

Assessment *The Inventory of Parent and Peer Attachment—Revised (IPPA-R) for Children: A Psychometric Investigation*

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Despite the importance of attachment theory in developmental research, there is an absence of valid and reliable tools with which to assess attachment beyond infancy and prior to late adolescence. To address this issue the present investigation reports on the revision and psychometric evaluation of the Inventory for Parent and Peer Attachment (IPPA, Armsden & Greenberg, 1987), a measure of attachment developed for use with older adolescents and young adults. The simplified revised measure (IPPA-R) was administered along with the Parental Bonding Inventory (PBI; Parker, Tupling, & Brown, 1979) and the Coopersmith Self-Esteem Inventory (SEI) to two samples of youth: 118 youth aged 9–11 years; 163 youth aged 14–15 years. Our findings provided support for the reliability and validity of the revised measure. It was concluded that the IPPA-R constitutes a useful tool for the assessment of both parent and peer attachment in youth aged between 9 and 15 years. Copyright © 2005 John Wiley & Sons, Ltd.

According to Bowlby's (1969) evolutionary-ethological attachment theory, the infant is endowed with an 'attachment behavioural system', which ensures sufficient proximity to primary caregivers to promote the infant's survival. Essentially, attachment theory describes a fundamental normative process in early development defined in terms of behavioural and affective regulation. The attachment relationship represents a 'special type of social relationship' (Bowlby, 1969, p. 376) and involves an affective bond between

infant and caregiver that may be characterized in terms of regulation of infant emotion.

An impressive amount of research has been carried out, providing strong empirical support for most of the key components of attachment theory (Carlson & Sroufe, 1995; Rutter, 1995). Given Bowlby's proposals that the attachment bond develops from birth and that it promotes survival in the young infant, it is not surprising that the majority of this research has focussed on infancy or early childhood. It is equally not surprising that methods and measures for assessing attachment have been developed primarily for these early years of life. Perhaps the most frequently cited method of assessing attachment is the observational 'strange situation' method devel-

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oped by Mary Ainsworth and colleagues (Ainsworth, Blehar, Waters, & Wall, 1978). Using this method, researchers demonstrated that individual differences in patterns of behaviour during infancy can reliably be classified as secure or insecure. Consistent with Bowlby's theoretical proposals, these patterns of behaviour have been shown to be moderately stable over long periods of time under stable family and caretaking conditions (see, e.g. Fraley, 2002; Hamilton, 2000; Lewis, Feiring, & Rosenthal, 2000). Moreover, an affective bond characterized by warmth, availability, trust, and responsiveness with at least one individual throughout the lifespan has been proposed to be important for psychological adjustment (see, e.g. MacDonald, 1992). Indeed, much research has shown such a bond to be an important factor in predicting resilience in individuals faced with substantial adversity (e.g. Cicchetti & Garmezy, 1993; O'Connell-Higgins, 1994).

Reflecting the increased recognition of the importance of attachment across the lifespan (see, e.g. Griffin & Bartholomew, 1994), research into attachment relationships beyond the preschool years is increasingly being conducted (e.g. Armsden & Greenberg, 1987; Gullone, King, & Ollendick, 2002). Self-report measures of attachment have been utilized to assess attachment in adolescence, in comparison with the observational measures utilized in infancy (Bretherton, 1985). Such measures allow researchers to gain insight into the cognitively based representations of individuals' internal working models (Berlin & Cassidy, 1999).

However, only a very limited number of psychometrically validated self-report measures that assess cognitive representations of attachment have been developed (e.g. West, Rose, Spreng, Sheldon-Keller, & Adam, 1998). These have primarily been developed for use with older adolescents and/or adults. For example, the initial version of the Parental Bonding Inventory (PBI) developed by Parker et al. (1979) requires that adults retrospectively respond in relation to their experiences of parenting during their adolescent years. Versions enabling current reporting of parenting perceptions by adolescents have since been developed (e.g. Cubis, Lewis, & Dawes, 1989; Herz & Gullone, 1999; Klimidis, Minas, & Ata, 1992; Klimidas, Minas, Ata, & Stuart, 1992).

The PBI assesses attachment on two dimensions, these being parental nurturance, ranging from parental care and involvement to indifference and neglect, and parental overprotection, ranging from

over-control to encouragement of independence and autonomy. Studies using this measure with adolescent samples have consistently found a positive association between self-esteem and the Care dimension and a negative association between self-esteem and the Overprotection dimension (e.g. Herz & Gullone, 1999; Rice & Cummins, 1996).

Another self-report measure of attachment is the Inventory of Parent and Peer Attachment (IPPA) developed by Armsden and Greenberg (1987). In line with Bowlby's attachment theory, the IPPA measures psychological security derived from relationships with significant others. In particular, this measure assesses the quality of attachment to parents and peers. For each of the parent and peer scales of the IPPA, items are included to assess three aspects of attachment including trust, communication and alienation. Specifically, the Trust scale measures the degree of mutual understanding and respect in the attachment relationship, the Communication scale assesses the extent and quality of spoken communication and the Alienation scale assesses feelings of anger and interpersonal alienation.

In their psychometric investigation of the IPPA, involving a sample of adolescents aged between 16 and 20 years, Armsden and Greenberg (1987) found significant inter-correlations between all subscales. Specifically, Trust and Communication were found to be positively correlated ($r = 0.76$ for each of the parent and peer scales). In contrast, the Alienation subscale was inversely correlated with each of the Communication ($r = -0.70$ for parents and $r = -0.40$ for peers) and Trust ($r = -0.76$ for parents and $r = -0.46$ for peers) subscales.

Past research has demonstrated that relationships characterized by high levels of acceptance, warmth and trust between children and adolescents and their parents as well as their peers are positively associated with self-esteem (e.g. Gecas, 1971; Greenberg, Siegal, & Leitch, 1983; Walker & Green, 1986). Consistent with such research, Armsden and Greenberg (1987) found that higher quality attachments with significant others (both parents and peers), as assessed with the IPPA, were related to more positive perceptions of oneself as a family member and to higher scores on self-concept as measured using the Tennessee Self-Concept Scale (Fitts, 1965). Each of peer and parent attachment scores were found to be significant predictors of adolescent self-esteem.

It is noteworthy, however, that the IPPA has been demonstrated to be a valid measure of attachment for the developmental periods of *mid- to late ado-*

lescence and early adulthood. Therefore, there remains, in large part, a paucity of assessment tools available to measure attachment representations post-infancy and pre-adolescence (Green & Goldwyn, 2002). Given the identified need for a measure of attachment appropriate for use with children and young adolescents, in the present study we report the revision and psychometric evaluation of the IPPA for children and young adolescents. On the basis of the research reviewed above, we propose that subscales of the revised IPPA will correlate significantly both with each other and with a valid measure of self-esteem (i.e. Coopersmith Self-Esteem Inventory), in line with correlations reported by Armsden and Greenberg (1987). We also predict that scores on each of the two dimensions of the PBI will correlate significantly with the IPPA-R subscales. Specifically, we predict that the Alienation subscale scores (parent and peer) will correlate positively with scores on the PBI Overprotection dimension but negatively with the PBI Care dimension. In addition, we predict that each of the Communication and Trust subscales will correlate positively with the Care dimension but negatively with the Overprotection dimension.

METHOD

Participants

Twenty-five schools were contacted to participate in the study, out of which six primary and three secondary schools agreed to participate. This represents a 36% response rate for schools. The total number of students recruited from the nine participating schools was 281. The sample was divided into two age-groups for data analysis. The first, constituting the child group, was aged between 9 and 11 years (age: $M = 9.97$, $SD = 0.72$) and comprised a total of 118 (91 males, 27 females) grade four and five students. The second group was aged between 14 and 15 years (age $M = 14.16$, $SD = 0.37$) and comprised a total of 163 (33 males, 130 females) participants. This group will subsequently be referred to as the young adolescent sample. Only participants who were given written parental consent to participate were involved in the study. The overall parent consent rate was 38.76%. This is consistent with other studies requiring active consent (Hollman & McNamara, 1999).

Measures

The Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987)

The original version of the IPPA was developed to measure attachment in older adolescents. It assesses the positive and negative affective and cognitive dimensions of adolescents' relationships with their parents and close friends. For each of the 28 items assessing parent attachment and the 25 items assessing peer attachment, respondents are required to rate the degree to which each item is true for them on a five-point scale ranging from 'Almost always or always true' to 'Almost never or never true'. The items in each of the scales (i.e. parent, peer) were demonstrated through principal components analysis to cluster into three factors (trust; communication; anger and alienation). In the present study, the IPPA-R was scored in accordance with directions provided by Armsden and Greenberg (1987) (see Armsden & Greenberg, 1987, for details).

Using two samples of undergraduate students who ranged in age from 16 to 20 years, Armsden and Greenberg (1987) reported good internal consistency for the IPPA with Cronbach's alpha coefficients ranging between 0.72 and 0.91 for the sub-scales across both the parent and peer scales. Good test-retest reliability for a sample of 18–20-year-olds over a three-week period was also reported with correlation coefficients ranging between 0.86 for peer attachment and 0.93 for parent attachment (Armsden & Greenberg, 1987).

Convergent validity has been reported on the basis of moderate correlations between the IPPA and other measures, including the Family Self-Concept subscale of the Tennessee Self-Concept Scale ($r = 0.78$ with parent attachment; $r = 0.28$ with peer attachment) and the Social Self-Concept subscale ($r = 0.46$ with Parent attachment; $r = 0.57$ with Peer attachment). Also, significant positive correlations between parent attachment and the Cohesion ($r = 0.56$), Expressiveness ($r = 0.52$) and Organization ($r = 0.38$) subscales of the Family Environment Scale (FES) have been reported. In addition, significant negative correlations with the Conflict ($r = -0.36$) and Control ($r = -0.20$) subscales of the FES were reported (Armsden & Greenberg, 1987).

The Self-Esteem Inventory—School Form (SEI; Coopersmith, 1981)

The SEI was used to measure self-esteem. This measure was designed for use with respondents

aged between 8 and 15 years. It consists of 58 items of which 50 items constitute a Global self-esteem scale and eight items constitute a lie or defensiveness scale. Respondents are required to rate each item on a two-point scale as either 'Like me' or 'Unlike me'. Higher scores indicated higher self-esteem. Although the SEI also yields four sub-scale scores, for the present purposes only the total Global self-esteem score was used.

The SEI has been shown to have good psychometric properties. Kudar-Richardson reliability estimates and split-half reliability coefficients have been determined across large samples to range between 0.81 and 0.92. The test-retest reliability of the measure over a 12-month period has also been shown to be good, with a test-retest coefficient of 0.64 for 104 children in grades 5 and 6 (Coopersmith, 1981). Adequate validity has also been reported on the basis of significant positive correlations between the SEI and an achievement ($r = 0.33$) as well as an intelligence measure ($r = 0.30$) (Coopersmith, 1981).

The Parental Bonding Instrument (PBI; Parker et al. 1979)

As previously noted, the PBI was originally developed to assess adults' perceptions of their parents' behaviours and attitudes in their first 16 years of life. The instrument comprises 25 statements assessing each of the Care (12 items) and Overprotection (13 items) dimensions. The Care item 'Is emotionally cold to me' was excluded upon request from the university ethics committee, who considered the item to be inappropriate for the young sample involved in the present study. Respondents were required to rate each of the remaining 24 items as to how closely the statement represented their parenting perceptions using a four-point Likert scale ranging from *very unlike* to *very like*.

The original version of the PBI has been shown to have sound psychometric properties. Parker and colleagues (1979) reported a split-half reliability of 0.88 for the Care scale and 0.74 for the Overprotection scale. Test-retest reliability coefficients over a three-week period were reported to be 0.76 for the Care scale and 0.63 for the Overprotection scale. Predictive validity has also been reported through a number of studies examining the association with psychosocial morbidity. For example, people with anxiety, phobic and depressive disorders have been found to score higher on the Overprotection dimension but lower on the Care

dimension (see, e.g. Parker, 1979a, 1979b, 1983; Silove, 1986).

Of particular relevance in the current study, the version of the PBI used was the revision reported by Herz and Gullone (1999) wherein the wording of the PBI was changed from retrospective to current. Demonstrating validity for this revised version, in two adolescent samples (an Anglo-Australian and a Vietnamese sample), Herz and Gullone reported significant positive correlations between the SEI and the Care dimensions of the PBI and significant negative correlations with the Overprotection dimension. Good internal consistency for each of the dimensions was also reported in each of the adolescent samples.

Procedure

The IPPA items were reviewed and revised with a view to simplifying the wording so as to promote their comprehension by children and younger adolescents. In addition, the five-point response scale was simplified to a three-point scale with 'always true', 'sometimes true' and 'never true' as the response options. As shown in Table 1, 16 of the 28 parent attachment items and 14 of the 25 peer attachment were revised. The revised items, as detailed in Table 1, were independently evaluated and endorsed by two primary school teachers prior to being administered to the respondents.

Prior to data collection, approval was obtained from the University ethics committee and the governing body of Catholic schools in Victoria, Australia. Following this, the principals of all schools approached to participate were sent a letter informing them of the study. The final nine principals who gave permission for their schools to participate also nominated the classes of children in their school which would be approached to be involved in the study.

All parents of children in nominated classes were provided with an explanatory statement and consent form, via their children. Parents who provided consent for their child to participate in the study were required to return a signed consent form. Children were also asked to complete a consent form as per ethics committee requirement. The questionnaires were completed on a small group basis and in a quiet room at the child's school during school hours. The measures were counterbalanced across different groups to control for possible order effects. The voluntary nature of the child's participation was clearly stated prior to distributing the questionnaires. It was also empha-

Table 1. Original and revised items of the IPPA

Original item	Revised item (where changed)
<i>Parent Attachment Items</i>	
I feel my parents are successful as parents.	My parents are good parents.
I have to rely on myself when I have a problem to solve.	I can depend on my parents to help me solve a problem (R)
I like to get my parents' point of view on things I'm concerned about.	I like to get my parents' view on things I'm worried about.
I feel it's no use letting my feelings show.	It helps to show my feelings when I'm upset (R).
My parents sense when I'm upset about something.	My parents can tell when I'm upset about something.
Talking over my problems with my parents makes me feel ashamed or foolish.	I feel silly or ashamed when I talk about my problems with my parents.
I get upset easily at home.	I easily get upset at home.
When we discuss things, my parents consider my point of view.	When I talk about things with my parents they listen to what I think.
My parents trust my judgement.	My parents listen to my opinions.
My parents encourage me to talk about my difficulties.	My parents support me to talk about my worries.
I don't know whom I can depend on these days.	I don't know who I can depend on.
When I am angry about something, my parents try to be understanding.	When I am angry about something, my parents try to understand.
My parents don't understand what I'm going through these days.	My parents understand my problems (R).
I can count on my parents when I need to get something off my chest.	I can count on my parents when I need to talk about a problem.
I feel that no one understands me.	No one understands me.
If my parents know something is bothering me, they ask me about it.	If my parents know that I am upset about something, they ask me about it.
<i>Peer Attachment Items</i>	
I like to get my friends' point of view on things I'm concerned about.	I like to get my friends' opinions on things I'm worried about.
My friends sense when I'm upset about something.	My friends can tell when I'm upset about something.
When we discuss things, my friends consider my point of view.	When we talk, my friends listen to my opinion.
Talking over my problems with my friends makes me feel ashamed and foolish.	I feel silly or ashamed when I talk about my problems with my friends.
My friends encourage me to talk about my difficulties.	My friends support me to talk about my problems.
I feel the need to be in touch with my friends more often.	I feel the need to be around my friends.
My friends don't understand what I'm going through these days.	My friends don't understand my problems.
I feel alone or apart when I am with my friends.	I do not feel like I belong when I am with my friends.
I feel my friends are good friends.	My friends are good friends
When I am angry about something, my friends try to be understanding.	When I am angry about something, my friends try to understand.
My friends are concerned about my well-being.	My friends care about the way I feel.
I can count on my friends when I need to get something off my chest.	I can count on my friends to listen when something is bothering me.
It seems as if my friends are irritated with me for no reason.	My friends get annoyed with me for no reason.
I tell my friends about my problems and troubles.	
If my friends know something is bothering me, they ask me about it.	If my friends know that I am upset about something, they ask me about it.

(R) refers to revised items that are scored in reverse to their equivalent item on the original IPPA.

sized to the children that there were no correct or incorrect answers but rather that it was the answers that were most true for them that were of interest to us. For the child sample, the directions

for questionnaire completion and the individual questionnaire items were read aloud to the students by the administrator of the questionnaires (i.e. second author).

All participants completed the SEI and the modified version of the IPPA but only a sub-sample of participants completed the PBI. For the Parent Attachment section of the IPPA-R, participants were asked to answer with regard to their relationship with both parents. The sub-sample who completed the PBI comprised 43 participants (21 males, 22 females); 15 in the child group and 28 in the young adolescent group. Children were instructed to nominate either mother or father and to respond to the PBI items in relation to the nominated parent. The average time required by the children to complete the questionnaires varied between 20 and 30 minutes depending on the age of participants and the number of questionnaires administered.

RESULTS

Below we report descriptive statistics for the measures used. These are followed by the internal consistency coefficients for the IPPA-R total scores and subscales by age group and sex. We then report the correlations between the IPPA-R scores and the other measures (i.e. PBI, SEI). We also report correlations between the two scales of the IPPA-R (i.e. Parent Attachment and Peer Attachment) as well as inter-correlations between the IPPA-R subscales. These are reported separately for each of the age and sex groups.

Prior to conducting statistical analyses, integrity issues related to the data were examined. Missing data and outliers were identified and dealt with.

For example, it was found that 10 cases had missing data for item 45 of the SEI. There were other instances of missing data, although this was the item missing the largest number of values. Given that the missing data appeared to be randomly scattered across cases and questionnaires, it was considered acceptable to replace the missing item value with the mean for that particular item. To detect possible outliers, standardized scores were computed for the total scores of each of the variables. Scores in excess of ± 3.29 were identified as outliers. This resulted in the deletion of four cases, reducing the overall sample size from 281 to 277.

Descriptive Statistics

A total score for each of the IPPA-R Parent and Peer Attachment scales was calculated by obtaining a sum of the Trust and Communication subscales and then subtracting the Alienation subscale score. The IPPA-R overall and sub-scale score means and standard deviations are presented in Table 2. These are provided for the overall sample as well as for each age group and sex. Similarly, total SEI score and PBI nurturance and overprotection means and standard deviations for the overall sample as well as for each age and sex group are provided in Table 2. No significant group differences were found for self-esteem. In contrast, for the IPPA-R scores, there were significant age-group and sex differences for all of the IPPA-R sub-scales, with one exception being the Alienation sub-scale of the Parent Attach-

Table 2. Means and standard deviations for the SEI, and the IPPA-R by age group and sex

Measure	Children		Adolescents		Males		Females		Overall sample	
	M	SD	M	SD	M	SD	M	SD	M	SD
Total SEI score	79.95	16.49	79.44	14.16 ns	77.66	16.01	78.39	14.60 ns	79.09	15.17
<i>IPPA-R—Parents</i>										
Trust	14.83	2.00	13.83	2.67***	14.79	1.99	13.81	2.70**	14.22	2.48
Communication	14.70	2.74	12.79	3.42***	14.26	2.99	13.02	3.43**	13.53	3.31
Alienation	4.39	3.14	4.92	3.56 ns	3.94	2.80	5.26	3.69**	4.72	3.41
Total score	25.14	6.78	21.70	8.71***	25.11	6.37	21.57	8.97***	23.03	8.18
<i>IPPA-R—Peers</i>										
Trust	14.26	3.06	15.76	2.97***	13.94	3.07	16.06	2.79***	15.19	3.08
Communication	11.51	3.73	14.12	3.55***	10.84	3.39	14.70	3.29***	13.11	3.83
Alienation	4.22	2.48	3.44	2.32**	4.40	2.39	3.28	2.32***	3.74	2.41
Total score	21.55	8.16	26.45	7.94***	20.37	7.73	27.48	7.52***	24.56	8.36
PBI Care	27.87	3.70	26.71	4.81 ns	26.75	3.04	27.43	5.43 ns	27.12	4.44
PBI Overprotection	15.73	7.38	12.14	6.89 ns	13.67	6.56	13.14	7.89 ns	13.40	7.19

t-test outcomes noted as ns = not significant, ** $p < 0.01$, *** $p < 0.001$.

ment scale. No significant age-group differences were found for this sub-scale. The significant age-group differences were due to the child sample scoring significantly higher on the Communication and Trust sub-scales as well as on the overall Parent Attachment scale compared with the adolescent sample. In contrast, the differences relating to Peer Attachment were due to the adolescent sample scoring significantly higher than the child sample on Trust, Communication, and overall Peer Attachment but lower on the peer Alienation sub-scale.

With regard to the significant sex differences, males scored higher than females on parent Trust and Communication as well as on overall IPPA-R parent attachment but lower on parent Alienation. In contrast, females scored higher on two (i.e. Trust and Communication) of the IPPA-R peer attachment sub-scales but lower on the Alienation sub-scale. Females also scored higher than males on overall Peer Attachment. It is important to note, however, that the female sample was over-represented by older participants while the male sample was over-represented by younger participants. This may explain why the trends for males and females are generally the same as those for the two age-groups.

Descriptive statistics and *t*-test comparisons for the PBI revealed no significant age-group or sex differences in ratings for parental nurturance or overprotection. The means and standard deviations for the two dimensions are shown in Table 2.

Cronbach's Alpha Internal Consistency

Internal consistency analyses were carried out for each of the measures. Alpha coefficients were

determined for the two dimensions of the PBI, for overall SEI, and for the overall IPPA-R Peer and Parent Attachment scales as well as for each IPPA-R sub-scale. These were determined for the overall sample and by age and sex groups. The results are shown in Table 3. As is evident upon examination of Table 3, the internal consistency coefficients did not differ markedly across the sub-groups, with the exception of the alpha coefficients for PBI Care. For this variable, there was a marked difference, with a more acceptable alpha being yielded for the older age group of participants and for females. On the whole, the coefficients demonstrated good internal consistency for all of the variables, with the exception of those for the Alienation sub-scale of the Peer Attachment scale, which were somewhat weaker, but nevertheless acceptable.

Pearson's Correlation Coefficients Between the IPPA-R and the Other Measures

Convergent validity coefficients between the IPPA-R and self-esteem scores, as well as with the PBI dimensions of Care and Overprotection, are shown in Table 4. What is clearly evident is that the overall Parent Attachment score of the IPPA-R was strongly positively correlated with the Care dimension of the PBI and moderately negatively correlated with the Overprotection dimension of the PBI. With the exception of the Parent Communication subscale of the IPPA-R, the sub-scales of the Parent Attachment scale were moderately correlated with the PBI dimensions. However, the correlations were generally smaller than those with the total Parent Attachment score. Peer Attachment

Table 3. Cronbach's alpha coefficients for the overall SEI, PBI Care and Overprotection dimensions, and the IPPA-R scales as well as its sub-scales, by age group and sex

Measure	Children	Adolescents	Males	Females	Overall
Self-Esteem	0.90	0.87	0.89	0.87	0.88
Parent Attachment					
Trust	0.83	0.85	0.77	0.77	0.78
Communication	0.79	0.79	0.79	0.83	0.82
Alienation	0.76	0.81	0.60	0.69	0.79
Peer Attachment					
Trust	0.80	0.86	0.82	0.88	0.86
Communication	0.84	0.86	0.80	0.86	0.87
Alienation	0.66	0.68	0.63	0.65	0.69
Parental Care	0.65	0.85	0.52	0.88	0.80
Parental Overprotection	0.80	0.86	0.74	0.86	0.84

Table 4. Pearson's product-moment correlation coefficients between the IPPA-R scores with self-esteem and the PBI by age group and sex

Measure	Self-esteem score				PBI (overall sample)	
	Children	Adolescents	Males	Females	Care	Overprotection
Parent Attachment	0.51***	0.65***	0.49***	0.62***	0.73***	-0.51**
Trust	0.41***	0.60***	0.41***	0.57***	0.45**	-0.40*
Communication	0.28**	0.51***	0.20*	0.49***	0.45**	-0.05
Alienation	-0.60***	-0.65***	-0.63***	-0.64***	-0.58***	0.57***
Peer Attachment	0.50***	0.33***	0.45***	0.47***	0.36*	-0.24
Trust	0.49***	0.33***	0.42***	0.44***	0.44**	-0.25
Communication	0.31**	0.27***	0.22*	0.43***	0.42**	-0.29
Alienation	-0.59***	-0.35***	-0.59***	-0.38***	-0.33*	0.15

Significance levels are for one-tailed correlations.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5. Pearson's product-moment inter-correlation coefficients between the IPPA-R scale and subscale scores by age group

Measure	Parent Attachment			Peer Attachment		
	Trust	Communication	Alienation	Trust	Communication	Alienation
Parent Attachment (overall)	0.87***	0.85***	-0.87***			
	0.90***	0.90***	-0.90***			
Trust		0.67***	-0.64***	0.30**	0.28**	-0.15
		0.74***	-0.74***	0.24**	0.21**	-0.18*
Communication			-0.53***	0.26**	0.30**	-0.16
			-0.68***	0.20**	0.24**	-0.20**
Alienation				-0.31**	-0.20*	-0.33***
				-0.13*	-0.06	0.29***
Peer Attachment (overall)				0.92***	0.91***	-0.78***
				0.93***	0.93***	-0.81***
Trust					0.79***	-0.62***
					0.82***	-0.66***
Communication						-0.53***
						-0.61***

Significance levels are for one-tailed correlations.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Coefficients for the adolescent sample are given in italics and bold font.

and its sub-scales were also found to be moderately correlated with the PBI Care dimension. In contrast, the Overprotection dimension was not found to correlate significantly with the IPPA-R peer attachment measure.

With regard to self-esteem, on the whole, the correlation coefficients were found to be significant and moderately sized. Whilst for the child group there was no apparent difference in the strength of the correlations across Parent and Peer Attachment, for the adolescent group the coefficients were somewhat stronger between self-esteem and Parent Attachment compared with Peer Attachment. No marked sex differences were apparent in the strength of the correlations. As expected, the

coefficients were positive for all IPPA-R scales with the exception of Alienation.

Inter-Correlations Between the IPPA-R Scales and Subscales by Age Group

Table 5 shows the inter-correlation coefficients between the Parent and Peer Attachment total and sub-scale scores, by age group. Not surprisingly, the within scale (i.e. Parent Attachment, Peer Attachment) correlations were found to be consistently higher than those across scales (i.e. Parent Attachment scores with Peer Attachment scores). This was true for each of the child and adolescent

Table 6. Pearson's product-moment inter-correlation coefficients between the IPPA-R scale and subscale scores by sex

Measure	Parent Attachment			Peer Attachment		
	Trust	Communication	Alienation	Trust	Communication	Alienation
Parent Attachment (overall)	0.86*** <i>0.90***</i>	0.82*** <i>0.92***</i>	-0.79*** <i>-0.92***</i>			
Trust		0.61*** <i>0.78***</i>	-0.59*** <i>-0.74***</i>	0.27** <i>0.30***</i>	0.25** <i>0.31***</i>	-0.17 ns <i>-0.19*</i>
Communication			-0.35*** <i>-0.74***</i>	0.23* <i>0.21**</i>	0.30** <i>0.26**</i>	-0.09 ns <i>-0.24**</i>
Alienation				-0.29** <i>-0.24**</i>	-0.16 ns <i>-0.23**</i>	0.39*** <i>0.33***</i>
Peer Attachment (overall)				0.92*** <i>0.93***</i>	0.89*** <i>0.93***</i>	-0.78*** <i>-0.81***</i>
Trust					0.75*** <i>0.83***</i>	-0.64*** <i>-0.63***</i>
Communication						-0.51*** <i>-0.60***</i>

Significance levels are for one-tailed correlations.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Coefficients for the female sample are given in italics and bold font.

age groups. Also, each of the Parent and Peer overall attachment scores correlated highly with their respective sub-scale scores. Correlations between sub-scales, within each of the Parent and Peer attachment scales, were also consistently moderately high. Finally, there were no marked differences in the patterns of association between the two age groups, although the correlations between scales tended to be stronger for the younger group and those within scales tended to be somewhat higher for the older group.

Table 6 shows the correlations between the same variable pairs as Table 5, this time by sex. As with the coefficients in Table 5, the within scale correlations were found to be consistently higher than those across scales. This was true for each of the male and female sub-groups. Again, the overall attachment scores for each of Parent and Peer Attachment correlated strongly with their respective sub-scale scores. As with the age-groups, there were no marked differences in the patterns of association between males and females.

DISCUSSION

Despite its central place in developmental theories (Rutter, 1995), the incorporation of the attachment construct into research involving participants beyond infancy and prior to late adolescence has been difficult given the limited availability

of age appropriate measures (Green & Goldwyn, 2002).

On the basis of several criteria, including its assessment of key aspects of the attachment relationship (i.e. trust, communication and alienation) and its demonstrated psychometric soundness, we considered the IPPA an appropriate measure to adapt for use with children. To that end, we simplified the wording of the IPPA items. Specifically, 16 of the 28 parent attachment items were revised, as were 14 of the 25 peer attachment items.

Investigation of the revised measure's psychometric properties included an initial set of analyses aimed at examining whether age and sex differences on the IPPA-R scale and subscale scores would be found. These analyses yielded significant differences, indicating that the IPPA-R is sensitive to age and sex differences. In relation to age differences, the early adolescent group scored significantly higher than the child group on overall Peer Attachment as well as Trust and Communication. In contrast, adolescents scored lower on the peer Alienation subscale compared to the child group. When examining Parent Attachment, on the whole, the child group scored significantly higher than the adolescent group on all scores, with the exception of the Alienation subscale, for which there were no age-group differences. It is important to note, however, that this should not be interpreted as an indication that attachments to parents are less

important for adolescents' psychological wellbeing compared to that of children (cf. Gecas, 1972; O'Donnell, 1976) as is indicated by the correlations found between IPPA-R scale and subscale scores and self-esteem (as will be discussed in more detail below).

Sex differences on the IPPA-R scale and subscale scores were the result of males generally scoring higher than females on Parent Attachment but females scoring higher than males on peer attachment. Given that the sex differences on the Alienation subscale for both parent and peer were in the opposite direction, the findings indicated that males reported more positive attachments with their parents than did females. In contrast, females reported more positive attachments with their peers compared with males. These differences are intriguing and warrant further investigation to determine whether they are a reflection of real differences in attachment relationships or whether they are related to response style on the self-report measure.

Analyses relating to the reliability of the IPPA-R demonstrated that the internal consistency coefficients did not differ markedly by age or sex group. The coefficients ranged between 0.60 (on Parent Alienation for males) and 0.88 (on Peer Trust for females) and thus indicated adequate to good internal consistency for each of the IPPA-R subscales across the sub-samples investigated. The coefficients yielded were highly comparable to those reported by Armsden and Greenberg (1987) for the IPPA, which ranged between 0.72 and 0.91 for the sub-scales across both the parent and peer scales.

Consistent with the work by Armsden and Greenberg with the IPPA, we examined convergent validity by correlating reports on the IPPA-R with reports on self-esteem. In general, moderate correlations in the predicted direction were found for all scores on the IPPA-R and therefore provided support for the validity of the revised measure. The reason is not clear but correlations were weakest on the Communication subscale scores across both Parent and Peer Attachment and particularly for the male and child sub-samples. It is also important to note that, whilst the differences were not large, there was some tendency for the correlations between self-esteem and Parent Attachment to be stronger for the adolescent sub-sample compared with the child sub-sample. This is consistent with outcomes reported in studies comparing peer and parent relationships in relation to psychological adjustment. Such studies have primarily shown

that post-adolescence, youths' perceptions of their relationships with their parents remain more important than those with peers (see, e.g., Gecas, 1972; O'Donnell, 1976).

As was predicted, the overall Parent Attachment score of the IPPA-R was strongly positively correlated with the Care dimension of the PBI and moderately negatively correlated with the Overprotection dimension of the PBI. For the most part, the sub-scales of the Parent Attachment scale were also moderately correlated with the PBI dimensions. Peer Attachment and its sub-scales were also found to be significantly correlated with the PBI Care dimension. In contrast, the Overprotection dimension was not found to correlate significantly with the IPPA-R peer attachment measure. The different pattern of association between the PBI with IPPA-R Parent versus Peer Attachment is not surprising since parental overprotection would not be expected to significantly spill over into peer relationship quality. In contrast, care, otherwise referred to as warmth and nurturance, has been identified as a central factor in the development of intimate relationships across the lifespan (cf. Griffin & Bartholomew, 1994; MacDonald, 1992). It is also of interest that, in contrast to the findings relating to self-esteem, the correlation analyses between the PBI and the IPPA-R did not reveal the Communication subscale to be weakly correlated with the Care dimension.

Finally, we examined the interrelationships between the IPPA-R scales and subscales. Our findings were highly consistent with those reported by Armsden and Greenberg (1987). Specifically, we found that each of the total IPPA-R Parent and Peer Attachment scores correlated strongly with their respective sub-scale scores. Correlations between sub-scales, within scales, were also consistently moderately strong. Comparison of the correlation coefficients across age and sex sub-groups did not reveal any major differences, suggesting that the IPPA-R assessed the constructs in a comparable way across sub-groups. These findings therefore lend further support to the validity of the revised measure.

Notwithstanding these promising findings, the limitations of the study need to be acknowledged. First, our sample was limited by an unequal representation of males and females in the two age groups of participants, with the child group being over-represented by males and the adolescent group being over-represented by females. Thus, the analyses involving the age and sex sub-samples

warrant replication in order to determine their validity. A second limitation relates to the small sample involved in the convergent validity analyses using the PBI. Although the outcomes were as predicted, these findings can only be considered tentative and need to be replicated.

In conclusion, our findings provide strong support for the reliability and validity of the revised IPPA. We found adequate to good internal consistency for the IPPA-R Parent and Peer Attachment scales as well as for each of the subscales. The adequately sized correlations between the IPPA-R total and subscale scores and another measure of parent bonding (i.e. PBI: Parker et al., 1979) indicate that the IPPA-R is a valid measure of attachment in children and young adolescents. The equally robust correlations found with self-esteem are consistent with past research using the IPPA with adolescents and young adults (Armsden & Greenberg, 1987). This consistency provides good indication that the revised IPPA is a sound tool for the assessment of attachment in children and adolescents aged between 9 and 15 years. Given the limited attachment measures for children and younger adolescents, the present study makes an important contribution to the developmental literature.

APPENDIX—THE IPPA-R

Parent Scale Items

1. My parents respect my feelings.
2. My parents are good parents.
3. I wish I had different parents.
4. My parents accept me as I am.
5. I can't depend on my parents to help me solve a problem.
6. I like to get my parents' view on things I'm worried about.
7. It does not help to show my feelings when I am upset.
8. My parents can tell when I'm upset about something.
9. I feel silly or ashamed when I talk about my problems with my parents.
10. My parents expect too much from me.
11. I easily get upset at home.
12. I get upset a lot more than my parents know about.
13. When I talk about things with my parents they listen to what I think.
14. My parents listen to my opinions.

15. My parents have their own problems, so I don't bother them with mine.
16. My parents help me to understand myself better.
17. I tell my parents about my problems and troubles.
18. I feel angry with my parents.
19. I don't get much attention at home.
20. My parents support me to talk about my worries.
21. My parents understand me.
22. I don't know who I can depend on.
23. When I am angry about something, my parents try to understand.
24. I trust my parents.
25. My parents don't understand my problems.
26. I can count on my parents when I need to talk about a problem.
27. No one understands me.
28. If my parents know that I am upset about something, they ask me about it.

Peer Scale Items

1. I like to get my friends' opinions on things I'm worried about.
2. My friends can tell when I'm upset about something.
3. When we talk, my friends listen to my opinion.
4. I feel silly or ashamed when I talk about my problems with my friends.
5. I wish I had different friends.
6. My friends understand me.
7. My friends support me to talk about my worries.
8. My friends accept me as I am.
9. I feel the need to be around my friends more often.
10. My friends don't understand my problems.
11. I do not feel like I belong when I am with my friends.
12. My friends listen to what I have to say.
13. My friends are good friends.
14. My friends are fairly easy to talk to.
15. When I am angry about something, my friends try to understand.
16. My friends help me to understand myself better.
17. My friends care about the way I feel.
18. I feel angry with my friends.
19. I can count on my friends to listen when something is bothering me.
20. I trust my friends.

21. My friends respect my feelings.
22. I get upset a lot more than my friends know about.
23. My friends get annoyed with me for no reason.
24. I tell my friends about my problems and troubles.
25. If my friends know that I am upset about something, they ask me about it.

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