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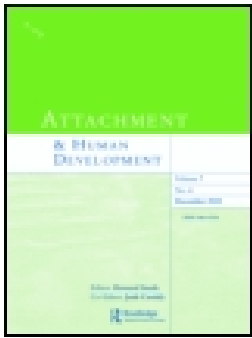
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## Correlates of child–father and child–mother attachment in the preschool years

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### ABSTRACT

The increase in fathers' involvement in childrearing, particularly beyond infancy, warrants research exploring factors influencing the quality of child–father attachment relationships, and the impact of these relationships on children's social development. The current investigation explored various correlates of preschoolers' child–father attachment security to both parents, including contextual factors (i.e., socioeconomic status, child temperament, parenting stress), parental play sensitivity, and child social adaptation. Participants included 107 preschool-aged children (59 girls;  $M = 46.67$  months,  $SD = 8.57$ ) and their fathers and mothers. Results revealed that both mothers' and fathers' play sensitivity were associated with child attachment security after controlling for different contextual factors. Furthermore, the magnitude of the association between child conduct problems and child–father attachment insecurity was stronger than the corresponding association with child–mother attachment insecurity. Findings provide important information on caregiving factors associated with child–father attachment security in the preschool years and the importance of this bond to children's social adaptation.

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Fatherhood; preschool attachment; play sensitivity; child social adaptation; parenting stress

Empirical study of the child–father relationship is a challenging task, especially given the ongoing evolution of the paternal role. Indeed, Pleck (2010) reported a 94% increase in fathers' interactive engagement time with their young children between 1965 and 2000. Moreover, it is now generally recognized that both fathers and mothers foster children's secure attachment and exploration (see Bretherton, 2010), even though fathers are not necessarily the primary caregivers and generally do not spend as much time with their children as mothers do, particularly in infancy. Indeed, according to Bowlby (1969/1982), an attachment figure is someone that a child will seek out for comfort and protection when distressed. Once comforted, a child should then be able to use the caregiver's support to continue exploring his or her environment. The attachment figure's sensitivity (i.e., ability to respond in an effective manner) is thought to have a major influence on a child's attachment behavior. It has been suggested that such sensitivity

demonstrated in a playful setting maybe particularly important for father–child relationship. In a recent meta-analysis, Lucassen et al. (2011) reviewed 16 studies ( $N = 1355$ ) exploring the association between observed paternal play sensitivity and child attachment security in the Strange Situation paradigm (Ainsworth, Blehar, Waters, & Wall, 1978). This meta-analysis revealed a modest significant association between father play sensitivity and infant attachment security. However, no study to date has explored associations between behavioral manifestations of paternal sensitivity and child attachment during the preschool years.

The current study explored child–father attachment security in the preschool period, a developmental stage during which, as described in more detail below, fathers are generally more involved in childrearing practices. Specifically, the influences of contextual factors (e.g., SES, child temperament, parenting stress) and paternal sensitivity on the quality of child–father attachment were examined. Moreover, we examined the relevance of child–father attachment to children’s social development during the preschool years through associations with child social adaptation. As it is undeniable that mothers play a central role in the family dynamic, child–father attachment security and its correlates were compared in parallel to the influences of children’s attachment relationships with their mothers throughout this study.

### *The child–father relationship in the preschool years*

Researchers have observed that fathers become more directly involved in childrearing activities in the toddler years and are especially involved once their children reach preschool age (Black, Dubowitz, & Starr, 1999; Lamb, 2004). Increased child mobility, the salience of playful interactions, greater exploration behavior, improved communication abilities, decreased dependency on caregivers to satisfy basic needs such as feeding, and resorbed stranger anxiety are all possible explanations for enhanced father involvement with the child during this developmental phase (Black et al., 1999).

During this period, the security of attachment with the caregiver is increasingly reflected in the integration of a goal-corrected partnership between caregiver and child (Bowlby, 1969/1982). The preschool attachment behaviors of secure and insecure children thus differ from infancy primarily in the increased verbal negotiation and planning between parent and child (Cassidy & Marvin with the MacArthur working group on attachment, 1992). Nonetheless, the relative functions of secure and insecure attachment in the preschool period are consistent with those of infant attachment behavior. To account for these developmental changes between the infancy and preschool periods, an evaluation system of attachment behavior was developed specifically for the preschool period (Preschool Attachment Coding System [PACS]; Cassidy & Marvin, 1992).

Given that the current study is the first to assess child–father attachment behaviors in the preschool years, it is important to explore its relation to outcomes typically linked with attachment in the literature. Solomon and George (2008) proposed a few categories of core variables that should be associated with attachment. According to them, parental sensitivity is expected to be one of the factors most strongly associated with child attachment. That being said, Cabrera, Fitzgerald, Bradley, and Roggman (2007) underlined in their model of paternal influences on children the importance of

accounting for various contextual factors, including father (e.g., parenting stress) and child (e.g., temperament) characteristics when exploring this association between fathers' sensitivity and child–father attachment. Moreover, prior research has consistently linked attachment insecurity with child social adaptation, suggesting social adaptation as an important correlate of attachment (DeKlyen & Greenberg, 2008).

### *Parental play sensitivity and attachment*

One of the core assumptions of attachment theory is that child attachment security is associated with parental sensitivity (Ainsworth, Bell, & Stayton, 1971; Bowlby, 1969/1982). Such parental sensitivity implies a balance between promoting exploration and autonomy (secure base behaviors) as well as reassuring a distressed child (safe haven). Accordingly, researchers argue that assessing parental sensitivity only in terms of one's ability to provide comfort places disproportionate emphasis on a single dimension of parental sensitivity (i.e., safe haven) that may traditionally be more associated with maternal, as opposed to paternal, behavior (Grossmann et al., 2002; Paquette & Bigras, 2010). In contrast to caregiving activities, play has been identified as the most important interactional context between fathers and children across cultures (see Lamb, 2004 for a review). In their seminal study, Grossmann et al. (2002) explored the long-term correlates of maternal and paternal play sensitivity, operationalized by the degree to which parents were sensitive, cooperative, and gently challenging while playing with their child, and child attachment with each parent. Results demonstrated that fathers' play sensitivity assessed in toddlerhood was significantly associated with the security of children's later representations of their relationship with father as assessed through interviews at age 10 and 16 years.

In accordance with these observations, some researchers (e.g., Cox, Owen, Henderson, & Margand, 1992; Van Ijzendoorn & De Wolff, 1997) suggest that paternal sensitivity should be assessed in playful interaction settings rather than during a procedure focused on the provision of comfort and reassurance. Although one may question the relevance of play behavior for attachment, both Cox et al. (1992) and Grossmann et al. (2002) emphasized that fathers are more likely to show attachment-related behavior such as providing psychological security during joint exploration and play. Thus, it is now common practice to evaluate paternal sensitivity in a playful context, and meta-analytic results have shown that fathers' sensitive play is indeed related to child–father attachment (Lucassen et al., 2011).

### *Contextual influences on child–father attachment security*

Previous meta-analytic evidence (Lucassen et al., 2011; Van Ijzendoorn & De Wolff, 1997) indicates significant associations between paternal sensitivity and child–father attachment, though the magnitude of this association is notably weaker than the corresponding association in child–mother dyads. In response to these results, and in addition to the new focus on paternal sensitivity within the play domain, it has been observed that researchers often overlook how contextual factors, such as parent characteristics and child characteristics, may impact the link between father sensitivity and the child–father attachment security (e.g., Doherty, Kouneski, & Erickson, 1998; Schoppe-Sullivan et al.,

2006). Indeed, contextual factors can reduce or even amplify the magnitude of the association between parental behavior and the child attachment security (Cowan, 1997), leading scholars to underestimate the strength of the link between paternal sensitivity and child–father attachment security.

As the role of fathers is less prescribed by society than is the role of mothers, fathers can, for example, choose to neglect the child–father relationship to invest themselves in other spheres of their lives such as work, friendship, or the couple relationship (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000). In contrast, mothers' more rigidly prescribed role can impede the prioritization of other life spheres above their relationships with their children. Therefore, child–father attachment security may be more strongly associated with fathers' motivational attitudes toward parenting and family than what has been found in maternal literature (Grossmann et al., 2002). In line with this assumption, Cox et al. (1992) showed that while child–mother attachment security was solely predicted by maternal sensitivity and time spent with the child, child–father attachment security was predicted not only by paternal sensitivity and time spent with child, but also by fathers' attitudes toward the child and the parental role.

Both parenting stress (Horn, 2000; Lamb, 2004) and child temperament (Cabrera et al., 2007; Freeman, Newland, & Coyl, 2010; McBride, Schoppe, & Rane, 2002) are additional factors identified in the literature as having a greater influence on the child–father relationships than on the child–mother relationships. Although stress factors pertaining to the marital relationship, role restriction, or work have all been identified as significant predictors of the quality of the child–father relationship (see Schoppe-Sullivan et al., 2006), it is also important to consider the impact of fathers' perceptions of child characteristics on the quality of paternal parenting behavior. In line with these observations, the current study explored whether parental sensitivity was associated with child attachment security with each parent beyond the influences of parental perceptions of child temperament and parenting stress.

### *Child–father attachment and child social adaptation*

Children's social adaptation has been extensively linked with the security of child–mother attachment (see DeKlyen & Greenberg, 2008 for a review). Specifically, research shows that secure attachment bonds foster the development of children's social and emotional competencies, as attachment relationships are a context for learning about future relationships (e.g., how to care for others and how to be cared for) and self-regulation (e.g., how to regulate emotions or how to resolve conflicts with peers). Despite the abundance of research linking insecure child–mother attachment with negative social outcomes, recent research assessing both child–mother and child–father attachment suggests that the child–father relationship may hold greater influence on child social adaptation. Indeed, when attachment to both parents is assessed at various ages (infancy to adolescence) across various methodologies (e.g., Strange Situation, representational measures), security to father – but not to mother – is associated with fewer teacher-reported externalizing behavior problems (Kochanska & Kim, 2013; Williams & Kelly, 2005), less teacher-reported anxious-withdrawn behavior (Verschuere & Marcoen, 1999), greater parent- and teacher-reported social competence (Boldt, Kochanska, Yoon, & Nordling, 2014), a higher number of reciprocated friendships

(Verissimo et al., 2011), and fewer self-reported behavior problems (Kochanska & Kim, 2013; Rosenthal & Kobak, 2010).

In addition to examining the differential predictive power of child–father and child–mother attachment on social adaptation, researchers have also demonstrated joint effects of attachment (i.e., insecure with both parents being at greater risk) on social adjustment. Indeed, although Verschueren and Marcoen (1999) reported that insecure attachment representations of fathers but not mothers predicted teacher-reported anxious-withdrawn behaviors and poorer school adjustment, for both outcomes, children who held insecure attachment representations regarding both parents had poorer outcomes than children who held secure attachment representations regarding both parents; children with secure representations of only mother or only father could not be differentiated from the other groups. Similarly, Kochanska and Kim (2013) reported that infant attachment insecurity with fathers was the sole predictor of teacher-reported externalizing problems and child self-reported behavior problems, both assessed in middle childhood. Again, despite the primacy of child–father attachment security, analyses regarding the joint effect of attachment with each parent showed that being insecurely attached to both parents was associated with greater risk on both outcomes. Thus, the current study aimed to explore both differential predictive power and joint effect of child attachment to mothers and to fathers on child social adaptation in the preschool period.

## ***Objectives and hypotheses***

### ***Objective 1: contextual factors and parental sensitivity in association with child–parent attachment security***

First, we hypothesized that both mother and father sensitivity assessed in a playful setting (laughing task [LT] procedure; Bureau et al., 2014) would be associated with child–mother/child–father attachment security, even after accounting for contextual factors (i.e., child temperament, parenting stress) and demographic features. This prediction was based on both the theoretical core assumption that attachment security derives from exposure to parental sensitivity. In accordance with the literature suggesting that child–father dyads are more vulnerable to contextual factors, it was also hypothesized that child–father attachment security would be more influenced by contextual factors than child–mother attachment security.

### ***Objective 2: associations between attachment and child social adaptation***

Links between child–father and child–mother attachment security and child social adaptation reported by both fathers and mothers were also examined. In line with previous literature suggesting that the quality of the child–father relationship has a potentially greater impact on children’s social adaptation than the child–mother relationship, it was expected that child–father attachment insecurity would show stronger associations with child social adaptation difficulties than child–mother attachment insecurity. Finally, in accordance with prior literature, it was also hypothesized that attachment to both parents would have a joint effect on child social adaptation and that children insecurely attached to both parents would present the greater risk of social adaptation difficulties.

## Method

### Participants

One hundred and nineteen child–father and child–mother dyads were recruited for this study. Twelve of these families did not participate in both mother– and child–father attachment assessments and were thus dropped from the study. Data from a final sample of 107 child–father and child–mother dyads (59 girls;  $M = 46.67$  months,  $SD = 8.57$ ) comprised the analytic sample. Both English- ( $n = 89$ ) and French-speaking ( $n = 18$ ) families were recruited through advertisements posted in newspapers, on the radio, and on the laboratory’s website. Interested families were invited to participate provided that they had a child participant aged between 3 and 5 years who was living with both parents; children living with a nonbiological parent were included in the study if the stepparent had lived in the home for at least 2 years and was considered a parental figure to the child ( $n = 2$ : one adopted child and one child living with stepfather). Although same-sex parent families were welcomed to participate, none did. The majority of participating families were not at socioeconomic risk, with only 23.4% reporting a gross annual income less than \$75,000, and 62.6% of fathers and 75.7% of mothers having completed a university degree (the remaining parents had either a college or high-school diploma). The majority of mothers identified themselves as Caucasian (82.2%), while others identified as Asian (6.5%), Black (4.7%), and Middle-Eastern (3.7%). The majority of fathers in the sample also self-identified as Caucasian (82.2%), with Asian (8.4%), Middle-Eastern (3.7%), Black (2.8%), and Latino/Hispanic (.9%) ethnicities reported at lower frequency.

### Procedure

Child–father and child–mother dyads participated in independent laboratory visits in counterbalanced order (there was a 3-month time-lapse between these visits). Each laboratory visit lasted approximately 2 h and included dyadic and individual tasks. First, dyads completed the LT procedure (Bureau et al., 2014). In this task, parents were asked to make their child laugh for a period of 2 min, without the use of any toys. Although 2 min may seem brief, the task elicited intense emotion (e.g., heavy laughter, as well as some fearful reactions and high distress) and intense physical play (e.g., chasing around, tickling), and pilot sessions showed that participants generally wound down after a few minutes. The LT procedure was presented first to ensure that it would not be contaminated by potential stresses elicited by other study procedures.

After the LT procedure, the child–parent dyad completed a separation–reunion procedure (PACS; Cassidy & Marvin, 1992). This procedure includes five stages: (1) Child–parent dyads were invited into a playroom where age-appropriate toys (and magazines for the parent) were available, but parents did not receive any specific instruction as to how the dyad should interact. (2) Following these first 5 min of free play or interaction, a research assistant signaled the parent to leave the playroom for a 5-min separation. In cases where the child expressed considerable distress, separations ended early. (3) After the separation, the parent returned to the playroom with the child for a 5-min reunion. (4) The parent and child were then separated a second time for



5 min. (5) The parent and the child were reunited for another 5-min period. Following each separation, a research assistant instructed the parent to return to the playroom but did not provide further instruction. Both the LT procedure and the separation–reunion procedure were video-recorded. Following behavioral tasks, parents completed a series of questionnaires. At the end of each laboratory visit, parents received monetary compensation, and children chose a toy prize in exchange for their participation. All procedures and tasks for the current study were approved by the institution’s Research Ethics Board.

## *Instruments*

### *Parental play sensitivity*

Video-recordings of child–father and child–mother LT interactions were coded using a modified version of the parent–child interaction scale for the preschool and school periods (Moss, Humber, & Roberge, 1996). The original scales, used in an observational snack time context, can distinguish interactive patterns of child–mother dyads (3–7-year-old children) with different attachment classifications (Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004) and demonstrate concurrent and longitudinal associations with children’s behavior problems (Moss, Rousseau, Parent, St-Laurent, & Saintonge, 1998). Bureau et al. (2014) previously adapted the coding system to the LT procedure, resulting in 10 scales representing various dimensions of child–parent interactions. Considering the focus on parental play sensitivity in the current study, only the parental sensitivity subscale was used in current analyses. Scores on the parental sensitivity subscale range between 1 and 4, with 1 reflecting an absence of parental sensitivity (e.g., parent uses fear to control child) and 4 representing greater parental sensitivity (e.g., parent respects the child’s needs). Four coders blind to all other data rated parental sensitivity in the LT procedure, without coding the same family twice. Inter-rater reliability for the sensitivity dimension (Pearson’s intra-class correlations;  $r_{ICC}$ ) was calculated for 45 videos (approximately 21% of the total sample of mothers [ $n = 23$ ] and fathers [ $n = 22$ ]), demonstrating excellent inter-rater reliability,  $r_{ICC} = .86$ . Discrepancies between coders were reviewed to obtain consensus.

### *Self-reported parenting stress*

Both fathers and mothers reported their perceptions of parenting stress via the Parenting Stress Index (PSI; Abidin, 1995). The PSI is a 120-item self-report questionnaire measuring the parent’s perception of the challenges associated with their child’s behavior (child domain) and the parent’s general stress associated with parenting (parent domain). The child domain is measured through six subscales: distractibility/hyperactivity, adaptability, reinforces parent, demandingness, mood, and acceptability. The parent domain is measured through seven subscales: competence, isolation, attachment, health, role restriction, depression, and spouse. Each scale item is scored by the parent on a 5-point scale ranging from strongly agree to strongly disagree. For the current study, both child and parent domain scores were used. The PSI has been widely used and has been shown to have acceptable concurrent, construct, discriminant, and factorial validity and reliability (Abidin, 1995). Internal consistency in the current sample was

acceptable for both child domain (father:  $\alpha = .78$ ; mother:  $\alpha = .83$ ) and parent domain (father:  $\alpha = .85$ ; mother:  $\alpha = .86$ ).

### *Child temperament*

Each parent completed the very short form of the Child Behaviour Questionnaire to assess their child's temperament (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001). The very short form of the CBQ has been validated for children aged between 3 and 6 years and entails 36 items yielding the following three broad temperament factors: surgency, negative affect, and effortful control. Moderate internal consistency has been found in previous literature for each factor (surgency  $\alpha = .73$ , negative affect  $\alpha = .66$ , and effortful control  $\alpha = .78$ ; Rothbart et al., 2001). The current study evidenced acceptable internal consistency across factors for each parent: surgency (father:  $\alpha = .74$ ; mother:  $\alpha = .78$ ), negative affect (father:  $\alpha = .70$ ; mother:  $\alpha = .69$ ), and effortful control (father:  $\alpha = .68$ ; mother:  $\alpha = .66$ ).

### *Child–parent attachment*

Attachment behavior was evaluated by using the PACS (Cassidy & Marvin, 1992) to code video-recorded observations of the separation–reunion procedure. The PACS was developed with a sample of 300 children between 2.5 and 4.5 years of age observed in the previously described separation–reunion procedure with their mother or father (Cassidy & Marvin, 1992). In the PACS, preschoolers are classified as secure, avoidant, ambivalent, controlling-caregiving, controlling-punitive, controlling-mixed, or behaviorally disorganized. Secure (B) children regain calm and comfortable interactions with their caregiver upon reunion. Avoidant (A) children maintain neutrality in their interaction with the caregiver and demonstrate limited emotional expressions toward him or her, even after reunion. Ambivalent (C) children demonstrate immature and/or resistant behavior toward the caregiver throughout the interaction and appear unsatisfied when contact with the caregiver is achieved. Controlling-caregiving children appear excessively attentive, caring, and helpful in their interaction with the caregiver, while controlling-punitive children show hostility toward the caregiver by giving harsh commands or humiliating the parent. Controlling-mixed children either alternate between caregiving and punitive behavior or demonstrate overly controlling behavior that is neither visibly caregiving nor punitive. Behaviorally disorganized children (D) do not manifest a coherent attachment strategy and/or demonstrate behaviors of disorganization that meet the infancy criteria.

Researchers report, through several validation studies assessing child–mother dyads, associations between PACS categories and child attachment representations (Bretherton, Ridgeway, & Cassidy, 1990), secure-base behavior measured with the Attachment Q-Sort (Moss, Bureau, Cyr, & Dubois-Comtois, 2006), quality of child–mother interactions (Barnett, Kidwell, & Leung, 1998; Moss et al., 2004; NICHD, 2001), maternal well-being (Manassis, Bradley, Goldberg, Hood, & Swinson, 1994; Moss et al., 2004; NICHD Early Child Care Research Network, 2001), and child social adaptation (Greenberg, Speltz, DeKlyen, & Endriga, 1991; Moss et al., 2004; NICHD Early Child Care Research Network, 2001). The majority of these results have been replicated by O'Connor, Bureau, McCartney, and Lyons-Ruth (2011) using data from the NICHD-SECCYD study ( $n = 1364$ ). To date, one study (George, Cummings, & Davies, 2010) used the PACS to assess attachment relationships of 236 early school-aged children

(age 6) with their fathers, demonstrating that fathers' responsiveness was a significant and unique predictor of child–father attachment.

Three trained and reliable coders, blind to participants' ratings on other study variables and to the other parent's rating, coded videos of separation–reunion procedures in the current study. Twenty-one percent of cases ( $n = 47$ ) were double-coded, resulting in 87% agreement ( $\kappa = .78$ ) for the 4-way classification (B, A, C, and D/controlling). For child–mother attachment, 91% agreement ( $\kappa = .84$ ) was reached, while for child–father attachment, 83% agreement ( $\kappa = .73$ ) was reached. All disagreements were reviewed until consensus was reached.

In order to achieve sufficient power to detect significant effects, a secure versus insecure (avoidant, ambivalent, controlling-caregiving, controlling-punitive, controlling-mixed, or behaviorally disorganized) dichotomy was used in current analyses. One-sample nonparametric binomial analyses showed that neither the child–mother (71 secure = 66%,  $p = .20$ ) nor the child–father distributions (68 secure = 64%,  $p = .41$ ) of secure–insecure categories significantly differed from the standard distribution established in a previous meta-analysis (secure = 62% for normative samples; Van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). The secure–insecure distributions for both parents showed high concordance (77%,  $\kappa = .49$ ,  $p < .01$ ). Indeed, 80% of children who demonstrated secure attachment behavior with their father also showed secure attachment behavior with their mother, whereas 69% of children insecurely attached to their father also showed attachment insecurity with their mother.

### Child social adaptation

Fathers and mothers completed the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), a brief behavioral screening questionnaire for children aged 3–16 years old, to assess their child's social and emotional behavior. The SDQ has 25 items and yields four subscales (Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, and Peer Relationship Problems). The SDQ has good psychometric properties (Goodman & Scott, 1999; Stone, Otten, Engels, Vermulst, & Janssens, 2010), and the validity of the SDQ is evident through strong correlations with Achenbach's (1991) Child Behavior Check List (Goodman & Scott, 1999; Stone et al., 2010). In order to reduce the number of analyses performed in the study and to decrease the bias of perceptions for one parent over the other, averaged scores across ratings by both fathers and mothers for the *Conduct problems* scale ( $\alpha = .65$ ) and the *Emotional symptoms* scale ( $\alpha = .65$ ) were used. These two scales have been used in previous literature (Huisman et al., 2010) as proxies for externalizing problems and internalizing problems, respectively. Fathers' and mothers' reports of social adaptation difficulties were moderately correlated: conduct problems,  $r = .41$ ,  $p < .01$ , emotional symptoms,  $r = .30$ ,  $p < .01$ , further supporting aggregation across ratings. The decision to use only these subscales was also informed by our desire to adhere to statistical norms for internal consistencies, given the low internal consistency of the *Peer Relationship problems* scale ( $\alpha = .52$ ). Moreover, although the *Hyperactivity/Inattention* scale was internally consistent ( $\alpha = .82$ ), it was conceptually very similar to the child temperament scales used in the current study.

### Sociodemographic information

A sociodemographic questionnaire for each family was completed by the parent who participated in the first laboratory visit. Items assessing diverse information about the

family such as child age, the family's annual gross income, and parents' education were explored as potential covariates.

## Results

### *Preliminary analyses*

Table 1 displays descriptive statistics and zero-order correlations for key study variables. Steiger's z-tests were performed in order to analyze the statistical difference in magnitudes of correlations between key study variables and each of child–father and child–mother attachment security. Results revealed two significant differences. First, the correlation between child–father attachment and the child domain of paternal parenting stress was significantly stronger than the association between child–mother attachment and the child domain of maternal parenting stress,  $z = 2.15, p < .05$ . Second, child–father attachment security was more strongly associated with the child conduct problems than was the child–mother attachment score,  $z = 2.17, p < .05$ .

Next, child variables (gender and age) and sociodemographic information (maternal and paternal education, gross family income) were explored as possible control variables through associations with child–father and child–mother attachment security and social adaptation. First, a significant gender difference was found for child–mother attachment,  $\chi^2(107) = 4.49, p < .05$ , Cohen's  $d = .42$ , such that boys were more likely than expected by chance (adjusted standardized residual,  $z = 2.1$ ) to be securely attached to their mothers. Gender was not associated with child–father attachment security. No associations were found between child–father or child–mother attachment and child age, parental education, as well as gross family income.

A potential effect of order of visit on attachment classification was also explored, as children participated in the same procedure twice. Analyses did not reveal significant associations between order of visit and child–mother attachment,  $\chi^2(107) = .04, p = .84$ , Cohen's  $d = .04$ , nor child–father attachment,  $\chi^2(107) < .01, p = .99$ , Cohen's  $d = .02$ . Covariate analyses also identified a significant negative correlation between emotional symptoms and gross family income ( $r = -.28, p < .01$ ). This covariate was included in analyses where emotional symptoms were used as an outcome.

### *Primary analyses*

#### *Objective 1: contextual factors and parental sensitivity in association with child–parent attachment security*

Hierarchical binary logistic regressions were used to examine respective additive contributions of child temperament, parenting stress, and parental sensitivity in association with child–father and child–mother attachment security. In line with preliminary analyses, no control variables were required in analyses using child–father attachment insecurity as an outcome (Table 2), but child gender was added as a covariate in the first step when child–mother attachment security was used as the outcome variable (Table 3).

**Child–father attachment.** Logistic regression analyses were conducted in three steps. In the first step, the fathers' reports of the three child temperament

**Table 1.** Correlations between study variables and descriptive statistics.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Child–father attachment security	–															
2. Child–mother attachment security	.49**	–														
3. Paternal sensitivity	.35**	.15	–													
4. Maternal sensitivity	.08	.25**	.15	–												
5. Paternal stress – child domain	–.28**	.16	–.19	–.11	–											
6. Paternal stress – parent domain	–.09	–.02	–.16	.04	.49**	–										
7. Maternal stress – child domain	–.14	.01	–.14	–.12	.47**	.10	–									
8. Maternal stress – parent domain	–.08	.03	–.21*	–.08	.36**	.21*	.73**	–								
9. Father report: child temperament – surgency	–.02	–.03	–.11	.01	–.04	.03	.02	.12	–							
10. Father report: child temperament – negative affect	–.05	–.16	.2	–.08	.55**	.18	.17	.18	–.07	–						
11. Father report: child temperament – effortful control	.19*	.08	.08	–.09	–.30**	–.25**	–.15	–.12	–.24*	.12	–					
12. Mother report: child temperament – surgency	–.09	–.06	–.16	–.09	–.02	.02	–.05	–.02	.60**	–.09	–.12	–				
13. Mother report: child temperament – negative affect	.06	.04	.05	.02	.23*	–.04	.49**	.30**	–.13	.42**	.02	–.21*	–			
14. Mother report: child temperament – effortful control	.04	.04	.11	.10	–.11	–.06	–.27**	–.25*	–.27**	–.02	.21*	–.05	–.03	–		
15. Child conduct problems	–.31**	–.02	–.16	–.14	.48**	.20*	.57**	.41**	.18	.23*	–.14	.21*	.16	–.22*	–	
16. Child emotional symptoms	.03	–.08	.04	–.02	.34**	.06	.37**	.22*	–.38**	.27**	.06	–.39**	.33**	–.05	.07	–
<i>M</i>	NA	NA	3.08	3.22	97.42	110.86	96.16	116.75	4.55	3.87	5.36	4.52	3.79	5.47	2.67	3.39
<i>SD</i>			.64	.70	16.03	22.25	21.38	25.50	.76	.76	.60	.89	.78	.77	2.38	3.07
Range			1–4	1–4	50–145	69–188	50–145	69–188	1–7	1–7	1–7	1–7	1–7	1–7	0–9	0–11

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

**Table 2.** Correlates of child–father attachment insecurity.

Step predictors	Step 1		Step 2		Step 3	
	Wald $\chi^2$	OR (95% CI)	Wald $\chi^2$	OR (95% CI)	Wald $\chi^2$	OR (95% CI)
Child surgency	.05	.94 (.54–1.63)	.02	1.04 (.59–1.84)	.04	.94 (.51–1.73)
Child negative affect	.58	1.24 (.72–2.13)	1.12	.68 (.33–1.39)	.37	.79 (.38–1.68)
Child effortful control	4.05*	.49 (.24–.98)	.64	.72 (.32–1.61)	1.31	.61 (.26–1.43)
Paternal stress – child domain			6.79**	1.06 (1.01–1.10)	4.62*	1.05 (1.00–1.10)
Paternal stress – parent domain			.81	.99 (.97–1.01)	1.35	.99 (.96–1.01)
Paternal sensitivity					9.31**	.30 (.14–.65)
Step $\chi^2$		4.75		7.79*		10.66**
Model $\chi^2$		4.75		12.36*		23.03**
Nagelkerke $R^2$		.06		.15		.27

OR: Odds ratio.  $N = 107$ .\* $p < .05$ ; \*\* $p < .01$ .**Table 3.** Correlates of child–mother attachment insecurity.

Step predictors	Step 1		Step 2		Step 3		Step 4	
	Wald $\chi^2$	OR (95% CI)	Wald $\chi^2$	OR (95% CI)	Wald $\chi^2$	OR (95% CI)	Wald $\chi^2$	OR (95% CI)
Child gender	3.94*	.42 (.2–.9)	4.38*	.39 (.2–.9)	4.45*	.39 (.2–.9)	5.08*	.34 (.1–.9)
Child surgency			.43	1.18 (.7–1.9)	.43	1.18 (.7–1.9)	.20	1.12 (.7–1.9)
Child negative affect			.07	.93 (.5–1.6)	.16	.88 (.5–1.7)	.09	.90 (.5–1.8)
Child effortful control			.46	.83 (.5–1.4)	.38	.83 (.5–1.5)	.23	.87 (.5–1.6)
Maternal stress – child domain					.35	1.01 (.9–1.0)	.13	1.01 (.9–1.0)
Maternal stress – parent domain					.37	.99 (.9–1.0)	.34	.99 (.9–1.0)
Maternal sensitivity							6.82**	.43 (.2–.8)
Step $\chi^2$	4.11*		1.09		.43		7.29**	
Model $\chi^2$	4.11*		5.21		5.64		12.93	
Nagelkerke $R^2$	.05		.07		.07		.16	

OR: Odds ratio.  $N = 107$ .\* $p < .05$ ; \*\* $p < .01$ .

dimensions were included as predictors with child–father attachment security as the binary outcome variable. Results showed that the model was not a good fit to the data (omnibus  $\chi^2(3) = 4.57$ ,  $p = .21$ ) with temperament accounting for an estimated 6% (Nagelkerke's  $R^2 = .06$ ) of variance in the odds of being insecurely attached to father. In the second step, self-reported paternal parenting stress was added to the model, significantly improving model fit ( $\chi^2(2) = 7.79$ ,  $p < .05$ ), and accounting for an additional 9% of variance in the likelihood of being classified as insecure (a total of 15% of variance accounted for by all predictors at Step 2; Nagelkerke's  $R^2 = .15$ ). Examination of odds ratios in the second step showed that paternal parenting stress regarding the child domain increased the odds of child insecurity even after controlling for child temperament. Paternal play sensitivity was added in the third and final step, significantly improving model fit ( $\chi^2(1) = 10.66$ ,  $p < .01$ ). This third step accounted for an additional 12% of variance in the odds of being classified as insecure (a total of 27% of variance accounted for by all predictors at Step 3; Nagelkerke's  $R^2 = .27$ ). This step revealed that whereas paternal parenting stress in the child domain still increased the odds of attachment insecurity, paternal play sensitivity decreased these odds by almost 70%.

**Child–mother attachment.** A 4-step hierarchical binary logistic regression model was conducted. In the first step, child gender was entered as a predictor with child–mother attachment security as the binary outcome variable. Results showed that the model was a good fit to the data (omnibus  $\chi^2(1) = 4.11, p < .05$ ), with child gender accounting for an estimated 5% (Nagelkerke's  $R^2 = .05$ ) of variance in the odds of being classified as insecurely attached toward mother. Results indicated that being a boy decreased the odds of being insecure by almost 60%. In the second step, mothers' perceptions of child temperament were added. The second step did not improve model fit ( $\chi^2(3) = 1.09, p = .78$ ) and accounted for an additional 2% of variance in the likelihood of being classified as insecure (a total of 7% of variance accounted for by all predictors at Step 2; Nagelkerke's  $R^2 = .07$ ). Maternal parenting stress was added in the third step, which also failed to improve model fit ( $\chi^2(2) = .43, p = .81$ ), accounting for a negligible percentage of variance in the odds of child–mother attachment security (Nagelkerke's  $R^2 = .07$ ). Maternal play sensitivity was added in the fourth and final step. This step made a significant improvement to model fit ( $\chi^2(1) = 7.29, p < .01$ ) and accounted for an additional 9% of variance in the likelihood of being classified as insecure (a total of 16% of variance accounted for by all predictors at Step 2; Nagelkerke's  $R^2 = .16$ ). The model showed that both being a boy and maternal play sensitivity significantly decreased the odds of being classified insecure with mothers.

### **Objective 2: associations between attachment and child social adaptation**

Hierarchical linear regressions examined the relative and unique contributions of child–father and child–mother attachment security to the prediction of child social adaptation (conduct problems and emotional symptoms). An analysis of variance (ANOVA) was also used to explore the possible joint effects of attachment security with both mother and father on child social adaptation.

**Conduct problems.** In both models presented in Table 4, child gender was entered in a first step and explained less than 1% of variance ( $R^2 = .01$ ). In the first model, child–father attachment was entered in a second step and explained a significant additional 9% of variance (a total of 10% of explained variance). The inclusion of child–mother attachment in the third step of the first model failed to significantly contribute to the variance accounted for, with only 1% of additional variance in conduct problems explained. In the second model, child–mother attachment was entered in the second step and again failed to contribute significantly to the model with less than 1% of variance in conduct problems explained. However, when child–father attachment was entered in the third step, a significant additional increase of 11% of variance in conduct problems was accounted for (a total of 13% of variance explained).

An ANOVA was used to compare conduct problems in the following four groups: (a) children securely attached to both parents ( $M = 2.81, SD = 2.01; n = 57$ ), (b) children securely attached to mother only ( $M = 3.93, SD = 2.40; n = 14$ ), (c) children securely attached to father only ( $M = 1.00, SD = 1.27; n = 11$ ), and (d) children insecurely attached to both parents ( $M = 4.08, SD = 2.74; n = 25$ ). The analysis revealed significant differences between these four groups,  $F(3,106) = 5.81, p < .01$ , Cohen's  $d = .84$ . A planned contrast confirmed the hypothesis that children insecurely attached to both parents showed greater conduct problems than all other children combined,  $t$

**Table 4.** Child–parent attachment security as predictor of child conduct problems.

Variable	$\Delta R^2$	$\Delta F$	df	$\beta$
Model 1: Child–mother attachment last				
Step 1	.01	.79	1105	
Child gender				−.09
Step 2	.09	10.37**	1104	
Child–father attachment				.30**
Step 3	.02	2.15	1103	
Child–mother attachment				.16
Model 2: Child–father attachment last				
Step 1	.01	.79	1105	
Child gender				−.09
Step 2	.01	.18	1104	
Child–mother attachment				.04
Step 3	.11	12.44**	1103	
Child–father attachment				.39**

\*\*\* $p < .01$ 

(103) = 2.74,  $p < .01$ , Cohen's  $d = .63$ . However, *post-hoc* Tukey's lowest significant difference tests also showed that children who were securely attached to mother but insecurely attached to father showed significantly higher conduct problems scores than children securely attached to father, regardless of attachment status toward mother.

**Emotional symptoms.** A similar set of analyses to those described immediately above was performed with emotional symptoms as the dependent variable. In both models presented in Table 5, child gender and family gross income were entered in a first step and explained a significant 8% of variance ( $R^2 = .08$ ). In the first model, child–father attachment was entered in a second step and only explained an additional 1% of variance. The inclusion of child–mother attachment in the third step of the first model also failed to significantly contribute to the variance accounted for, with only 1% of additional variance in conduct problems explained (for a total of 10% of explained variance). In the second model, child–mother attachment was entered in the second step and again failed to contribute significantly to the model with less than 1% of variance in conduct problems explained. Moreover, when child–father attachment was

**Table 5.** Child–parent attachment security as predictor of child emotional symptoms.

Variable	$\Delta R^2$	$\Delta F$	df	$\beta$
Model 1: Child–mother attachment last				
Step 1	.08	4.65*	2104	
Child gender				.04
Family income				−.28**
Step 2	.01	.01	1104	
Child–father attachment				.01
Step 3	.01	.49	1103	
Child–mother attachment				.08
Model 2: Child–father attachment last				
Step 1	.08	4.65*	2104	
Child gender				.04
Family income				−.28**
Step 2	.01	.35	1103	
Child–mother attachment				.06
Step 3	.01	.14	1102	
Child–father attachment				−.04

\* $p < .05$ ; \*\* $p < .01$ .



entered in the third step, it only contributed to an additional 1% of variance in emotional symptoms (for a total of 10% of variance explained).

An analysis of covariance (ANCOVA) was used to compare the emotional symptoms scores in the four following groups, while controlling for gross family income: (a) Children securely attached to both parents ( $M = 3.21$ ,  $SD = 2.55$ ;  $n = 57$ ), (b) children securely attached to mother only ( $M = 3.36$ ,  $SD = 2.76$ ;  $n = 14$ ), (c) children securely attached to father only ( $M = 4.73$ ,  $SD = 4.22$ ;  $n = 11$ ), and (d) children insecurely attached to both parents ( $M = 3.24$ ,  $SD = 1.96$ ;  $n = 25$ ). No significant differences were found between these four groups,  $F(3106) = 1.26$ ,  $p = .29$ , Cohen's  $d = .41$ . A planned contrast showed that being insecurely attached to both parents was not associated with higher emotional symptoms scores,  $t(103) = .81$ ,  $p = .42$ , Cohen's  $d = .19$ .

## Discussion

The present study aimed to explore the correlates of child–father and child–mother attachment assessed in the preschool years. Our first hypothesis proposed that parental play sensitivity would be associated with child attachment security even after accounting for additional contextual factors such as parenting stress and child temperament; the data supported this hypothesis for both fathers and mothers. Although sensitivity was assessed in a different context than previous research exploring associations with child–mother attachment only, this methodological decision aligns with empirical work comparing associations between both paternal and maternal sensitivity and children's corresponding attachment security (see Grossmann et al., 2002). Indeed, rather than focusing on distress and comfort, within the LT procedure adopted in the current study, parents are instructed to make their child laugh and generally have to closely monitor their children's excitement and high emotional arousal. In such a task, it is possible for parents to become overly intrusive if they do not adequately attend to the child's cues (e.g., if the child cries). The LT procedure is thus directly in line with the activating and arousing context of interaction that Paquette and Bigras (2010) deem necessary for studying the quality of child–father interactions.

That being said, our results contradict Paquette and Bigras' (2010) theoretical claims. Whereas Paquette and Bigras posited that *only* fathers would show optimal activation of their child in an arousing context, our results suggest that both fathers' and mothers' sensitivity observed in this highly arousing context are associated with child attachment security. This result, combined with the observation reported by Bureau et al. (2014) that fathers do not show greater effort than mothers in attempting to make their child laugh in the LT procedure, strongly suggests that both fathers and mothers of preschoolers are competent partners in a playful and arousing setting. Caregivers who remain sensitive to their children's emotional cues in such settings seem more likely to have children who develop secure attachments. Considering this may be in opposition to a popular perspective that fathers' rough-and-tumble play with their children is sufficient to foster a bond with them; our results are, however, consistent with those reported by Lucassen et al. (2011) such that paternal play sensitivity was associated with child–father attachment security. Although there is a possibility that the playful nature of the LT procedure may have contaminated behavior in the separation–reunion procedure used to assess attachment security, this bias would have resulted in an abnormally high rate of

attachment security due to the enhancement of positive mood in the dyad. However, neither the distribution of secure–insecure child–father or child–mother attachment in the current study differed from the attachment literature.

Consistent with a dynamic conceptualization of fathers' influence on children (Cabrera et al., 2007; Doherty et al., 1998; Schoppe-Sullivan et al., 2006), our hypothesis that the child–father attachment relationship would be more vulnerable to contextual factors such as parenting stress and child temperament than the child–mother attachment relationship was partially supported. As expected, fathers' higher parenting stress regarding the child was linked with a higher rate of insecure child–father attachment, and this association was significantly stronger for child–father dyads than for child–mother dyads. This finding aligns with the lack of association between child–mother attachment security at age 3 and maternal parenting stress identified by Moss et al. (2004) and is also coherent with previous research (see Horn, 2000) showing that stress is more closely associated with infants' attachment security to fathers than to mothers.

It is also noteworthy that only the child domain and not parent domain of fathers' parenting stress was associated with child–father attachment. More precisely, fathers of insecure children may report greater parenting stress due to their perceptions of the child as being hyperactive, less capable of adapting to new situations, less reinforcing to the father, being in a negative mood, and not corresponding with paternal expectations. As suggested by Cox et al. (1992), such results underline the importance of assessing fathers' own perceptions of the relationship with their child, as it represents a unique developmental context in which affective bonds are established between the father and his child. Indeed, an otherwise sensitive father who perceives his child as not valuing his parenting efforts and contributions may ultimately withdraw from interaction with his child, which could hurt the relationship.

Taken together, the results of our first research objective confirm that parental sensitivity is a key element fostering attachment security, even with fathers and during the preschool years. The fact that child–father attachment security was influenced by factors such as paternal parenting stress is noteworthy, but ultimately, paternal sensitivity represented an additive contribution to the odds of child–father attachment security.

The second objective was to investigate associations between preschool attachment and children's concurrent social adaptation. The hypothesis that child–father attachment insecurity would be more strongly associated with child social adaptation difficulties than child–mother attachment insecurity was confirmed with respect to children's conduct problems. Specifically, insecure child–father attachment was associated with conduct problems, even when child–mother attachment was controlled for, though the opposite association was not found. Further, the correlation between child–father attachment and child conduct problems was significantly stronger than the association between child–mother attachment and conduct problems. Lastly, in contrast to previous studies revealing a joint effect of insecurity to both parents in association with behavior problems (Kochanska & Kim, 2013; Verschueren & Marcoen, 1999), our findings showed that having insecure attachment to father was associated with more conduct problems, *regardless* of the quality of attachment with mother. However, prior investigations of joint effects of mother and father attachment differ from the current study in terms of developmental period studied, method of assessment of attachment, and reporter of

behavior problems. Future studies are therefore necessary to further explore this question.

The current findings correspond with previous research evidencing that the quality of child–father relationships exerts greater influence on children’s externalizing behavior problems than does the quality of child–mother relationships (Kochanska & Kim, 2013; Williams & Kelly, 2005). The unique association between child–father attachment and conduct problems may be at least in part explained by fathers’ greater likelihood of modeling aggressive behavior (e.g., rough-and-tumble play). If these aggressive paternal behaviors are not combined with sensitive-responding and appropriate limit-setting (characteristics of secure attachment), children may view aggressive behavior as acceptable and correspondingly apply them across social contexts.

Notably, no study variables were associated with parent reports of children’s emotional symptoms. Moss, Smolla, et al. (2006) have previously discussed the challenge for adults to detect internalizing symptoms in school-age children, a task which may be even more difficult at an earlier age when language is not fully developed and children lack the communication skills to express depressed or anxious feelings. Researchers (see O’Connor et al., 2011) also suggest that some insecure children may be misinterpreted as being shy, and that their behaviors may not be interpreted as problematic. Longitudinal studies relying on multiple informants, including self-reports from children, are needed to further explore this hypothesis.

### Limitations and directions for future research

Despite the contribution of current findings to the understanding of child–father attachment in the preschool period, it is not without limitations. First, this study is somewhat limited in its sample size. Although a sample of 107, two-parent families is well within the norms for research involving observational measures of attachment and is potentially remarkable for an investigation involving fathers in particular, attachment is not a construct with evenly distributed categories. Therefore, the secure–insecure comparisons may mask additional potential significant associations with specific attachment classifications (e.g., greater negative outcomes associated with a disorganized classification). Second, the current study used cross-sectional data and concurrent measures of all key variables. Longitudinal studies exploring the evolution of child–father relationships are greatly needed in order to corroborate our findings and interpretations. Third, we were unable to account for the full range of possible contextual factors which may be associated with children’s attachment security. Although parenting stress and child temperament have been identified in existing literature, other variables such as quality of co-parenting and marital satisfaction are also conceptually relevant and should be explored in future investigations. Finally, the use of a convenience sample of fathers who volunteered for this research limits the interpretation of our findings. Recruiting fathers from more at-risk or diverse populations (e.g., with more variability in ethnicity or income), although a difficult task, may yield a different pattern of results.

In conclusion, these findings provide important information on the parenting context associated with child–father attachment in the preschool years. One key finding from this study may be that fathers and mothers are more similar than different in terms of the security of their children’s attachment, at least in the

preschool years. First, parents of secure children, whether fathers or mothers, displayed an ability to play with their child while tolerating high arousal and remaining sensitive to their needs. As predicted, this sensitivity promoted child attachment security to both parents beyond contextual factors, such as parenting stress and child temperament. Second, the concordance rate between attachment to father and mother was quite high in the current study, likely suggesting similar patterns of interaction between child–father and child–mother dyads. A second take-home message lies in the importance of accounting for child–father relationship quality with respect to children’s externalizing behavior problems. Indeed, Cowan’s (1997) plea for the inclusion of father variables in our conception of family systems still resonates 20 years later. The findings highlight the importance of including fathers in clinical interventions and the salience of father-related variables in the conceptualization of family systems. Given the primacy of child–father attachment in association with child conduct problems in this study, it follows that fathers may also be major players in the reduction of children’s problematic behaviors.

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## References

- Abidin, R.R. (1995). *The parenting stress index professional manual*. Odessa, FL: Psychological Assessment Resources.
- Achenbach, T.M. (1991). *Manual for the child behavior checklist/4-18 and 1991 profile*. Burlington, VT: University of Vermont Department of Psychiatry.
- Ainsworth, M.D.S., Bell, S.M., & Stayton, D. (1971). Individual differences in Strange Situation behavior of one-year-olds. In H. R. Schaffer (Ed.), *The origins of human social relations* (pp. 17–57). London: Academic Press.
- Ainsworth, M.D.S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Barnett, D., Kidwell, S.L., & Leung, K.H. (1998). Parenting and preschooler attachment among low-income urban African American families. *Child Development*, 69, 1657–1671. doi:10.2307/1132138
- Black, M.M., Dubowitz, H., & Starr Jr., R.H. (1999). African American fathers in low income, urban families: Development, behavior, and home environment of their three-year-old children. *Child Development*, 70, 967–978. doi:10.1111/1467-8624.00070

- Boldt, L.J., Kochanska, G., Yoon, J.E., & Nordling, J.K. (2014). Children's attachment to both parents from toddler age to middle childhood: Links to adaptive and maladaptive outcomes. *Attachment & Human Development*, 16, 211–229. doi:[10.1080/14616734.2014.889181](https://doi.org/10.1080/14616734.2014.889181)
- Bowlby, J. (1969/1982). *Attachment and loss*, vol. 1: *Attachment* (2nd ed.). New York, NY: Basic Books.
- Bretherton, I. (2010). Fathers in attachment theory and research: A review. *Early Child Development and Care*, 180, 9–23. doi:[10.1080/03004430903414661](https://doi.org/10.1080/03004430903414661)
- Bretherton, I., Ridgeway, D., & Cassidy, J. (1990). Assessing internal working models of the attachment relationship: An Attachment Story Completion Task for 3-years-old. In M. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 3–49). Chicago, IL: University of Chicago Press.
- Bureau, J.-F., Yurkowski, K., Schmiedel, S., Martin, J., Moss, E., & Pallanca, D. (2014). Making children laugh: Parent–child dyadic synchrony and preschool attachment. *Infant Mental Health Journal*, 35, 482–494. doi:[10.1002/imhj.21474](https://doi.org/10.1002/imhj.21474)
- Cabrera, N.J., Fitzgerald, H.E., Bradley, R.H., & Roggman, L. (2007). Modeling the dynamics of paternal influences on children over the life course. *Applied Developmental Science*, 11, 185–189. doi:[10.1080/10888690701762027](https://doi.org/10.1080/10888690701762027)
- Cabrera, N.J., Tamis-LeMonda, C.S., Bradley, R.H., Hofferth, S., & Lamb, M.E. (2000). Fatherhood in the twenty-first century. *Child Development*, 71, 127–136. doi:[10.1111/1467-8624.00126](https://doi.org/10.1111/1467-8624.00126)
- Cassidy, J., Marvin, R.S., & The MacArthur working group on attachment. (1992). *Attachment organisation in 2 1/2 to 4 1/2 years olds: Coding manual* (Unpublished coding manual). University of Virginia.
- Cowan, P.A. (1997). Beyond meta-analysis: A plea for a family systems view of attachment. *Child Development*, 68, 601–603. doi:[10.2307/1132111](https://doi.org/10.2307/1132111)
- Cox, M.J., Owen, M.T., Henderson, V.K., & Margand, N.A. (1992). Prediction of infant–father and infant–mother attachment. *Developmental Psychology*, 28, 474–483. doi:[10.1037//0012-1649.28.3.474](https://doi.org/10.1037//0012-1649.28.3.474)
- DeKlyen, M., & Greenberg, M.T. (2008). Attachment and Psychopathology in Childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 383–416). New York, NY: Guilford Press.
- Doherty, W.J., Kouneski, E.F., & Erickson, M.F. (1998). Responsible fathering: An overview and conceptual framework. *Journal of Marriage and the Family*, 60, 277–292. doi:[10.2307/353848](https://doi.org/10.2307/353848)
- Freeman, H., Newland, L.A., & Coyl, D.D. (2010). New directions in father attachment. *Early Child Development and Care*, 180, 1–8. doi:[10.1080/03004430903414646](https://doi.org/10.1080/03004430903414646)
- George, M.R.W., Cummings, E.M., & Davies, P.T. (2010). Positive aspects of fathering and mothering and children's attachment in kindergarten. *Early Child Development and Care*, 180, 107–119. doi:[10.1080/03004430903414752](https://doi.org/10.1080/03004430903414752)
- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581–586. doi:[10.1111/j.1469-7610.1997.tb01545.x](https://doi.org/10.1111/j.1469-7610.1997.tb01545.x)
- Goodman, R., & Scott, S. (1999). Comparing the strengths and difficulties questionnaire and the child behavior checklist: Is small beautiful? *Journal of Abnormal Child Psychology*, 27, 17–24. doi:[10.1023/A:1022658222914](https://doi.org/10.1023/A:1022658222914)
- Greenberg, M.T., Speltz, M.L., DeKlyen, M., & Endriga, M.C. (1991). Attachment security in pre-schoolers with and without externalizing behavior problems: A replication. *Development and Psychopathology*, 3, 413–430. doi:[10.1017/S0954579400007604](https://doi.org/10.1017/S0954579400007604)
- Grossmann, K., Grossmann, K.E., Fremmer-Bombik, E., Kindler, H., Scheuerer-English, H., & Zimmerman, P. (2002). The uniqueness of the child–father attachment relationship: Fathers' sensitive and challenging play as a pivotal variable in a 16-year longitudinal study. *Social Development*, 11, 307–331. doi:[10.1111/1467-9507.00202](https://doi.org/10.1111/1467-9507.00202)
- Horn, W.F. (2000). Fathering infants. In J. D. Osofsky & H. E. Fitzgerald (Eds.), *Handbook of infant mental health*. Vol. III: *Parenting and child care* (pp. 270–297). New York, NY: Wiley.
- Huisman, M., Araya, R., Lawlor, D.A., Ormel, J., Verhulst, F.C., & Oldehinkel, A.J. (2010). Cognitive ability, parental socioeconomic position and internalising and externalising problems in

- adolescence: Findings from two european cohort studies. *European Journal of Epidemiology*, 25, 569–580. doi:[10.1007/s10654-010-9473-1](https://doi.org/10.1007/s10654-010-9473-1)
- Kochanska, G., & Kim, S. (2013). Early attachment organization with both parents and future behavior problems: From infancy to middle childhood. *Child Development*, 84, 283–296. doi:[10.1111/j.1467-8624.2012.01852.x](https://doi.org/10.1111/j.1467-8624.2012.01852.x)
- Lamb, M.E. (Ed.). (2004). *The role of father in child development*. New York, NY: Wiley.
- Lucassen, N., Tharner, A., van Ijzendoorn, M.H., Bakermans-Kranenburg, M.J., Volling, B.L., & Verhulst, F.C. (2011). The association between paternal sensitivity and infant-father attachment security: A meta-analysis of three decades of research. *Journal of Family Psychology*, 25, 986–992. doi:[10.1037/a0025855](https://doi.org/10.1037/a0025855)
- Manassis, K., Bradley, S., Goldberg, S., Hood, J., & Swinson, L. (1994). Attachment in mothers with anxiety disorders and their children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33, 1106–1113. doi:[10.1097/00004583-199410000-00006](https://doi.org/10.1097/00004583-199410000-00006)
- McBride, B.A., Schoppe, S.J., & Rane, T.R. (2002). Child characteristics, parenting stress, and parental involvement: Fathers versus mothers. *Journal of Marriage and Family*, 64, 998–1011. doi:[10.1111/j.1741-3737.2002.00998.x](https://doi.org/10.1111/j.1741-3737.2002.00998.x)
- Moss, E., Bureau, J.-F., Cyr, C., & Dubois-Comtois, K. (2006). Is the Maternal Q-set a valid measure of preschool child attachment behavior? *International Journal of Behavioral Development*, 30, 488–497. doi:[10.1177/0165025406071908](https://doi.org/10.1177/0165025406071908)
- Moss, E., Bureau, J.-F., Cyr, C., Mongeau, C., & St-Laurent, D. (2004). Correlates of attachment at age 3: Construct validity of the preschool attachment classification system. *Developmental Psychology*, 40, 323–334. doi:[10.1037/0012-1649.40.3.323](https://doi.org/10.1037/0012-1649.40.3.323)
- Moss, E., Humber, N., & Roberge, L. (1996). *Grille d'interactions parent-enfant pour les périodes préscolaire et scolaire* (Unpublished manuscript). Université du Québec à Montréal, Montréal.
- Moss, E., Rousseau, D., Parent, S., St-Laurent, D., & Saintonge, J. (1998). Correlates of attachment at school age: Maternal reported stress, mother-child interaction, and behavior problems. *Child Development*, 69, 1390–1405. doi:[10.2307/1132273](https://doi.org/10.2307/1132273)
- Moss, E., Smolla, N., Cyr, C., Dubois-Comtois, K., Mazzarello, T., & Berthiaume, C. (2006). Attachment and behavior problems in middle childhood as reported by adult and child informants. *Development and Psychopathology*, 18, 425–444. doi:[10.1017/S0954579406060238](https://doi.org/10.1017/S0954579406060238)
- NICHD Early Child Care Research Network. (2001). Child-care and family predictors of preschool attachment and stability from infancy. *Developmental Psychology*, 31, 847–862. doi:[10.1037/0012-1649.37.6.847](https://doi.org/10.1037/0012-1649.37.6.847)
- O'Connor, E., Bureau, J.-F., McCartney, K., & Lyons-Ruth, K. (2011). Risks and outcomes associated with disorganized/controlling patterns of attachment at age three years in the national study of early child care and youth development. *Infant Mental Health Journal*, 32, 450–472. doi:[10.1002/imhj.20305](https://doi.org/10.1002/imhj.20305)
- Paquette, D., & Bigras, M. (2010). The risky situation: A procedure for assessing the father-child activation relationship. *Early Child Development and Care*, 180, 33–50. doi:[10.1080/03004430903414687](https://doi.org/10.1080/03004430903414687)
- Pleck, J.H. (2010). Paternal involvement: Revised conceptualization and theoretical linkages with child outcomes. In M. E. Lamb (Ed.), *The role of the father in child development* (5th ed., pp. 58–93). Hoboken, NJ: Wiley.
- Rosenthal, N.L., & Kobak, R. (2010). Assessing adolescents' attachment hierarchies: Differences across developmental periods and associations with individual adaptation. *Journal of Research on Adolescence*, 20, 678–706. doi:[10.1111/j.1532-7795.2010.00655.x](https://doi.org/10.1111/j.1532-7795.2010.00655.x)
- Rothbart, M.K., Ahadi, S.A., Hershey, K.L., & Fisher, P. (2001). Investigations of temperament at three to seven years: The children's behavior questionnaire. *Child Development*, 72(5), 1394–1408. doi:[10.1111/cdev.2001.72.issue-5](https://doi.org/10.1111/cdev.2001.72.issue-5)
- Schoppe-Sullivan, S.J., Diener, M.L., Mangelsdorf, S.C., Brown, G.L., McHale, J.L., & Frosch, C.A. (2006). Attachment and sensitivity in family context: The roles of parent and infant gender. *Infant and Child Development*, 15, 367–385. doi:[10.1002/icd.449](https://doi.org/10.1002/icd.449)

- Solomon, J., & George, C. (2008). The measurement of attachment security and related constructs in infancy and early childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 383–416). New York, NY: Guilford Press.
- Stone, L.L., Otten, R., Engels, R.C., Vermulst, A.A., & Janssens, J.M. (2010). Psychometric properties of the parent and teacher versions of the strengths and difficulties questionnaire for 4- to 12-Year-Olds: A review. *Clinical Child and Family Psychology Review*, 13, 254–274. doi:[10.1007/s10567-010-0071-2](https://doi.org/10.1007/s10567-010-0071-2)
- van Ijzendoorn, M.H., & de Wolff, M.S. (1997). In search of the absent father – meta-analyses of infant-father attachment: A rejoinder to our discussants. *Child Development*, 68, 604–609. doi:[10.1111/j.1467-8624.1997.tb04223.x](https://doi.org/10.1111/j.1467-8624.1997.tb04223.x)
- van Ijzendoorn, M.H., Schuengel, C., & Bakermans-Kranenburg, M.J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*, 11, 225–250. doi:[10.1017/S0954579499002035](https://doi.org/10.1017/S0954579499002035)
- Veríssimo, M., Santos, A.J., Vaughn, B.E., Torres, N., Monteiro, L., & Santos, O. (2011). Quality of attachment to father and mother and number of reciprocal friends. *Early Child Development and Care*, 181, 27–38. doi:[10.1080/03004430903211208](https://doi.org/10.1080/03004430903211208)
- Verschueren, K., & Marcoen, A. (1999). Representation of self and social emotional competence in kindergartners: Differential and combined effects of attachment to mother and to father. *Child Development*, 70, 183–201. doi:[10.2307/1131636](https://doi.org/10.2307/1131636)
- Williams, S.K., & Kelly, F.D. (2005). Relationships among involvement, attachment, and behavioral problems in adolescence: Examining father's influence. *Journal of Early Adolescence*, 25, 168–196. doi:[10.1177/0272431604274178](https://doi.org/10.1177/0272431604274178)