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Research article

A scale for assessing nursing students' emotional competence: A validation study

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ABSTRACT

Background: The wellbeing of nursing professionals can be affected by emotionally challenging situations. Emotional intelligence (EI) is a recognised ability to manage stress, reduce work overload, and improve clinical relationships and decision making. Therefore, these emotional skills should be identified and developed throughout nursing education.
Objectives: The aim of this study is to create an observer-based emotional measurement tool to assess the level of emotional skills in university students.
Design: This is a cross-sectional study.
Setting: Complutense University in Madrid, Spain.
Participants: A total of 415 first- and fourth-year nursing students participated.
Methods: The Situational Emotional Response Scale (ERES) is a questionnaire for observing emotional competence in nursing practice. It underwent content validation using the Delphi method with 6 experts, resulting in a final version of 34 items. Focus group sessions were conducted with nursing students to ensure readability and appropriateness. Participants completed the ERES after viewing two clinical interaction videos, resulting in two sets of responses. Half of the responses were used for exploratory factor analysis (EFA) and half for confirmatory factor analysis (CFA).
Results: A total of 415 nursing students participated in the study. Four factors were extracted, explaining 55.1 % of the variance. The CFA was conducted with 208 students, yielding a total of 4 factors and a variance of 55.1 %. The internal consistency of the scale was high, with Cronbach's α and McDonald's ω coefficients of 0.947 and 0.949, respectively. Test-retest reliability showed a moderate intra-class correlation coefficient of 0.604 (95 % CI: 0.503–0.688) over a 15-day interval.
Conclusions: The ERES questionnaire is well grounded in the theoretical framework of emotional competence as manifested in clinical practice. The empirical evidence provided by this study suggests that the ERES is a reliable, valid, useful, and innovative instrument for measuring emotional competence in university students.

1. Introduction

Nursing professionals are subjected to emotionally draining situations that affect both their mental wellbeing and their performance when providing healthcare. Therefore, in recent years, there has been a growing interest in emotional intelligence (EI) and emotional skills in relation to nurses and how they can help them cope with work overload and psychological distress (Galanis et al., 2021).

EI was first described by Salovey and Mayer as 'the ability to monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions' (Mayer and Salovey, 1993).

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Several studies have reported significant benefits of improving emotional skills through EI improvement among nurses, such as reduction in perceived stress (Foster et al., 2018; Molero Jurado et al., 2019), improved stress management (Foster et al., 2017; Gribble et al., 2017; Kim and Shin, 2021; Molero Jurado et al., 2019; Štiglic et al., 2018; Yu et al., 2021), and decreased perception of work overload (Molero Jurado et al., 2019). The positive effects of emotional skills have also been observed in undergraduate nursing trainees. Students with higher levels of EI exhibited lower levels of anxiety and stress during their clinical placements (Foster et al., 2018). EI has also been found to be a protective factor against suicidal ideation among nursing students (Aradilla-Herrero et al., 2014). It has been hypothesised that the beneficial effects of EI may be due to its positive relationship with clinical communication, critical thinking, and problem-solving skills (Cleary et al., 2018). Emotional skills of nursing students and professionals would thus play a key role in establishing optimal clinical relationships with patients and colleagues, as they involve communicating and decision making, as well as recognising, understanding, and conveying emotions (Gribble et al., 2017).

Over the years, a variety of validated instruments have been used to measure EI. Ashkanasy and Daus (2005) place these instruments into three classes: 1) instruments measuring skills based on objective questions with correct or incorrect responses, similar to cognitive intelligence tests, such as the MSCEIT (Mayer et al., 2003); 2) self-report instruments measuring EI based on Mayer et al.'s theoretical model (Jordan et al., 2002; Schutte et al., 1998); 3) 'mixed' instruments measuring emotional competence that include a variety of emotion-related skills and capabilities (Boyatzis et al., 2000).

A systematic review on EI measurement instruments analysed 40 different scales and self-report questionnaires in several languages, none of which being specifically designed for nurses or for the development of emotional skills in nurses (Bru-Luna et al., 2021).

Therefore, the aim of this study was to develop an emotional measurement instrument for use by external observers to analyse the acquisition of EI skills and competence among university students, as well as to evaluate their performance.

2. Materials and methods

2.1. Study design, population, and sample

A cross-sectional study was carried out to conduct a construct validation of the ERES scale on a population of 500 first- and fourth-year undergraduate nursing students at a university in Madrid (Spain) during the second semester of 2022. The sample was composed of first-year and fourth-year students to reduce bias in clinical interpretation and to ensure that clinical judgments of interpretation were balanced.

To estimate the necessary sample size, we used the Epidat tool (v. 4.2.). For a standard deviation of 16 points, a 1.75 % level of accuracy, and a 95 % confidence level, the necessary sample size was estimated to be 196 participants. Conventional sampling was used.

2.2. The ERES: drafting the questionnaire

The Situational Emotional Response Scale (ERES) is intended to be used to observe the performance of a nursing student's emotional skills in a conflict situation with a patient. The ERES breaks these skills down into 34 items, describing behaviours that the observer can assess on a Likert scale, where 0 = Poor, 1 = Inadequate, 2 = Adequate, 3 = Good, and 4 = Optimal. The scale score ranges from 0 to 136 points.

Content validation was carried out through the Delphi method, with a panel of 6 experts. Expert eligibility criteria included having at least 6 years of teaching experience, clinical experience, experience in personnel selection, and expertise in EI. Brainstorming sessions were held, in which experts made proposals for items on EI attributes applied to nursing students, which were to be included in the final questionnaire. This step was carried out once a list of 80 items had been generated. The RAND-UCLA technique was used to select the final items of the scale (Fitch et al., 2001). Each panellist rated the questions on a scale from 1 to 9, with 1 meaning that the item was deemed inappropriate and 9 meaning that it was extremely appropriate. Experts also provided their views and thoughts on anything they felt was relevant to improving the list of proposed items. After the first round, the data were statistically analysed. The items were rated as 'appropriate', 'inappropriate', or 'doubtful' through the following steps:

1. The median score for each item was calculated.
2. The rating scale was divided into three ranges or regions (1–3, 4–6, 7–9).
3. For each item, 'agreement' was considered to be reached when at least 80 % of the panellists had scored the item within the three-point range of that item's median.
   a. There was "disagreement" when 33 % or more of the panellists rated the item in a different range (1–3 or 7–9).
4. An item was considered 'appropriate' when the median for that item was in the 7–9 region and there was no disagreement:
   a. An item was considered 'inappropriate' when the median for that item was in the 1–3 region and there was no disagreement.
   b. An item was considered 'doubtful' when the median for that item was in the 4–6 region or when there was disagreement.

This technique was carried out three times. After reaching agreement on the items to be included in the scale, the original list was reduced to 34 items. Subsequently, three focus group sessions made up of 10 nursing students were conducted to ensure and improve the readability, comprehensibility, and appropriateness of the construct. After this process, minor changes were added to the wording of several items, resulting in the final version of the questionnaire.

2.3. Procedure and assessment of reliability and construct validity

Once the participants had been informed of the study objectives and their consent to participate had been obtained, each student watched two videos showing a role-playing scenario in which a student attended to a simulated patient (a role that was played by a nursing professional following a specific script). The visualization of the videos was necessary to homogenize the observation phenomenon and reduce interpretation biases that affect the properties of the scale. The scripts for the videos were developed by 5 nursing professionals with teaching and research experience in nursing who were selected by the researchers. The actors and scriptwriters were different professionals. The videos were recorded at the facilities of the faculty.

Video 1, with a duration of 3:30 min, showed how a student trainee cared for a patient with fibromyalgia and managed her refusal to engage in physical exercise instead of massage-based therapy. Video 2, lasting 3:20 min, featured how a student trainee cared for a patient who had been waiting several hours for her urine samples to be collected, managing her negative emotional response and reassuring her. In the last minutes of each video, when the role-playing scenario was over, the researchers asked the student about the positive aspects of their own performance, about the aspects they thought they should improve, and what specific behaviours they would change in the future to improve their clinical practice.

Each student completed the ERES scale after watching each video, thus obtaining two records for each participant. Half of the records from videos 1 and 2 were used for exploratory factor analysis (EFA) and the other half for confirmatory factor analysis (CFA).

The questionnaires were completed digitally in an electronic data notebook, where basic sociodemographic variables, such as age and gender, were also collected.

Table 1
Description of the study sample for construct validation. ERES Scale.

Samples for construct validation	Number of students (n)	Number of ERES scale responses	Mean ERES score (SD) for Video 1	p*	Mean ERES score (SD) for Video 2	p*
Student sample 1 (EFA)	207	413	101.9 (14.9)	0.81	81.5 (24.2)	0.11
Student sample 2 (CFA)	208	414	102.1 (15.6)		85.2 (22.4)	
Total sample	415	817	102 (15.2)		83.4 (23.4)	

Test of homogeneity for samples 1 and 2 (video 1): F = 1.1; $p = 0.5$.
Test of homogeneity for samples 1 and 2 (video 2): F = 1.17; $p = 0.27$.
* Comparison of independent means (Student's *t*-test).

2.4. Ethical and legal aspects

The research study complied with the tenets of the Helsinki Declaration on Biomedical Research and was approved by the relevant Research Ethics Committee under the code 18/005-E. All study subjects agreed to participate voluntarily and signed the informed consent form.

2.5. Statistical analysis

The EFA was performed by applying the unweighted least squares method as the factor extraction method (oblique rotation method: oblimin with Kaiser normalisation). In addition, the Kaiser-Meyer-Olkin (KMO) test was conducted to estimate the measure of sampling adequacy and Bartlett's test of sphericity was used to test the null hypothesis of the correlation matrix and the scree plot of eigenvalues.

For the CFA, the weighted least squares estimator was calculated and the following criteria were applied: the goodness of fit of the model, a root mean square error of approximation (RMSEA) $\leq$0.08; a comparative fit index (CFI) $\geq$0.90; and a Tucker-Lewis index (TLI) $\geq$0.90 (Shumacker and Lomax, 2004).

Internal consistency or reliability was assessed using Cronbach's α and McDonald's ω coefficients, considering values above 0.70 as the reference criterion for both tests (Cronbach, 1951; Hayes and Coutts, 2020).

For temporal stability (test-retest or intra-observer reliability), the intraclass correlation coefficient and Bland-Altman plots were calculated.

Student's *t*-test was used to compare the means of independent data. SPSS (v. 22), AMOS-SPSS (v. 24), and EPIDAT (v. 24) were used to support statistical calculations and analyses. All statistical tests were conducted with a statistical significance threshold of alpha error < 5 %. Confidence intervals (CIs) were calculated with 95 % certainty.

3. Results

A total of 415 nursing degree students participated in the study, of whom 338 (81.4 %) were women, 74 (17.8 %) were men, and 3 were non-binary (0.72 %). The overall mean age was 22.6 years (SD = 7.98; 95 % CI = 21.6–23.6).

The total ERES score for video 1 was 102 (SD = 15.2) and 83.4 (SD = 23.4) for video 2. Table 1 shows the number of participants selected for each factor analysis in the construct validation. No significant differences were found between the means for the EFA and CFA samples for each video (video 1: $p = 0.81$; video 2: $p = 0.11$).

3.1. Exploratory factor analysis (EFA)

A total of 207 students participated in the EFA, generating 413 records while completing the ERES scale, 207 for video 1 and 206 for video 2.

The KMO statistic yielded a value of 0.962 and Bartlett's test of sphericity a value of $p < 0.001$. A total of four factors were extracted, which explained 55.1 % of the variance. Table 2 shows the pattern matrix with factor rotation.

After analysing this rotated solution of the EFA, the researchers introduced minor modifications, resulting in the version of the ERES questionnaire that was used for the CFA (Table 3).

The four factors extracted were as follows:

- **Factor 1. Communication and positive emotional influence.** Influencing others through good communication until cooperation is achieved, by creating a positive emotional environment in the interview that promotes the patient's wellbeing.
- **Factor 2. Awareness of others, empathy, and listening.** Exploring the individual's state of mind and trying to tune in to their feelings and thoughts so they can be properly understood.
- **Factor 3. Emotional self-regulation and outcome-oriented thinking.** Staying motivated in order to achieve objectives, keeping destructive emotions away from the performance of one's role, and preventing conflicting impulses from undermining work and personal performance.
- **Factor 4. Appropriate self-assessment and personal development.** Recognising one's own strengths and weaknesses to improve future performance.

3.2. Confirmatory factor analysis (CFA)

A total of 208 students participated in the CFA generating 414 ERES scale responses: 208 for video 1 and 206 for video 2 (Fig. 1). The goodness-of-fit results of the model resulting from the CFA show an adequate fit (Table 4).

Reliability of the ERES scale: internal consistency and temporal stability.

The internal consistency of the ERES scale for the 827 responses (n = 415 participants) was 0.947 (Cronbach's α) and 0.949 (McDonald's ω). Table 5 shows the reliability (internal consistency) results of the ERES scale for the samples used in the EFA and CFA, as well as for each of the latent dimensions (factors) identified in the questionnaire, with all values being higher than 0.70.

Finally, test-retest reliability (temporal stability) was analysed using a sample of 182 participants who completed the questionnaire at two different times, 15 days apart, yielding an intraclass correlation coefficient (ICC) of 0.604 (95 % CI = 0.503–0.688). Both the ICC and the Bland-Altman plots (Fig. 2) showed moderate reliability.

4. Discussion

Being emotionally intelligent is a crucial skill in the field of nursing. Nursing professionals, like other healthcare professionals, must interact with patients and their families daily and be able to manage both their own emotions and those of others in an effective manner. Therefore, emotion management skills need to be identified and developed among nursing students throughout their undergraduate training. To our knowledge, there is no instrument specifically developed to assess emotional skills in nursing students in specific situations with patients during clinical placements. Our study shows the reliability and validity of the ERES scale for measuring emotional skills among nursing students. The importance and novelty of this work involving nursing

Table 2
Rotated pattern matrix resulting from the EFA.

#	ITEM	1	2	3	4
1	[Greets and introduces him/herself to the patient with a welcoming look and a smile]	.071	.347	.457	.123
2	[Confirms the patient's name and calls him/her by name to build rapport]	.060	.719	.222	.120
3	[Conveys calmness and confidence, creating an atmosphere that favours communication with the patient]	.097	-.003	.695	.091
4	[Rectifies any mistakes made and continues with the task, avoiding getting stuck and trying to get the situation back on track]	-.048	-.064	.687	-.094
5	[Interacts with his/her patient while performing a task, making the situation as stress-free as possible]	.246	.065	.441	-.095
6	[Speaks warmly and avoids using sentences that suggest hesitation or insecurity]	-.061	-.144	.731	-.077
7	[Recognises when his/her patient fails to understand a message]	.009	.024	.658	-.061
8	[The time spent communicating with the patient is enough to ensure understanding but not tire the patient with too many explanations]	.120	-.030	.515	-.062
9	[Uses descriptive and clear language suited to his/her patient]	.074	-.131	.588	-.058
10	[Explains the task at hand to the patient, as well as the way in which they should participate, obtaining their consent and cooperation]	.043	-.056	.585	-.065
11	[When faced with setbacks and difficulties, remains calm and willing to overcome them]	.268	-.128	.368	-.194
12	[Takes criticism constructively]	.498	-.072	.120	-.244
13	[Can encourage the appropriate patient behaviours with positive reinforcement sentences]	.392	.095	.272	-.153

14	[Shows understanding of the feelings of his/her patients and, in the event of negative feelings, tries to ease them]	.834	.041	-.050	-.053
15	[Shows that he/she is listening to the patient through language (tone of voice, expressions of listening, etc.)]	.894	.030	.026	.127
16	[Shows that he/she is paying attention to the patient with gestures (facial expression, gaze, posture)]	.675	.038	.113	.102
17	[Asks questions to clarify their patient's ideas, showing understanding and acceptance]	.555	-.192	.200	.181
18	[Continues to listen actively even when the patient's message is negative]	.855	-.038	-.136	-.082
19	[Respects the hesitations and silences of the patient without completing their sentences, showing understanding]	.545	-.286	.028	-.018
20	[Demonstrates he/she is actively listening and has a constructive interest in the patient's needs]	.874	-.052	-.032	.014
21	[Can focus the conversation appropriately and without being abrupt when the conversation wanders off course]	.304	-.005	.235	-.318
22	[Is motivated to perform a given task and assists the patient at all times]	.473	-.083	.229	-.127
23	[Shows understanding of the patient's concerns without downplaying them]	.700	.004	.044	-.112
24	[Uses sentences that express genuine interest in what the patient has to say]	.556	-.033	.177	-.095
25	[Can respond to criticism without becoming defensive]	.523	-.042	-.002	-.328
26	[Shows with his/her behaviour that he/she understands what the other person is saying]	.662	-.096	.030	-.197
27	[Can resume the conversation despite interruptions and distractions]	.207	-.054	.248	-.367
28	[Addresses the patient's objections with workable solutions, suited to the situation and the patient's needs]	.109	.196	.342	-.369

29	[Can remain calm under pressure]	.117	-.134	.250	-.443
30	[Manages conflict by seeking solutions to the best of his/her ability, without arguing with the patient]	.247	-.027	.175	-.409
31	[Confirms the patient is happy with his/her performance before finishing]	.151	.100	.304	-.027
32	[Can assess the positive aspects of his/her performance]	.146	-.703	.294	.031
33	[Can assess the negative aspects of his/her performance]	.175	-.823	.229	.091
34	[Can analyse his/her performance in order to improve it for future situations]	.232	-.771	.169	.067

Note: Absolute factor loadings have been taken into consideration for item grouping in each of the factors.

Table 3
The ERES scale: a 4-factor structure after EFA and researchers' modifications.

#	ITEM	Factor loading
Factor 1. Communication and positive emotional influence. Influencing others through good communication until cooperation is achieved, by creating a positive emotional environment in the interview that promotes the patient's wellbeing.		
1	[Greets and introduces him/herself to the patient with a welcoming look and a smile]	0.457
2	[Confirms the patient's name and calls him/her by name to build rapport]	0.222
3	[Conveys calmness and confidence, creating an atmosphere that favours communication with the patient]	0.695
4	[Rectifies any mistakes made and continues with the task, avoiding getting stuck and trying to get the situation back on track]	0.687
5	[Interacts with his/her patient while performing a task, making the situation as stress-free as possible]	0.441
6	[Speaks warmly and avoids using sentences that suggest hesitation or insecurity]	0.731
7	[Recognises when his/her patient fails to understand a message]	0.658
8	[The time spent communicating with the patient is enough to ensure understanding but not tire the patient with too many explanations]	0.515
9	[Uses descriptive and clear language suited to his/her patient]	0.588
10	[Explains the task at hand to the patient, as well as the way in which they should participate, obtaining their consent and cooperation]	0.585
31	[Confirms the patient is happy with his/her performance before finishing]	0.304
Factor 2. Awareness of others, empathy, and listening. Exploring the individual's state of mind and trying to tune in to their feelings and thoughts so they can be properly understood.		
11	[When faced with setbacks and difficulties, remains calm and willing to overcome them]	0.268
12	[Takes criticism constructively]	0.498
13	[Can encourage the appropriate patient behaviours with positive reinforcement sentences]	0.392
14	[Shows understanding of the feelings of his/her patients and, in the event of negative feelings, tries to ease them]	0.834
15	[Shows that he/she is listening to the patient through language (tone of voice, expressions of listening, etc.)]	0.894
16	[Shows that he/she is paying attention to the patient with gestures (facial expression, gaze, posture)]	0.675
17	[Asks questions to clarify their patient's ideas, showing understanding and acceptance]	0.555
18	[Continues to listen actively even when the patient's message is negative]	0.855
19	[Respects the hesitations and silences of the patient without completing their sentences, showing understanding]	0.545
20	[Demonstrates he/she is actively listening and has a constructive interest in the patient's needs]	0.874
22	[Is motivated to perform a given task and assists the patient at all times]	0.473
23	[Shows understanding of the patient's concerns without downplaying them]	0.700
24	[Uses sentences that express genuine interest in what the patient has to say]	0.556
25	[Can respond to criticism without becoming defensive]	0.523
26	[Shows with his/her behaviour that he/she understands what the other person is saying]	0.662
Factor 3. Emotional self-regulation and outcome-oriented thinking. Staying motivated in order to achieve objectives, keeping destructive emotions away from the performance of one's role, and preventing conflicting impulses from undermining work and personal performance.		
21	[Can focus the conversation appropriately and without being abrupt when the conversation wanders off course]	−0.318
27	[Can resume the conversation despite interruptions and distractions]	−0.367
28	[Addresses the patient's objections with workable solutions, suited to the situation and the patient's needs]	−0.369
29	[Can remain calm under pressure]	−0.443
30	[Manages conflict by seeking solutions to the best of his/her ability, without arguing with the patient]	−0.409
Factor 4. Appropriate self-assessment and personal development. Recognising one's own strengths and weaknesses to improve future performance.		
32	[Can assess the positive aspects of his/her performance]	−0.703
33	[Can assess the negative aspects of his/her performance]	−0.823
34	[Can analyse his/her performance in order to improve it for future situations]	−0.771

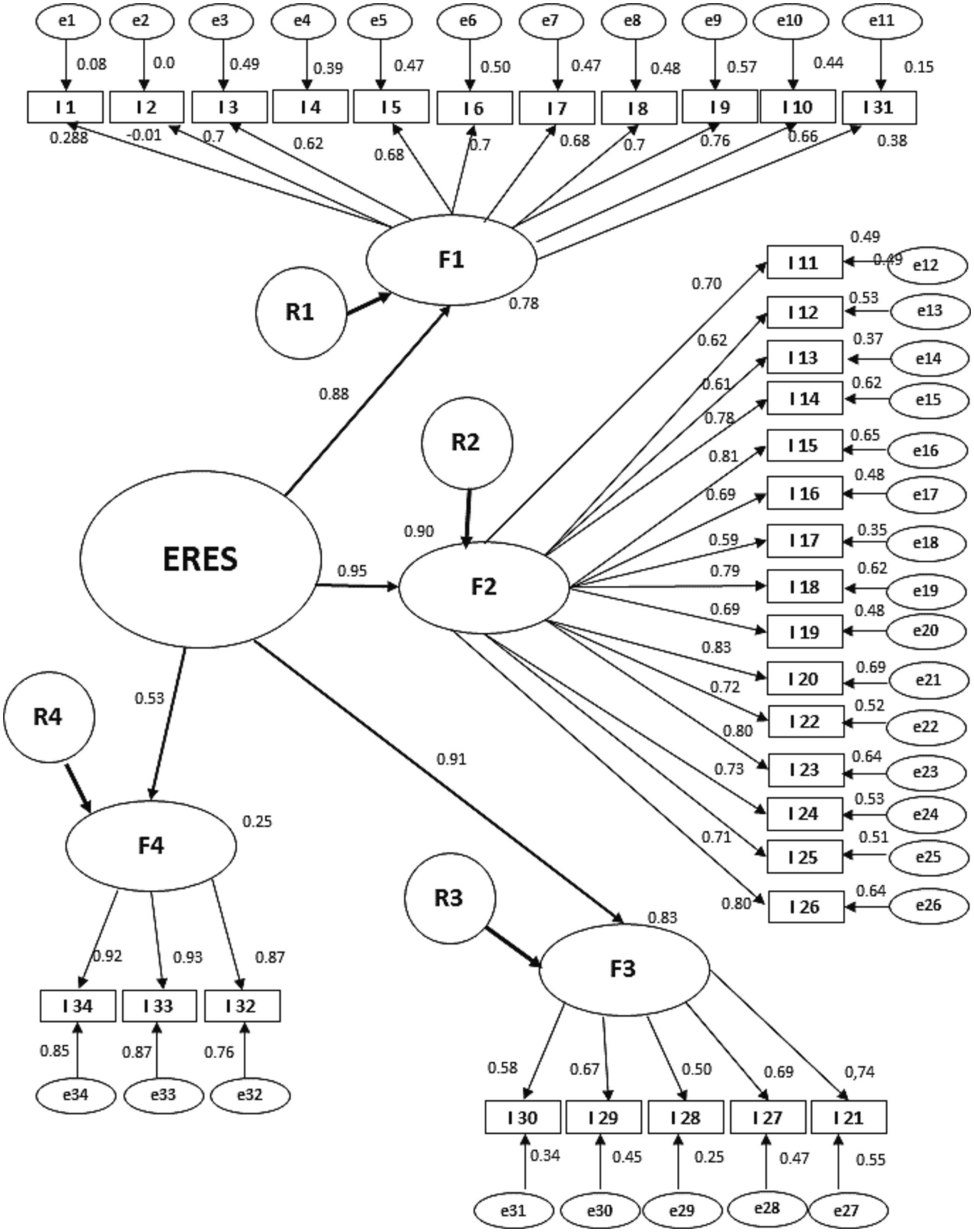

Fig. 1. Confirmatory factor analysis of the ERES questionnaire with four latent factors
Key to Fig. 1: The figure depicts the factors emerging from the confirmatory factor analysis of the ERES questionnaire, as well as the factor loadings for each of the items alongside their corresponding factor.

Table 4
CFA goodness-of-fit indicators.

	Absolute fit indices		Incremental fit indices			Parsimonious fit indices			
	CMIN	RMSEA	CFI	TLI-NNFI	NFI	P-RATIO	PCFI	PNFI	AIC
Model	P = 0	0.071	0.872	0.863	0.822	0.932	0.813	0.767	1818.4

CMIN: chi-squared; RMSEA: root mean square error of approximation; CFI: comparative fit index; TLI-NNFI: Tucker-Lewis index or non-normal fit index; NFI: normal fit index; P-RATIO: parsimony ratio; PCFI: the product of P-RATIO and CFI; PNFI: the product of PRATIO and NFI; AIC: Akaike Information Criterion.

Table 5
Internal reliability of the ERES scale.

Group	*N*	Cronbach's α	McDonald's ω
Sample 1 (EFA)	413	0.950	0.951
Sample 2 (CFA)	414	0.958	0.946
Total	827	0.947	0.949
Latent factors or dimensions			
Factor 1. Communication and positive emotional influence	413	0.822	0.821
Factor 2. Awareness of others, empathy, and listening	413	0.943	0.944
Factor 3. Emotional self-regulation and outcome-oriented thinking	413	0.817	0.818
Factor 4. Appropriate self-assessment and personal development	413	0.941	0.946

students lies in the fact that it shows the discriminating power of the instrument beyond the differences between the observers who use it. Consequently, the results could be applied to the entire nursing student population in general. Regarding construct validity, the internal reliability of the four factors was excellent. All scales showed high levels of reliability and strong correlations with the overall measure of emotional skills.

There are two types of measurement instruments for assessing socio-emotional skills, self-report measures and measures of skill (Pacheco and Fernández-berrocal, 2004). Self-report measures are based on one's subjective perception of one's own skills. By contrast, measures of skill assess the student's skills through problem-solving exercises, such as the Bar-On Emotional Quotient Inventory (EQ-i) (De Weerdt and Rossi, 2012) or the Emotional Competence Inventory (ECI) (Boyatzis et al., 2000). These questionnaires are not specifically designed to measure students' emotional skills within the context of their clinical work with patients.

In several studies, no associations have been observed between emotional skills and certain stress-related variables during clinical placements (Alconero-Camarero et al., 2018; Rodríguez-Leal et al., 2023; Wang et al., 2020). This could be due to the fact that the assessment instruments used to measure emotional skills were not specifically designed to do so within the context of clinical placements. In this sense, the ERES questionnaire could be used to assess students' emotional skills and evaluate their association with levels of negative emotions such as stress and anxiety during their clinical practice, and even to measure the impact of interventions aimed at improving students' emotional management in their clinical environment.

The development of EI in nursing requires learning based on clinical placements in different departments and subsequent reflective thinking, which favours the development of socio-emotional skills such as self-control, motivation, and relating to others (Alconero-Camarero et al., 2018). This reflective process has not been included in the questionnaires that assess emotional skills, but rather in the final items of the ERES scale.

The educational applications of the ERES are manifold, both in assessing the emotional development needs that students may present at the beginning of their studies, or to design and evaluate interventions aimed at improving their emotional skills. To this end, according to Keefer, there is a need for a properly validated instrument that provides information regarding the emotional development of university students and that contributes to the design and evaluation of intervention programmes (Keefer, 2014). The consequences of developing appropriate emotional skills can be very positive for trainees, enhancing other

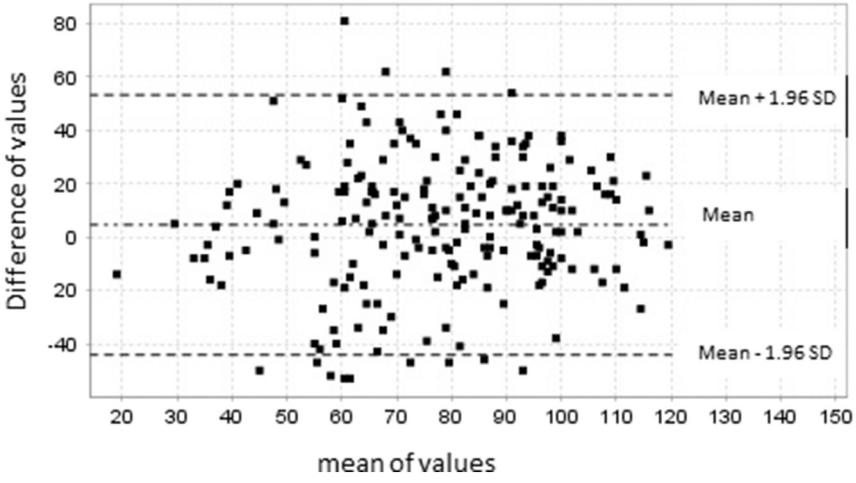

Fig. 2. Bland-Altman plot for temporal reliability of the ERES scale
Key to Fig. 2: The dots on the plot represent the mean differences obtained between both time measurements. Most of the points on the plot lie within the confidence interval, between the mean +/− 1 SD, suggesting adequate temporal reliability.

professional skills and reducing the impact of stress they experience during their clinical hospital training on their physiological responses and physical and emotional health (Aghajani Inche Kikanloo et al., 2019). In addition, improving emotional skills during their academic training could help them to better tackle conflict situations with academic mentors at their hospital placements, which, in many cases, cause discomfort among students and interfere with their learning process and performance of their duties, in some cases even leading to them dropping out (Brown et al., 2021; Fernández-Fernández et al., 2022; Garside et al., 2021).

The ERES scale could also be useful in evaluating students' emotional performance after clinical simulations, either by themselves or by observers. It would help students to identify both positive aspects of their emotional performance and areas for emotional improvement during debriefing sessions and discuss them with the simulation instructor (Kuszajewski, 2021).

4.1. Limitations

The limitations of this study include the fact that the study sample was mainly made up of women and that it was carried out in a single academic institution. It would therefore be advisable to replicate our results in future studies using more representative samples from other universities. Moreover, the convergent validity of the instrument could not be measured, as we were unable to identify an assessment instrument that could measure that factor as an observational scale. Temporal reliability was only moderate, which may be due to the upcoming exams at the time of the second assessment. This could have caused slight changes in the students' perception of their performance assessment. Therefore, it would be interesting to assess internal factors such as assessor stress or mood in order to determine their influence on the scores.

5. Conclusions

We can conclude that the ERES questionnaire is theoretically sound, as it is based on the emotional skills that are manifested in clinical practice. Additionally, this study provided the necessary empirical evidence to confirm that the ERES is a reliable, valid, useful, and novel instrument for measuring emotional skills in university students.

CRediT author statement

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Ethical approval

The study was approved by the Research Ethics Committee for the San Carlos Clinical Hospital under the code 18/005-E.

Declaration of competing interest

The authors declare that they have no competing interests.

Data availability

The data used for this study are available from the corresponding author upon reasonable request.

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