







Early father–child and mother–child attachment relationships: contributions to preschoolers’ social competence

Carla Fernandes ^a, Ligia Monteiro^b, António J. Santos ^a, Marília Fernandes^a,
Marta Antunes^a, Brian E. Vaughn ^c and Manuela Veríssimo ^a

^aWilliam James Center for Research, ISPA-Instituto Universitário, Lisboa, Portugal; ^bInstituto Universitário de Lisboa (ISCTE-IUL), CIS-IUL, Lisboa, Portugal; ^cHuman Development and Family Studies, Auburn University, Auburn, AL, USA

ABSTRACT

The main goal of this study was to explore the contributions of early father–child and mother–child attachment relationships to children’s later social competence with their preschool peers; possible unique and shared contributions were tested. Using a multi-method design and focusing on direct observation, attachment was assessed at home at age 3 with the Attachment Behavior Q-sort (AQS) and two years later social competence was assessed at classrooms of 5-year-olds using a set of seven measurement indicators that are part of the Hierarchical Model of Social Competence. Results show that attachment to each parent made unique and significant contributions to children’s social competence and suggested the possibility that each caregiver may have somewhat different patterns of influence on the different indicators of children’s social competence. Findings also suggest the possibility that a secure attachment with one parent may buffer the impact of having an insecure relationship with the other. Due to sample size, these results should be seen as a starting point to generate new and larger studies.

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Attachment theory provides a theoretical framework for understanding development and adaptation during the early years (Ainsworth & Bowlby, 1991). One of the theory’s strongest assumptions concerns the implications of early attachment security for the quality of child’s interpersonal relationships across the life span. With regard to early childhood, attachment theorists (e.g. Waters & Sroufe, 1983) have proposed that the nature of a secure attachment relationship with the caregivers is likely to promote the child’s social competence (i.e. the capacity to use behavioral, cognitive, and emotional resources in the service of achieving personal goals across multiple social contexts) outside of the family.

A secure attachment relationship may promote social competence because there is a history of caregiver’s availability and responsiveness that should result in the development of the child’s positive social expectations regarding relationships in general,

including relationships with peers (e.g. Booth-LaForce, Rubin, & Rose-Krasnor, 1998; Elicker, Englund, & Sroufe, 1992). These positive social expectations are likely to result in active exploration of new social environments (Booth-LaForce et al., 1998) that support interactions with peers which, in turn, result in the consolidation of existing social skills and afford opportunities to learn new skills (Rubin, Hymel, Mills, & Rose-Krasnor, 1991; Sroufe, 2005). It seems plausible to suggest that these various attachment outcomes may make the child an attractive social partner to peers during early childhood (Elicker et al., 1992; Rose-Krasnor, Rubin, Booth-LaForce, & Coplan, 1996). Thus, children with secure attachment histories are more likely better prepared to successfully navigate this new social world, than children with insecure attachments.

A substantial amount of evidence supporting the arguments made by Waters and Sroufe (1983) has accumulated over the last decades. In general, children with secure attachments tend to be in advantaged in terms of the quality of peer interactions and the relationships they establish during early childhood (e.g. Barglow, Contreras, Kavesch, & Vaughn, 1999; Lux & Walper, 2019; Veríssimo et al., 2011; Waters, Wippman, & Sroufe, 1979).

Despite the consistency of findings linking secure attachment with social competence, the magnitude of predictive and concurrent associations between attachment security and social competence is rather modest. In a meta-analysis covering 63 studies, Schneider, Atkinson, and Tardif (2001) found a small to moderate effect size relating security of attachment in childhood with subsequent social outcomes. This effect was moderated (among other things) by children's age at the time of assessment, being smaller for children under 8 than for children over 8 years of age, when social adaptation was assessed. The difference between effect sizes was found to be statistically significant. More recently, other published meta-analyses (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Groh et al., 2014; Groh, Roisman, van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012) presented consistent findings and also emphasize the role that early security plays in children's social competence. In the Groh et al. (2014) meta-analysis the contribution of each of the insecurity subtypes to children's social competence was investigated, extending the previous meta-analytic research. Findings suggested that insecure attachment relationship in early childhood is negatively associated with children's peer competence, and this is true for all subtypes contrasting with previous results (Fearon et al., 2010; Groh et al., 2012). Regarding mother-child and father-child attachment security, Groh et al. (2014) reported that mother-child security was more strongly associated with peer competence than father-child security. A decade before also Schneider et al. (2001) report that only mother-child attachment security, was found to be significantly associated with peer relationship functioning. However, caution is needed since the number of studies including fathers was small in all meta-analyses, leading to the results being considered inconclusive with respect to father-child attachment. Finally, analytic works (Groh et al., 2014, 2012) provided evidence suggesting that the magnitude of the association between attachment and social competence is larger in studies employing the AQS when assessing attachment and using observational data rather than reports when assessing social competence with peers. This is not surprising since they are both complex constructs that require broadband assessments that address multiple domains of functioning and their integration in the service of the child's

adaptation to the peer context (e.g. Grossmann & Grossmann, 2019; Veríssimo, Santos, Fernandes, Shin, & Vaughn, 2014; Waters & Sroufe, 1983).

The work reported by the Minnesota Longitudinal Study of Risk and Adaptation investigators (Sroufe, Egeland, Carlson, & Collins, 2005) provides some of the strongest evidence regarding Bowlby's prediction that individuals with secure attachments should tend to develop social and emotional skills that promote social competence (Sroufe, 2005). Broadly speaking, their findings show that children with histories of secure attachment relationships exhibited higher levels of social competence (Sroufe, 2005).

Another large longitudinal study (i.e. The NICHD Study of Early Child Care and Youth Development (SECCYD)) has yielded evidence of a strong link between family and parental characteristics and children development outcomes, including social competence. Findings from this study suggest that early attachment security predicts children's later social competence with peers; and appeared to be mediated by parenting quality, however, parenting quality interacted with attachment security. Higher vs. lower parenting quality only affected teachers' reports if the child was insecurely attached (NICHD Early Child Care Research Network, 2006).

A role for fathers

Despite Bowlby's conceptual support for the possibility of multiple attachment figures during infancy and early childhood, until more recently, few studies were mounted to examine the child's attachment to fathers during infancy and early childhood (e.g. Cox, Owen, Henderson, & Margand, 1992; Lamb, Frodi, Hwang, Frodi, & Steinberg, 1982; Main & Weston, 1981; Monteiro et al., 2010; Steele, Steele, & Fonagy, 1996; Veríssimo, Santos, et al., 2011). With a social shift on gender roles and family polices during the last decades, along with the notable increase in fathers' involvement and participation in children's lives, there has been an effort to explore factors influencing the quality of father-child attachment (Bureau et al., 2016, 2014; Euler, 2019; Grossmann & Grossmann, 2019; Pinto, Veríssimo, Gatinho, Santos, & Vaughn, 2015). Researchers have also empirically tested its impact on children's socio-emotional development more broadly (e.g. Boldt, Kochanska, Yoon, & Nordling, 2014; Bureau, Deneault, & Yurkowski, 2019; Lux & Walper, 2019). Clearly, fathers are no longer outsiders in attachment research as evidenced by the publication of two special volumes devoted entirely to this topic (see Ahnert & Schoppe-Sullivan, 2019; Cowan & Cowan, 2019).

In general, studies including measures of attachment to both parents produced results suggesting that both parents contribute significantly to the child's later social functioning (e.g. Boldt et al., 2014; Bureau et al., 2019; Lux & Walper, 2019).

There have also been inconsistencies in the data regarding the salience of mother-child vs. father-child attachments as influences on later social competence, with results of some studies favoring mothers (e.g. Coleman, 2003; Groh et al., 2014; Schneider et al., 2001) and others favoring fathers (e.g. Boldt et al., 2014; Bureau et al., 2016; Kochanska & Kim, 2013; Lux & Walper, 2019; Verschueren & Marcoen, 2002). In an attempt to resolve this issue, some researchers have suggested that attachments to different parents may influence somewhat different aspects of social competence, so are both important but for different social outcomes (e.g. Howes, 1999; McDowell & Parke, 2009).

Thompson (2019) recently summarized these arguments in terms of his *domain-specific* approach, which implies that attachment relationships to each parent will have greater influence on developmental domains that are most salient/relevant to the individual parent. Studies that have independently analyzed the implications of both attachment relationships for child social functioning in the peer-group support the notion that both parents play important and non-redundant roles in the child's integration into peer groups (e.g. Boldt et al., 2014; Bureau et al., 2019; Cowan & Cowan, 2019; Kochanska & Kim, 2013). These studies suggest that a more complete characterization of attachment influences on children's subsequent social competence should include both parents.

The present study aimed to examine the contributions of early mother-child and father-child attachment relationships to children's later social competence with preschool peers in order to explore both unique and shared contributions that may be attributable to different attachments within the family. Moreover, this study makes a methodological contribution by using observational measurement indicators of both attachment and social competence constructs.

Method

Participants

Part of the sample for this study overlaps with the sample reported by Veríssimo, Santos, et al. (2011), with new cases and indicators of social functioning in preschool groups added. Participants were 39 mother/child and father/child dyads and the children attended private daycare programs in suburbs of Lisbon, Portugal. All children were typically developing (i.e. none were identified as having special needs).

When the AQS observations were completed, children were on average 3 years of age ($M = 36.51$; $SD = 7.05$) and 14 were female. Social competence data were collected two years later at the end of the preschool period. Children were observed in six different 5-year-olds' classrooms. All nuclear families were European and both parents lived in the household. Children spent between 6 and 10 h ($M = 8.15$; $SD = 1.10$) in non-parental care each weekday. The range of mothers' ages was 27–49 years ($M = 36.34$; $SD = 4.39$) and fathers' ages ranged from 32 to 61 years ($M = 37.57$; $SD = 5.02$). Mothers' education level varied between 9 and 23 years ($M = 15.77$; $SD = 2.83$) and fathers between 9 and 18 years ($M = 15.74$; $SD = 2.43$). All families were "middle class," by the standards of the local community.

Procedures

Informed consent was obtained from all the participating families when they were recruited to the study, after the approval the Ethics Committee of ISPA-Instituto Universitário. In the beginning of the academic year each parent was contacted in order to schedule home visits (with one-month interval between them). Two years later, direct behavioral observations and sociometric interviews were collected in classrooms of 5-year-olds. Assessments were completed between October and April, in the school context. Classroom observers were blind to the attachment data and different teams of

classroom observers were assigned to each measurement “family” for the social competence assessments.

Instruments

Attachment behavior Q-set

The AQS (Waters, 1995, v. 3.0) assesses the quality of attachment relationships, as indexed by the organization of secure base behavior in the presence of primary or secondary caregivers, in ecologically valid contexts (Vaughn & Waters, 1990). Secure base behavior (i.e. both exploration away from and proximity/contact seeking) of the child is characterized in terms of its organization in these contexts (Posada et al., 2013). The AQS provides a detailed description of the child’s attachment behavior and has been used to document both changes and continuities in the development of attachment relationships (e.g. Monteiro, Veríssimo, Vaughn, Santos, & Bost, 2008; Veríssimo, Blicharsky, Strayer, & Santos, 1995; Waters & Deane, 1985). Furthermore, The AQS is particularly useful when multiple assessments are planned (as in our case because both mothers and fathers are assessed within a short period of time) because most children do not become sensitized to the observers (as can happen when Strange Situation tests are repeated over a short time span) during the home observations (e.g. van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004; Waters & Deane, 1985). The validity of this instrument was confirmed in previous meta-analysis (e.g. Groh et al., 2014; van IJzendoorn et al., 2004). Studies with Portuguese samples have also demonstrated the utility and validity of the AQS in the Portuguese culture (Posada et al., 2013).

AQS procedures

Mother–child and father–child dyads were observed during separate visits, each lasting between 2 and 3 h. During visits with the mother, the father was asked not be present (and mothers were asked to absent themselves during the father/child visit). Home visits were counter-balanced (thus, for approximately half the families, fathers were observed first). The average interval between the visits was 1 month. About 82% of the visits with the mothers and 64% of the visits with the fathers were completed during the week, after the parents picked up the children from the preschool; the remaining visits were done on weekends. The parents were told that the purpose of the visit was to better understand the child and the parent in their daily routine and experiences, for which reason they were asked to keep their daily activities unaltered as much as possible, in spite of the observers’ presence. No other special restrictions were enforced during dyadic observations.

Two observers were present for all home visits; teams of observers were different for mother and father visits. The observers behaved as social visitors in the home, not intervening in family routines but participating in play if invited by the child. They talked informally with the parent but tried not to interfere with child–parent interactions. When it was opportune and in the sequence of the conversation with the parent, observers asked questions concerning Attachment Q-set items that could not be observed (e.g. item 10 refers to the child’s behavior when he/she goes to bed) and about items they may not have observed during the visit (e.g. item 45 refers to the child’s liking to sing and dance music).

Observers were trained over a period of several weeks before initiating formal observations for the project. After training, rater agreements in the present study averaged .78 (range between .69 and .90; SD = .08) for the mothers and .75 (range between .68 and .84; SD = .07) for the fathers. The final Q-sort for the child was a composite (average) of the two Q-descriptions provided by each observer and criterion scores for security were calculated using this composite (rater agreements averaged .79 for mothers and .81 for the fathers).

At the end of the observation period, the home visitors independently sorted the AQS items into nine categories, using a rectangular (i.e. 10 items in each of the 9 categories) distribution indicating how characteristically or uncharacteristically each item describes the observed child. Sorts are completed after a sufficiently long period of observation (minimum recommended observation time is 2 h). Placement of an item in the distribution is determined by the salience/relevance of the item as observed (or reported by the caregiver) rather than by frequency or visibility per se (so, for example, determining that the child uses the mother as a base of exploration may take 60–90 min for a 3 to 5 year old, but if observed, this item would be placed high in the distribution even though only a single cycle or two might be seen). Items that are more characteristic of the child are placed in the higher categories (9–7) and items least characteristic (i.e. those items that are not good descriptors of the child's behavior) are placed in the lower categories (1–3). Items that are neither characteristic nor uncharacteristic and items that are not observed within the time frame of the observation should be placed in the center of the distribution (categories 4–6).

For scoring, the Q-description of the observed child is compared to a "criterion sort" described by Waters (1995). Individual cases are evaluated in relation to this criterion by correlating the vector of item scores derived from the sort of an observed child with the vector of criterion item scores. This value indexes the similarity of the "observed child" to the idealized hypothetical child and ranges (in principle) from -1.0 to 1.0 . In practice, scores below $-.25$ or above $.80$ are rare in samples of typically developing children.

Hierarchical model of social competence

Children's social competence in preschool groups was assessed using three measurement families (with a total of seven measures), namely: directly observed behaviors, Q-sort descriptions, and sociometric interviews. Each of these measurement families provides us with information regarding three unique dimensions indicative of child social competence: social engagement/motivation; profiles of behavioral and psychological attributes and skills; and peer acceptance (e.g. Bost, Vaughn, Washington, Cielinski, & Bradbard, 1998; Vaughn, Colvin, Azria, Caya, & Krzysik, 2001; Vaughn et al., 2009), respectively. The composite of these is the "broadband" indicator for social competence (see Vaughn et al., 2009).

Social engagement/motivation

Rates of positive and neutral interaction initiated and visual attention received are the indicators of this dimension. Before starting collecting data, two observers spent at least 2 h in the classroom in order to let children become familiar with their presence in the classroom and to learn children's names.

Regarding interactions initiated with peers, each child was observed independently by each observer for 100 intervals of 15-s each (100 observations per child per observer). At the end of each observation interval, the identification codes of all the children with whom the focal child interacted were registered. Additionally, the interactions could be characterized as a *positive*, *neutral*, or *negative* depending on expressed affect of one or both children. An interaction was characterized as positive if one or both children clearly displayed positive affect during the social exchange (e.g. smiles, laughs, gestures or vocalizations indicative of positive emotions) and if the positive-affect expression was not accompanied or followed by negative-affect expressions from the interactive partner (e.g. crying, distress, pain, intense irritability). To be coded as a negative interaction, one or both children had to clearly evidence negative affect during the social exchange (e.g. anger, distress, fear, and sadness), whether through vocal, gestural, or facial means; and the negative-affect expression did not occur in the context of pretend/fantasy play. When social interactions could not be coded as either positive or negative they were coded as neutral. This interaction code included all the verbal and nonverbal exchanges that did not contain affect expression. Following prior conventions (i.e. Bost et al., 1998; Vaughn et al., 2001, 2009), we used only positive and neutral interactions for this study.

Visual regard observations were collected independently from the interaction observations, by the same observers. The two observers worked independently, and each watched a given focal child during approximately 100 intervals of 6 s each (so a total of 200 intervals per child). At the end of the interval, the codes identifying the children who received attention from the focal child were registered as a unit of visual attention – namely, a look (described as the orientation of the head and/or eyes in the direction of another person for 2 s or more) or a glance (described as a similar orientation of the head and/or eyes for less than 2 s). The total score for visual attention was the sum of looks and glances each child received from peers.

The observations were completed over a two-month period. Each observer had a differently randomized class roster (in terms of codes of children and where rounds of interaction and visual attention were also randomly interspersed). For each observation round, a given focal child was observed when his or her name appeared on the randomized class roster, and no child was observed twice before all children present were observed once. To adjust for absences from the classroom during observational rounds, the total scores were divided by the number of observation rounds for which the target child was actually present in the classroom and standardized within the classroom. Scores of children absent from the classroom for 50% or more of the interaction and/or visual regard rounds were treated as missing for these observations. Final scores were standardized within the classroom group prior to further analysis. All observers were previously trained by the principal investigator.

Observers' rater agreement for both observation categories was estimated based on intraclass correlation of the coding rates between class observers. Observer agreement was estimated as the intra-class correlation (ICC) of individual rate scores across observers. Mean ICC estimates (Average measures consistency – ICC for each class pair of observers were .78 interaction (range between .54 and .90; SD = .11) and .76 for visual attention data (range between .57 and .92; SD = .10). Agreement on "real" data and in a small sample can occasionally be lower than required, since observers sometimes do not observe a given

child simultaneously; in addition, rounds of interaction and visual attention were randomly interspersed.

Profiles of behavioral and psychological attributes

Q-sort descriptions were used as indicators of this dimension. Q-sorting is an ipsative procedure for assigning scores to the items in a standard personality- or behavior-descriptive-item pool or Q-set (for more information about the implications of the ipsative nature of Q-sort measures see Vaughn, Santos, & Coppola, 2014). However, criterion scores derived from ipsative data can be treated normatively for purposes of analysis (Block, 1961). Two widely used Q-sorts were used: the California Child Q-sort (Block & Block, 1980) and the Preschool Q-sort (Bronson's adaptation of a Q-sort originally used by Baumrind, 1967). California child Q-sort is composed by 100 items designed to capture children's behavior and personality profiles. The 72 items of the Preschool Q-sort are more related to behaviors toward peers and observable interactions (Verissimo et al., 2014).

The two previously trained observers (blind to all other child information), each spent 20 h (spread over 2 weeks) observing the children in a given classroom over a variety of settings (e.g. transition activities, small groups, mealtimes, indoors and outdoor play). After finishing observations, each observer used both Q-sorts to independently describe each child in the classroom (except when a child was absent for over 50% of the observation time), sorting their items into nine-category rectangular distribution (11 items per category, except for middle category, which received 12 items, for the California Child Q-set; and 8 items per category for the Preschool Q-sort). The median of intra class correlation estimated for each pair of observers in each classroom (with respect to social competence's criteria) was .74 for CCQ and .75 for PQ.

Q-sort descriptions were used to derive social competence scores for each child following the criteria published by Waters, Noyes, Vaughn, and Ricks (1985). Since the two observers contributed Q-sort descriptions of a child their scores were averaged. A child's Q-sort was subsequently correlated with the profile of a hypothetical child at the extreme for social competence that had been generated by aggregating descriptions provided by experts on social development (Waters et al., 1985). Pearson's correlation between a child's Q-sort and the criterion sort for the construct becomes her or his score for that construct. The final social competence criterion scores were standardized within classroom prior to the primary analyses.

Peer acceptance

Two sociometric interviews were used as indicators of this social competence dimension: peer nominations (McCandless & Marshall, 1957) and a paired-comparisons task (e.g. Vaughn et al., 2009; Vaughn & Waters, 1981). In the nomination, task children were presented with the set of photographs of their classmates and asked to identify a peer with whom he or she especially liked to play. After making three such choices, the child was asked to name a peer with whom he or she did not especially like to play with, and this request was repeated again twice. Peer acceptance was calculated based on the number of times each child was one of the first three choices by that child's peers. In order to adjust for differences in class size, average scores were calculated by dividing the number of choices received by the number of children who completed the task.

For the paired-comparisons task, each child was shown photographs of all the possible pairs within their classroom (i.e. total number of comparisons = $N[N - 1]/2$). The child was then asked to choose the peer with whom she or he especially liked to play for each pair. The order of presentation ensured that no child was seen twice before all other classmates were seen once. Pairs' photographs were arranged so that each child appeared the same number of times on the left- and right-hand side of the stimulus. The acceptance score for this task was calculated dividing the total number of choices received from peers, by the number of classmates who completed the task. Consistent with standard conventions regarding sociometric data, both sociometric scores were standardized within the classroom prior to the analysis.

Results

Preliminary analyses tested the relations between sociodemographic indicators (i.e. age, years of education, number of months the child was enrolled in day care prior to assessment, sex of the child) and variables in study (i.e. the AQS security scores for both parents and social competence scores). No significant associations were found at this level.

Attachment

AQS security scores

The AQS security scores for mothers ranged between $-.12$ and $.80$ ($M = .56$; $SD = .16$). Scores when children were seen with their fathers ranged between $.04$ and $.79$ ($M = .55$; $SD = .16$). These values are within the range of typical values identified by van IJzendoorn et al. (2004) in their meta-analysis of studies using the AQS in non-clinical samples. As expected most children's AQS security scores were positive, indicating the use of both mother and father as a secure base (Posada et al., 2013). The AQS security scores with fathers and mothers were significantly correlated, $r(39) = .32$, $p < .05$. Thus, children with well-organized secure base behavior with one parent tended also to display well-organized secure base behavior with the other parent. A repeated measures ANOVA grouped by child sex tested differences between the AQS scores for fathers vs. mothers. Neither main effects of parent (within subject), child sex, nor their interaction reached significance. These findings are consistent with the literature on child attachments to both parents (e.g. Caldera, 2004; Frosch, Mangelsdorf, & McHale, 2000; Main & Weston, 1981).

Social competence

As shown in Table 1, correlations among same-family measures from the social competence battery tended to be higher than correlations with indicators from different measurement families; however, tests on the significance of differences between correlation values (i.e. Fisher r -to- z transformation) did not reveal significant differences for correlation magnitudes (the correlation between the Pair Comparison and PQ is the exception). These results are consistent with previous findings describing coordinated associations among the social competence indicators (e.g. Bost et al., 1998; Vaughn et al., 2001, 2009; Veríssimo et al., 2014; Veríssimo, Fernandes, et al., 2011). Scores were created for the three

Table 1. Correlations among the social competence indicators.

	Paired comparisons	CCQ	PQ	Visual attention	Interactions
Positive nominations	0.57**	0.47**	0.45**	0.55**	0.45**
Paired comparisons		0.53**	0.28	0.51**	0.43**
CCQ			0.71**	0.61*	0.45**
PQ				0.52*	0.43**
Visual attention					0.68**

** $p < 0.01$; * $p < 0.05$

Table 2. Correlations among the social competence dimensions.

	Social engagement	Peer acceptance
Psychological attributes	0.58**	0.46**
Social engagement		0.60**

** $p < .01$

indicator sets: *social engagement/motivation*, *profiles of behavioral and psychological attributes*, and *peer acceptance* (see Vaughn et al., 2009). The three composite scores were significantly associated (see Table 2) and were themselves aggregated to create a social competence composite score, with an alpha of .71.

Attachment and social competence

First, zero-order correlations were calculated between father and mother attachment and the social competence variables (see Table 3). Attachment security with the mother was significantly associated with the social engagement and peer acceptance composites, as well as with the global social competence composite. Attachment security with father was significantly correlated with the psychological attributes composite and also with the global social competence composite. Tests on the significance of differences between mother and father correlation values for each social competence variable (i.e. Fisher r -to- z transformation) did not reveal significant differences for correlation magnitudes, except for Peer acceptance.

Regression analyses tested the predictive utility of attachment security to mother, father and their interaction for children's social competence (global and within indicator composites, Table 4). Both mother-child and father-child attachment scores uniquely and significantly predicted the global social competence score. With respect to the three measurement families, mother-child attachment security was a unique

Table 3. Preschoolers' social competence correlations with early attachment security to both parents.

	AQS with Mother	AQS with Father
Social engagement	0.38*	0.31
Psychological attributes	0.26	0.42**
Peer acceptance	0.54**	0.11
Social Competence	0.56**	0.36*

* $p < .05$, ** $p < .01$

Table 4. Preschoolers' social competence composite and dimensions predicted by early attachment security to both parents.

Dependent Variable	AQS Mother		AQS Father		Mother X Father		Models		
	β	p	β	p	β	p	F (1,37)	p	R^2
<i>Composite</i>									
Social competence	0.95	.000***	0.75	.006***	-.87	.018***	9.391	.000***	0.45
<i>Dimensions</i>									
Social engagement/motivation	0.52	.068 ^a	0.45	.157***	-.39	.370***	2.948	.046***	0.2
Behavioral and psychological attributes	0.42	0.126	0.71	.025***	-.54	.206***	3.526	.025***	0.23
Peer acceptance	1.03	.000***	0.49	.075***	-.91	.020***	7.63	.000***	0.4

* $p < .05$, ** $p < .01$, *** $p < .001$

significant predictor of the peer acceptance composite and a marginally significant predictor of the social engagement/motivation composite. Father-child attachment security was a unique significant predictor of the behavioral and psychological attributes composite and a marginally significant predictor of the peer acceptance composite. The interaction term (product of mother and father AQS scores) was a significant predictor of the social competence composite and of the peer acceptance dimension. The mother x father interaction score was associated with significant increases in R^2 for both the global social competence composite ($\Delta R^2 = .09$, $F(1,35) = 6.11$, $p = .02$) and for the peer acceptance composite ($\Delta R^2 = .10$, $F(1,35) = 5.98$, $p = .02$), suggesting that the degree of the effect of the child's attachment security to one parent depended on the magnitude of the security score for the other parent.

To clarify the interaction results, and given the small sample size available in this study, we used the SPSS module *Process* (Hayes, 2018) with bootstrapping and bias corrected since it tends to provide better estimates. Slopes for attachment security to mother predicting both the social competence and peer acceptance composite scores were generated at three levels of attachment security to father: low, middle and high, assuming that every child in sample was scoring -1 SD, 0, and $+1$ SD, respectively (Figure 1). Results indicated that in this sample only the slopes representing the effect of attachment to mother on the those children whose level of attachment security to father was low proved significant, for both social competence ($b = 1.59$, $t(35) = 3.23$,

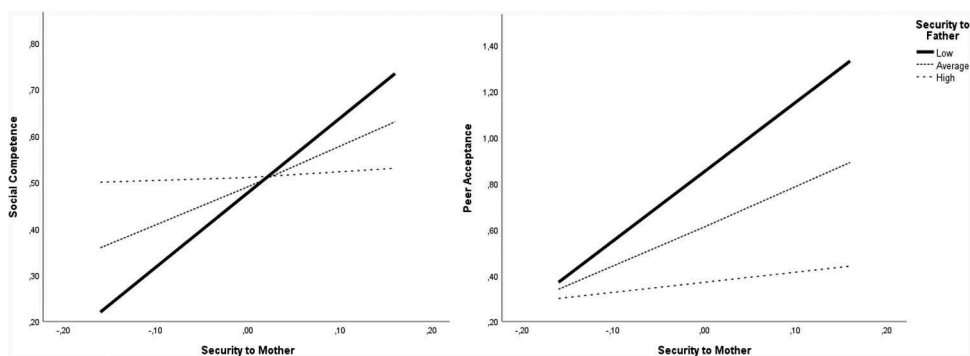


Figure 1. Plot of slopes of relations between attachment security to mother and social competence composite and peer acceptance dimension at three levels of attachment security to father.

$p = .003$) and peer acceptance dimension ($b = 2.98$, $t(35) = 3.53$, $p = .001$). These findings suggest the possibility that when a child's attachment is less secure with the father, the mother-child relationship could be a strong predictor of peer social competence, perhaps especially in the peer acceptance domain. For completeness, we also decomposed the interaction using the AQS score with mother as the moderator and plotted the association between the SC composite and the peer acceptance dimension with the AQS score with fathers. No significant slope terms were observed in these analyses, suggesting that effects of father-child attachment do not depend on the level of security in the mother-child relationship.

Discussion

The primary purpose of this study was to explore the potential influences of parent-child attachments during childhood on social competence, at both general and specific indicator levels for 5-year-old children. Consistent with the Waters and Sroufe (1983) conjecture and with previously reported results, we found that both mother-child and father-child attachment security independently contributed to the prediction of the preschoolers' social competence scores (Cowan & Cowan, 2019; Kochanska & Kim, 2013; Lieberman, Doyle, & Markiewicz, 1999; Main & Weston, 1981; Verschueren & Marcoen, 1999). However, they did not necessarily contribute in the same ways to the individual domains used to characterize child social competence. These findings are consistent with the notion that attachment figures can have overlapping, but not isomorphic, spheres of influence (Bureau et al., 2016; Kochanska & Kim, 2013; Lux & Walper, 2019; Thompson, 2019; Verschueren & Marcoen, 2002).

This pattern of parental influences was reversed for the composite behavioral and psychological attributes indicator derived from Q-sort data, insofar as the AQS score with the father proved to be a unique and significant predictor but the AQS score with the mother failed to reach significance in the regression. These differences may reflect differences in the content of interactions fostering the child's organization of secure base behavior around a specific attachment figure.

It is important to acknowledge, however, that due to low n our results have to be cautious interpret. Additional research with larger samples will be needed to clarify whether there are meaningful between parent differences in the prediction of early childhood social competence from parental attachment measures.

With respect to fathers, some previous studies suggest that the interaction patterns of father-child dyads seem to be associated with levels of greater excitation or destabilization (Paquette, 2004) and that the unique ways in which fathers interact with their children (often associated with physical play) seems to promote competence more generally, especially with reference to the acquisition of regulatory skills that may be deployed in subsequent peer interactions. Booth-LaForce et al. (2006) speculated that the context of physical play between fathers and children with secure attachments, promotes the learning of boundaries between play and aggression that can be brought to other social contexts such as the peer group. A recent study designed to explore sex differences in the organization of attachment-relevant behavior, using the AQS, reported that items positively associated with security include more explicit secure base behavior in a physically playful context when children were

observed with their fathers (Fernandes et al., 2018). It seems that fathers are especially supportive of children's play and exploration (Grossmann & Grossmann, 2019; Grossmann et al., 2002; Lamb, 2010), with the quality father-child attachment being marked by the father functioning mainly as a secure base and supporting the child's emotional intensity in settings of vigorous play. With respect to mothers, they often provide emotional security to regulate child distress (Grossmann et al., 2002). Mother-child attachment relationships are frequently associated with calming, reassuring and comforting interactions, which also imply proximity and physical contact (Booth-LaForce et al., 2006). Thus, it may be that children build competences related to social awareness, concern, comfort, and understanding affective signals for underlying emotion states, which can be transferred to interactions with peers (Booth-LaForce et al., 2006). These are, of course, very speculative generalizations about the characteristic patterns and contents of interactions between mothers (and fathers) and their infants/toddlers and they should be rigorously tested in new research samples. Nevertheless, they are suggestive and it will be important that new research frames explicit and directional hypotheses about which competence domains should be affected by interaction and attachment histories with different attachment figures.

In this sample, having a secure relationship with the mother appears to counter the impact of less secure (or insecure) relationship with the father (see Figure 1); however, a secure relationship with the father does not significantly offset the effect of a low secure relationship with the mother. This finding seem to be consistent with previous discussions of potential buffering effects of maternal attachment security and with the suggestions that it is possible for children securely attached to only one parent (mothers, in this case) to also achieve good developmental outcomes (e.g. Dagan & Sagi Schwartz, 2018; Kochanska & Kim, 2013; Yates, Egeland, & Sroufe, 2003). Again, we stressed that our results are exploratory and should be seen as hypotheses for future studies.

We note that many studies concerning associations between attachment security and social competence relied upon indirect measures of social competence, in particular, adult (teacher or parent) ratings of child behavior and character traits that are not derived from systematic observation. One strength of our study is that both the attachment and social competence constructs rely on direct observation of child behavior and child reports of playmate preferences (e.g. Bost et al., 1998; Posada et al., 2013; Santos, Peceguina, Daniel, Shin, & Vaughn, 2012; Santos, Vaughn, Peceguina, & Daniel, 2014; Santos et al., 2014; Wong et al., 2011). Use of multiple, broadband indicators of social competence afforded us the possibility of exploring differential influences of attachment with mothers and with fathers on multiple domains of child social competence indicators. By way of comparison, the bulk of existing studies have used a single, more global measure of child social competence and did not test the possibility that specific indicators might be differentially related to mother-child attachment vs. father-child attachment (see Groh et al., 2014; Schneider et al., 2001).

We also recognize limitations that constrain the generalization of these results. For example, the sample is small and homogeneous given that we recruited participants from middle to upper-middle class families attending private institutions and only enrolled families with both biological parents living with the child. It would be important to replicate these findings in samples without these limitations, using large non-

convenience samples and including children with attachment histories covering the full range of the Strange Situation classifications, rather than the AQS, which only provides a single attachment security score. Future research might also expand the range of potential attachment figures (e.g. grandparents, daycare providers) when attempting to extend the knowledge about the implications of early affective relationships on children's later social competence.

Highlights

- Both the attachment and social competence constructs rely on direct observation of child behavior and child reports of playmate preferences;
- Early childhood social competence is predicted by attachment to both mothers and fathers.
- Both mother-child and father-child attachment security not necessarily contribute similarly to the three domains of social competence indicators we used.
- Analyses of the interaction of mother- and father-child AQS scores suggest that if a child has only one secure relationship between the two parents, it is advantageous that that relationship be with the mother. These data are relevant to discussions of attachment networks and/or hierarchies.

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ORCID

Carla Fernandes  <http://orcid.org/0000-0001-8259-6829>

António J. Santos  <http://orcid.org/0000-0003-2451-9352>

Brian E. Vaughn  <http://orcid.org/0000-0002-0035-2976>

Manuela Veríssimo  <http://orcid.org/0000-0003-4356-5696>

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