated the capacity to predict prosocial behaviour above the different personality dimensions.

As for the prediction of adjustment difficulties, we did not find evidence for gender or for age. These results do not coincide with other studies such as those by Schoeps et al. (2021) and García & Gómez-Baya (2022), which indicate that girls display more emotional symptoms (anxiety, fear, and low mood), while boys display behavioural problems (aggressive or antisocial behaviour), giving rise to different ways of adapting to the physical and psychological changes of puberty.

The CDE-SEC also demonstrated its power of prediction above the different personality dimensions. In addition, we found that the openness personality trait negatively predicted adjustment difficulties. This finding is similar to other studies that find that some personality traits seem to be better at explaining or predicting the presence of certain problems in adolescence (Molina et al., 2014).

Furthermore, in our study, neither age nor gender predicted self-esteem. These results are not new in the literature. For example, Orth et al. (2018) also did not find significant differences in self-esteem by gender. Nonetheless, more recent studies indicate that boys tend to display higher levels of self-esteem than girls (Gardner & Lambert, 2019) and that these increase with age (Bleidorn et al., 2016).

In contrast, we found that, in relation to personality, the dimensions of conscientiousness, openness, and extroversion predicted self-esteem. These results are consistent with earlier studies that show that self-esteem is associated positively with openness, conscientiousness, extroversion, agreeableness, stability, and plasticity and negatively with neuroticism (Wagner & Gerstorf, 2017), so that the personality traits could affect self-esteem (Simkin et al., 2018). On the same

lines, emotional competence measured with the CDE-SEC was also found to provide unique information about self-esteem in addition to that provided by the personality dimensions.

This work's main strength is the formulation of an instrument that makes it possible to assess secondary-school students' level of emotional competence. In addition, the correlations between the results of the CDE-SEC and recognised measures of emotional intelligence, personality, self-esteem, adjustment difficulties and social behaviour, provide sufficient evidence for its usefulness and pertinence in guidance processes. For their part, the limitations of the work should be reviewed, such as the relatively low alpha reliability figures for the variables of *adjustment difficulties* and *prosocial behaviour*. These coefficients, however, are similar to those obtained in previous studies (see Di Riso et al., 2010). Moreover, this instrument's explained variance is not very high, limiting its capacity to inform about the variation in the data obtained. This drawback is partially offset by the fact that the instrument has demonstrated different types of validity and high reliability.

Given these limitations, there is a need for new studies to replicate the findings obtained from partial samples. Increasing the number of participants and including representation of different educational and social contexts would be useful. It would also be of value to carry out longitudinal studies to investigate the stability of the instrument over time. Additional studies can help to understand better the possible relationships between trait emotional intelligence, the big-five personality dimensions, and predictor variables of prosocial behaviour. It would also be of interest to study the relationship between emotional intelligence and other variables to predict clinical symptoms such as anxiety or depression and so develop prevention and intervention measures.

We believe that having instruments that evaluate emotional competences is a vital requirement for the design and development of educational programmes to promote emotional education. Emotional education has multiple benefits for young people as it plays an important role in preventing socioemotional problems and in personality development. As well as favouring psychological adjustment, emotional competence is key in moments in which important developmental changes can threaten adolescents' emotional development and well-being (Merino et al., 2023).

5. Conclusions

The CDE-SEC has proven to be an instrument that is solidly founded, valid, and reliable, with psychometric properties that are appropriate and adequate for measuring the emotional competence of students in secondary education. It also has the capacity to predict other important aspects of adolescents' development such as prosocial behaviour, adjustment difficulties, and self-esteem, and this predictive capacity is still maintained when personality is included in the regression equations. The applications of the CDE-SEC in the educational sphere contribute to the design and evaluation of educational guidance programmes, as well as to the personalised support for students in secondary education to promote social and emotional development.

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