CIPAS Scale: Pilot Test for Evaluating Interaction Quality and Secure Attachment Potential

Karina Ramírez-Morales[1,2], Marta Sadurní Brugué[1], Iván Ramírez-Morales[3]

[1]*Laboratorio de Vínculo Afectivo y Desarrollo Humano. Departamento de Psicología Universidad de Girona, Plaça Sant Domènec, 9 17004 - Girona, España*
[2]*Centro de Salud Velasco Ibarra. Ministerio de Salud Pública del Ecuador, Av. La Ferroviaria, Machala, Ecuador*
[3]*Grupo de Desarrollo e Implementación de Nuevas Tecnologías. Universidad Técnica de Machala, Av. Panamericana Km 5.5, Machala, Ecuador*
Corresponding Author: Marta Sadurní Brugué, Email: marta.sadurni@me.com

KEYWORDS
emotional bond, interaction quality, parenting skills, new instrument.

ABSTRACT
The adult's sensitivity to the child's communicative signals, their prompt and appropriate response to the child's needs for security, protection, and comfort, along with their ability to regulate emotions in the face of childhood stress, are parenting skills associated with attachment quality. Various instruments and observation scales code these constructs. Furthermore, developmental psychology has made significant contributions regarding the affective and communicative exchanges between parents and children during early stages of life and their implications for the formation of emotional bonds. The objective of this study is to describe the development and preliminary analysis of a new observation scale called: Quality of Interaction and Secure Attachment Potential (CIPAS), which aims to simply integrate the different parameters of the interactive relationship between attachment figures and children in early childhood. The construction process and initial psychometric analyses from a pilot sample are presented. The results showed very high inter-rater reliability, with an overall kappa value of κ=0.88. The relevance of CIPAS is discussed not only as a valuable tool for developmental psychology research but also as an effective instrument to guide educational practices in promoting secure attachment and quality interaction in young children.

1. Introduction

Attachment can be understood, following the definitions given by Bowlby, as the intense bond of affection and special trust that a child establishes with other emotionally significant people, who constitute a source of security and protection. The main attachment figure during childhood is generally the person who fulfills the maternal function (main caregiver), although it is also established with the father, siblings, grandparents or other relevant caregivers in the child's life (Zan, 2004). Understanding the importance of secure attachment and the quality of parent-child interaction[1] has been considered fundamental to children's emotional, behavioral, cognitive, social, and linguistic development. Research in this field points to the importance of the early stages of the affective relationship between parents and children in the well-being and development of children. Although the first research focused, above all, on the anguished reactions of children to the separation of their attachment figures and the emotional and behavioral manifestations after the reunion, Kobak, Zajoc, and Madsen (2016) emphasize that this panorama was extended to the study of parental competencies and the quality of affective interaction. In this sense, the children's perception of comfort and safety (safe haven and safety) offered by their parents revealed keys to the development of a secure attachment. Based on repetitions of the parents' response to the children's states of emotional dysregulation, discomfort or stress, the theoretical corpus of attachment theory has maintained that schemas or representations of the expected parental responses will be developed, giving rise to the various models of internal functioning of attachment (Mañes et al., 2011). Among the factors related to the development of secure attachment, the sensitivity of the parent or attachment figure to the baby's cues, the adult's responsiveness to his or her communications, the ability to collaborate rather than interfere, physical and psychological availability, and the ability to sustain the children's affective experience stand out (Ainsworth et al., 1978; Bowlby, 1969).

However, and despite the fact that research focused on attachment theory has marked relevant milestones and has strengthened the strength of this perspective, some current scientific voices claim that there are not enough empirical replication studies of both the original studies and subsequent research (van IJzendoorn & Bakermans-Kranenburg, 2024). In this context, it is pointed out that, in order to give rise to replication studies, in different

[1] "Parents" are understood to be the parents or foster figures, whether biological, adoptive or fostering.

populations and countries, reliable and culturally adapted psychometric tools are needed to evaluate these interactions, especially in Spanish-speaking regions where the availability of such instruments is limited (Matus et al., 2008; Valencia & Gómez, 2010).

On the other hand, studies that relate parental competencies with attachment security focus, as a priority, on the maternal sensitivity parameter (Rothbaum & Rosen, 1993) well defined by Mary Ainsworth (1978) and more recently on the parents' ability to regulate the child's crying and emotions (Schore, 2015), as well as on restorative parental competence in the face of disruptions or conflicts (Rojas-Rocha, 2022). However, the ability to transmit tenderness, affection and warmth with the gaze, voice, sensitive touch, and shared enjoyment are also characteristics of parent-child communication that have a positive effect on the construction of the affective relationship and child development (Feldman, 2007). The intersubjective process described by Trevarthen & Aiken (2001), the synchronous adjustment of the mother-child dyad observed by Stern (1987), to cite some of the classic studies, among others, give rise to the idea that attachment security and the quality of parent-child affective communication are intrinsically related, despite the fact that there is not much research that relates both aspects.

The Observation Scale of the Quality of Interaction and Potential for Secure Attachment (CIPAS) emerges as a new tool aimed at creating a bridge that relates the quality of communication and affective interaction between parents and children with the development of a secure attachment. The underlying hypothesis is that the quality of the interaction will be related to the potential of the parents to offer an attachment that brings security, protection and emotional comfort to the child. The scale considers three basic dimensions: a) verbal and nonverbal intersubjective communication; b) the emotional and affective expression of the dyad; and c) the level and evolutionary adjustment of shared play. A fourth dimension analyzes the activation of attachment behaviors that may emerge during the course of the application of the scale, the sensitivity and emotional regulation response of the attachment figure, and the child's expected calm response. These four dimensions stand as subscales of CIPAS. The scale can be applied to normative or at-risk populations, vulnerable to psychosocial problems, and children with mild developmental problems, thus addressing a significant gap in psychometric assessment, especially in Latin America. An extension of this scale, also in the process of validation, includes a 30-minute observation in natural context using the same parameters and a semi-structured interview of secure attachment potential that is applied to the parents.

The development of the CIPAS scale has been based on an extensive qualitative analysis and literature review, followed by quantitative exploratory studies with parent-child dyads, in Spain and in Ecuador, a country that, like Bolivia, Chile, Uruguay and Mexico, faces particular challenges related to children's vulnerability and quality of life (Giacometti & Pautassi, 2014; Ramírez Morales et al., 2023; Vásconez Rivera, 2017). The analysis of interaction and attachment using culturally adapted psychometric tools to Spanish-speaking populations has traditionally been challenging due to the scarcity of validated instruments (Gudmundsson, 2009). In response to this, CIPAS was developed from the collaboration between researchers and professionals who are experts in evolutionary psychology and attachment theory from Spain and Latin America in favor of cultural adaptation and the psychometric validity of assessment instruments.

The relevance of CIPAS is based on the theoretical and descriptive body on maternal care and secure parenting, following the key concepts of attachment theory developed by Bowlby and expanded by Salter Ainsworth et al. (2015) as well as observations from evolutionary psychology. Compared to other reference instruments, such as Feldman's (1998, 2012) Coding Interactive Behavior (CIB), CIPAS is distinguished by establishing observation parameters in 4 dimensions that are grouped in the form of subscales and allow distinguishing the areas that require improvement and those that, on the contrary, are more adjusted to what is expected by reference to developmental psychology. Another differentiable parameter is the fact that the observations are made sequentially and synchronously, not evaluating the parental figure and the child separately, but in their dyadic interaction. In relation to the child's internal attachment patterns and sub-patterns, it should be clarified that the scale does not have this classification as an objective but rather to offer a framework for observing the communicative-affective dimensions of the dyad that allow, in future research work, to be predictors of attachment security. The scale originated from a scientific collaboration agreement[2] that sought to systematize the observation of the quality of interaction and the development of a secure affective bond in children who attended development and early care centers, and were in one of the following two circumstances: a) children,

[2] The first version of this scale was carried out as part of a scientific collaboration programme between the University of Girona and the Municipal Institute for People with Disabilities (MPD) of Barcelona.

without developmental delays but who needed attention since the vulnerable condition of their families or social contexts could be condition their optimal development or b) children who, without being diagnosed with a developmental disorder, showed a certain maturity delay. The application of the scale was conceived as part of an intervention program with the mother or attachment figure. The scale is expected to be part of a broader protocol for the evaluation of parents-children involved in child protection processes due to risk or abandonment. Based on these preliminary studies and the first outline of the construction of the scale, a research work was established within the framework of a doctoral thesis study in order to establish a solid framework for the development and reliability of CIPAS as a psychometric resource for the evaluation of the interaction of children with their attachment figures. This effort represents a significant advance in psychological research and clinical practice, providing an essential tool for understanding and supporting the development of healthy attachment relationships from childhood.

2. Method:

The study was approved by the Ethics Committee of the University of Girona. In addition, written consent was required and received from all participants, including the authorization of the parents or caregivers of the children involved in the recordings, thus securing their agreement for the participation of the minors before initiating the research; approval was also received from the Ministry of Public Health of Ecuador.

Participants:

Design Stage: For empirical validation and adjustment of the scale items, 50 videos of interactions between parents and children were analyzed. These videos included children aged between 0 and 6 years, with a mean age of 2.5 years (SD = 1.9), both from the normative population belonging to volunteer families and from children with mild developmental delays filmed as part of their diagnostic process at the Health Center in Machala, within the stimulation area. The sample of parental figures observed in the 50 videos was predominantly composed of mothers, who represented 78% of the total (39 out of 50). The ages of the mothers ranged from 22 to 38 years, with a mean age of 29 years. In addition, six grandmothers (12%) aged between 48 and 55 years were included, as well as three aunts (6%) aged between 24 and 27 years. Parent representation was minimal, with only two parents (4%) aged 34 and 36. Overall, the sample included parental figures aged between 22 and 55 years, with a mean age of 31 years (SD = 7.92). The videos were provided by the professionals who made up the judging team, and each video was used to ensure that the items on the scale adequately covered observations of parent-child interactions.

Reliability Stage: Participants in this study were intentionally selected and consisted of 24 dyads, each composed of parents or attachment figures and children. The families were recruited from a Health Center in Machala, Ecuador, which offers child development checkups within its primary care programs. The sample included children aged between 0 months and 5 years, with a mean age of 2.25 years (SD = 1.76). The analysis of the videos was organized by age group at six-month intervals to obtain more accurate evaluations. In terms of gender, the distribution was equal: 50% girls and 50% boys. The sample of parental figures observed in the videos was predominantly composed of mothers, who represented 87% of the total (20 out of 23). The ages of the mothers ranged from 20 to 39 years, with a mean age of 28 years. In addition, two grandmothers (9%) aged 50 and 57 were included, as well as an aunt (4%) aged 25. Parent representation was minimal, with only one parent (4%) aged 35. Overall, the sample included parental figures aged between 20 and 57 years, with a mean age of 30 years (SD = 8.99). This distribution highlights a notable predominance of young women in the parental role.

Participants came from vulnerable socioeconomic sectors and risky environments, characterized by criminality, micro-trafficking and prostitution, among other adverse factors. Regarding the educational level of the parental figures, 75% had completed secondary education, 20% had completed primary school, and 5% had higher education. In terms of marital status, 75% lived with a partner, while 25% were single-parent.

Procedure:

The method followed for the elaboration of the instrument was based on the principles established by Soriano Rodríguez (2015), focusing on the concepts of theoretical construct, measurement, reliability and validity. The process of design, drafting and preliminary validation of the instrument was carried out through several prototypical phases described below:

1. Theoretical research and definition of the construct.

In this first phase, the author of the scale explored the scientific literature on intersubjective development and parameters of parent-child relational communication in early childhood, also relying on her scientific knowledge on attachment theory and parental competencies that favor the development of secure attachment. Based on this, he wrote the first configuration of the items of the scale (Version 1 of the Scale).

2. Expert Judgment and Item Adequacy.

The Content Validity Phase (CVI) of the scale was carried out through the collaboration of a group of experienced and recognized professionals in the field of child development and attachment theory. In this phase, 16 sessions of three hours each were organized, where the theoretical dimensions of the construct were discussed in depth and a comparative analysis was carried out with related existing instruments.

Theoretical Dimension of the Construct: The experts discussed the theoretical basis of the scale, addressing key concepts of intersubjective development, relational communication and the parental competencies necessary for the development of a secure attachment.

Comparative Analysis of Existing Instruments: Established instruments such as the Strange Situation Procedure by Mary Ainsworth et al. were reviewed and compared.(1978), the Messie-Campbell Scale (1992), and the Attachment Story Completion Task (ASCT) by Bretherton et al. (1990). This analysis made it possible to identify similarities and differences in the objectives of each instrument, integrating valuable and complementary elements to the new instrument.

To focus the analysis on the quality of interaction and the parental competencies that predict secure attachment, the categories of George Downing's Video-Interaction Therapy (VIT) (2005) and Ruth Feldman's (1998) Coding Interactive Behavior (CIB) scale were studied in detail. The author of the instrument was accredited in the use of these methods, which facilitated its integration into the new scale.

Mary Ainsworth's maternal sensitivity scales and the six dimensions of the Dyadic Emotional Availability (EA) Scale by Biringen et al. were considered. (2008), as well as the studies on the first mother-son relationship by Daniel Stern (1983).

The works of Trevarthen (2001) and the Observational Scale of Levels of Intersubjectivity and Shared Symbolic Play in the original version of Sadurní, M (1993) were consulted. For the part of the test that involves a semi-structured interview, the Adult Attachment Interview by Main et al. (1996) and the Adult Attachment Interview (EVA) by Barudy and Dantagnan (2010) were reviewed.

This rigorous review and comparison process allowed adjusting and enriching the items of the scale, ensuring their validity and relevance to evaluate the quality of interaction and parental competencies.

Writing and Adaptation of Items: At this stage, the items were adjusted to the children's developmental ages and were written in a style understandable to the professionals in charge of administering the test. The items were established in Catalan and Spanish, and translated bidirectionally to ensure that they retained their purpose and meaning. The translation and retranslation of the items was carried out by bilingual psychologists, who ensured the fidelity of the original content. In addition, the new drafts were reviewed by professionals from the language service of the University of Girona. This step was repeated with predoctoral researchers in different Ibero-American contexts, especially in Ecuador, where the pilot test presented in this study was carried out.

During this phase, 50 videos of children aged between 0 and 6 years were analyzed with a double purpose: to verify that the items were adjusted to the observations and that the observations of the interactions of the dyad were covered by all the items. The videos were provided by the different professionals who made up the team of judges and correspond to children from a normative population who belonged to close volunteer families or children with mild developmental delays who had been filmed as part of their diagnostic process in the relevant stimulation center. Once this process was carried out, it was determined that the items on the scale fit a population of 0-5.

To empirically determine the validity of content through expert judgment, only the items on the scale that had obtained a score of +1 following the Lawshe index were left; which consists of a value calculated from the answers of a group of experts on the relevance of each item. In this case, each expert rated the items according to whether they considered them to be "essential," "useful, but not essential," or "unnecessary." The Lawshe index for each item is calculated by obtaining a score of +1 if the expert consensus indicates that the item is "essential." Those items that achieved this score were retained on the scale, while items that did not reach this

threshold were eliminated. This process ensures that only items considered critical for measuring interaction and secure attachment remain on the CIPAS scale, which reinforces their content validity (Lawshe, 1975).

Instrument: The wording and adaptation of items gave rise to the instrument; the number of items on the scale was 95, organized in four dimensions for children and four for parents (Version 2 of the scale), as detailed in Table 1. This structuring allows for a detailed and specific assessment of various aspects of parenting interaction and competencies that are crucial for the development of secure attachment.

Table 1. General Scale Parameters

OBSERVATION OF THE CHILD	FATHER'S OBSERVATION
A. Quality of the child's verbal and nonverbal communication. (9 items)	B. Quality of verbal and non-verbal communication directed at the child. (9 items)
C. Quality of the child's emotions and affective expression. (17 items)	D. Quality of emotions and affective expression directed at the child. (19 items)
E. Quality of the child's exploration and play. (13 items)	F. Quality of the promotion of children's exploration and play. (16 items)
G. The child's response to stress: activation of attachment behaviors and response to maternal regulation maneuvers. (8 items)	H. Quality of response to attachment behaviors and the child's capacity for emotional regulation (7 items)

3. Inter-rater reliability

According to the results of the content validity analysis among the expert judges, the instrument for the analysis of concordance through inter-rater reliability was applied. The sample was intentional and included 24 dyads composed of parents-children. The analysis of the videos was carried out by age groups, with intervals of six months, in order to obtain a more accurate and relevant evaluation. As noted, most of the parents who participated were women, reflecting the care dynamics predominant in the study. Families were recruited at a Health Center in Machala, Ecuador. These centers offer child development screenings as part of their prevention and comprehensive care programs in primary care.

To summarize the entire process, Figure 1 presents a summary of the rigorous methodological process used for the development of the CIPAS instrument and its preliminary analysis.

Fig.1. Process for the development of the instrument and preliminary analysis. In original language: Spanish

Data analysis:

The quantitative validation of the pilot study included the participation of seven psychologists who are experts

in child development trained by the creator of the scale, providing the analysis of reliability and agreement of the scale in the pilot test that is presented in results. The analysis was carried out independently and in pairs on the same case, that is, no evaluator shared the rating of the other.

For the reliability and agreement analysis, intercoder agreement tests were performed using Cohen's Kappa coefficient withquadratic weighting, since the scale is ordinal. These analyses were carried out with Python (2022).

3. Results

The results section presents: a) the structure of the resulting scale after the design process carried out; (b) quantitative reliability results through concordance analysis; and, c) the results obtained on the application of the scale in the Ecuadorian population.

a) Structure of the scale

Presentation of the Instrument and Coding of the items: The CIPAS has been created by Sadurní, M, with the aim of establishing a baseline that allows the assessment of the quality of interaction and affective relationship when initiating an early intervention or psychosocial program and empirical evidence of the changes that have occurred in the child's parental competencies and behaviors. The instrument consists of an observation template that analyzes: 1) a videotaped observation of the 8-minute dyad interaction; or 2) a 30-minute undirected observation in natural contexts.

The age of the child subject of the observation ranges from 0 to 5 years. The parameters that are coded and represented are organized into subscales. The instrument consists of 95 items (47 for children and 51 for parents) designed to capture different parameters of dyadic interaction. The items are presented in the form of a Checklist or Observations Template organized around the four dimensions presented in Table 1.

Each of the parameters is coded on a Likert scale from 1 to 5 and can award half points. If the observational parameter cannot be appreciated, it is marked with a score of 0. As a general rule, scores from 1 to 2.5 are given when the action or behavior of the child or the parent has occurred in very or low frequency. From 3 to 3.5 when, in the eyes of the accredited coder, the frequency is as expected, taking into account the child's developmental level, although it can be improved, and from 4 to 5 it is understood that the frequency or quality of the interactions to be scored are high. Since the items to be observed are a mixture of positive and negative aspects, it must be taken into account that a low or high score will be considered ideal or not depending on the item. The instrument is prepared at the computer level so that an average score of each subscale is obtained taking into account these differentiated variables.

The CIPAS is an instrument applicable to the child population and its parenting figures from birth to five years of age. It has been developed, as has been commented, from the bibliographic review and the judgment of experts of the construct of parental sensitivity and competencies that are intended to be related to the internalization of parenting figures as figures of secure attachment, as well as with the evolutionary parameters of the affective interaction between father and son characteristic in normative population. The scale can be applied to both normative and vulnerable or at-risk populations and can be used for paediatric assessments, in early stimulation centres or in psychosocial intervention contexts.

CIPAS Application Methodology

Observation Protocol: This component involves the recording and subsequent analysis of an eight-minute video that captures the natural interaction between the child and his caregiver; It can be complemented with observation in a natural environment. For the recording, the environment can vary, including doctors' offices, laboratories or the home, thus adapting to the most favorable conditions for each dyad. During the recording, caregivers are encouraged to interact with children in the way they usually would, even allowing them to perform routine activities such as feeding or changing them. Specific play material is provided, selected for its ability to promote interaction. This protocol is complemented by the measurement of observations using the same template in natural environments for 30 minutes, in order to contrast the results obtained under controlled conditions and provide a broader perspective on the interaction.

b) Quantitative results on reliability through a concordance analysis

Inter-judge reliability was assessed using Cohen's Kappa coefficient. Kappa values indicate the level of

agreement between judges. Kappa values range from -1 to 1, where a value of 1 indicates perfect agreement, 0 suggests random-level agreement, and negative values imply systematic disagreement. The common interpretation of kappa values is as follows: less than 0 indicates poor agreement, 0.01-0.20 means slight, 0.21-0.40 is acceptable, 0.41-0.60 is moderate, 0.61-0.80 is good, and 0.81-1.00 is very good or excellent (Landis & Koch, 1977; Viera & Garrett, 2005).

The value of the agreement between Kappa judges yielded an overall index of κ=0.886, which indicates a very good agreement among the coders. This level of agreement, reflected in Table 2, suggests an adequate reliability of the instrument in this preliminary stage, considering the complexity inherent in the coding of the interactions. The specific Kappa values for the different groups of observers varied, but always exhibited a very high degree of agreement, showing reasonable consistency in the evaluation of interactions and supporting the applicability of CIPAS for future validation phases.

Table 2. K values, by groups of observers.

Group	Value of κ
Group 1	0.86
Group 2	0.95
Group 3	0.83
Group 4	0.88

The Kappa values analyzed by category of items presented in Table 3 showed results ranging from acceptable to excellent, the category with the least agreement was G, which is related to the child's response to stress, including the activation of attachment behaviors and the response to maternal regulation maneuvers. Given the relevance of maintaining this category, it is proposed to implement, in the following validation phases, a different strategy in the instruction at the time of recording the videos. This modification will allow us to observe this parameter more effectively, without considering its elimination, since its value is supported by the literature.

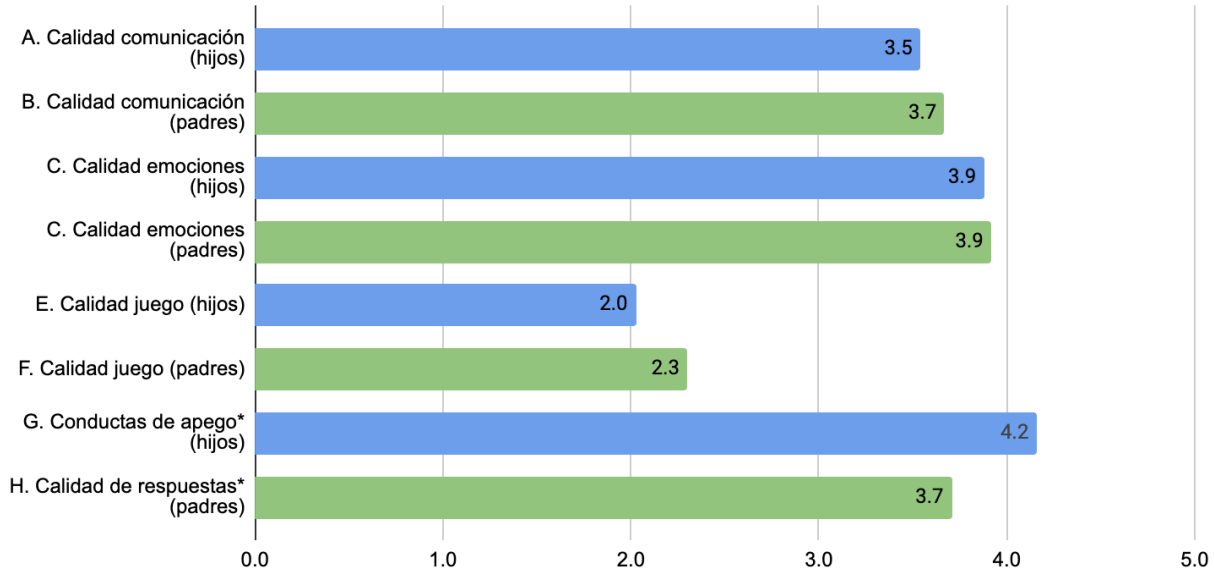
Table 3. K values, by item category

Category	K
A. Quality of the child's verbal and nonverbal communication. (9 items)	0.54
B. Quality of verbal and non-verbal communication directed at the child. (9 items)	0.63
C. Quality of the child's emotions and affective expression. (17 items)	0.84
D. Quality of emotions and affective expression directed at the child. (19 items)	0.83
E. Quality of the child's exploration and play. (13 items)	0.89
F. Quality of the promotion of children's exploration and play. (16 items)	0.90
G. The child's response to stress: activation of attachment behaviors and response to maternal regulation (8 items)	0.34
H. Quality of response to attachment behaviors and the child's capacity for emotional regulation (7 items)	0.52

c) Results obtained on the application of the scale in the Ecuadorian population

It is important to consider that the sample size of the pilot study is small, so these results should be interpreted with caution.

Figure 2, presented below, integrates the results obtained from applying CIPAS in this study, capturing important elements of parent-child interaction.



Note: *four observations

Fig 2. Results of the Evaluation of the Quality of Parent-Child Interaction. In original language: Spanish

The results show that the quality of communication, both of the child (3.5) and the parent (3.7), reflects normative scores. This indicates constructive and positive interactions in the parent-child relationship, suggesting that verbal and nonverbal communication does not present relevant problems.

In terms of emotions, the scores on the quality of emotions of both the child (3.9) and the parent (3.9) are within a moderate-high range. This denotes proper emotional management and a healthy affective exchange, a crucial aspect for the emotional well-being and socio-emotional development of children.

However, the child's (2.0) and parent's (2.3) play quality scores are the lowest, highlighting this aspect as an area that needs attention. Play is critical to a child's cognitive and emotional development, so improving the quality of play could have significant beneficial effects.

Finally, the child's attachment behaviors and the quality of the parents' responses were assessed with only 4 observations each. The child's attachment behaviors have a high score of 4.2, indicating a secure attachment and a strong affective relationship. The quality of parents' responses has a score of 3.7, suggesting that parents are often responding appropriately to children's needs. However, it is essential to interpret these results with caution due to the limited number of observations and to consider the need for a more thorough analysis with a larger sample to obtain more robust conclusions.

These results highlight communication and emotional management as strengths in the parent-child interaction in the sample studied. However, the intersubjective interaction between parent and child through sharing play spaces and symbolic significance requires a clear improvement. On the other hand, the evaluation of attachment behaviors and the father's responses merit a more detailed assessment due to the limited sample used in the study.

Taken together, the results of CIPAS offer future guidance and point to the importance of mindful parenting practices. The need to continue researching and developing this instrument is raised, which is postulated as a valuable guide to evaluate and improve parent-child interaction . These findings allow us to think about targeted, evidence-based interventions that can further strengthen family relationships and child development.

In our study, there were few moments in which we were able to observe behaviors that activate the child's attachment. However, they stand out with the highest score in the dataset with a 4.18, which suggests that, in these few observations, the activation of attachment behaviors and the ability to calm after the father's regulatory performance is positive. The quality of the father's responses in response to the child's attachment behaviors, also based on these 4 observations, obtains a score of 3.75, which is above the average of most indicators, which indicates good sensitivity to signals and ability to regulate.

Variability in scores needs to be explored in further research to better understand the factors that contribute to the quality of parent-child interaction in these different aspects.

4. Discussion

CIPAS emerges as a new instrument framed in developmental psychology and attachment theory. This process, significantly enriched by the incorporation of focus groups, has allowed fundamental adjustments to be made based on expert feedback, thus improving the methodological rigor and clinical relevance of the scale. The study details the careful process of creating the scale and provides preliminary evidence of the reliability of CIPAS in an Ecuadorian sample. The modifications to the observation protocol through expert analysis included significant adjustments in the items in order to better capture the dynamics of the interactions, and the inclusion of specific items such as avoidance, self-regulation and emotional lability in both children and caregivers.

Inter-observer variability through the kappa coefficient (Cerda L & Villarroel del P, 2008), has revealed a very good agreement, indicating the reliability of CIPAS for future research and clinical applications.

The results obtained in the Ecuadorian population provide valuable insights into the dynamics of parent-child interaction that are discussed in this section.

First, the results reveal that verbal and nonverbal communication conform to a normative population, as well as the expression of interest, tenderness, warmth, and other positive emotional exchanges between parent and child. This fact is interesting because we know that socio-affective exchanges between babies and caregivers are part of the child's development process. From the moment of birth, babies are attracted to the caregiver's face, to his voice and prosody, as Daniel Stern's (1998) studies reflected. The author spoke of the choreographic dance that is established in this dialogic communication of tender gestures, smiles, and expressions through which the child began to have knowledge of the other, of himself and of the world around him.

In these expressive spaces of exchange, play in parent-child interaction also becomes relevant for child development, acting as a critical platform for learning, emotional development, and the construction of a secure attachment (Ginsburg, 2007). Play offers a unique space for children to explore and learn in company and through the adult, facilitating the development of essential skills through an activity that is intrinsically motivated and deeply rooted in pleasure and curiosity (Hirsh-Pasek et al., 2009).

The results of the present study are in line with the findings of Ramírez Morales et al. (2023) in the Ecuadorian population, underscore the importance of focusing on improving the quality of the game within these dynamic interactions. If we address the issue within the framework of the studies of Perinat and Sadurní (1995); Sadurní (1993) and Sadurní and Pérez (2016).

We can conclude that most of the type of shared play that the dyads in this study have carried out are below the intersubjective level that corresponds to them. The use of potentially symbolic materials and toys is reoriented, in the observation of the videos, to create instructional situations in which the children must follow the parental guidelines and place the construction pieces in the corresponding place or show the camera that they know the colors, shapes or other properties of the objects, with neither the child nor the parent appreciating expressions of joy that give a connotation of shared pleasurable play. These observations require future research that expands the detail and framework of understanding them. However, we can agree with Ginsburg (2007) that it is essential to offer parents concrete strategies to enrich play, underlining how it can be used to foster curiosity, self-expression and emotional resilience in children as well as highlighting the importance of sharing a space of playful time with the child. To make progress in this area, it is imperative that public policies and community development initiatives value and promote play as an essential tool for child development and family strengthening. Implementing safe spaces for play and supporting educational programs for parents can be critical steps in improving the quality of parent-child interactions through play.

In relation to the subscale that aims to analyze whether children are able to activate attachment behaviors when they are in a stressful situation, if caregivers are sensitive to these demands, have regulation strategies and if the child calms down and can explore again, we must point out that this study does not offer sufficiently contrasted results based on only 4 specific observations. Admittedly, it is very difficult to offer an alternative to the experimental test of the strange situation designed by Mary Ainsworth. In this test, an event that we know is potentially overwhelming for the child is intentionally induced: we introduce him into a room unknown to him and he will have to face the separation from the mother and the presence of a stranger who tries to comfort. When the mother returns, we will be able to see this activation of attachment behaviors and trust in the

attachment figure as a safe haven. However, the CIPAS scale does not contemplate any experimental situation, so it is difficult for the child to go through a stressful situation in eight minutes of video that would allow the search for the attachment figure and its potential to restore calm. This difficulty may be solved with the part of observation in a natural context that contemplates a longer time of undirected observation, or with a different instruction at the time of making the video recordings. Future studies should be conducted to obtain more data to allow a more extensive assessment of this point.

Finally, the importance of testing instruments in different populations and recognizing cultural diversity in parenting practices is discussed to ensure that interventions are culturally sensitive and adapted to the specific needs of families (Tamis-LeMonda et al., 2008). In our case, this has involved close collaboration between professionals and academics from two different continents and also coordination between local communities, health professionals and educators.

This finding underscores the importance of further validating the psychometric properties of CIPAS. A thorough validation of this instrument could make it a valuable resource within the Ecuadorian context, facilitating not only the assessment, but also the support of specific interventions designed to reinforce the crucial elements of the parent-child dynamic; which aligns with contemporary research that emphasizes the significant influence of early parental relationships on children's social and emotional well-being and development (Cabrera et al., 2007; León & Olhaberry, 2020).

The nature of the sample in Catalonia (Spain) in the preliminary phases of the construction of the instrument and the Ecuadorian sample used in this study has allowed the evaluation of essential aspects of parental interactions through the CIPAS Scale as a promising psychometric tool and suggests the need to expand the research to different contexts and populations to generalize the findings and advance in the final process of accreditation of the instrument.

5. Conclusions and Limitations of the study

In conclusion, the CIPAS scale emerges as a promising tool in the field of clinical and developmental psychology, with the ability to significantly improve the assessment of interaction quality and secure attachment in early childhood. However, the limitations observed during the pilot test phase, mainly related to the small sample size, underline the need to continue with broader and more diversified research to consolidate its validity and psychometric reliability.

To advance in the validation process, it is essential to implement an exploratory factor analysis (EFA) with a larger sample, which will allow the underlying structure of the scale to be identified and confirmed, and thus to debug its key dimensions. In addition, the use of multivariate analyses, such as MANOVA, would be essential to contrast the effectiveness of the scale in differentiating clinical groups and normative populations. Test-retest reliability should also be assessed by sub-sample in separate sessions, to ensure temporal consistency of measurements. Finally, a longitudinal analysis would provide critical information about the stability of dyadic interactions assessed over time, contributing to a deeper understanding of the attachment process.

These additional phases will not only strengthen the psychometric validation of CIPAS, but will allow it to be adapted for wider application in clinical and research contexts. By integrating this rigorous methodological approach, the CIPAS scale will not only facilitate the assessment of interaction and attachment in diverse populations, but will also provide a robust theoretical and empirical framework for the design of interventions aimed at improving attachment relationships and child development.

Authors' notes: The authors declare absence of funding or conflicts of interest in this study, complying with the ethical and biosafety regulations of the University of Girona, which supported the research on the development of the CIPAS scale. Informed consent was obtained from the participants, protecting their rights and anonymizing identifiable data, with permission to publish according to university guidelines and the Journal of Advances in Latin American Psychology. The data, from the Ministry of Public Health of Ecuador, is available under conditions of privacy and ministerial authorization.

References

[1] Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). Strange Situation Procedure. Patterns of attachment: A psychological study of the strange situation. Clinical Child Psychology and Psychiatry. https://doi.org/10.1037/t28248-

000
[2] Biringen, Z., Robinson, J., & Emde, R. (2008). The emotional availability (EA) scales. Unpublished manual, 31998.
[3] Bowlby, J. (1969). Attachment and Loss. Vol. 1, Attachment. New York: Basic, 1982. Attachment and loss, 2.
[4] Bretherton, I., Ridgeway, D., & Cassidy, J. (1990). Assessing internal working models of the attachment relationship: An attachment story completion task for 3-year-olds. Attachment in the preschool years: Theory, research, and intervention., 507, 273-308. https://psycnet.apa.org/fulltext/1990-98514-009.pdf
[5] Cabrera, N. J., Shannon, J. D., & Tamis-LeMonda, C. (2007). Fathers' Influence on Their Children's Cognitive and Emotional Development: From Toddlers to Pre-K. Applied developmental science, 11(4), 208-213. https://doi.org/10.1080/10888690701762100
[6] Downing, G. (2005). Discussion: Emotion, body, and parent-infant interaction. En J. Nadel (Ed.), Emotional development: Recent research advances (pp (Vol. 457, pp. 429-449). Oxford University Press, xvii. https://psycnet.apa.org/fulltext/2005-07347-017.pdf
[7] Feldman, R. (1998). Coding Interactive Behavior (CIB) (Tesi doctoral). Bar-Ilan University, Israel. Bar-Ilan University, Israel.
[8] Feldman, R. (2007). Parent–Infant Synchrony: Biological Foundations and Developmental Outcomes. Current directions in psychological science, 16(6), 340-345. https://doi.org/10.1111/j.1467-8721.2007.00532.x
[9] Feldman, R. (2012). Parenting behavior as the environment where children grow. The Cambridge handbook of environment in human development., 723, 535-567. https://doi.org/10.1017/CBO9781139016827.031
[10] Giacometti, C., & Pautassi, L. C. (2014). Childhood and social (dis)protection: a comparative analysis in five Latin American countries. United Nations; ECLAC-UNICEF, Santiago de Chile. https://hdl.handle.net/11362/37327
[11] Ginsburg, K. R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. Pediatrics, 119(1), 182-191. https://doi.org/10.1542/peds.2006-2697
[12] Gudmundsson, E. (2009). Guidelines for translating and adapting psychological instruments. Nordic Psychology, 61(2), 29-45. https://doi.org/10.1027/1901-2276.61.2.29
[13] Hirsh-Pasek, K., Golinkoff, R. M., Berk, L. E., & Singer, D. G. (2009). A mandate for playful learning in preschool: Presenting the evidence. https://psycnet.apa.org › recordhttps://psycnet.apa.org › record, 121. https://psycnet.apa.org/fulltext/2008-14352-000.pdf
[14] Kobak, R., Zajac, K., & Madsen, S. D. (2016). Attachment disruptions, reparative processes, and psychopathology: Theoretical and clinical implications. Handbook of attachment: Theory, research, and clinical applications, 3, 25-39.
[15] Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. Biometrics, 33(1), 159-174. https://doi.org/10.2307/2529310
[16] Lawshe, C. H. (1975). A quantitative approach to Content Validity. Personnel Psychology, 28, 563-575. https://doi.org/10.1111/J.1744-6570.1975.TB01393.X
[17] León, M. J., & Olhaberry, M. (2020). Triadic interactions, parental reflective functioning, and early social-emotional difficulties. Infant Mental Health Journal, 41(4), 431-444. https://doi.org/10.1002/imhj.21844
[18] Mañes, R. J. M., Aguado, R., Barrocal, Y. S., & Molero, L. (2011). THE IMPORTANCE OF EARLY EXPERIENCES OF AFFECTIVE AND RESPONSIBLE CARE IN MINORS. International Journal of Developmental and Educational Psychology: INFAD. Journal of Psychology, 1, 511-520. https://dialnet.unirioja.es/servlet/articulo?codigo=5098344
[19] Massie, H., & Campbell, K. (1992). The Massie-Campbell Scale of mother-infant attachment indicators during stress. For use during the pediatric examination and other childcare situations.
[20] Matus, T., Haz, A. M., Razeto, A., Funk, R., Roa, K., & Canales, L. (2008). Innovating in quality: Construction of a quality certification model for social programs. Road to the Bicentennial Proposals for Chile, Pontificia Universidad Católica de Chile. Andros Printers.
[21] Perinat, A., & Sadurní, M. (1995). Let's play at making phone calls. Symbolic play and recursive processes in communicative interaction. Substratum (Barcelona), 3(7), 77-102.
[22] Python. (2022). Python Software Foundation (Versión 3). Available at http://www. python.org
[23] Ramírez Morales, K., Sadurní Brugue, M., Jiménez Castillo, R., & Ramírez Morales, I. (2023). Interaction of Ecuadorian preschoolers and their mother figures. Veritas & Research, 5(2), 143-159.
[24] Rojas-Rocha, C. A. (2022). Tronick, E. & Gold, C (2021). The power of discord. The secret to strengthening emotional well-being. Planet. 266 pages. Contemporary Clinic, 13(3). https://doi.org/ 10.5093/cc2022a20
[25] Rothbaum, F., & Rosen, K. (1993). Quality of parental caregiving and security of attachment. Developmental psychology, 2(29), 358-367. https://doi.org/10.1037/0012-1649.29.2.358
[26] Sadurni, M. (1993). Scale of Development of Intersubjective Symbolic Play Mother - Child. Unpublished doctoral thesis.
[27] Sadurni, M., & Pérez-Burriel, M. (2016). Outlining the windows of achievement of intersubjective milestones in typically developing toddlers. Infant mental health journal. https://onlinelibrary.wiley.com/doi/abs/10.1002/imhj.21576
[28] Salter Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. N. (2015). Patterns of attachment: A psychological study of the strange situation. taylorfrancis.com. https://doi.org/10.4324/9780203758045/patterns-attachment-mary-salter-ainsworth-mary-blehar-everett-waters-sally-wall
[29] Schore, A. N. (2015). Affect Regulation and the Origin of the Self: The Neurobiology of Emotional Development (Routledge (ed.); Vol. 45, p. 752). SAGE Publications. https://doi.org/10.4324/9781315680019
[30] Soriano Rodríguez, A. M. (2015). Design and validation of measurement instruments. Dialogues, 14, 19-40.

https://doi.org/ 10.5377/dialogos.v0i14.2202
[31] Stern, D. (1983). The first relationship: mother-child. Ediciones Morata. https://play.google.com/store/books/details?id=rsGJJlU-6dUC
[32] Stern, D. (1987). The interpersonal world of the infant: A view from Psychoanalysis Developmental Psychology. 19, 73-74. https://doi.org/10.1007/bf03174535
[33] Tamis-LeMonda, C. S., Way, N., Hughes, D., Yoshikawa, H., Kalman, R. K., & Niwa, E. Y. (2008). Parents' goals for children: The dynamic coexistence of individualism and collectivism in cultures and individuals. Social development , 17(1), 183-209. https://psycnet.apa.org/fulltext/2008-00719-010.pdf
[34] Trevarthen, C., & Aitken, K. J. (2001). Infant intersubjectivity: research, theory, and clinical applications. Journal of Child Psychology and Psychiatry, and Allied Disciplines, 42(1), 3-48. https://www.ncbi.nlm.nih.gov/pubmed/11205623
[35] Valencia, E., & Gómez, E. (2010). An Eco-Systemic Family Assessment Scale for Social Programs: Reliability and Validity of NCFAS in a High Psychosocial Risk Population. Psykhe (Santiago), 19(1), 89-103. https://doi.org/10.4067/S0718-22282010000100007
[36] van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2024). Cuestiones de significancia. Mago Editores. https://play.google.com/store/books/details?id=RDH8EAAAQBAJ
[37] Vásconez Rivera, I. (2017). Educational Parenting Practices and Machismo: Influence on the Language Development of 18-Month-Old Infants in Various Regions of Ecuador [Universidad Casa Grande. Graduate Department]. http://200.31.31.137:8080/handle/ucasagrande/1289
[38] Viera, A. J., & Garrett, J. M. (2005). Understanding interobserver agreement: the kappa statistic. Family Medicine, 37(5), 360-363. https://www.ncbi.nlm.nih.gov/pubmed/15883903
[39] Zan, F. (2004). Importance of attachment in the development of psychism. Vertex , 15(56), 121-129. https://europepmc.org/article/med/15243656