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A New Measure of Socio-emotional Skills: A Pilot Study with Children, Adolescents, and their Families

Louise MARQUES[1],
Karina AYUMI TERUYA[2],
Éverson RANGEL LOPEZ[3],
Renato de MARCA[1],
Adriana LIMA[4],
Bruno OLIVEIRA[5],
Jesus LANDEIRA-FERNANDEZ[1],
Luis ANUNCIAÇÃO[1]
[1]Pontifical Catholic University of Rio de Janeiro, Rio de Janeiro, Brazil
[2]University City of São Paulo, São Paulo, Brazil
[3]Estacio, Rio de Janeiro, Brazil
[4]Federal University of Parana, Rio de Janeiro, Brazil
[5]Federal University of the State of Rio de Janeiro, Rio de Janeiro, Brazil
Email: luisfca@gmail.com

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Abstract

Introduction: The teaching of socio-emotional skills has received greater attention, with ongoing theoretical discussions about these competences. Evaluating such characteristics and their development, however, is challenging because of a lack of consensus about theoretical and practical models, the difficulty in analyses that rely solely on self-reports, and the scarcity of robust Brazilian psychometric instruments.

Objectives: Therefore, the present study sought to (1) verify the psychometric evidence of the instrument's internal consistency in assessing socio-emotional skills, (2) identify differences in respondents' answers, and (3) identify potential issues with questionnaire items via semi-structured interviews.

Methods: This pilot study involved 32 responses from children and adolescents and 25 responses from their family members. The questionnaire assessed five socio-emotional skills: self-awareness, self-management, social awareness, relationships, and responsible decision making. Descriptive analyses and Cronbach's alpha calculations were applied to confirm internal consistency of the items in each subscale. Analyses of variance were also conducted to analyse responses from family members and children.

Results: The results showed that self- awareness ($\alpha = 0.83$, $\alpha = 0.76$), self-management ($\alpha = 0.82$, $\alpha = 0.79$), and relationship skills ($\alpha = 0.71$, $\alpha = 0.79$) had adequate internal consistency in both children's and family members' versions. Significant differences were observed in scores between family members and children/adolescents in self-awareness ($p = 0.0159$), self-management ($p = 0.0279$).

Conclusion: The present study underscores the importance and complexity of assessing responsible decision-making skills and suggests that the questionnaire can be useful for evaluating socio-emotional competencies.

Keywords: *socio-emotional skills; psychometry; psychological assessment; children*

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Corresponding address:
Luis ANUNCIAÇÃO
Pontifical Catholic University of Rio de Janeiro,
Rua Marques de São Vicente 225-L201, (21) 96588-9616, Rio de Janeiro, Brazil
Email: luisfca@gmail.com

1. Introduction

Socio-emotional skills have been recognised as key elements for healthy development and for achieving academic, professional, and personal success throughout life. These competences, which encompass abilities that enable people to understand and manage their own emotions, also facilitate the construction of positive relationships with others, the display of empathy, the making of responsible decisions, and solving problems effectively.

These skills contribute to general well-being, mental health, and success in various domains of life, including academic performance (Greenberg et al., 2003). Thus, they are crucial for social interaction, adaptation, and well-being in different contexts (Denham & Brown, 2010).

The Collaborative Institute for Academic, Social, and Emotional Learning (CASEL, 2020) defines social-emotional skills as abilities to understand and manage emotions, plan, accomplish goals, empathise with others, establish and maintain healthy relationships, and make important decisions. In his studies, Goleman (2006) similarly portrays five components: self-awareness, self-management, motivation, empathy, and social skills. Different descriptions can be found in the literature on socio-emotional skills, as shown in Table 1.

Socio-emotional skills can be approached in different ways and from different perspectives. Several approaches, such as the Savoring Abilities Scale (SAS), seek to identify individual strengths, focusing on outstanding skills, and emphasise with the investigation of possible difficulties. This knowledge facilitates specific interventions and strategies to improve the individual's socio-emotional skills (Aguilar et al., 2019).

In Brazil, schools face a complex group of challenges in the educational system. The implementation of the 2018 National Common Curricular Base highlighted the importance of a more comprehensive and holistic approach to increasing student development. The implementation of socioemotional competency programs in schools is pivotal to meeting this demand. These programs target not only academic success but also the emotional and social well-being of students. They offer opportunities for students to develop empathy, emotional self-regulation, communication skills, and conflict resolution abilities—critical skills for healthy and constructive societal engagement.

However, due to the Brazilian economic context, there are significant differences between public and private schools in Brazil regarding the implementation of these programs and the promotion of socio-emotional competencies. Private schools often possess the financial and structural resources to invest in innovative teaching approaches, including the integration of socioemotional competencies into their curriculum (Reis, 2020).

This approach entails more than just references and must be tailored to each research context. Moreover, criticisms of the approach should be considered, especially those that pertain to the idealisation of a constantly happy life (Bosseti, 2014). These difficulties raise intriguing hypotheses about the factors influencing child development, including environmental influences (Albert et al., 2020), individual variations in temperament and personality (Blandin, 2013), and neurobiological sensitivity (Belsky & Pluess, 2009).

Carstensen and Mikels (2005) discussed the importance of emotional regulation in decision making, highlighting the complexity of the relationship between cognition and emotion.

The work of Kahneman (2003) illustrates how memory, the manipulation of information, and reasoning can decline with age, whereas managing emotions and intuition that influence judgment and decision making can improve. Durlak et al (2011) emphasised the need for more in-depth studies to guarantee evidence-based interventions, thus highlighting the complexity and its multiple dimensions of responsible decision making.

In the literature we observed numerous socioemotional frameworks that have been proposed by researchers from different fields, and because of this variety, there were issues involving the definition of these terms.

Therefore, the objective of the present study was to evaluate the Geniuses Battery questionnaire that assesses socio-emotional competences. This evaluation includes a discussion of psychometric validity that was discovered during the instrument's development and potential improvements that could be made.

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Table 1. Socio-emotional skills definitions.

Authors	CASEL (2020)	Durlak, Weissberg, Dymnicki, Taylor, and Schellinger (2011)	Brackett and Rivers (2014)	Elias, Zins, Weissberg, Frey, Greenberg, Haynes, and Shriver (1997)
Definitions **Self-management/Self-control**	- Regulate your emotions, thoughts, and behaviors effectively in different situations. - Go toward your goals.	- Ability to regulate your emotions, thoughts, and behaviors to achieve academic and personal goals. - Impulse control. - Stress management.	- Recognises and understands your emotions, regulates them effectively, and adapts your behavior in different situations. - Impulse control.	- Ability to regulate your emotions. - Control impulses. - Set and work toward goals.
Authors	CASEL (2020)	Jones and Bouffard (2012)	Brackett and Rivers, (2014)	Elias, Zins, Weissberg, Frey, Greenberg, Haynes, and Shriver (1997)
Definitions **Self- awareness**	- Recognition of your strengths, limitations, values, and goals. - Accurately assess your thoughts and feelings in different situations.	- Able to be aware of their strengths, weaknesses, learning preferences, and areas for improvement.	- Clear understanding of your own emotions, thoughts, strengths, weaknesses, and values. - Ability to name emotions.	- Develops a deep understanding of your emotions, thoughts, and behaviors in the context of your environment. - Recognises your emotions effectively.
Authors	CASEL (2020)	Durlak, Weissberg, Dymnicki, Taylor, and Schellinger (2011)	Jones and Bouffard (2012)	Elias, Zins, Weissberg, Frey, Greenberg, Haynes, and Shriver (1997)
Definitions **Social awareness**	- Understands, empathises, and feels compassion for others, regardless of their status or context of social or cultural life.	- Understands and puts oneself in the other's shoes, understanding their perspectives, experiences, and emotions.	- Understands social dynamics, cultural backgrounds, and different perspectives within their environment.	- Understands and values social, cultural, and historical contexts in which they interact with each other.
Authors	CASEL (2020)	Pianta and Hamre (2009)	Brackett and Katulak (2007)	Osher, Kidron, Brackett, Dymnicki, Jones, and Weissberg (2016)
Definitions **Healthy Relationship**	- Establish and maintain healthy relationships with different individuals and groups.	- Effective communication. - Empathy. - Team work. - Conflict resolution.	- Form and maintain healthy interpersonal connections, characterised by trust, respect, and effective communication.	- Develop and maintain positive, respectful, and supportive connections to others.
Authors	CASEL (2020)	Zins, Weissberg, Wang, and Walberg (2004)	Durlak, Weissberg, Dymnicki, Taylor, and Schellinger (2011)	Elias, Zins, Weissberg, Frey, Greenberg, Haynes, and Shriver (1997)
Definitions **decision making**	- Makes ethical and constructive choices in a social and personal context.	- Make choices that are aligned with your values, goals, and the well-being of yourself and others.	- Make choices and take actions that are ethical, safe and respectful of each other.	- Make choices that demonstrate integrity, respect, and ethical judgment, considering the well-being of oneself and others.

However, due to the Brazilian economic context, there are significant differences between public and private schools in Brazil regarding the implementation of these programs and the promotion of socio-emotional competencies. Private schools often possess the financial and structural resources to invest in innovative teaching approaches, including the integration of socioemotional competencies into their curriculum (Reis, 2020).

This approach entails more than just references and must be tailored to each research context. Moreover, criticisms of the approach should be considered, especially those that pertain to the idealisation of a constantly happy life (Bosseti, 2014).

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Study 1

2. Methodology

2.1 Participants

The present survey consisted of a general sample of 32 responses from children and adolescents and 25 responses from their family members. Most children and adolescents who participated were female (N = 21, 65.6%), resided in the city of Rio de Janeiro, Brazil (N = 21, 65.6%), and attended private schools (65.5%). Responses were collected from elementary and high school students. Table 2 illustrates the characteristics of the general sample.

From the general sample, 19 complete responses were identified, in which both students and family members completed the questionnaire. Most respondents were female (52.6%), attended 8th grade (21%), and resided in the city of Rio de Janeiro (84.2%). Data analysis models were applied to these responses. In a later stage of the research, in-depth interviews were conducted with two 9-year-old children.

2.2 Instruments

Geniuses Battery of socio-emotional skills. The questionnaire aims to assess five socio-emotional skills that were established by the CASEL group: (1) Self-awareness, (2) Self-management, (3) Social awareness, (4) Responsible decision-making, and (5) Relationship. The instrument has three versions, one intended for children and young people (with 41 items), one for family members of students, and one for teachers (with 26 items). In this research, only the versions for students and family members were applied.

The construction of this instrument began in 2021 with the initiation of a bibliographic search on socio-emotional skills assessment tools.

During the literature review stage, three criteria were established for the selection of instruments: (1) Self-report instruments targeting school-age children, (2) Instruments that assess socio-emotional skills aligned with the Geniuses program and (3) Instruments with accessible item content.Following this, The Collaborative for Academic, Social and Emotional Learning (CASEL) was approached to provide a list of recommended instruments based on the previously defined parameters.

A screening process was carried out to select self-report instruments that aligned with the constructs addressed by the Genius Program, which encompassed self-knowledge, self-management, social awareness, responsible decision-making, and relationships. During this phase, 166 items were collected, and an additional 27 new items were created.

These 188 items, primarily in English, underwent translation into Brazilian Portuguese by two specialised translators, working independently.

The translation results were then compared in terms of semantic equivalence, and a synthesis of translations was performed for all items. Subsequently, these items were presented and analysed by four experts in the fields of psychology and education.

They used a 5-point polytomous scale to assess the clarity and relevance of the items, which contributed to calculating the Content Validity Coefficient (CVC) to verify the quality of the items.The total CVC scores obtained were 0.91 for relevance, 0.89 for clarity, and a high endorsement rate of 93% for the items within their respective competencies.

A cutoff point of 0.8 was applied for both CVC clarity and relevance, and at least 66% theoretical agreement of the item with the competence (endorsement). Figure 1 provides a summary of the initial stages of instrument development.

Table 2. Descriptive data of the general sample

Characteristics	No	Frequency
Sex		
Female	21	65.6%
Male	10	31.2%
I prefer not to inform	1	3.1%
Type of school		
Private	21	65.6%
Public	11	34.3%
City		
Rio de Janeiro	21	65.6%
Three Rivers	7	21.8%
Others	4	12.5%
Grade		
1st grade	3	9.3%
2nd grade	2	6.2%
3rd grade	4	12.5%
4th year	7	21.8%
5th year	5	15.6%
6th grade	1	3.1%
8th grade	4	12.5%
9th grade	6	18.7%

2.3 Procedures

Between December 2022 and February 2023, the Geniuses Battery questionnaires were disseminated in an online format. Participants were invited via social networks and asked to provide some information, such as name, gender, and contact information, on the website. Before beginning the questionnaire, a free and informed consent form was presented to the family members, and an assent form was presented to the children and adolescents' participants. After acceptance, a sample question and instructions were presented to aid understanding of the structure of the questionnaire. Once the sample question was answered, the specific questions for each version were displayed.

In the next phase of the research, some of the participants were selected to collect impressions about the questionnaire and possible doubts. To gather this feedback, contact was made via social networks, in which some standardised questions were presented; for a second group, interviews were scheduled.

The interview was recorded only when the person who was responsible for the child authorised it. Questions were asked about specific terms of each item, general understanding concepts, how the child completed the questionnaire (alone or accompanied), and any potential uncertainties that might have arisen while completing the questionnaire. Prior approval for the research was obtained from Plataforma Brasil (no. XXXXXX).

2.4 Statistical analyses

All data were checked for inconsistencies and coding errors. Before implementing the analyses, we checked for missing data and used only the answers that fully completed the questionnaires. Descriptive analyses were applied with the aim of analysing the demographic characteristics of the sample, with the results presented as means, standard deviations, and percentages. Due to the sample size, we could just perform a preliminary psychometric analysis using a bootstrapped version of the data.

Therefore, we carried out an exploratory factor analysis, defining the WLSMV as the estimator and using an oblique rotation to allow a nonzero correlation between the derived factors. To check the fit of the model, we used the CFI, TLI, and RMSEA. This analysis was performed using Mplus. The reliability of the measure was computed using Cronbach's alpha and aligned with the theoretical factor proposed for the tool.

To identify possible differences between the averages in the versions for family members and students, a one-way analysis of variance was conducted for each subscale of socio-emotional competence, comparing the results of both versions. No post-hoc analysis was computed.

Data were collected from questions that were answered by the children in the semi-structured interview format. All analyses were performed in R with the Rstudio environment and the readr, tidyverse, janitor, psych, summary tools, arsenal, and lubridate packages. Codes are available at (Removed for peer review). The alpha level for all analyses was set to 0.05.

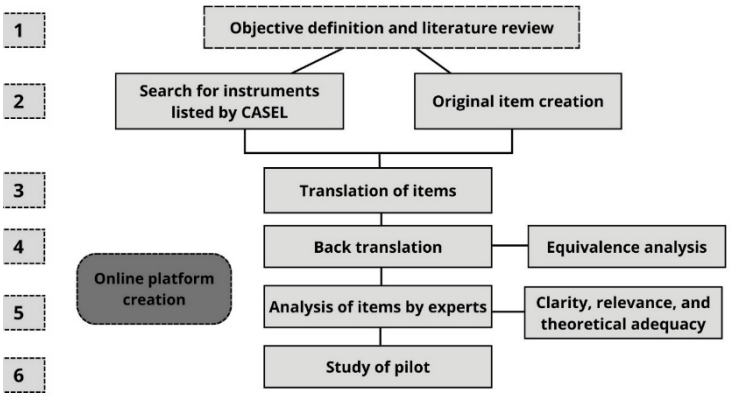

Fig. 1. The process of development of the instrument

3. Results

Individual characteristics of the internal consistency of the items in each subscale (socio-emotional competence) were analysed based on calculations of mean responses and Cronbach's alpha. Five socio-emotional skills were analysed: (1) self-awareness, (2) self-management, (3) social awareness, (4) relationships, and (5) decision making.

The analyses were applied individually, considering differences between responses of students and their legal guardians. In the version that was intended for children and adolescents, higher average scores were found for social awareness competence (M = 4.00, SD = 0.45) and self-awareness (M = 3.77, SD = 0.90). In the version for students, on average, the participants indicated "sometimes" for the self-awareness, self-management, relationships, and decision-making items. Adequate internal consistency was verified for self-awareness (α = 0.83), self-management (α = 0.82), relationships (α = 0.71), and social awareness (α = 0.63) competencies. However, responsible decision-making competency items (α = 0.36) had a lower index regarding internal consistency. These results are illustrated in Table 3.

Table 3. Analysis by competencies in student version.

Competency	Number of items	Average	SD	Cronbach's alpha (α)
Self-awareness	4	3.77	0.90	0.83
Self-management	10	3.27	0.64	0.82
Social awareness	8	4.00	0.45	0.63
Relationships	10	3.76	0.54	0.71
Decision making	8	3.57	0.44	0.36

Items of self- awareness (M = 3.80, SD = 0.77) and relationships (M = 3.77, SD = 0.55) competencies had the highest mean scores. Most competencies showed adequate levels of internal consistency.
The items of self-awareness (α = 0.76), self-management (α = 0.79), social awareness (α = 0.76), and relationships (α = 0.79) competencies showed adequate results. Items of responsible decision-making competency were below expectations (α = 0.53). Table 4 presents the results of the item competency analysis for parents and family members.

Table 4. Analysis by competencies in parents and family member version.

Competency	Number of items	Average	SD	Cronbach's alpha (α)
Self- awareness	4	3.80	0.77	0.76
Self-management	10	3.49	0.62	0.79
Social awareness	8	3.76	0.64	0.76
Relationships	10	3.77	0.55	0.79
Decision making	8	3.76	0.43	0.53

The difference between family member and student scores was significant (Fdf= 7.169, p = 0.0159, eta2 = 0.29). Students scored higher on self-awareness, self-management, and decision-making. No significant differences were found between the versions for parents, and students in the items of social awareness (F = 1.26, p = 0.277, eta2 = 0.06) and decision making (F = 0.101, p = 0.754, eta2 = 0.005). Such findings may be linked to the previously highlighted internal consistency results of the two competencies. The results of the ANOVA model are illustrated in Table 5.

Table 5. The ANOVA results

Predictor	Intercept	*SS*	*df*	*MS*	*F*	*p*
Self-awareness (family version)	Self- awareness (student version)	4.334	1	4.334	7.169	0.0159
Self-management (family version)	self-management (student version)	1896	1	1896	5.782	0.0279
Social awareness (family version)	Social awareness (student version)	0.258	1	0.2577	1.26	0.277
Relationships (family version)	Relationships (student version)	1.631	1	16.313	7.311	0.0151
Decision making (family version)	decision making (student version)	0.022	1	0.02151	0.101	0.754

Note: SS means sum of squares, df means degree of freedom, MS means mean square, F indicates the test statistic and p means p value.

Study 2
Study 2 sought to provide further evidence that can aid understanding of the constructed items, based on in-depth interviews with participants that were previously selected for this phase.

4. Methodology

4.1 Participants

The present study was conducted with two children who had already completed the questionnaire. Child 1 was 9 years old and in the second year of elementary school at the time of contact. Child 2 was 9 years old and in the fourth year of elementary school at the time of contact.

4.2 Procedures

The guardians of five children who had previously answered the questionnaire were contacted. The interviews occurred online at a previously scheduled time and date and only after receiving a signed free and informed consent form from the responsible individuals.
On the date of the interview, the children's relatives accessed the meeting's electronic address online. A previously trained researcher performed the rapport (a structured conversation about topics of the life of the child) with the child and then asked specific questions that were previously organised to gather more evidence about the execution process that the child used to conduct the interview, for example which was their response in specific items.

5. Results

When interviewed, Child 1 was 9 years old and in the second year of elementary school. He reported having conducted the interview with occasional help from his older brother. He demonstrated difficulties in understanding the terms "habit" and "strength." For the former, when asked about its meaning, he was unable to provide a correct definition. For the term strength, the child had to ask his brother to explain the meaning of the term because he could not understand it himself. The child demonstrated ease in understanding the terms "hardworking," "conquest," "different," "disagreement," "goal," "unhealthy behaviour." and "disrespect," exemplifying them and/or explaining them correctly after being asked.

6. Discussion

The assessment of socio-emotional skills has gained more relevance with a document that was issued by the United Nations Educational, Scientific, and Cultural Organisation (UNESCO, 2014). Although there are discussions in the literature about the reliability and validity of instruments that assess socio-emotional skills, few studies have specifically discussed each construct, especially responsible decision-making. This may be related to the complexity of assessing and defining competencies (Schoon, 2021). The objective of the present study was to evaluate the Battery Geniuses questionnaire of socio-emotional competencies, discussing psychometric validity that was found during elaboration of the research, with the following findings: (1) demonstration of valid internal consistency, with only decision-making below the expected level, (2) discrepancy between the two questionnaires when they were compared, and (3) difficulties by the children in the in-depth interview.
Another finding in the present study was the difference in scores that were obtained between the two versions. Discrepancies between self-reported and hetero-reported questionnaires are present in several studies (Bowers et al., 2020; Fogarty et al., 2014; Olino & Klein, 2015). The observed differences are not merely "noise" or errors; they can also provide valuable information about the child's behaviour in different contexts and from different perspectives (De Los Reyes et al., 2013; Nuzum et al., 2019). The family perspective becomes important because it influences the development of prosocial behaviors (Pastorelli et al., 2021). Hetero-report questionnaires may have limitations in capturing personal experiences and feelings (De Los Reyes et al., 2015), and self-report questionnaires are important tools for assessing this information.
Another issue that was found in the in-depth interviews was the children's difficulties, with differences between them, which raised some hypotheses. The influence of the environment on child development, considering the level of stimulation (Albert et al., 2020), and issues related to temperament, personality, and neurobiological sensitivity (Blandin, 2013). Additionally, neurobiological sensitivity should be considered. Research has shown that some children may have heightened neurobiological sensitivity, making them more attuned to environmental stimuli and potentially more responsive to various learning experiences (Belsky & Pluess, 2009). This sensitivity can impact how they process and understand complex information. In the case of the two children interviewed who both participated in extracurricular activities, it is essential to acknowledge that while they received stimulation, the nature and quality of this stimulation could vary.
Our study had limitations; as expected from a pilot study, the sample was composed of a small group of participants, which may make it difficult to generalise the data and findings. This characteristic of the sample was observed in studies 1 and 2. Furthermore, the sample was composed of conveniences due to the period of application (school break) and the target audience. In order to expand our study, we will seek to apply it to a sample of participants from different regions of the country, on a large scale and with a new design, comparing different types of schools and the performance of students, their families, and teachers in the questionnaire. Another issue was that we did not apply the teachers' version of the form in the pilot; however, we emphasise that this version was previously evaluated by experts in the field of psychology

and education and will be applied on a large scale in the future.

7. Conclusion

In summary, the present study analysed the internal consistency of items on a new instrument of socio-emotional competencies that proposes to evaluate five competencies: (1) self-awareness, (2) self-management, (3) social awareness, (4) relationships, and (5) responsible decision-making. The pilot study, in addition to a review of the literature, indicated multiple definitions of socio-emotional competencies, consequently nurturing a challenge framework not only for analysing the data but also for interpreting the results. In our study, we found adequate internal consistency in most subscales. In Study 2 in particular, questions and doubts presented by the target sample of children and adolescents were verified, with the aim of changing difficult terms and sentences. Furthermore, a new version for younger children will be created through an analysis of the items, and a new pilot study will be conducted.

Future studies are proposed to identify whether invariance between genders exists in addition to verifying possible difficulties within other age range groups. After considering these points, we believe that the present study is useful for researchers and professionals in the fields of psychology and education by providing preliminary psychometric evidence for future applications of the present test.

Conflict of Interests

The authors declare that they have no conflicts of interest.

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