

Design, construction and validation of the emotional skills questionnaire for school children (QESSC) Pilot test

Diseño, construcción y validación del cuestionario de habilidades emocionales para escolares (CHENE) Prueba piloto

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Palabras clave:

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Abstract

Introduction: emotional skills are associated with feelings and/or perception of the elements and relationships of reality or imagination, which is expressed through physiological reactions such as changes in breathing, sweating, increased heart rate, and includes some behavioral reactions such as relaxation, well-being, anxiety, depression, aggressiveness or crying. **Objective:** design, development and validation of a questionnaire to assess emotional skills, such as: emotion recognition, behavioral and cognitive self-regulation of emotions, interpersonal relationships and interpersonal sensitivity; for schoolchildren attending official schools in the Iztacalco Delegation of Mexico City. **Material and methods:** this is a descriptive-cross-sectional research study, in the construction and validation of the questionnaire a test-validation design has been used, according to which the instrument has been applied, in the pilot study to 150 schoolchildren and has been submitted to expert judgment, to be applied to a sample of students representative of the population aged 7 to 12 years. The questionnaire (QESSC) consists of 40 items organized into four factors: 1. Recognition of emotions, 2. Behavioral and cognitive regulation of emotions, 3. Interpersonal relationships, and 4. interpersonal sensitivity.

Results: in order to validate the questionnaire, it was applied to a sample of 150 subjects. The sample had a mean and standard deviation of 9.1 ± 1.6 (SD). Construct, criterion, appearance and content validation was performed. Cronbach's alpha of the total scale was 0.82 with a variance explanation of 72.5%. Factor 1: recognition of emotions (10 items, $\alpha = 0.82$), factor 2: behavioral and cognitive self-regulation of emotions (10 items, $\alpha = 0.81$), factor 3: interpersonal relationships (10 items, $\alpha = 0.85$), factor 4: interpersonal sensitivity (10 items, $\alpha = 0.87$). The Mesquite questionnaire was used as a gold standard and correlations were observed between emotion recognition and moderate emotional intelligence (7-15) ($r = 0.753$) $p < 0.01$) behavioral and cognitive self-regulation of emotions and high emotional intelligence (15-25) ($r = 0.751$) ($p < 0.01$). Interpersonal sensitivity and moderate interpersonal intelligence (7-15) ($r = 0.791$) $p < 0.01$) test-retest correlations on the total scale items ranged from $r = 0.76$ to $r = 0.82$. **Conclusion:** CHENE is a questionnaire that allows the assessment of emotional skills in school-age children. The validity and reliability of the CHENE were established. The goodness of this questionnaire is supported by the empirical data achieved both in reliability and validity. According to the statistical analysis, it is observed that in general the CHENE questionnaire has a good correlation between the different fields proposed. In relation to the Mesquite questionnaire (gold standard) it presents a positive and significant correlation.

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Resumen

Introducción: las habilidades emocionales están asociadas a los sentimientos y/o a la percepción de los elementos y relaciones de la realidad o la imaginación, que se expresa a través de reacciones fisiológicas como cambios en la respiración, sudoración, aumento del ritmo cardíaco, e incluye algunas reacciones conductuales como la relajación, el bienestar, la ansiedad, la depresión, la agresividad o el llanto.

Objetivo: diseño, desarrollo y validación de un cuestionario, para evaluar las habilidades emocionales, como son: reconocimiento de las emociones, autorregulación conductual y cognitiva de las emociones, relaciones interpersonales y sensibilidad interpersonal; para escolares que asisten a escuelas oficiales de la Delegación Iztacalco de la Ciudad de México.

Material y métodos: se trata de una investigación descriptiva-transversal, en la construcción y validación del cuestionario se ha utilizado un diseño de validación de pruebas, de acuerdo con el cual el instrumento se ha aplicado, en el estudio piloto a 150 escolares y se ha sometido a juicio de expertos, para ser aplicado a una muestra de estudiantes representativos de la población de siete a 12 años. El cuestionario denominado (CHENE) consta de 40 ítems organizados en cuatro factores: 1. Reconocimiento de las emociones, 2. Regulación conductual y cognitiva de las emociones, 3. Relaciones interpersonales y 4. Sensibilidad interpersonal.

Resultados: para realizar la validación del cuestionario, se aplicó a una muestra de 150 sujetos. La muestra con una media y desviación estándar de 9.1 ± 1.6 (DE). Se realizó la validación de constructo, criterio, apariencia y contenido. El alfa de Cronbach de la escala total fue de 0.82 con una explicación de la varianza del 72.5%. Factor 1: reconocimiento de las emociones (10 ítems, $\alpha = 0.82$); factor 2: autorregulación conductual y cognitiva de las emociones (10 ítems, $\alpha = 0.81$); factor 3: relaciones interpersonales (10 ítems, $\alpha = 0.85$); factor 4: sensibilidad interpersonal (10 ítems, $\alpha = 0.87$). Se utilizó el cuestionario Mesquite como estándar de oro y se observaron correlaciones entre reconocimiento de las emociones e inteligencia emocional moderada (7-15) ($r = 0.753$) ($p < 0.01$), autorregulación conductual y cognitiva de las emociones e inteligencia emocional elevada (15-25) ($r = 0.751$) ($p < 0.01$). Sensibilidad interpersonal e inteligencia interpersonal moderada (7-15) ($r = 0.791$) ($p < 0.01$). Las correlaciones test-retest en los ítems de la escala total oscilaron entre $r = 0.76$ y $r = 0.82$.

Conclusión: CHENE es un cuestionario que permite evaluar las habilidades emocionales a niños en edad escolar. Se estableció la validez y confiabilidad del CHENE. Las bondades de este cuestionario se sustentan por los datos empíricos alcanzados tanto en la confiabilidad como en la validez. De acuerdo con el análisis estadístico, se observa que en general el cuestionario CHENE tiene una buena correlación entre los diferentes campos propuestos. En relación con el cuestionario Mesquite (estándar de oro) presenta una correlación positiva y significativa.

INTRODUCTION

The study of emotional skills has focused on theoretical understanding, development and assessment. However, there are few instruments that assess this construct in schoolchildren.¹

Emotion is defined as the feeling or perception of the elements and relationships of reality or imagination, which is expressed through physiological reactions such as changes in breathing, sweating, increased heart rate, and includes some behavioral reactions such as relaxation, well-being, anxiety, depression, aggressiveness or crying.²

Emotional intelligence (EI) is a personal capacity with increasing interest and relevance due to its implications in psychological functioning, emotional well-being and social relationships. The theoretical construct of EI integrates reason and emotion by providing a global vision of intelligence according to its purposes and constituting itself as the complementary

element of cognitive intelligence, which leads to adaptation and effective functioning for the achievement of goals. Therefore, a person's intelligence or intelligent behavior is not only the result of cognitive skills and abilities, but there are other non-cognitive elements that play a fundamental role.³

Emotional Intelligence (EI) is defined as «the ability to recognize one's own and others' feelings, to be motivated to correctly manage emotions in ourselves and in our human relationships».⁴

On the other hand, the implications that EI has for well-being, quality of life, health, and positive aspects of life have been demonstrated, and it is seen as a fundamental element in prevention.⁵

According to the literature, it is mentioned that emotional intelligence implies the ability to self-control emotions and feelings, to discriminate them to guide actions and thoughts.^{6,7}

The developments of EI, a subject involved in the ability to perceive, express and value emotions,

depend on the combined interaction of cognitive and socioemotional developments. As for the expression of emotions, the skills implicit in the recognition of emotions go hand in hand with that of facial expressions. Thus, from birth, infants have the ability to imitate the emotional expressions of the adults around them.⁸ Specific interest in EI during childhood and youth has increased due to the evidence that, at an early age, it influences academic performance, social interaction, academic and social adaptation, and levels of physical and verbal aggression.⁹

The different concepts of emotional intelligence derive from other studies such as Multiple Intelligences, it is said that there are eight different intelligences, and that each human being excels in one type of intelligence. These eight intelligences are grouped in two generalities, the interpersonal intelligence that allows working with oneself and understanding oneself better in order to relate to others and the intrapersonal intelligence, which refers to self-understanding, access to one's own emotional life, to a series of feelings, to the ability to discriminate between these emotions, to be able to name them and access them to guide one's own behavior.¹⁰

Likewise, in the literature we can find as support for emotions the description of emotional processes, which are cognitive, regulated and in a certain way learned processes that are subject to a series of neuroanatomical structures and their neurofunctional activity. The neuroanatomical structures described are the limbic system, the cingulate cortex and the neocortex. The limbic system is a set of subcortical structures, mainly composed of the hippocampus, hypothalamus, thalamus and amygdala. The amygdala is involved in the consolidation and retrieval of memories in close relation with the hippocampus, as well as in the recognition of facial expressions giving them an emotional meaning and participates in the conditioning process regarding fearful emotions. Through a complex network of neurons it connects with cortical and subcortical structures, for learning processes, this connection refers that through the thalamic pathway and the neocortical pathway it connects with neocortex, thalamus, among others such as the cingulate cortex, these structures are involved in the processing and recognition of emotions, which leads to behavioral changes in the subject. Currently, the function of the neocortex for the regulation and conditioning of emotions is known.¹¹

Emotions are present throughout the development of the human being, and the structures of the cerebral

cortex in turn make the perfect framework for the development of these, in such a way the orbitofrontal and ventromedial areas are described; the function of the orbitofrontal and ventromedial structures is to intervene in the conditioning process through external stimuli, reward and reinforcement of the stimulus, pleasure and displeasure and in this physiological activity the hypothalamus is involved. Another structure, such as the cingulate gyrus, which is closely related to memories through odor association, is involved in this physiological activity.¹²

Smells, related to pleasure and displeasure, also generate a series of memories related to emotions.

As for the basic skills of emotional intelligence, there are four skills, these skills are: emotional perception, emotional facilitation or assimilation, emotional understanding and emotional regulation, which are placed hierarchically, so that emotional perception is the most basic level and emotional regulation the most complex, these skills will influence personal and interpersonal management.

a) Emotional perception: it is the ability of human beings to detect and recognize their own emotions and those of those around them. b) Emotional facilitation or assimilation: It is the ability to keep emotions in mind when we reason or solve problems. c) Emotional understanding: it consists of the ability to separate emotions and group them in different order. It is also based on knowing how to recognize the reasons that originate that emotion, as well as the effects produced by our actions. d) Emotional regulation: it consists of being accessible to both positive and negative emotions, meditating on them, in order to be able to discard or approve them. Emotional intelligence skills are linked and help emotional and intellectual development, since the person, by stimulating these four skills, can consciously identify his own emotions and those of others. By generating new emotions, it helps other cognitive processes for conflict resolution. He can also reflect on the feelings that occur in him and understand the difficulty of emotional changes.¹³

People who are evaluated with adequate tools and skills involved in EI show a decrease in psychological problems, such as depression, anxiety, stress and coping strategies.⁹

The specific interest in EI during childhood and youth has increased due to the evidence that, at an early age, it influences academic performance, social interaction, academic and social adaptation, and levels of physical and verbal aggressiveness.

It has been identified that adolescents with developed emotional intelligence show greater psychological adjustment. This translates into physical health and psychological problems such as, for example, better management of emotional problems, less somatization, suicide ideation and attempts, stress and the use of positive coping strategies.¹⁴

On the other hand, the study of EI is framed within positive psychology and is gaining strength when it is linked to neuroscience, education, clinical, social and organizational fields.¹⁵

In addition, despite the variety of existing instruments for assessing EI in adults, there are few instruments designed or adapted for children. The few instruments that exist for the child population are based on a different conception of EI as a basic personality trait.¹⁶

The main objective of this paper is to present a novel way of assessing emotional skills by integrating several dimensions: emotion recognition, behavioral and cognitive self-regulation of emotions, interpersonal relationships and interpersonal sensitivity; as well as meeting the criteria of validity and reliability.

MATERIAL AND METHODS

Study: descriptive-transversal, conducted in elementary schools in the Iztacalco Delegation of Mexico City, with the participation of subjects of both sexes, from 7 to 12 years of age who met the following inclusion criteria: 1) Subjects enrolled in 1st and 6th grade of elementary school in public schools, 2) Subjects between 7 and 12 years of age, 3) Informed consent signed by their parents and school authorities.

After the consent was signed by parents and school authorities, a semi-structured interview was conducted to determine the sociodemographic variables of the population. Subsequently, the QESSC questionnaire was applied, which was validated through 4 routes:

1. Appearance validation
2. Valid content
3. Validity of criterion
4. Construct validation

To carry out the QESSC questionnaire; in the completion of each one of the items, the diagnostic criteria, according to the rules for the construction of items for Likert-type questionnaires, were considered.⁷

All the items that make up the QESSC Questionnaire were reviewed by experts in children and adolescents, as well as in the methodology for the elaboration

of questionnaires; the observers provided their observations and, based on them, the pertinent changes were made to the questionnaire. For the evaluation of the items, it was decided to apply the Likert-type scoring system.

The Likert scale is a rating scale used to question a person about his or her level of agreement or disagreement with a statement. It is ideal for measuring reactions, attitudes and behaviors of a person. It is mainly used to measure and learn about the degree of agreement of a person or respondent to a certain affirmative or negative statement.

The Likert scale assumes that the strength and intensity of the experience is linear, thus ranging from strongly agrees to strongly disagree, assuming that attitudes can be measured.

Once the evaluation was done by expert criteria, a pilot test was conducted on a sample of 150 students who met the inclusion criteria; they were asked to indicate whether or not each item was clearly understandable. With this application, the wording of items was corrected and the preliminary survey preparation phase was concluded.

Subsequently, the application of the questionnaire was carried out in the primary schools of Iztacalco, Mexico City, to subjects of 7 and 12 years enrolled in 1st and 6th grade of elementary school, the application was carried out in the classroom, the instrument was distributed and they were given instructions to fill it out, question by question was read and the students were guided, at the end of the application they were asked to review the questionnaire and make sure they did not miss any answer. Finally, the questionnaires were reviewed and verified, the application was carried out under the strict supervision of the researcher. Likewise, the Mesquite test was applied, which was used as the gold standard.

Instrument

For the elaboration and validation of the Questionnaire, a test validation design has been used, established on the basis of the guidelines set by some of the main researchers in the construction of tests at present.¹⁷

Therefore, the following steps were carried out to arrive at the final result of the questionnaire of emotional skills (QESSC):

1. The purpose and aim of the questionnaire were identified. The objectives set out in the objectives section were established, the type of questionnaire (of ability) was defined and the structure was defined for the target population (7-12 years old).

2. The main restrictions that the instrument will have a priori: time, means, situations, etc. were specified. The questionnaire was considered to be of collective application, so that the printed instructions should be easy to understand for the subjects to whom it is addressed. Similarly, the application time has been limited to one hour.
3. Subsequently, on the basis of the study and reflection, the theoretical model in which the construct is inscribed, and the observable behaviors representative of it, have been specified. The theoretical model of Mayer and Salovey¹⁸ was chosen, based on which four dimensions of emotional skills were developed and, within these, sub-dimensions, around which the questions of the questionnaire were formulated. The item construction process was guided by theory and expert judgment to ensure construct validity.
4. Next, a first version of the questionnaire was elaborated, the thematic blocks were specified and the items were formulated, considering the proportions of items on each behavior specified in the previous point. In our questionnaire, 50 items were elaborated, organized in situations, in which the methodological process of construction and validation of the instrument is required. The questionnaire was rated on a likert scale, according to the rules of item construction for Likert-type questionnaires. Selection of the correct answer from a set of proposed alternatives, specifically 4 answers to eliminate the effect of change, which will have values from 0 to 3 depending on the perfection of the answer.
5. The treatment of the items in order to select those to be included in the final test, as well as the sample selection process in the pilot study is specified below. From a classical test approach, the statistics considered to be of interest are item difficulty and the ability to distinguish between high and low proficiency, so that items that do not serve to discriminate will be eliminated.
6. Subsequently, the values of the statistics to be calculated for the final version of the test, the desired levels of item difficulty, the minimum standards of reliability and validity are established.
7. Subsequently, the data collection and techniques to be used in the analysis of reliability, validity, test bias, etc. are designed.
8. Once the provisional test had been developed and all the above decisions had been taken, it was

subjected to evaluation by 6 experts. These judges assessed the construction of the items taking into account the relevance, wording and sufficiency, as explained below, in the section on validity and reliability of the instrument.

9. According to the data obtained from the expert judgment, the t-questionnaire was modified and this second version was applied to 1,040 students from official schools in the Iztacalco delegation, in the pilot study, with the aim of identifying possible problems in the application of the instrument, time of completion, etc. In this phase, it was concluded to summarize the statements of the questions and adapt some terms that generated comprehension problems, as well as to reduce the number of items in order to avoid fatigue and lack of attention of the students.

The questionnaire of emotional skills (QESSC) was developed based on the different studies carried out by authors who have contributed to the subject of Emotional Intelligence. The Theory of Emotional Intelligence arises from a concern of Daniel Goleman¹⁹ based on the theory of multiple intelligences postulated by Garder²⁰ where the influence that it has on the human being and the impact on the activities he performs is proposed. According to Goleman, the world is full of excellently trained men and women who have inevitably failed because of their lack of emotional intelligence. This theme is very recent and has aroused the interest of researchers, for which the need to create an instrument that allows its measurement in the Mexican school context is presented.

The statements in the questionnaire were classified into 4 categories: emotional recognition, behavioral and cognitive self-regulation of emotions, interpersonal relationships and interpersonal sensitivity.

The final questionnaire was made up of 40 items and 4 factors:

1. Emotional recognition: the child learns to name emotions is the first step to achieve good emotional skills.
2. Behavioral and cognitive self-regulation of emotions: Self-regulation is essential for adaptive behavior, it is crucial in childhood for the development of social, emotional and cognitive skills. In the context of cognitive neuroscience, self-regulation is the ability to modulate and modify responses –emotional and cognitive–, due to specific demands. At the beginning of development, regulation is primarily physiological, to later be related to

attention and behavioral concomitants of emotion, at the service of biological adaptation. These processes will allow the child to postpone the desired act, and consequently will be able to achieve individual goals and adapt socially.²¹

3. Interpersonal relationships: when we talk about interpersonal relationships, we refer to the links that exist between two or more people, based on emotions, feelings, interests, social activities, etc. Furthermore, they are part of human life at such deep levels that they may even be regulated by law, convention or custom.²²
4. Interpersonal sensitivity: refers to a person's ability to identify what he/she feels, thinks, needs, expects, and what the other person's personality is like and, thus, respond accordingly (*Addendum A*).

The Likert scale was used because it is useful for evaluating the perceptions, habits and behaviors of individuals. Its greatest capacity lies in its ability to show trends in large respondent populations.

Form of evaluation and interpretation of the QESSC questionnaire

1. The most frequent answers to each statement were identified.
2. The information was broken down by segmenting the responses in relation to the defined categories: recognition of emotions, behavioral and cognitive regulation of emotions, and interpersonal relationships.
3. A graph was created for each category or sum of the scores of each participant.
4. The results were graded according to the highest score; the one with the highest importance or the one that determines the objective of the research. According to the above, the scores were established for the qualification and classification of the questionnaires applied to the population of the study.

From 0 to 25 points: low emotional skills low

Schoolchildren with this score have Low emotional skills, which leads to low emotional intelligence, which does not allow them to deal positively with emotions. Generally, they do not express their emotions and these accumulate until they finally explode, causing feelings such as tension, stress and anxiety.

Therefore, it is recommended to learn strategies for the proper management of your emotions that will allow you to get to know those around you better.

From 26 to 50 points: medium emotional skills

School children with this score tend to be sensitive on certain occasions but still do not know how to respond to this. However, they have a great understanding of what is happening in their environment, so you have to strengthen their emotional skills through games that help them to be empathetic with their peers.

51 to 80 points: high emotional skills

Schoolchildren with high emotional intelligence manage positive emotions. They manage emotions and can choose how to feel in each situation. In this way, they know how to generate pleasant emotions that help them in daily life. You are a person with a certain level or degree of emotional intelligence. You can read body language and act accordingly in each situation.

From 81 to 120 points: very high emotional abilities

Schoolchildren with this score know how to recognize when other people are sad, recognize their emotions, manage to self-regulate cognitively and behaviorally in all environments in which they participate, establish interpersonal relationships and are sensitive and empathetic with their peers.

Statistical analysis

The results were processed based on the objectives that were established with the help of specialized computer programs, such as the statistical package S.P.S.S. (Statistical Program for Social Sciences) version 19.

RESULTS

The sample consisted of 1,040 subjects, 708 male and 332 female, with a mean age of 9.1 ± 1.6 SD. The sample was satisfactory for the validation of the instrument. The highest frequency (24.5%) was located at the age of 9 years, followed by 21.4% corresponding to the age of 21.45%.

Significant differences were observed in terms of sex in interpersonal relations and interpersonal sensitivity ($p < 0.05$), the males showed greater emotional

intelligence in the interpersonal relations area and the females in interpersonal sensitivity (Table 1).

According to the comparative analysis of means in relation to age, significant differences are observed in the items interpersonal relations ($p < 0.001$) and Interpersonal Sensitivity ($p < 0.003$), at the ages of 7 and 9 years respectively (Table 2).

Appearance validity

The goal of face validity is to answer the following question: does the scale appear to measure what it is supposed to measure? Appearance validity does not imply a statistical concept, but rather depends on the judgments made by experts on the relevance of the items on the scale.

For the development of the instrument, experts in the fields of psychology, emotions, education, evaluation and statistics were consulted

The experts made recommendations for the construction of each question and each block that makes up the questionnaire, and their suggestions were also taken into account in the response items when applying the 4-point rating system (from 0 to 4) taking into account the frequency from «never» to «almost always» through which the factors were adequately evaluated to assess emotional skills, according to their criteria.

Content validity

The internal consistency of the test was evaluated from the Cronbach’s alpha coefficient of the subscales and in the entire test. The frequency data and descriptive statistics were obtained, the normality test was performed on each of the analysis variables to identify the type of statistical test to be used: parametric or

non-parametric. In addition, the degrees of freedom of the analyzed variables were considered, making sure that they were the same as those accounted for the data analysis in the tests, and that the statistical values presented were in line with the statistical data provided. For all the analysis carried out, a statistical significance level of 5% ($\alpha = 0.05$) was assumed.

Factorial analysis was carried out using the principal component method with Varimax and oblique orthogonal rotation (direct Oblimin) for dimensions not correlated with all the variables. Both analyzes began by determining if the data were adjusted to factor analysis (FA), calculating the Kaiser-Meyer-Olkin (KMO) index, with the criterion that if the index was greater than 0.7, the PA was justified. Bartlett’s test of sphericity was also calculated.

Factorial analysis

Of the initial 50 items contained in the questionnaire, the last 10 items were excluded because they did not meet the criteria considered for the selection. The questionnaire was finally made up of 40 items and four factors. The exploratory factorial analysis was performed with the 40-item questionnaire. The KMO adequacy measure of the Emotional Intelligence

Table 2: Comparative analysis of means in relation to age.

Factors	Difference of means	p
– Recognition of emotions	0.213	0.450
– Behavioral and cognitive self regulation of emotions	0.371	0.488
– Relationships	1.127	0.001*
– Interpersonal sensitivity	0.684	0.003*

* Statistically significant.

Table 1: Comparative analysis of means in relation to gender.

Scales	Male*	Female*	Z	p
– Recognition of emotions	16.5 ± 5.3	4.2 ± 2.64	-1.239	0.450
– Behavioral and cognitive self regulation of emotions	10.2 ± 2.6	7.9 ± 2.89	-1.056	0.156
– Relationships	6.5 ± 2.3	5.7 ± 3.51	-2.572	0.000*
– Interpersonal sensitivity	6.8 ± 3.4	10.7 ± 4.52	-3.72	0.002*

* Data indicate mean ± standard deviation. Significant differences at the 0.5 level.

Table 3: Reliability analysis of the CHENE questionnaire.

Scales	Items	Mean ± SD	Range	Initial Alpha	Item to delete	Alpha when removing the item
– Recognition of emotions	1-10	1.5	1.8	0.78	7	0.82
– Behavioral and cognitive self regulation of emotions	11-20	1.7	1.08	0.79	15	0.81
– Relationships	21-30	1.29	0.51	0.74	21, 24	0.85
– Interpersonal sensitivity	30-40	1.6	0.78	0.87	—	0.87

CHENE = questionnaire of emotional skills for school children.

Questionnaire reached a score higher than 0.7 and the Bartlett sphericity test was below 0.05, validating the factor analysis procedure (KMO = 0.954; Bartlett $p = 0.000$). Cronbach's Alpha of the test for the 40 items was 0.82, with 55.46% of total variance explained for 40 components.

Cronbach's Alpha of the total scale was 0.82, with a variance explanation of 72.5%. Factor 1: emotional recognition (10 items, $\alpha = 0.82$), factor 2: behavioral and cognitive self-regulation of emotions (10 items, $\alpha = 0.81$), factor 3: interpersonal relationships (10 items, $\alpha = 0.85$), factor 4: interpersonal sensitivity (10 items, $\alpha = 0.87$). Positive correlations were observed between the variables of the instrument, the test-retest correlations in the items of the total scale ranged between $r = 0.76$ and $r = 0.82$, confirming the stability of the questionnaire (Table 3).

The four factors were made up of 10 items respectively and when analyzing the explanation of the variance, this is the one that contributes the highest percentage with 39.76%, and an eigenvalue of 8.49.

The second and third factors presented a variance explanation percentage of 1.23 and 1.45 respectively, and the items carry values not less than 0.6. The fourth factor, with variance explanation percentages of 1.12. The fourth was carried out with items with values not less than 0.07 (Table 4).

Correlations between QESSC and Mesquite

Correlations are observed between the questionnaires CHENE and mesquite between emotional recognition and moderate emotional intelligence (7-15) ($r = 0.753$; $p < 0.01$), behavioral and cognitive self-regulation of emotions and intelligence, high emotional (15-25) ($r = 0.751$; $p < 0.01$), interpersonal sensitivity and moderate emotional intelligence (7-15) ($r = 0.791$; $p < 0.01$) which indicates a level of concurrent validity with the

scale (Mesquite) that was used as a gold standard, to validate the instrument at the criterion level (Table 5).

Criterion validities

An instrument must be compared with a previously existing form of measurement that has been shown to be suitable for the entity's measurement (gold standard) to establish whether the scores obtained from a scale are valid. When the comparison is made between both instruments and there is an adequate correlation, then it is certain that the scale has criterion validity.

In this sense, the Mesquite Emotional Intelligence test was employed with the intention of comparing the new instrument with an already validated and used worldwide, with the objective of complying with the validity of the criteria.

The Mesquite test adapted for children, with which the new instrument was compared, consists of 8 items with response options: always, almost always, almost never, never.

Mesquite emotional intelligence test results:

1. 0 to 6 points: low emotional intelligence.
2. From 7 to 15 points: moderate emotional intelligence.
3. From 15 to 25 points: high emotional intelligence.

The structure of the scale, its reliability and validity were analyzed. The results confirmed the internal consistency of the scale (Cronbach's alpha = 0.90). The test-retest correlations in the items of the total scale ranged between $r = 0.76$ and $r = 0.88$, confirming the temporal stability of the test. In conclusion, the Mesquite scale can be applied to schoolchildren as a screening test to assess emotional intelligence in the four dimensions studied (Addendum B).

Table 4: Factorial structure with Varimax variation of the CHENE questionnaire with 40.

Own value	1	2	3	4
	8.49	1.23	1.45	1.12
	39.76	7.43	6.70	6.27
Explained variance %				
Ítem				
1	0.76	—	—	—
2	0.78	—	—	—
3	0.67	—	—	—
4	0.69	—	—	—
5	0.72	—	—	—
6	0.65	—	—	—
7	0.60	—	—	—
8	0.67	—	—	—
9	0.80	—	—	—
10	0.79	—	—	—
11	—	0.79	—	—
12	—	0.78	—	—
13	—	0.67	—	—
14	—	0.71	—	—
15	—	0.78	—	—
16	—	0.75	—	—
17	—	0.73	—	—
18	—	0.65	—	—
19	—	0.78	—	—
20	—	0.72	—	—
21	—	—	0.67	—
22	—	—	0.69	—
23	—	—	0.72	—
24	—	—	0.73	—
25	—	—	0.67	—
26	—	—	0.71	—
27	—	—	0.78	—
28	—	—	0.76	—
29	—	—	0.74	—
30	—	—	0.72	—
31	—	—	—	0.82
32	—	—	—	0.80
33	—	—	—	0.89
34	—	—	—	0.76
35	—	—	—	0.74
36	—	—	—	0.72
37	—	—	—	0.76
38	—	—	—	0.75
39	—	—	—	0.73
40	—	—	—	0.81

CHENE = questionnaire of emotional skills for school children.

Table 5: Correlations between the questionnaire of emotional skills for school children and Mesquite.

(CHENE) scale	Emotional intelligence		
	Limited (0-6)	Moderate (7-15)	Elevated (15-25)
Recognition of emotions	—	0.753**	—
Behavioral and cognitive self regulation of emotions	—	—	0.751**
Relationships	—	—	—
Interpersonal sensitivity	—	0.791**	—

CHENE = questionnaire of emotional skills for school children.
 ** Positive or significant correlations.

Construct validity

Theoretical aspects related to emotional skills and the factors identified as protective for the development of emotional skills in schoolchildren were validated, such as: recognition of emotions, behavioral and cognitive regulation of emotions, interpersonal relationships and interpersonal sensitivity.

According to the literature, «emotional intelligence includes the ability to perceive, evaluate, and express emotions accurately; the ability to access and/or generate feelings when they facilitate thoughts; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth». Emotional intelligence refers to a «thinker with a heart» who perceives, understands and manages social relationships.

Regarding emotions and emotional skills, teachers must have a solid initial training. There are two reasons for this; the first is that the more knowledge a teacher has, the more he can transmit to his students and the second is because students need to better understand these concepts to facilitate their development.

Educating through emotion is being aware and being able to create and build positive emotions, recognizing our own emotions and those of the people around us, thinking about a problem and knowing what is happening in order to address it positively. In summary, we can say that working on emotional intelligence in early childhood education helps to develop more empathetic people, who know how to help others and who can boost their self-esteem, among other possibilities, creating Emotional literacy.

in the infant stage it is beneficial to begin to give emotional education the necessary importance for emotional communication, seek understanding, both from others and from oneself, and give the first step in emotional literacy.²³

Children who have developed emotional skills tend to have greater confidence in their abilities, which allows them to make better decisions and maintain healthier relationships with others, so we set ourselves the task of developing an instrument with the characteristics we wanted, and that had reliability and psychometric validity, so we saw the need to develop a questionnaire to assess

Emotional skills in the Mexican population.

DISCUSSION

The validity and reliability of the emotional skills questionnaire for schoolchildren was established. The benefits of this test are supported by the empirical data achieved both in reliability and validity.

Therefore, it can be said that the objective of constructing an emotional skills questionnaire based on solid psychological and psychometric knowledge was achieved. According to the literature, reliability analysis allows us to study the properties of the measurement scales analyzed and of the items that make up the scales. The reliability analysis procedure followed calculates a number of commonly used scale reliability measures and also provides information on the relationships between individual scale items. Cronbach's alpha coefficient has been used to measure internal consistency based on the average of the correlations between items.²⁴

Great care has been taken to satisfactorily include both the comprehensiveness and representativeness of the content, as well as to have achieved accuracy of the measurement performed and good reliability in all the areas evaluated in the questionnaire, being useful for the population of schoolchildren aged 7 to 12 years. Also, when considering the results of construct validity in this questionnaire, we can assure that it is equally valid for the relevant population, since it is demonstrated that the constructs that were measured are relevant in the group studied. In this research, the QESSC Questionnaire showed adequate validity and a Cronbach's alpha internal consistency of 0.84 after modifying some items according to the experts' criteria. According to statistical analysis, it is observed that in general the QESSC questionnaire has a good correlation

between the different domains proposed. In relation to the Mesquite Questionnaire (gold standard), it presents a positive and significant correlation. For all these reasons, the QESSC questionnaire can provide us with information on the emotional skills of schoolchildren in the Mexican population.

The CHENE has psychometric properties that demonstrate sources of evidence of validity referring to the internal structure and reliability in its use with Mexican schoolchildren.

In studies of adaptation of scales that measure the same construct, such as the TEI QUE (trait emotional intelligence questionnaire), cumulative variance percentages between 45 and 55% were reported, but they necessarily required segmentation by age groups, with different factorial structures for each of them and with lower internal consistency.²⁵

This leads to the conclusion that both Mesquite and QESSC allow us to evaluate the strategies to achieve the strengthening of emotional intelligence.

The strategies, not only train the ability to learn and solve some kind of problem, but in itself involves the intellectual development of students, the potential of their skills through which, the students are building a way to meet the challenges proposed and in this construction acquires the capacity of conviction with their peers, achieving meaningful learning and proper control of their emotions, facilitating the teaching-learning process.²⁶

Therefore, the QESSC is a suitable option for assessing the construct in the wide age range it covers, especially in research. Regarding the resulting factorial structure, the items remained in the same factors indicated by the authors of the original instrument. However, an important change was the elimination of 6 items. This is not considered a negative element given that the items that remain contain theoretically relevant indicators of each factor and currently in psychometrics it is sought that a smaller number of items contribute more to the explanation.

The internal structure they proposed was confirmed by having four EI factors and an independent factor, which is the Mood subscale (EA).²⁴ there is another independent factor, the Positive Impression scale, which according to the authors is made up of six items, but in this analysis it was decided not to include them. The structure of four basic factors: intrapersonal, interpersonal, stress management and adaptability, has been analyzed with the 40 items in total of these scales, showing consistency in different populations.²⁵

In congruence, the instrument was subjected to analysis with all the items, with the exception of those belonging to the positive impression factor, and the structure of five factors was corroborated: EA, adaptability, stress management, interpersonal and intrapersonal.²⁶ The majority percentage of variance in the EA scale and the lower percentages of variance explained by the Interpersonal and Intrapersonal scales are consistent with what is reported in the literature.²⁷

The author of the model visualizes EI as affective capacities, abilities and skills that are accompanied by other elements,²⁸ mention that the main research currents referring to EI are: to visualize it as an ability that implies cognitive skills to reason and act in congruence with emotions and the second, as a personality trait, which includes the perceptions that one has with respect to emotions and behavioral dispositions. A third proposal integrates these two conceptions as complementary, EI as a personality trait that is more automatic and less conscious, and EI as a skill that must be conscious of reasoning and managing emotions.²⁹

CONCLUSIONS

The results of the present study allow us to affirm that the instrument has adequate content validity, since in all cases the content validity indexes were high and similar to each other. Even when some of the items of the original instrument were modified, it was possible to obtain consistent items in relation to the conceptual aspect.

QESSC is a questionnaire that assesses the emotional skills of school-age children. It covers different areas: recognition of emotions, behavioral and cognitive regulation of emotions, interpersonal relationships and Interpersonal sensitivity.

When reviewing the literature, no specific instruments were found to evaluate emotional skills in Mexican schoolchildren. This instrument was designed by making a broad review of the literature on theoretical references on the management of emotions in schoolchildren. In this sense, we propose the development of a line of research to be used in other scenarios, in different populations.

Limitations

It is important to conduct further studies with a larger population to verify other characteristics such as the specificity and sensitivity of the instrument.

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Addendum A.

Questionnaire of Emotional Intelligence for Elementary School Children (CHENE)

1. Recognition of emotions
2. Behavioral and cognitive regulation of emotions.
3. Interpersonal relationships
4. Interpersonal sensitivity

Instructions: Answer the questions by crossing out only one answer. This questionnaire does not grade good, adequate or bad, inadequate answers. All are valid.

Name: _____ Age: _____

Date of birth: _____ Grade level _____

Never (1) Sometimes (2) Often (3) Almost always (4)

	Recognition of emotions	1	2	3	4
1	I do everything wrong	—	—	—	—
2	I get angry when things don't work out well	—	—	—	—
3	I can be better at everything	—	—	—	—
4	I would like to be better every day	—	—	—	—
5	If things do not work out, I will try again	—	—	—	—
6	I don't like to lose and I attack others	—	—	—	—
7	I love the way I am	—	—	—	—
8	I get sad without knowing why	—	—	—	—
9	I don't like to be told I'm doing things wrong	—	—	—	—
10	When things go wrong for me, I blame others	—	—	—	—
	Behavioral and cognitive self-regulation of emotions				
11	If I do poorly in school, I ask my teacher for help	—	—	—	—
12	When I feel afraid I ask my parents for help	—	—	—	—
13	I can't wait, I want everything fast	—	—	—	—
14	When I get angry, it makes me very upset	—	—	—	—
15	If I have problems, I ask for help from adults	—	—	—	—
16	I choose my clothes, my toys, my games	—	—	—	—
17	I don't like to be observed when I make a mistake	—	—	—	—
18	I don't like them touching my toys	—	—	—	—
19	I am afraid of people I don't know	—	—	—	—
20	I think that others do not understand me	—	—	—	—
	Interpersonal relationships				
21	I like to see my friends happy	—	—	—	—
22	I help my siblings and friends when I see them sad	—	—	—	—
23	I feel sad when a friend misses school due to illness	—	—	—	—
24	If possible, I can help a colleague if he/she asks me to do so	—	—	—	—
25	I Trust in people	—	—	—	—
26	I enjoy talking to my friends and listening to them	—	—	—	—
27	It annoys me when colleagues fight	—	—	—	—
28	I am annoyed when classmates make fun of children who are different	—	—	—	—
29	Small children are very annoying	—	—	—	—
30	Black boys and girls are ugly	—	—	—	—
	Interpersonal sensitivity				
31	I love going to school	—	—	—	—
32	Where I feel best is at home	—	—	—	—
33	The best people in my life are my parents	—	—	—	—
34	I like to be cheerful	—	—	—	—
35	I like to hear that my parents are proud of me	—	—	—	—
36	My parents listen to me and help me in everything	—	—	—	—
37	I almost never get sad	—	—	—	—
38	My parents do not supervise my school work	—	—	—	—
39	Sometimes I come to school without homework	—	—	—	—
40	When I'm interrupted, I get angry and I don't do it anymore	—	—	—	—

CHENE = questionnaire of emotional skills for school children.

Addendum B.

Questions of the Mesquite test adapted for children

We will establish eight questions referring to different situations of everyday life and we will score them

Questions

1. You are at a family or friends meeting and soon you notice that the conversation has escalated and the participants are starting to get angry. Knowing that you know both parties very well, what do you do?
 - You try to change the subject
 - You do nothing
 - You try to call one of the parties privately to prevent the discussion from getting out of control.
 - Continue eating and drinking
2. Do you think you are a person who finds it difficult to express what is happening to you?
 - Always
 - Almost always
 - Almost never
 - Never
3. A person who feels distressed and sad should:
 - Hide what he or she feels
 - Say what he/she feels
 - Say what he/she feels and try to resolve it
 - Should not say anything to anyone so that he/she will not be laughed at.
4. A friend has become unjustly angry with you. You:
 - You talk to him privately to ask what has happened to him.
 - You hide from him so as not to talk to him. You prefer to remain in doubt about what has offended him.
 - During the night you remember what happened and you suffer.
 - You ask a mutual friend if he/she knows the reasons for your friend's anger with you.
5. For you, parents and children should:
 - their feelings and/or thoughts.
 - They should talk to each other about what they think is necessary without limits.
 - Parents should never talk to children about their anxieties or problems but children should do so
 - You have never asked yourself this question before and don't know how to answer it
6. When you have to wait for others to finish talking:
 - You become impatient
 - Start pacing anxiously
 - You wait for them to finish and give your opinion or say what you have to say
7. When you have made a mistake, you:
 - You know it because your conscience tells you so
 - You feel nothing wrong
 - You repent and ask for forgiveness from whomever it may concern
8. A friend of yours comes to school completely heartbroken and crying. What do you do?
 - You just look at him
 - You sit next to him and just wait for him to talk to you
 - You ask him what happened and wait for him to respond. If he doesn't, you simply put your arm on his shoulder as a sign of support and understanding
 - You insistently ask him every 5 minutes what is wrong with him