

# Psychometric Properties of the Inventory of Parents-Peer Attachment (IPPA) in Adolescents with Behavioural Problems

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## ARTICLE INFO

### Article history:

Received 4 October 2022

Accepted 8 May 2023

Available online 11 September 2023

### Keywords:

IPPA

Attachment

Adolescents

Parents

Peers

Behavioural problems

Validation

## ABSTRACT

**Background:** The Inventory of Parental-Peer Attachment (IPPA) is an internationally recognized measure to assess the attachment of adolescents to their parents and peers. The objective of this study was to examine the psychometric properties of the IPPA in a sample of Spanish adolescents with behavioural problems. **Method:** The sample was composed of 294 Spanish adolescents (53% girls) with behavioural problems. The IPPA mother, father, and peer versions, along with other related measures, were administered. **Results:** The 25-item scale, distributed into three factors, was confirmed for both the mother and father versions but not for the peer version. The IPPA showed adequate values of reliability ranging from .79 to .86. Validity was demonstrated through correlations with emotional intelligence, antisocial behaviour, and aggressiveness. **Conclusion:** The three-factor version of the IPPA is a useful, reliable, and valid scale to assess the attachment of adolescents with problematic behaviours and their parents.

## Propiedades psicométricas del Inventario de Apego a Padres-Iguales (IPPA) en adolescentes con problemas de comportamiento

## RESUMEN

**Antecedentes:** El Inventario de Apego a Padres e Iguales (IPPA) es un instrumento reconocido internacionalmente para evaluar el apego de adolescentes hacia padres e iguales. El objetivo de este estudio ha sido examinar las propiedades psicométricas del IPPA en una muestra de adolescentes españoles con problemas de conducta. **Método:** La muestra estaba compuesta por 294 adolescentes españoles (53% chicas) con problemas de conducta. Se administraron las versiones de IPPA madre, IPPA padre e IPPA iguales, junto con otras medidas relacionadas. **Resultados:** Se ha confirmado la escala de 25 ítems, distribuida en tres factores, para la versión IPPA madre e IPPA padre, pero no para la versión de iguales. El IPPA ha mostrado valores adecuados de fiabilidad que oscilaban entre .79 y .86. La validez se demostró mediante las correlaciones significativas con las variables inteligencia emocional, conducta antisocial y agresividad. **Conclusiones:** La versión de tres factores del IPPA es una escala útil, fiable y válida para evaluar el vínculo de adolescentes que muestran conductas problemáticas con sus padres.

Conduct disorder in adolescence is defined as a frequent and lasting pattern of behaviour characterized by the violation of the basic rights of other people or of social norms (American Psychiatric Association, 2013). It is estimated that up to 8% of adolescents present symptoms compatible with conduct disorder, which is the main reason for psychological care in this developmental stage (Mohammadi et al., 2021). Classifications of adolescents' behavioural problems have shown common aspects, such as the presence of problematic behaviours in the various contexts of adolescent development, especially in the family and social contexts (Maya, Jiménez, et al., 2020). The problematic behaviours of adolescents can be defined

as externalizing adjustment problems in relationships with others: attacking, disobeying, lying, or expressing hostile feelings towards familiar individuals or strangers (Maya, Jiménez, et al., 2020). Among the most analysed factors of adolescents' relationships, the quality of emotional attachment with parents and friends is one of the main explanatory factors of behavioural problems and the degree of adjustment (Loeber & Farrington, 2000).

The existence of a secure attachment between parents and children has traditionally been considered an important factor in promoting child well-being (e.g., attachment theory; Ainsworth & Bowlby, 1991). Studies have found that a parent-adolescent relationship

Cite this article as: Maya, J., Arcos-Romero, A. I., & Hidalgo, V. (2023). Psychometric properties of the inventory of parents-peer attachment (IPPA) in adolescents with behavioural problems. *Clínica y Salud*, 34(3), 131-137. <https://doi.org/10.5093/clysa2023a13>

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based on communication, the promotion of autonomy, and parental supervision predicts better adolescent adjustment (Ioffe et al., 2020; Rodríguez-Meirinhos et al., 2020; Ruiz-Hernández et al., 2018). In contrast, conflictive behaviours of adolescents have been associated with dysfunctional family dynamics and parenting styles such as authoritarian or indulgent parenting (Ruiz-Hernández et al., 2018).

Peer relationships play an important role during adolescence given the positive effects of emotional support among young people (Sakya et al., 2015). Generally, social support, acceptance, and social attachment have been associated with good adolescent adjustment (Schoeps et al., 2020). Difficulties in achieving secure attachment, a lack of belonging to a social group, and social rejection have been associated with behavioural problems (Dishion et al., 2008). According to Cornella-Font et al. (2020), quality relationships with peers are associated with lower risks of emotional and behavioural problems.

One of the quality criteria of evidence-based treatments is instruments with good reliability indices adapted to the targeted population (Frost et al., 2007). In interventions with adolescents exhibiting problematic behaviours that aim to strengthen attachment, it is necessary to have validated instruments to facilitate both the design of the interventions and the evaluation of effectiveness. The Inventory of Parental-Peer Attachment (IPPA; Armsden & Greenberg, 1987) was developed to evaluate young people's attachment to parents and peers. The original instrument had 28 items to evaluate attachment to parents and 25 items related to peers. The items are grouped into three factors: trust, communication, and alienation. Trust refers to mutual feelings of understanding between adolescents and parents (or friends), the perception of respect between individuals and the perception of parents (or peers) as support figures for adolescents. Communication can be understood as the presence of open and fluid dialogue between adolescents and parents (or friends) and the responsiveness of others to the needs of the adolescent. Finally, alienation is related to perceptions and feelings of hostility towards parents (or peers), isolation, and a low perception of family or social belonging (Armsden & Greenberg, 1987). The dimensions of communication and trust positively correlate with each other, while alienation negatively correlates with communication and trust (Armsden & Greenberg, 1987). A total score can be used so that high scores in communication and trust accompanied by low scores in alienation imply the presence of secure attachment. This original version for parents (28 items) and for peers (25 items) has been tested in psychometric studies (Andretta et al., 2017; Baiocco et al., 2009). Recently, Andretta et al. (2017) confirmed adequate functioning with the three dimensions in parents' version but not for peers' version. However, although peers' version has been maintained over time, the original authors (Armsden & Greenberg, 1989) proposed that the attachment may differ between mothers and fathers and therefore did not recommend the use of the parent version. Thus, they transformed the original parent version (28 items) into two new versions, the mother's version (25 items) and the father's version (25 items), while maintaining the peer version (25 items).

Several psychometric studies have been conducted on these three versions (Delgado et al., 2016; Guarnieri et al., 2010; Pace et al., 2011; Pardo et al., 2006). Most studies agree on a three-dimensional structure of the original instrument in its three versions (Delgado et al., 2016; Pace et al., 2011). Some studies suggest the elimination of one item per version (Guarnieri et al., 2010; Pardo et al., 2006). Delgado et al. (2016) proposed a Spanish version with data from community samples that confirmed the three-dimensional structure in the three versions without the removal of any items (Delgado et al., 2016). However, among the limitations of this Spanish validation, the authors highlighted the importance of validating the IPPA in various sociocultural and economic contexts (Delgado et al., 2016).

In relation to construct validity, high scores in attachment reported in the IPPA have shown associations with prosocial behaviours, self-

esteem, self-efficacy, life satisfaction, and well-being (Andretta et al., 2017; Armsden & Greenberg, 1987; Guarnieri et al., 2010; Gullone & Robinson, 2005; Pardo et al., 2006), as well as negative correlations with aggressiveness and externalizing and internalizing adjustment problems (Guarnieri et al., 2010).

The IPPA has also been applied to evaluate the effectiveness of treatments that aim to promote or repair family attachment (Maya, Hidalgo et al., 2020). Usually, these interventions are for families and adolescents at risk. However, most validations of the IPPA have been performed with community samples. Despite the need for scales that are adjusted to the characteristics of the population and validated for community, subclinical, and clinical samples (De los Reyes et al., 2015; Frost et al., 2007), the IPPA has not been adapted and validated in at-risk youth, such as adolescents with behavioural problems. According to patient-reported outcomes (PROs; Frost et al., 2007), the validity and reliability of instruments should be demonstrated in contexts beyond the community with specific samples.

Among the psychometric challenges of the IPPA is the establishment of evidence that supports its application and interpretation in different contexts and with different types of populations is among IPPA's psychometric challenges. Thus, the main objective of this study is to analyse the Parental-Peer Attachment Inventory's (IPPA; Armsden & Greenberg, 1989; Delgado et al., 2016) (mother, father, and peer versions) psychometric properties to evaluate attachment in a sample of Spanish adolescents with behavioural problems. Evidence of the validity of the scale for this population will be provided by taking into account the following specific objectives: a) conducting confirmatory factor analysis of the IPPA; b) analysing the descriptive statistics of the items of the three versions of the IPPA and its factors; c) examining the internal consistency through analysis of the reliability of the scale; and d) analysing the convergent validity of the IPPA and associating it with related variables (i.e., emotional intelligence, antisocial behaviour, and aggressiveness).

The results confirm good psychometric properties of the mother and father versions of the IPPA through a three-factor model (communication, trust, and alienation), providing validity evidence and adequate reliability values (Cronbach's alpha coefficients were .79, .86, and .84 for the mother, father, and peer's versions, respectively). However, the three-factor model did not fit the data for peers' version.

This study contributes to scientific evidence on the evaluation of the attachment of adolescents with problematic behaviours and therefore it is a tool for professionals who work with adolescents. It endorses the need to analyse the properties of measurement instruments in different risk contexts given the specificity of these samples. Finally, IPPA's mother and father versions are confirmed as reliable and valid scales to assess parental attachment in at-risk adolescents.

## Method

### Participants

A total of 294 adolescents with behavioural problems from Andalusia (Spain) participated in this study. The sample was balanced by gender (53% girls) and the ages ranged between 12 and 18 years old ( $M = 14.56$ ,  $SD = 1.58$ ). Regarding the family context, 52% of adolescents belonged to two-parent families, 36% to single-parent families, and 12% to reconstituted families. Most adolescents (75%) reported that their parents did not reach the minimum professional wage in Spain and 57.9% reported a difficult employment situation for their parents. The adolescents presented a high level of school failure: 59.4% had repeated an academic year, 57.9% did not attend class regularly, and 26% had been expelled from school for antisocial

behaviour. Other recent risk situations were the death of a very close person (56.2% of adolescents), fighting between parents (38.6%), and moving home (31.5%).

Regarding sampling, this study included all adolescents who participated in Scene-Based Psychodramatic Family Therapy (SB-PFT; [Maya, Jiménez, et al., 2020](#)) for two years. This treatment is aimed at adolescents with behavioural problems and implemented in priority areas in southern Spain with a medium-low economic status. First, the high school proposes that adolescents participate in SB-PFT. Specifically, they refer to Child Welfare Services families of adolescents who have repeatedly exhibited at least two of the following behaviours in the school context during the last month: disobedience to teachers, verbal aggression towards teachers, frequent arguments with teachers, infringement of school rules, expulsion from school, or skipping school. Second, Child Welfare Services select adolescents to participate in the SB-PFT by identifying through family interviews adolescents who also repeatedly presented during the last month two of the following externalizing problems: breaking objects at home, disobedience to any family member, frequent arguments with the family, lying at home, verbal aggression towards parents or siblings, deliberately not communicating at home, physical aggression towards siblings, hostile feelings at home, or staying out without permission. The absence of comorbid psychological disorders and prior psychological care were exclusion criteria. Finally, families and adolescents could agree to participate in the SB-PFT by completing the assessment of the IPPA and the other questionnaires in the pretest.

## Instruments

### Background Sociodemographic Questionnaire

The questionnaire consisted of ad hoc items about gender, age, school, risk situations, and family situation (family structure, income, or employment status of parents).

### Parental-Peer Attachment Inventory (IPPA; [Armsden & Greenberg, 1989](#); [Delgado et al., 2016](#))

We used the 25-item Spanish version to assess attachment to the mother, father, and peers ([Delgado et al., 2016](#)). The items are distributed into three dimensions: trust (mutual understanding, trust, accessibility, and respect), communication (extent of verbal communication), and alienation (feelings of isolation, anger, and alienation). For mother and father versions, items 3, 6, 9, and, 14 are inverted. For the peer version, item 5 is inverted. The response scale uses a 5-point Likert-type scale from 1 = *almost never or never true* to 5 = *almost always or always*. The total score is calculated by obtaining a sum of the trust and communication subscale scores and then subtracting the alienation subscale score. Following the proposal of items for early adolescence ([Gullone & Robinson, 2005](#)), the expert research team on families at risk adapted the wording of some items. The adaptation focused on changing abstract statements into concrete prompts and substituting words commonly used by youth to facilitate their reading and understanding. In the present study, Cronbach's alpha coefficients were .79 for mother's IPPA, .86 for father's IPPA, and .84 for peers' IPPA. Please see the Spanish and English versions of the IPPA mother and IPPA father for adolescents with problematic behaviours as support material.

### Trait Meta-Mood Scale (TMMS; [Fernández-Berrocal et al., 2004](#))

This test measures emotional attention through 24 items distributed into three dimensions. Eight items assess emotional atten-

tion, 8 items assess emotional clarity, and the other 8 items assess mood repair. The response scale ranges from 1 = *strongly disagree* to 5 = *strongly agree*. Cronbach's alpha was .86 for emotional attention, .85 for emotional clarity, and .81 for mood repair.

### Antisocial and Criminal Behaviour Questionnaire (AD; [Seisdedos, 1995](#))

This questionnaire comprises 20 items that are answered on a YES/NO dichotomous scale. A positive response indicates antisocial behaviour of adolescents in the previous two months. Cronbach's alpha value was .88.

### Aggression Questionnaire (AQ-PA; [Santisteban & Alvarado, 2009](#))

This questionnaire consists of 29 items related to psychological and verbal aggressiveness, anger, and hostility. Items are rated on a 5-point scale from 1 = *does not define me at all* to 5 = *it totally defines me*. Cronbach's alpha coefficient was .88.

## Procedure

This research followed the standards of the Helsinki Declaration ([World Medical Association, 2013](#)). Families and adolescents signed informed consent for the evaluation and voluntarily participated in the study. Anonymity, confidentiality, and protection of the collected data were guaranteed. The questionnaires were self-administered on paper in the following order: the sociodemographic questionnaire, TMMS, IPPA, AD, and AQ. The evaluation lasted approximately 40 minutes. During the data collection process, the principal investigator was always present to resolve doubts about the procedure and the items and to ensure the correct execution of the evaluation. The project was previously approved by the Ethics Committee of the Andalusian government (code 0985-M1-18).

## Data Analysis

First, missing data of the items were examined through missing value analysis. Little's MCAR test was used to confirm random data distribution. For each item, less than 5% of missing data were found. Additionally, less than 10% of items were missing per scale following a random distribution. The SEM procedure was conducted to impute data using the expectation-maximization (EM) algorithm in SPSS. Second, IPPA's (mother, father, and peers versions) factor structure was examined by testing the following models: (a) a unidimensional model and (b) a three-factor model (trust, communication, and alienation). Confirmatory factor analysis (CFA) was conducted using IBM SPSS AMOS 26 graphics software. The robust method of maximum likelihood (ML) as the estimator for the models was used. Chi-square and chi-square fit statistics/degrees of freedom were interpreted. Fit indices included (a) root mean square error of approximation (RMSEA) and its 90% confidence interval, (b) comparative fit index (CFI), (c) Tucker-Lewis index (TLI), and (d) standardized root mean square residual (SRMR). RMSEA values below .08 indicate an adequate fit ([Browne & Cudeck, 1993](#)) and CFI values greater than .90 indicate a good fit ([Kline, 2015](#)). Then, descriptive statistics of the items were analysed, internal consistency analyses were conducted, and the reliability of the scale was determined considering Cronbach's alpha coefficient. Finally, convergent validity of IPPA's three versions was examined through the analysis of their correlations with emotional intelligence, antisocial behaviour, and aggressiveness.

**Table 1.** Fit Indices for the CFA of the Three Versions of the IPPA

	Model	$\chi^2$	$\chi^2/df$	RMSEA (90% CI)	CFI	TLI	SRMR
IPPA-Mother	One-factor	814.737	2.963	.082 (.760, .890)	.833	.817	.070
	Three-factors	566.963***	2.123	.062 (.055, .069)	.907	.895	.062
IPPA-Father	One-factor	914.354	3.325	.099 (.092, .106)	.840	.825	.081
	Three-factors	657.688***	2.436	.078 (.070, .085)	.903	.892	.079
IPPA-Peers	One-factor	883.816	3.214	.087 (.081, .093)	.810	.793	.076
	Three-factors	721.145***	2.651	.075 (.068, .082)	.860	.845	.075

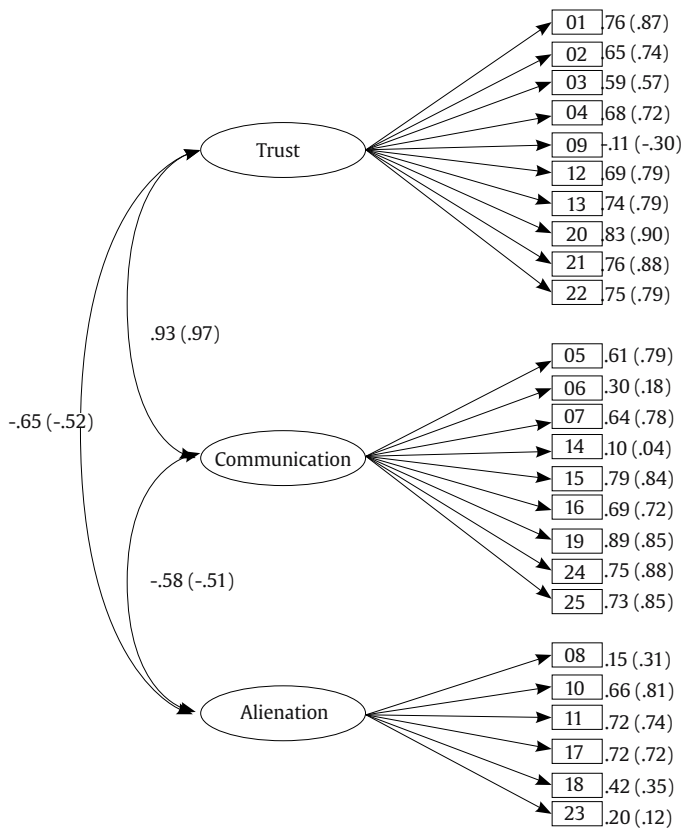
Note.  $\chi^2$  = chi-square;  $\chi^2/df$  = chi-squared difference test; RMSEA = root mean square error of approximation; 90% CI RMSEA = confidence interval for RMSEA; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual. \*\*\* $p < .001$ .

**Results**

**Confirmatory Factor Analysis (CFA)**

First, CFA showed that the unidimensional model did not adequately fit any of the IPPA versions (mother, father, and peers) (see Table 1). Second, the structure of 25 items distributed into three factors showed a good fit for both the mother and father versions. Fit indices were as follows: mother ( $\chi^2/df = 2.123$ , RMSEA = .062, CFI = .907, TLI = .895) and father ( $\chi^2/df = 2.436$ , RMSEA = .078, CFI = .903, TLI = .892). However, the three-factor model did not show a good fit for the peer version ( $\chi^2/df = 2.651$ , RMSEA = .075, CFI = .860, TLI = .845).

As presented in Figure 1, the correlations between the three factors of the IPPA were significant ( $p < .001$ ) for both the mother and father versions. For IPPA mother, correlations were .93 between trust and communication, -.65 between trust and alienation, and -.58 between communication and alienation. For IPPA father, these values were .97, -.52, and -.51, respectively.



**Figure 1.** Path Diagram of the Three-factor Model of the IPPA Mother and IPPA Father.

Note. Standardized estimates of both versions are included, and values in brackets belong to the father version.

**Descriptive Statistics of the Items and the Factors**

Table 2 presents the descriptive statistics of the 25 items of the IPPA for mothers, fathers, and peers. In all cases, responses ranged from 1 to 5. For the mother's IPPA, the obtained mean scores of most of the items were higher than the theoretical midpoint of the scale (i.e., 2.5), and only three items showed means lower than this midpoint (items 9, 17, and 18). The highest mean value was reached for item 2, "My mother is a good mother" ( $M = 4.62$ ), with the lowest standard deviation ( $SD = .86$ ). For the father's IPPA, only the mean scores for items 17, 18, and 23 were lower than the theoretical midpoint of the scale. The highest mean value was reached for item 2, "My father is a good father" ( $M = 4.16$ ), and its standard deviation was the lowest ( $SD = 1.32$ ). For peers' IPPA, four items showed mean scores lower than the midpoint of the scale (items 4, 11, 18, and 23). The highest mean value was reached for item 8, "My friends accept me as I am" ( $M = 4.64$ ), with the lowest standard deviation ( $SD = .74$ ).

The mean scores of the factors for the mother's IPPA were 37.64 ( $SD = 8.66$ ) for trust, 32.70 ( $SD = 8.39$ ) for communication, and 14.96 ( $SD = 5.05$ ) for alienation. On the scale of the father's IPPA, these values were 34.81 ( $SD = 10.58$ ) for trust, 28.29 ( $SD = 9.77$ ) for communication, and 15.56 ( $SD = 5.53$ ) for alienation.

**Reliability**

IPPA mother's version showed adequate values of internal consistency. Cronbach's alpha coefficient was .79 for the total scale, .86 for the dimension of trust, .84 for communication, and .70 for alienation. IPPA father's version also demonstrated good values for reliability. Cronbach's alpha coefficient was .86 for the total scale and .89, .88, and .70 for trust, communication, and alienation, respectively. In the case of IPPA peers, the results showed a Cronbach's alpha coefficient of .84 for the total scale.

**Validity**

Table 3 shows the correlations between the total score as well as the scores of each factor of IPPA and emotional intelligence, antisocial behaviour, and aggressiveness. Correlations between IPPA mother version's total scores and emotional intelligence were significant. Maternal attachment significantly and positively correlated with attention to feelings ( $r = .14, p < .05$ ), clarity in discrimination of feelings ( $r = .26, p < .001$ ), and mood repair ( $r = .32, p < .001$ ). Furthermore, this version negatively correlated with antisocial behaviour ( $r = -.26, p < .001$ ) and aggressiveness ( $r = -.21, p < .001$ ). IPPA father significantly correlated with clarity in discrimination of feelings ( $r = .28, p < .001$ ), mood repair ( $r = .28, p < .001$ ), and aggressiveness ( $r = -.23, p < .001$ ). Total score for paternal attachment was not correlated with attention to feeling or with antisocial behaviour. Finally, IPPA peers' total score significantly correlated with attention to feelings ( $r = .18, p < .01$ ) and clarity in discrimination of feelings ( $r = .12, p < .05$ ). It was not correlated with mood repair, antisocial behaviour, or aggressiveness (see Table 3).

**Table 2.** Descriptive Statistics of IPPA's Items

Item	Mother n = 292			Father n = 239			Peers n = 294		
	M	SD	Range	M	SD	Range	M	SD	Range
1	4.10	1.19	1-5	3.68	1.50	1-5	4.13	1.18	1-5
2	4.62	0.86	1-5	4.16	1.32	1-5	4.23	1.02	1-5
3	3.92	1.39	1-5	3.66	1.55	1-5	3.81	1.21	1-5
4	4.30	1.16	1-5	4.01	1.39	1-5	2.09	1.37	1-5
5	3.69	1.39	1-5	3.22	1.55	1-5	4.24	1.19	1-5
6	3.94	1.38	1-5	3.82	1.40	1-5	4.21	1.07	1-5
7	4.10	1.29	1-5	3.18	1.49	1-5	4.11	1.16	1-5
8	2.67	1.52	1-5	2.97	1.56	1-5	4.64	0.74	1-5
9	2.30	1.36	1-5	2.57	1.50	1-5	3.78	1.39	1-5
10	2.87	1.38	1-5	2.75	1.52	1-5	2.57	1.53	1-5
11	2.75	1.45	1-5	2.87	1.51	1-5	1.64	1.16	1-5
12	3.24	1.52	1-5	3.12	1.53	1-5	4.17	1.07	1-5
13	3.67	1.33	1-5	3.38	1.50	1-5	4.55	0.82	1-5
14	3.18	1.46	1-5	3.15	1.54	1-5	4.31	1.08	1-5
15	3.50	1.48	1-5	3.06	1.58	1-5	4.15	1.08	1-5
16	3.08	1.50	1-5	2.50	1.51	1-5	3.84	1.23	1-5
17	1.89	1.23	1-5	2.21	1.43	1-5	4.15	1.08	1-5
18	2.13	1.47	1-5	2.32	1.46	1-5	1.67	1.08	1-5
19	3.49	1.41	1-5	2.93	1.50	1-5	4.26	1.13	1-5
20	3.72	1.39	1-5	3.33	1.52	1-5	4.34	0.99	1-5
21	3.58	1.39	1-5	3.12	1.55	1-5	4.31	0.98	1-5
22	4.20	1.25	1-5	3.79	1.54	1-5	2.59	1.35	1-5
23	2.65	1.48	1-5	2.44	1.40	1-5	1.90	1.21	1-5
24	3.67	1.50	1-5	3.10	1.61	1-5	3.89	1.28	1-5
25	4.06	1.30	1-5	3.33	1.59	1-5	4.28	1.02	1-5

**Table 3.** Correlations between the Three Versions of the IPPA and Emotional Intelligence, Antisocial Behaviour, and Aggressiveness

	IPPA-Mother				IPPA-Father				IPPA-Peers	
	Total	Trust	Communication	Alienation	Total	Trust	Communication	Alienation	Total	
EI - Attention to feelings	.14*	.13*	.18**	.002	.002	.08	.01	.16*	.18**	
EI - Clarity in discrimination of feelings	.26***	.28***	.24***	-.10	.28***	.29***	.27***	-.13*	.12*	
EI - Mood repair	.32***	.30***	.28***	-.24***	.28***	.26***	.29***	-.12	.10	
Antisocial behaviour	-.26***	-.19**	-.20***	.35***	-.12	-.14*	-.08	.08	.04	
Aggressiveness	-.21***	-.16**	-.09	.38***	-.23***	-.21**	-.17*	.23***	.003	

Note. EI = emotional intelligence.  
\*p < .05, \*\*p < .01, \*\*\*p < .001.

**Discussion**

The main objective of this study was to examine the psychometric properties of IPPA in a sample of adolescents with behavioural problems. The IPPA's international relevance for evaluating adolescent attachment has been widely highlighted (Delgado et al., 2022). In recent years, evidence of IPPA's validity has been obtained in different countries for community samples (Delgado et al., 2016; Guarnieri et al., 2010; Gullone & Robinson, 2005). However, given the specificity of populations at risk, such as adolescents with problematic behaviours, it is necessary to have instruments with good psychometric properties to detect difficulties in emotional attachment with parents and peers. The present study is one of the first efforts to validate IPPA's Spanish version in a population of adolescents at risk. To meet the main objective, we tested CFA, calculated the descriptive statistics of the items, and provided reliability and validity evidence of this measurement instrument.

Confirmatory factor analyses supported the structure of 25 items distributed along three factors for IPPA mother's version and IPPA father's version, replicating the structure suggested by the original authors (Armsden & Greenberg, 1987) and according to previous research (Baiocco et al., 2009; Delgado et al., 2016; Pace et al., 2011). Both parent versions of the IPPA were composed of the dimensions of

trust (items 1, 2, 3, 4, 9, 12, 13, 20, 21, and 22), communication (items 5, 6, 7, 14, 15, 16, 19, 24, and 25), and alienation (items 8, 10, 11, 17, 18, and 23). Furthermore, the findings provided support for the internal consistency of the IPPA for the mother and father versions. Good reliability indices have been found for the total scale as well as for the three factors of the parent versions. The best reliability value for the total scale was found for the father version. According to the original study (Armsden & Greenberg, 1987), IPPA has shown substantial reliability as a measure of perceived quality of close relationships in adolescence. Similar reliability values have been demonstrated by other studies (Baiocco et al., 2009; Delgado et al., 2016; Guarnieri et al., 2010).

The mean scores for the IPPA of adolescents with problematic behaviours differed from the results obtained in previous studies in community samples (Delgado et al., 2016; Guarnieri et al., 2010; Pardo et al., 2006). Specifically, lower values for trust and higher scores in alienation were obtained in comparison with Spanish adolescents from community samples for the father and mother versions (Delgado et al., 2016). Similarly, compared to European community samples (Guarnieri et al., 2010), adolescents at risk showed lower scores in trust and higher scores in alienation. Although the three-factor structure for the father and mother versions was confirmed, the mean values obtained for the subscales (trust, communication and

alienation) indicated the specificity of the group and the relevance of scales for samples of adolescents with behavioural problems.

In relation to IPPA peers' version, the results did not support the three-factor structure. This finding is similar to results found in samples of individuals with low socioeconomic status (Andretta et al., 2017) and is contrary to studies with community samples that show good functioning of the peer version (Baiocco et al., 2009; Delgado et al., 2016; Pace et al., 2011). The results may be due, in part, to the generic instructions on the peer version ("Answer this questionnaire thinking about your friends"). The term "friends" can be interpreted in different ways by adolescents. Likewise, adolescents show important changes in their social relationships and may belong to multiple social groups at the same time with different statuses in each group (Jiang & Cillensen, 2005). Therefore, it would be advisable to specify the concept of friends, for example, close friends, your best friend, school friends, or neighbourhood friends. In addition, adolescent problem behaviours have been associated with low social support (Telzer et al., 2015), although other studies link adolescent problem behaviours to troubled peer relationships (Monahan et al., 2009). Therefore, there is a current controversy about the role of peers in adolescent problem behaviours, which is reflected in the difficulty of establishing instruments that differentiate between high-quality peer relationships associated with positive behaviours versus high-quality peer relationships that may lead to mutual reinforcement of disruptive behaviours or status maintenance within a group with problem behaviours. In fact, the results of peers' IPPA show independence with respect to aggression and antisocial behaviour, in line with studies opposing data on the role of peers as a risk or protective factor for adolescents with behavioural problems (Monahan et al., 2009; Telzer et al., 2015).

Finally, validity evidence was demonstrated through correlations with related measures (i.e., emotional intelligence, antisocial behaviour, and aggressiveness). In line with previous research linking maternal attachment and emotional intelligence (Mónaco et al., 2019), the data show that better attachment to the mother is associated with higher emotional intelligence, specifically with higher attention to feelings, higher clarity in discrimination of feelings, and higher mood repair. Furthermore, according to Hoeve et al. (2012), the best level of attachment with the mother is correlated with less antisocial behaviour and less aggressiveness and therefore it is a protective factor. Consistent with previous findings (Mónaco et al., 2019), parental attachment is associated with emotional intelligence; specifically, attachment to the father is related to greater clarity of feeling discrimination and higher mood repair. A study showed that the emotional intelligence of problematic adolescents is associated with the magnitude of their attachment (Bonab & Koohsar, 2011).

This study has limitations. The three-factor model has an adequate fit for parent versions, although the three dimensions are strongly correlated with each other. Inferences drawn from the scores of this measurement instrument are not universal; they must be applied to a specific use, context, and population (Muñiz & Fonseca-Pedrero, 2019). Future studies could focus on an in-depth analysis of the items to develop a reduced version of the scale. The results do not include invariance analysis considering the variables of interest (e.g., gender, family structure). Furthermore, possible dyads according to gender (father-boy, father-girl, mother-boy, and mother-girl) were not considered. Future studies could report scale data for the population at risk and classifications by gender and analyse the invariance for a better understanding of adolescent attachment (Delgado et al., 2022). Using and validating this version of the IPPA in diagnosed clinical samples could provide an interesting comparison between populations with different characteristics. In addition, this version of the IPPA could be used in cross-cultural studies and at-risk areas. The analysis of convergent validity with other attachment instruments as well as the comparison of attachment with the mother and attachment with the father in different populations are

recommended. Finally, this study was conducted with adolescents as the sole informants. It would be advisable to use other parent-reported versions of the IPPA to follow the multi-reporting approach (de los Reyes et al., 2015).

In conclusion, this research provides good psychometric properties of mothers' and fathers' IPPA for adolescents with behavioural problems (see support material). The data confirm adequate psychometric properties of the mother and father IPPA in the three-factor model (communication, trust, and alienation) compared to the one-factor model. However, the data do not support the application of the IPPA peer for adolescents with problematic behaviours. It is necessary to verify the psychometric properties of the assessment measures in different risk contexts given the specificity of the samples. Thus, instruments with sufficient evidence of reliability and validity adapted to the characteristics of the population can increase the rigor of evaluation and the sensitivity to measure change in treatment with adolescents with adjustment problems (Frost et al., 2007). This study contributes to the scientific evidence on the evaluation of the attachment of adolescents with problematic behaviours and therefore is a resource for professionals who work with adolescents who exhibit serious externalizing behaviours. Thus, the IPPA, specifically the versions of attachment to the mother and the father, is confirmed as a potential scale to assess parental attachment in adolescents at risk and a possible instrument to assess the effectiveness of family treatment.

### Conflict of Interest

The authors of this article declare no conflict of interest.

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