

Validation of the *Preschool Attachment Rating Scales* with Child-Mother and Child-Father

Dyads

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Abstract

Growing evidence points to the theoretical and statistical advantages of continuous (rather than categorical) assessments of child-caregiver attachment (e.g., Feeney, 2016; Fraley & Spieker, 2003). In the preschool years, a continuous coding system adapted to preschool attachment was recently developed by Moss, Lecompte, and Bureau (2015), the *Preschool Attachment Rating Scales* (PARS). This system includes six continuous scales and is complementary to the categorical *MacArthur Preschool Attachment Coding System* (PACS; Cassidy, Marvin, & MacArthur Working Group on Attachment, 1992). The current study aims to evaluate the reliability and validity of the PARS to measure both child-mother and child-father attachment during the preschool period. Participants included 144 preschool-aged children ($M=46.89$ months, $SD=8.77$; 83 girls) and their parents. Results support the reliability and validity of the PARS: good inter-rater reliability, expected associations between scales, convergence with the PACS, and association with parental sensitivity and child externalizing problems. These findings support the application of continuous assessments of child-caregiver attachment in the preschool years. They also align with previous work on child-mother attachment, and present avenues for future research on child-father attachment.

Keywords: preschool period, continuous scales, validity, child-mother attachment, child-father attachment

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Attachment theory provides a theoretical framework on how children's early interactions with their caregivers come to shape their subsequent development. Initially centered on infants' attachment to their mothers as measured through the Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978), attachment research has expanded to other developmental periods, caregivers, and assessment methods. A notable recent focus aims to understand the specificity of preschool attachment, an important developmental period for children's socialization and socioemotional development. Although previous work supports continuous assessments of attachment in other developmental periods (e.g., Fraley & Spieker, 2003), the *MacArthur Preschool Attachment Coding System* (PACS; Cassidy et al., 1992 – often described as the “gold standard” measure of preschool attachment; Solomon & George, 2016) uses a primarily categorical approach to qualify qualitative differences in child-caregiver attachment, similar to the infant SSP coding system. The current study aims to establish the reliability and validity of a continuous instrument measuring preschool child-mother and child-father attachment that is complementary to the PACS, the *Preschool Attachment Rating Scales* (PARS; Moss et al., 2015).

Preschool Attachment

The preschool period (i.e., 3 to 5 years old) is characterized by children's socialization beyond the immediate family context and considerable growth in linguistic, cognitive, and self-regulatory abilities (Marvin, Britner, & Russell, 2016). Generally, fathers play an increased role in childrearing as compared with infancy (Black, Dubowitz, & Starr, 1999; Lamb, 2004), making the assessment of child-father attachment in the preschool period especially favorable. Children's

developmental changes during this period are concomitant with behavioral changes in attachment behavior, as compared with infant manifestations. However, the underlying functions of attachment behavior remain similar across these two periods. For example, preschool children are no longer limited to physical contact to achieve proximity with the caregiver (Cassidy et al., 1992) and may initiate verbal interactions to gain comfort or reassurance. Furthermore, enhanced cognitive abilities improve preschool children's perspective taking capacity, allowing them to understand better the caregiver's goals and feelings. These skills are an integral part of a *goal-corrected partnership* in which caregiver and child are able to communicate and negotiate their goals to form a joint plan (Bowlby, 1969/1982).

Although organized attachment (i.e., secure, avoidant, and ambivalent) is similar during the infancy and preschool periods, an important developmental shift occurs for behaviorally-disorganized infants. Some of them continue to display infant-like disorganized and disoriented behaviors such as freezing, contradictory behaviors, and stereotypies (Cassidy et al., 1992). However, most behaviorally-disorganized infants instead develop controlling behaviors in the preschool years (Main & Cassidy, 1988; Moss, Cyr, Bureau, Tarabulsy, & Dubois-Comtois, 2005; Wartner, Grossmann, Fremmer-Bombik, & Suess, 1994). Role-reversal in the child-caregiver dyad can materialize into distinct forms of controlling behaviors (Cassidy et al., 1992; Main & Cassidy, 1988). Controlling-caregiving children direct the caregiver's attention and behaviors through cheery and entertaining behaviors. They become attuned to their caregiver's needs to the point of minimizing and forgetting their own needs or distresses. In contrast, controlling-punitive children control the interaction through punitive, threatening, and hostile behaviors. Solomon, George, and De Jong (1995) posit that controlling behaviors may render interactions with the caregiver more predictable, thus allowing for increased emotion regulation.

Although some could argue that controlling behaviors are a step forward from behavioral-disorganization, Bowlby (1969/1982, p. 377) theorizes that “the reversal of roles between child, or adolescent, and parent, unless very temporary, is almost not only a sign of pathology in the parent, but a cause of it in the child”.

Limitations Related to Categorical Attachment Assessments

Given the maturation of the attachment system (e.g., greater tolerance to short separations) and differences in behavioral attachment manifestations between the infancy and preschool periods, Cassidy and her colleagues (1992) proposed an adapted SSP for preschool-aged children and an adapted coding system (PACS). Their *separation-reunion procedure* is similar to the traditional SSP yet involves longer stages (5 minutes instead of 3) and uses only the caregiver’s departure as an attachment-activating situation (as preschool children tend to perceive strangers as non-threatening playmates).

The PACS, much like the infancy coding system, relies primarily on categorical assessments of attachment, allowing for classification into one of six attachment types: secure, avoidant, ambivalent, behaviorally-disorganized, controlling-caregiving, and controlling-punitive. However, scholars dispute the use of categorical attachment measurements. Fraley and Spieker (2003) argue that previous methodological tools (e.g., latent class analysis and cluster analysis) used to address the “categorical vs. continuous debate” ‘forced’ data into a grouping structure to reveal types. Instead, they suggest using taxometric techniques as they can determine whether members of a group form a true type (or *taxon*; Meehl, 1992). They applied these techniques to the National Institute of Child Health and Human Development (NICHD) sample and found that infant security, avoidance, and ambivalence are not categorical in nature (Fraley & Spieker, 2003). They were not able to uncover the structure of disorganization due to a limited

number of indicator variables. This analysis – although limited to infancy – raises the question as to whether attachment in the preschool years follows a similar continuous pattern.

Furthermore, categorical attachment assessments limit our knowledge to differences between classifications, thereby neglecting individual differences *within* classifications (Feeney, 2016). Within a given classification, there is considerable variation (e.g., some secure children may present only strong indicators of security whereas others may present a mix of security and avoidance), which could be meaningful in itself. As children's attachment can only be put into one classification, categorical assessment implies mutual exclusivity, even though a child's true attachment type may lie on the border between two classifications (as could be the case for a child showing a mix of security and avoidance; Cummings, 2003).

From a statistical standpoint, categorical assessments also limit power to detect differences. To reach the statistical power necessary to find reliable group differences between classifications (Solomon & George, 2016), it is necessary to gather larger sample sizes. Given the challenges associated with observational research, the number of cases in each insecure classification is often insufficient to warrant individual analysis. Some scholars thus rely on a secure-insecure attachment binary model to respect statistical postulates (e.g., Anan & Barnett, 1999; Bureau et al., 2017; Moss et al., 2005; Speltz, DeKlyen, & Greenberg, 1999), which limits our understanding of the different insecure groups. In contrast, others choose to compare insecure groups, but their results often rely on a small number of cases. These limitations hinder our understanding of insecure attachments and their comorbidity, which notably makes it impossible to confirm whether controlling children present increased levels of behaviorally-disorganized behaviors, although this phenomenon is observed by PACS coders (Moss & Bureau, 2015).

Continuous Scales of the PACS

Although the PACS is used primarily as a categorical assessment of attachment, the PACS coding manual (Cassidy et al., 1992) includes Main and Cassidy's (1987) six-year-old continuous scales for security and avoidance (measured on 1-9- and 1-7-point scales, respectively). Although there is no behavioral-disorganization scale in the PACS manual, some studies (e.g., Chatoor et al., 1998; Seifer et al., 2004) use the 1-9-point scale infancy behavioral-disorganization scale (Main & Solomon 1990) with a preschool sample. In spite of these scales' statistical advantages over classifications, they present two important limitations. First, they were not developed and adapted specifically for preschool attachment, as their descriptions refer to attachment behaviors associated with other developmental periods. Second, this lack of adaptation to preschool attachment results in the absence of scales for half of the preschool attachment types, as there are no scales for ambivalence, controlling-caregiving, and controlling-punitive attachment.

The absence of scales for these attachment types is especially problematic given their concurrent and longitudinal correlates with socioemotional adaptation (e.g., ambivalence and externalizing problems, Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; controlling-caregiving and internalizing behavior, Moss, Cyr, & Dubois-Comtois, 2004; controlling-punitive and disruptive behavior, O'Connor, Bureau, McCartney, & Lyons-Ruth, 2011). Furthermore, it prevents the differentiation of the different preschool disorganization *subtypes* (behavioral-disorganization, controlling-caregiving, and controlling-punitive), although previous research highlights their distinctness. Indeed, results from the NICHD sample ($N=1,364$; O'Connor et al., 2011) showed that controlling-punitive children presented the highest levels of disruptive behaviors, while controlling-caregiving children displayed the lowest (even

lower than secure children). Behaviorally-disorganized children presented worse relationships with their teachers at 54 months than caregiving-controlling children. Among all groups, behaviorally-disorganized and controlling-punitive children had the most maladaptive profile across 18 variables (O'Connor et al., 2011). The need to differentiate disorganized subtypes was also confirmed in middle childhood, as behavioral-disorganization and punitive-control, but not caregiving-control, were associated with externalizing problems (Bureau, Easterbrooks, & Lyons-Ruth, 2009). Taken together, these results highlight the importance of having distinct scales to assess all types of preschool attachment. It should be noted that previous studies that examined disorganized subtypes separately are limited to child-mother dyads (Moss, Cyr, & Dubois-Comtois, 2004; O'Connor et al., 2011), as studies with child-father dyads and the PACS in the preschool years did not have a sufficient sample size to examine them independently (e.g., Bureau et al., 2014; George et al., 2010). This limitation leaves the questions as to whether comparable differences across subtypes of disorganization are also present in child-father dyads.

Preschool Attachment Rating Scales

Recently, Moss and colleagues (2015) proposed a continuous coding system adapted to preschool attachment based on the PACS: the PARS. To our knowledge, it is the only measure of *behavioral* attachment with continuous scales that was developed for the preschool period specifically. It is important to note that continuous measures exist for preschool attachment, such as Waters & Deane's (1985) Attachment Q-Sort (AQS) and the Attachment Story Completion Task (ASCT; Bretherton & Ridgeway, 1990). However, they do not provide the same attachment-related information as the PARS. The AQS offers a single scale of security, thereby not providing a scale for all preschool attachment patterns. Although some coding systems for the ASCT include differentiated scales for some attachment types, the ASCT is used to evaluate

attachment representations (which scholars believe is indicative of children's internal working models), and thus cannot provide information as to children's actual attachment *behaviors* with their attachment figure. As such, the PARS address a need for continuous scales to measure all preschool attachment behaviors.

The PARS rating criteria are exhaustive and based on indicators specific to the preschool period, thereby preventing coders from interpreting criteria in different ways. Two certified PACS trainers developed the PARS in consultation with Robert Marvin, one of the original developers of the PACS. The scales are grounded in the theoretical and empirical traditions of preschool attachment. Trained and reliable coders use video-recordings of the separation-reunion procedure adapted for the preschool years (Cassidy et al., 1992) to rate the PARS. Based on children's behaviors, coders assign ratings on six scales: security, avoidance, ambivalence, behavioral-disorganization, caregiving-control, and punitive-control. Ratings on a given scale are based on the extent to which a given attachment strategy (as described in the PACS; Cassidy et al., 1992) is globally displayed by the child, while keeping in mind the overall strategy. Scales have a uniform rating of 1 to 9, with every other point defined (i.e., 1, 3, 5, 7, and 9). A score of 5 on a scale generally warrants classification in this attachment pattern under the PACS; however, ratings are independent from (i.e., not based on) the assigned classification.

The PARS were carefully designed to adhere to guidelines for new continuous attachment systems (Cassidy, 2003; Fraley & Spieker, 2003; DeKlyen & Greenberg, 2016). Indeed, they maintain a *focus on organization of behavior* because each scale represents the extent to which a child displays a specific organization of behavior (instead of representing individual behaviors or their mere frequency). The PARS also allow for the *representation of classic attachment types* and is *grounded in indicators and procedures already used*. Lastly, they

allow for a more *detailed description of disorganized subtypes* (i.e., behaviorally-disorganized, controlling-caregiving, and controlling-punitive). This study aims to explore the reliability and validity of the newly developed PARS instrument to assess preschool child-parent attachment.

Validation Strategy

In addition to an examination of traditional aspect of validity (e.g., inter-rater reliability, convergent validity), this study follows Solomon and George's (2016) recommendations regarding the validation of new attachment measures. As such measures should be usable across attachment figures, the current study examines the reliability and validity of the PARS for both child-mother and child-father attachment. Research from two research groups (Bureau et al., 2014, 2017; George, Cummings, & Davies, 2010) supports the adequacy of the modified separation-reunion procedure to evaluate child-father attachment in the preschool years. These research efforts support our simultaneous investigation of child-mother and child-father PARS because their studies report: 1) attachment distributions consistent with previous meta-analytical findings for both child-mother and child-father attachment (van IJzendoorn, Schuengel, & Bakermans–Kranenburg, 1999), 2) significant associations between child-father attachment and paternal sensitivity as well as with socioemotional adaptation.

Solomon and George (2016) noted that new attachment measures should be associated with parental sensitivity, as this link is a core tenet of attachment theory (Ainsworth et al., 1978). Meta-analyses have confirmed this association for maternal sensitivity and infant-mother security ($r=.22$; De Wolff & van IJzendoorn, 1997) and for paternal sensitivity and infant-father security ($r=.12$; Lucassen et al., 2011). It should be noted that sensitivity in infancy is typically construed as parents' response to their child's distress and non-distress, whereas in the preschool years, sensitivity is conceived as parents' supportive presence (Raikes & Thompson, 2008).

Scholars (including NICHD) thus use semi-structured dyadic interactions during problem-solving, construction, or free-play tasks to examine parental sensitivity during the preschool years (e.g., Kok et al., 2013; NICHD, 2001; Raby, Roisman, Fraley, & Simpson, 2015). To investigate the association between parental sensitivity and the PARS in the current study, we used a similar semi-structured interaction that requires parents to both activate and regulate their child's emotion with sensitivity (Laughing Task procedure, Bureau et al., 2014), thereby providing a compelling context to observe these parental behaviors.

New attachment measures should also be associated with important aspects of development (Solomon & George, 2016), such as socioemotional adaptation. A recent meta-analysis found significant associations between externalizing problems and child-mother security, ambivalence, and behavioral-disorganization in the preschool years (Fearon et al., 2010). However, these results are inconsistent with studies that include *both* child-mother and child-father attachment, which show that child-father attachment security is associated more strongly with socioemotional adaptation than child-mother attachment (e.g., Boldt, Kochanska, Yoon, & Nordling, 2014; Kochanska & Kim, 2013; Verissimo et al., 2011; Verschueren & Marcoen, 1999).

Objectives and Hypotheses

Objective 1. Inter-rater reliability of the PARS. We hypothesized that the scales would present good (intraclass correlations, ICC=.60 to .74) or excellent (ICC=.75 to 1.00; Cicchetti, 1994) reliability as coders have followed extensive training and achieved reliability with expert coders on an independent set of cases.

Objective 2. Associations between individual scales. Given the theoretical and practical evidence arising from previous studies with continuous scales (e.g., Brumariu et al., 2018; Fraley

& Spieker, 2003; McCartney et al., 2004; Moss et al., 2015), we expected security scores for a parent to be associated with low scores on the five insecure scales for the same parent, and vice versa. We also expected to find negative associations between avoidance and resistance, and positive associations between behavioral-disorganization and both caregiving- and punitive-control. As for the association between child-mother and child-father scales, we expected to find a moderate correlation between the security scales and similar mean scores on the scale (based on significant concordance in infancy: van IJzendoorn & De Wolff, 1997, and middle childhood: Boldt, Kochanska, Grekin, & Brock, 2016). We did not pose a hypothesis for insecure scales as there is limited research examining concordance between insecure groups.

Objective 3. Convergence of the PARS with the PACS. Although the PARS and the PACS were examined based on the same separation-reunion behaviors, it is necessary to determine whether assessment of the PARS is consistent with an independent assessment of the PACS (this analysis is conducted on a subset of the sample for which PARS and PACS were coded independently). We expected that PACS classification in a given category would be associated with higher scores on the associated PARS scale.

Objective 4. Association of the PARS with key variables. We assessed the association between the individual attachment scales and two key variables: parental sensitivity (while controlling for the other parent's sensitivity level to compensate for the potential shared variance associated with the other parent's sensitivity) and child externalizing problems. We also compared the PARS' predictive power by examining whether it accounted for comparable or supplemental variance when compared to the PACS.

We expected maternal sensitivity to be positively associated with the child-mother security scale (De Wolff & van IJzendoorn, 1997), and paternal sensitivity to be positively

associated with the child-father security scale (Lucassen et al., 2011). We also expected to uncover associations with some insecure scales but refrained from specifying which ones, as previous research was mostly predicated on a secure-insecure dichotomy. As for externalizing problems, we expected to find associations between externalizing problems and security, ambivalence, and behavioral-disorganization (Fearon et al., 2010) but refrained from specifying for which parent given inconsistencies in the literature. We expected these associations to be comparable to those of the PACS, or to explain supplemental variance beyond the PACS.

Method

Participants

The initial sample comprised 157 preschool-aged children and their parents. Of this number, we excluded 13 families for the purpose of this study: 12 families failed to complete experimental sessions with both parents, while a technical error irreversibly compromised video-recordings for another family. The final sample consists of 144 children ($M=46.89$ months, $SD=8.77$; 83 girls) who completed a separation-reunion procedure with each parent. One hundred seven of these families were part of previous studies by Bureau and colleagues (2014, 2017), while the rest ($n=37$) were added subsequently using the same protocol to increase the sample size. We recruited all participants from a low sociodemographic risk population in a large Eastern Canadian city through radio, newspapers, and online advertisements between 2009 and 2013. Children had to be between 3 and 5 years old and living with both parents to be eligible for participation. Non-biological parents considered to be a parental figure were eligible to participate if they had been living with the child for a minimum of two years. The sample includes two non-biological parents (an adoptive father and a step-father). No same-sex families chose to participate.

Families were English-speaking (79.2%) and French-speaking (20.8%), with a majority of mothers identifying themselves as Caucasian (84.7%). The rest identified as Asian (6.3%), Middle Eastern (4.2%), Black (3.5%), and First Nations (1.4%). Fathers also mostly identified as Caucasian (84.7%), whereas others identified as Asian (7.6%), Middle Eastern (4.2%), Black (2.1%), First Nations (0.7%), and Latino (0.7%). Most families were not at socioeconomic risk, with only 20.1% reporting a gross annual household income lower than \$75,000. Furthermore, 71.1% of mothers and 63.9% of fathers reported completing a university degree. These characteristics are representative of the region's population (Statistics Canada, 2017).

Procedure

Children participated in a two-hour video-recorded laboratory session with each parent. Sessions were scheduled in a counterbalanced order, six months apart; all procedures were conducted independently for each parent. After receiving parental consent and child assent, child-parent dyads completed the Laughing Task procedure (LT procedure; Bureau et al., 2014), a semi-structured validated task to evaluate parental sensitivity. In this task, we asked parents to make their child laugh without using any toys. Dyads then completed a separation-reunion procedure (Cassidy et al., 1992) in a testing room containing age-appropriate toys and magazines. This procedure allows for the observation of children's attachment behaviors through two sets of 5-minute separations and reunions with the parent. Afterwards, children completed activities with a research assistant while the parent answered questionnaires on their child's socioemotional adaptation and sociodemographic information. Following their participation, parents received monetary compensation and children received a toy. The institution's Research Ethics Board approved all procedures and measures used in this study.

Instruments

Child-Parent Categorical Attachment. Trained and reliable coders classified children's attachment behavior during the separation-reunion procedure following the PACS (Cassidy et al., 1992) guidelines. Coders must choose one of six possible attachment classifications: secure, insecure-avoidant, insecure-ambivalent, behaviorally-disorganized, controlling-caregiving, or controlling-punitive. The PACS is widely accepted as the method of choice to assess qualitative differences in child-parent attachment during the preschool years (Solomon & George, 2016). It presents adequate psychometric properties with child-mother dyads (Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004; NICHD, 2001; O'Connor et al., 2011) and child-father dyads (Bureau et al., 2014, 2017; George et al., 2010).

Five coders (who were blind to other study variables and to the other parent's rating) coded the tapes. Coders achieved excellent reliability with a certified PACS trainer (R. Marvin or E. Moss) on a separate set of tapes. In the current sample, sixty-eight percent of cases were double-coded (97 child-mother tapes and 99 child-father tapes). Coders reached 92% agreement for child-mother dyads ($kappa=.83$) and 90% agreement for child-father dyads ($kappa=.83$) for the 6-way classification. Reliability reached 95% ($kappa=.88$) and 92% ($kappa=.83$) agreement for secure-insecure classification with child-mother and child-father tapes, respectively. Coders reviewed any disagreement until they reached a consensus. Distribution of attachment classification was as follows: 97 child-mother dyads (67.4%) were secure, 2 (1.4%) avoidant, 13 (9.0%) ambivalent, 12 (8.3%) behaviorally-disorganized, 18 (12.5%) controlling-caregiving, and 2 (1.4%) controlling-punitive. For child-father attachment, 89 dyads (61.8%) were secure, 9 (6.3%) avoidant, 14 (9.7%) ambivalent, 11 (7.6%) behaviorally-disorganized, 20 (13.9%) controlling-caregiving, and 1 (0.7%) controlling-punitive.

Child-Parent Continuous Attachment. Children's behavior during the separation-reunion procedure was also assessed using the PARS (Moss et al., 2015) to obtain continuous attachment ratings. Coders assign scores on six continuous 1-9 scales for each child: security scale, insecure-avoidance scale, insecure-ambivalence scale, behavioral-disorganization scale, controlling-caregiving scale, and controlling-punitive scale. Ratings of 5 are considered the cut-off point for classification, but coders may assign a score of 5 or above to more than one scale; such ratings would normally mandate a behaviorally-disorganized primary classification as behaviors represent a mix of attachment strategies (or lack thereof; Moss et al., 2015). When rating each scale, coders must observe the extent to which attachment strategies are displayed through different modalities (i.e., body orientation/proximity, speech, gaze, and affect; Cassidy et al., 1992; Moss et al., 2015), while also taking into consideration how these modalities interact to maintain an overall attachment strategy. Coders must consider both duration and frequency of behavior, as well as the developmental appropriateness of the behavior (as the system is intended for use with children between 2.5 and 7 years of age).

Three coders rated continuous attachment: one of the co-developers of the PARS and two trained coders who achieved excellent reliability with the trainer on a separate set of tapes. Coders were blind to other study variables and to the child's attachment with the other parent. They were also blind to attachment classifications (PACS) for 107 families. They participated in PACS classification for the remaining 37 families; for this reason, convergent validity analyses only used the 107 families for which classification (PACS) and scales (PARS) were rated by independent coders.

Parental Sensitivity. Four coders assessed parental sensitivity with a modified version of the *Parent-Child Interaction Scale for the Preschool and School Periods* (Moss, Humber, &

Roberge, 1996). This coding system has previously been used across a wide range of tasks (e.g., picture-book reading: George & Solomon, 2016; semi-structured dyadic activities: Hobson, Tarver, Beurkens, & Hobson, 2016; snack-time interaction: Milot, St-Laurent, Éthier, & Provost, 2010). The modified version of the system used for the current study was adapted and validated for use with the LT procedure by Bureau and colleagues (2014). It yields two main factors (Dyadic Synchrony and Task Management) and 10 subscales (including parental sensitivity) assessing different aspects of child-parent interactions. Bureau and his colleagues (2014, 2017) found that both parents provided similar efforts during the task, but that mothers achieved a greater synchrony with their child. They also found that parental sensitivity was associated with child-mother and child-father attachment.

For the purpose of this study, we only used the parental sensitivity subscale. Scores on this subscale range between 1 (absence of parental sensitivity) to 4 (greater parental sensitivity). Coders were blind to other study variables and to the other parent's ratings. Pearson intraclass correlations reached .77 (single measures) based on 20% (29 cases) double-coded tapes for maternal sensitivity, and .71 based on 21% (30 cases) double-coded tapes for paternal sensitivity. Coders reviewed all disagreements until they reached consensus.

Externalizing Problems. Mothers and fathers completed the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997) to report on their child's externalizing problems. The SDQ presents good psychometric properties and strong correlations with the Child Behavior Checklist (Achenbach, 1991; Goodman & Scott, 1999). The SDQ comprises 25 items pertaining to children's positive and negative behaviors, rated as "Not true", "Somewhat true", and "Certainly true". For the purpose of this study, we used a broader externalizing scale comprising conduct problems and hyperactivity/inattention items instead of using the subscales individually.

This is in line with previous work suggesting that the broader externalizing scale is more appropriate for low-risk samples (Goodman, Lamping, & Ploubidis, 2010). We used averaged scores of mother- and father-reported externalizing problems, as previous research suggests that averaged parental report can avoid the over- or underestimation of children's behavioral problems that is associated with single informants (Alakortes et al., 2017). The internal consistency of the externalizing problems scale was adequate ($\alpha=.80$).

Results

Preliminary Analyses

Prior to the main analyses, we explored the potential effects of sociodemographic variables (child age, child gender, family income, and visit order) on study variables. For child-mother scales, analyses revealed the following significant associations: ambivalence and child age ($r=-.18, p<.05$); caregiving-control and child age ($r=.17, p<.05$); caregiving-control and child gender ($t(142)=-2.15, p<.05$, boys: $M=2.36, SD=1.63$; girls: $M=3.00, SD=1.86$) and; punitive-control and family income ($r=-.22, p<.01$). Significant covariates for child-father scales included: ambivalence and child-age ($r=-.20, p<.05$); behavioral-disorganization and child gender ($t(142)=2.63, p<.01$, boys: $M=2.22, SD=2.09$; girls: $M=1.46, SD=1.03$) and; caregiving-control and child gender ($t(142)=-2.28, p<.05$, boys: $M=2.18, SD=1.47$; girls: $M=2.83, SD=1.93$). The following covariates were also significant for other study variables: categorical child-father attachment and child gender ($\chi^2(5, N=144)=17.36, p<.01$, post hoc analyses show that boys were more likely to be classified as behaviorally-disorganized and less likely to be controlling-caregiving, whereas the reverse was true for girls. We thus performed analyses while controlling for child gender, child age, and family income.

Inter-Rater Reliability of the PARS

Table 1 presents descriptive statistics and reliability scores for each individual child-mother and child-father attachment scale. The continuous nature of the scales guided our decision to assess reliability using two-way mixed, absolute agreement, single-measure ICCs (Hallgren, 2012). Analyses are based on 20% of double-coded tapes for child-mother ($n=29$) and child-father ($n=29$) attachment. All child-mother scales presented excellent reliability (ICCs ranging from .88 to .96; Cicchetti, 1994). Child-father scales also presented excellent reliability (ICCs between .75 and .92), except for the punitive-control scale which presented good reliability (ICC=.60; Cicchetti, 1994).

Associations between Individual Scales

In order to determine if scales correlated with one another in the expected direction, we computed partial correlations between each scale while controlling for child gender, child age, and family income (see Table 2; zero-order correlations are also presented). Child-mother security scale was significantly negatively correlated with all child-mother insecurity scales (r s ranging between -.23 and -.60). Correlation difference tests based on Steiger's z -test (using zero-order correlations) revealed differences in the magnitude of correlations between the security scale and the insecure ones: the correlations between security and behavioral-disorganization as well as security and ambivalence were significantly stronger than the correlation between security and avoidance ($z=-4.07$, $p<.001$ and $z=-2.84$, $p<.01$, respectively). The correlation between security and behavioral-disorganization was also stronger than that between security and punitive-control ($z=3.68$, $p<.01$). Intercorrelations between insecure scales revealed that behavioral-disorganization was positively correlated with all other insecure scales (r s ranging between .17 and .29); Stieger's z -test found no significant difference in the magnitude of these

correlations. As for the other scales, ambivalence was associated negatively with avoidance and positively with punitive-control.

Results for child-father scales (Table 2) revealed significant negative correlations between security and all insecure scales (r s ranging between $-.37$ and $-.46$). Stieger's z -test showed that these correlations were of comparable magnitudes. For insecure scales, ambivalence was associated negatively with avoidance and positively with punitive-control.

In order to examine the association between child-mother and child-father scales, we performed correlations for attachment scale pairs (e.g., $\text{Secure}_{\text{mother}}$ and $\text{Secure}_{\text{father}}$; $\text{Avoidant}_{\text{mother}}$ and $\text{Avoidant}_{\text{father}}$). As shown in Table 3, all pairs, except for punitive-control, were significantly correlated (r s ranging from $.21$ to $.42$). Paired difference t -tests between attachment scale pairs enabled us to examine whether the mean score of the child-mother scale was comparable to that of the child-father scale. Scores on all scales were comparable (i.e., means of child-mother scales are not different from the means of child-father scales), except for avoidance, for which the child-father mean was higher than child-mother.

Convergence of the PARS with the PACS

For the current analysis, we exclusively used cases for which attachment scales and attachment classifications were coded by two different and independent coders ($n=107$; i.e., a first coder coded classification only and a second independent coder rated scales only). For child-mother attachment, we ran a multivariate general model analysis with 6-way attachment classification and the six attachment scales (Table 4). The pattern of attachment scale scores varied across classifications, $F(30)=26.92$, $p<.001$, and scores varied across categories. LSD post-hoc tests revealed that, for all scales, scores were highest amongst children classified in the associated classification (e.g., secure children presented significantly higher scores on the

security scale than children in all other classifications). Post-hoc comparisons revealed other significant differences. Ambivalent children presented higher security scores than their behaviorally-disorganized counterparts. Behaviorally-disorganized, controlling-caregiving, and controlling-punitive children all had higher ambivalence scores than secure and avoidant children. Children classified as controlling-caregiving and controlling-punitive presented higher behavioral-disorganization scores than their secure and insecure-organized peers. Behaviorally-disorganized children scored higher on the caregiving-control scale than secure and ambivalent children. Lastly, controlling-caregiving children displayed higher levels of punitive-control than secure, insecure-organized, and behaviorally-disorganized children.

A second multivariate general model analysis with child-father 5-way attachment classification (only one child was classified as controlling-punitive, forcing us to exclude the classification from this analysis) and the six attachment scales ($n=107$) revealed results similar to those of the child-mother model: a significant multivariate effect, $F(26)=28.73$, $p<.001$, significant univariate effects for each scale, and significant post-hoc comparisons showing that scores were highest amongst children classified in the associated category (Table 4). Other post-hoc comparisons revealed that behaviorally-disorganized and controlling-caregiving children presented higher levels of avoidance than their secure and ambivalent counterparts. Children classified as behaviorally-disorganized had higher ambivalence scores than their secure and avoidant peers. Caregiving-controlling children had higher behavioral-disorganization scores than secure and insecure-organized children. Children classified as ambivalent presented higher scores on the behavioral-disorganization and punitive-control scales than their secure counterparts.

Association of the PARS with Key Variables

Correlational analyses between attachment scales and parental sensitivity showed that, as expected, higher parental sensitivity is associated with higher scores on the security scale for both child-mother and child-father attachment (see Table 2). These results remained significant (and of comparable magnitude) after controlling for the other parent's sensitivity levels, suggesting a direct association between paternal sensitivity and the quality of the child-father attachment relationship that goes beyond the bounds of maternal sensitivity, and vice-versa.

In order to determine if the associations between the security scales and parental sensitivity accounted for comparable or supplemental variance when compared to the PACS classification, we used Haynes and Lench's (2003) incremental validity assessment techniques. For each parent, it involved computing two hierarchical regression models. In Model 1, a PACS dummy variable (e.g., secure vs. non-secure) was entered first, and the associated PARS scale second (e.g., security scale). In Model 2, a PARS scale (e.g., security scale) was entered first, and the associated PACS dummy variable second (e.g., secure vs. non-secure).

If both models show a significant step 1 but not step 2, it would show that the scale and classification hold similar predictive power (that do not go account for variance beyond one another). In contrast, if one model features a significant step 2 while the other does not, it would indicate that the significant one holds supplemental predictive power over the nonsignificant one. This latter case applied to child-mother security, as the scale was associated with maternal sensitivity beyond the PACS in the first model ($\Delta F=6.60, p<.01, \beta=.45$), whereas the classification did not contribute beyond the PARS in the second model ($\Delta F=1.86, p>.05, \beta=.24$). The same pattern applied to child-father security: the scale was associated with paternal sensitivity beyond the classification ($\Delta F=4.58, p<.05, \beta=.39$), whereas the classification did not contribute beyond the scale in the second model ($\Delta F=0.06, p>.05, \beta=.05$). These results show

that the PARS security scale provides supplemental predictive variance compared to the PACS security classification in the relationship with parental sensitivity.

For child-mother insecure scales, analyses revealed that maternal sensitivity was negatively associated with child-mother ambivalence and behavioral-disorganization. Using Haynes and Lench's (2003) incremental validity assessment technique, we found that the ambivalence scale was associated with maternal sensitivity beyond the classification ($\Delta F=8.05$, $p<.01$, $\beta=-.31$), whereas the classification did not contribute beyond the scale in the second model ($\Delta F=2.66$, $p>.05$, $\beta=-.18$). This suggests that the PARS ambivalence scale provides additional predictive power when compared to the PACS ambivalence classification. For behavioral-disorganization, although both the scale and classification were significantly associated with maternal sensitivity when entered in the first step, they failed to explain additional variance when entered in the second step (scale: $\Delta F=1.49$, $p>.05$, $\beta=-.19$ and classification: $\Delta F=0.03$, $p>.05$, $\beta=.02$). This indicates that the PARS behavioral-disorganization scale holds comparable predictive power to the PACS behavioral-disorganization classification.

For child-father insecure scales, paternal sensitivity was negatively associated with child-father caregiving-control and punitive-control. Incremental validity analyses revealed that although both the caregiving-control scale and classification were significantly associated with paternal sensitivity when entered in the first step, they failed to explain additional variance when entered in the second step (scale: $\Delta F=0.25$, $p>.05$, $\beta=-.06$ and classification: $\Delta F=3.14$, $p>.05$, $\beta=.22$). For punitive-control, the first model showed the scale was associated with paternal sensitivity beyond the classification ($\Delta F=6.43$, $p<.01$, $\beta=-.23$), whereas the classification did not contribute beyond the scale in the second model ($\Delta F=0.19$, $p>.05$, $\beta=.04$). These results suggest

that the PARS caregiving-control scale holds comparable predictive power and that the punitive-control scale provides supplemental predictive power when compared to the PACS.

We also examined the correlations between child-mother and child-father attachment scales and child externalizing problems to assess the PARS' predictive validity. Results revealed no significant associations between child-mother scales and externalizing problems (Table 2). For child-father scales, child externalizing problems were negatively associated with security and positively associated with ambivalence. Incremental validity analyses revealed that the security and ambivalence scales hold comparable predictive power to that of the PACS classification, as they were significantly associated with externalizing problems when entered in the first step, but they failed to explain additional variance when entered in the second step (security scale: $\Delta F=2.65, p>.05, \beta=-.30$ and security classification: $\Delta F=0.03, p>.05, \beta=.03$; ambivalence scale: $\Delta F=2.39, p>.05, \beta=.17$ and ambivalence classification: $\Delta F=0.43, p>.05, \beta=.07$).

Discussion

Given the absence of a continuous system conceived and validated specifically for preschool attachment, this study aimed to validate the PARS (Moss et al., 2015). Results provide evidence that the PARS is a reliable and valid instrument that is well-suited to a fine-grained analysis of preschool children's attachment to their mother and father. Reliability analyses showed that the PARS is a reliable instrument, as child-mother and child-father scales all presented good or excellent reliability. It is apparent that the ICC of the child-father punitive-control scale is lower than other scales, despite being within the "good reliability" range (Cicchetti, 1994). This could be explained by the relative rarity of these behaviors in a normative sample such as ours, as low frequency reduces reliability (Haynes, Smith, & Hunsley, 2011). To address such issues of low disorganized scores, future research may use a composite score of

behavioral-disorganization and punitive-control. This approach was used by Bureau and his colleagues (2009) in middle childhood, as behavioral-disorganization and punitive-control were moderately correlated and loaded on a same factor. In contrast, caregiving-control was not associated with behavioral-disorganization (and was negatively associated with punitive-control) and loaded on its own factor. It is however worth noting that Bureau and colleagues' (2009) study only included child-mother dyads; future research will be necessary to determine if such grouping is warranted for child-father dyads.

The lower ICC for punitive-control may also indicate that the conception of punitive-control itself, which is based on child-mother samples, does not apply fully to child-father dyads. It is conceivable that a father's dominating presence in some non-optimal familial contexts discourages the child from exhibiting strong forms of punitive behaviors toward their father. They could instead be expressed in a subtler manner. As the current study is the first to examine both punitive-control and caregiving-control in child-father dyads in the preschool years (be it with categorical or continuous measures), the concept of child-father role-reversal as a whole warrants further investigation, notably in a clinical sample.

Results also show that the PARS possess good validity. The intercorrelations between scales were consistent with previous theoretical and empirical work, notably with studies of middle childhood (Brumariu et al., 2018). Brumariu and colleagues (2018) used six attachment scales (one for each attachment type) to evaluate child-mother attachment during a conflict task in which child-mother dyads discussed a topic of conflict. Consistent with this study, we found that the security scale was negatively associated with all insecure scales for both child-mother and child-father attachment. For child-mother attachment, the strongest correlation was with the behavioral-disorganization scale, as was the case in Brumariu and colleagues' (2018) study. The

size of the association between security and behavioral-disorganization was also similar to what was found in the 36 months NICHD sample ($r=-.60$ for child-mother and $r=-.45$ for child-father scales in our sample, $r=-.55$ in the NICHD sample; McCartney et al., 2004). Pursuing the comparison with Brumariu and colleagues' (2018) study, we both found a negative association between avoidance and ambivalence, and a positive association between ambivalence and punitive-control for both parents. For child-mother attachment, we also replicated the association between behavioral-disorganization and punitive-control. Although minor differences were present across our studies, our results attest to the similarity between preschool and middle childhood attachment, and thus the pertinence of such comparisons in future research.

Significant associations between child-mother and child-father security scales are in line with previous research showing concordance between security/insecurity to mother in infancy ($r=.17$; van IJzendoorn & De Wolff, 1997). This association was, however, larger in our preschool sample ($r=.42$; Stieger's z -test: $z=3.06$, $p<.01$). This difference may be explained by a self-forming bias of family composition – by the preschool years, many parents may already separated. One can expect that separated families are more likely to present discordant attachments, which could contribute to a negative and conflictual familial environment. In contrast, concordant attachments may reduce strains associated with childrearing within the couple relationship, thereby contributing indirectly to parents remaining a couple through the preschool years. As a result, preschool samples of intact families may feature higher concordance than infant ones. This interpretation is supported by studies of intact families in middle childhood such as those by Boldt and colleagues (2016), who found a correlation of $r=.55$ between security to mother and father at age 10 (which is in line with our results; Stieger's z -test: $z=-1.31$, $p>.05$).

Comparisons between child-mother and child-father scales also confirm that the PARS can be used across multiple caregivers. Indeed, children did not present higher scores on child-mother than on child-father scales (nor the reverse). One notable exception was the avoidance scale, which displayed higher scores under the child-father scales than the child-mother scales. Although this result may suggest higher avoidance with father, replication is necessary to determine if this is a simple artifact of our sample which presented low levels of avoidance to mother. It should be noted that studies of preschool attachment tend to have lower avoidance rates (e.g., 4.8% in NICHD, 2001, 3.8% in the control sample of Speltz et al., 1999) than what is typically reported in infancy (i.e., 15%; see van IJzendoorn et al., 1999). This may indicate a need to refine the understanding of avoidance in the preschool years to fully grasp subtle behavioral manifestations of avoidance.

The current study also showed that the PARS present convergent validity with independently coded categorical attachment. Levels of each scale were the highest for children who were classified in the contiguous PACS classification for child-mother and child-father attachment. Although categorical and continuous scores are based on the same separation-reunion procedure, the correspondence between the two shows that the PARS derive similar information from this procedure as the PACS. Moreover, the PARS go beyond information provided by the PACS, as exemplified in the post-hoc comparisons. For example, findings illustrate that children classified as controlling-caregiving presented higher levels of behavioral-disorganization than their secure, avoidant, and ambivalent peers. This result shows that despite controlling-caregiving children being perceived as nice and helpful by the parent (see Moss et al., 2011 for a review), a profound disorganization at the level of the dyad itself remains.

The associations between the PARS scales and key variables support the PARS' validity. As the influence of parental sensitivity on child-caregiver attachment is central to attachment theory (Ainsworth et al., 1978), the validity of the PARS was contingent upon uncovering this relationship (Solomon & George, 2016). Results revealed a moderate association between the security scale and parental sensitivity for both parents. In child-mother dyads, the association between attachment and maternal sensitivity ($r=.23$) was consistent with meta-analytical results in infancy ($r=.22$ in De Wolff & van IJzendoorn, 1997: Stieger's z -test: $z=0.12$, $p>.05$) as well as middle childhood and adolescence ($r=.31$ in Koehn & Kerns, 2018: Stieger's z -test: $z=-1.02$, $p>.05$). The association between paternal sensitivity and attachment ($r=.34$) was stronger than meta-analytical findings of this relationship in infancy ($r=.12$ in Lucassen et al., 2011 – Stieger's z -test: $z=2.64$, $p<.01$), but not in middle childhood and adolescence ($r=.19$ in Koehn & Kerns, 2018 – Stieger's z -test: $z=1.87$, $p>.05$). This may suggest that the association between parental sensitivity and attachment becomes more important after infancy.

The different conceptualizations of parental sensitivity between these periods may also explain the stronger associations in the preschool years and beyond. Indeed, assessment of parental sensitivity during infancy focuses on parental response to distress and non-distress, whereas it centers on the parent's supportive presence in the preschool years (Raikes & Thompson, 2008). According to Grossman and colleagues (2002), fathers are naturally more prone to providing a supportive presence during child exploration, and less prone to providing comfort under a traditional definition. It is thus possible that the association between paternal sensitivity and attachment is larger in our sample due to the developmental period studied or to the task itself (which both present an important focus on exploration) – despite this difference, both Lucassen and colleagues' (2011) meta-analysis and our results show a link between paternal

sensitivity and child-father attachment, supporting the use of a separation-reunion paradigm to assess child-father attachment. Furthermore, this relationship held even when controlling for maternal sensitivity (see Bretherton, 2010).

We also found associations between parental sensitivity and insecure scales. Consistent with previous studies in infancy and middle childhood, our study revealed a small association ($r=-.21$) between child-mother behavioral-disorganization and maternal sensitivity ($r=-.18$ in Koehns & Kerns, 2018 – Stieger’s $z=0.03, p>.05$; $r=-.10$ van IJzendoorn et al., 1999 – Stieger’s $z=1.29, p>.05$). Caregiving-control and punitive-control, despite their association to behavioral-disorganization in this study, were not associated with maternal sensitivity. In contrast, child-father behavioral-disorganization was not associated with paternal sensitivity, whereas caregiving-control and punitive-control were. These associations for insecure attachments may differ across risk contexts. Only replication across varied familial contexts will allow drawing robust conclusions regarding the differences between insecure attachment to mother and father. It is also interesting to note that unlike Koehns and Kerns’ (2018) meta-analysis, we did not find an association between avoidance and parental sensitivity. This difference supports the aforementioned suggestion that researchers might not yet understand the full subtleties of avoidance in the preschool years.

The current study identified that externalizing problems were associated significantly with child-father security, ambivalence, and behavioral-disorganization. These results mirror the associations uncovered for child-father attachment in middle childhood by Boldt and colleagues (2016). However, they also found associations with child-mother security and behavioral-disorganization, whereas we only found a marginal association for security. This result is inconsistent with meta-analytical findings (Fearon et al., 2010). It is possible that more complex

interactions between child-mother and child-father attachment are at play; such interactions have been documented in prior studies (e.g., Kochanska & Kim, 2013; Verschueren & Marcoen, 1999) and warrant further investigation to better understand their underlying mechanisms.”

We were also able to determine that the PARS’ predictive power is comparable or higher than that of the PACS. This finding supports the use of the PARS (by itself or alongside with the PACS) when suitable to address the research questions scholars want to investigate (e.g., when examining specific subtypes of disorganization). Through the use of PACS classification and individual PARS scales, researchers will have access to valid instruments for both categorical and continuous preschool attachment.

Limitations. This study was unable to evaluate test-retest reliability as it would have required children to complete four repeated assessments of the strange situation (two with each parent). This would have been problematic as repeated attachment assessments can make the setting more familiar, or simply make the child more distressed (Ainsworth et al., 1978). The current study also examined convergent validity based on the same observations. Although informative, future work using the PARS should examine its concordance with other measures of attachment such as the ASCT or AQS. Furthermore, the study used a normative sample, which limits generalization to at-risk families.

Conclusion. This study provides evidence of the PARS’ reliability and validity for both child-mother and child-father attachment. The current study is also the first to report results specific to role-reversal in child-father dyads during the preschool years, and to explore the association between parental sensitivity and attachment while controlling for the other parent’s sensitivity levels. The level of precision of results found with the PARS attests to the usefulness

of a continuous measure of preschool attachment that includes individual scales for all preschool attachment types.

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Table 1

Descriptive Statistics and Intraclass Correlations for Attachment Scales

Scale ¹	Child-mother attachment						Child-father attachment					
	ICC ²	<i>M(SD)</i>	Range of scores	Distribution of scores ³			ICC ²	<i>M(SD)</i>	Range of scores	Distribution of scores ³		
				1-3	3-5	5-9				1-3	3-5	5-9
B	.96	5.43 (1.86)	1-8.5	10.4%	22.2%	67.4%	.81	5.24 (1.90)	1-9	16.7%	21.5%	61.8%
A	.92	1.99 (1.20)	1-6	78.5%	18.1%	3.5%	.90	2.49 (1.44)	1-7	61.8%	29.2%	9.0%
C	.93	2.74 (1.68)	1-8	59.0%	27.8%	13.2%	.83	2.77 (1.75)	1-7.5	50.7%	35.4%	13.9%
D	.92	1.90 (1.74)	1-8	81.9%	7.6%	10.4%	.92	1.78 (1.61)	1-7	82.6%	9.7%	7.6%
CC	.94	2.73 (1.79)	1-8	56.3%	30.6%	13.2%	.75	2.55 (1.78)	1-8	63.9%	21.5%	14.6%
CP	.88	1.30 (.88)	1-8	93.1%	5.6%	1.4%	.60	1.28 (.77)	1-5.5	92.4%	6.3%	1.4%

Note. *N*=144. *M*=mean, *SD*=standard deviation, ICC=intraclass correlations. ¹B=security, A=avoidance, C=ambivalence, D=behavioral-disorganization, CC=caregiving-control, CP=punitive-control. ²Two-way, absolute agreement, single-measure intraclass correlations based on double-coding 20% of cases. ³Participants' distribution on the scale (i.e., proportion of participants who scored between 1 and 3, 3 and 5, and 5 and 9 on the 1-9 rating scale).

Table 2

Zero-Order Correlations Between Study Variables (Partial Correlations Controlling for Child Age, Child Gender, and Family Income)

	Attachment scales						Parental sensitivity		Socioemotional adaptation
	B	A	C	D	CC	CP	Not controlling for other parent's sensitivity	Controlling for other parent's sensitivity	Externalizing problems ^a
<i>Child-mother attachment</i>									
B	-						.24** (.23**)	.21* (.21*)	-.14 ^t (-.14 ^t)
A	-.22** (-.23**)	-					-.01 (-.01)	-.01 (-.01)	-.08 (-.11)
C	-.51*** (-.50***)	-.19* (-.19*)	-				-.19* (-.18*)	-.17* (-.16 ^t)	.14 ^t (.14)
D	-.60*** (-.60***)	.16* (.17*)	.19* (.18*)	-			-.21* (-.21*)	-.20* (-.20*)	.06 (.02)
CC	-.50*** (-.52***)	.00 (.02)	-.09 (-.08)	.27** (.29**)	-		-.08 (-.10)	-.07 (-.09)	.11 (.15 ^t)
CP	-.34*** (-.33***)	-.03 (-.02)	.20* (.14 ^t)	.20* (.18*)	.10 (.08)	-	-.06 (-.07)	-.06 (-.07)	-.02 (-.01)
<i>Child-father attachment</i>									
B	-						.35*** (.34***)	.35*** (.33***)	-.33*** (-.30***)
A	-.36*** (-.37***)	-					-.08 (-.10)	-.10 (-.12)	-.10 (-.11)
C	-.47*** (-.46***)	-.21* (-.21*)	-				-.12 (-.09)	-.11 (-.08)	.22** (.17*)
D	-.45*** (-.43***)	.08 (.07)	.15 ^t (.10)	-			-.09 (-.07)	-.08 (-.07)	.21** (.13)
CC	-.41*** (-.42***)	-.08 (-.08)	-.11 (-.10)	.09 (.14 ^t)	-		-.23** (-.22**)	-.22** (-.21*)	.11 (.17 ^t)
CP	-.45***	.03	.26**	.12	.16 ^t	-	-.25**	-.25**	.15 ^t

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(-.44***) (.03) (.26**) (.12) (.15^t) (-.24**) (-.24**) (.12)

Note. $N=144$. ^a Mother- and father-report scores were averaged for each scale. B=security, A=avoidance, C=ambivalence, D=behavioral-disorganization, CC=caregiving-control, CP=punitive-control.

^t $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$.

Table 3

Correlations and Differences Between Associated Child-Mother and Child-Father Scales

Attachment scale pair	Zero-order correlation (Partial correlation ^a)	Paired difference test between attachment scale pair	
		<i>df</i>	<i>t</i>
B _{mother} - B _{father}	.42*** (.42***)	143	1.15
A _{mother} - A _{father}	.26** (.26**)	143	-3.70*** (C-F > C-M)
C _{mother} - C _{father}	.38*** (.37***)	143	-.24
D _{mother} - D _{father}	.21** (.21*)	143	.69
CC _{mother} - CC _{father}	.33*** (.31***)	143	1.03
CP _{mother} - CP _{father}	-.04 (-.05)	143	.86

Note. ^a Controlling for child age, child gender, and family income. *N*=144. B=security, A=avoidance, C=ambivalence, D=behavioral-disorganization, CC=caregiving-control, CP=punitive-control, C-F=child-father scale, C-M=child-mother scale.

p*<.01, *p*<.001.

Table 4

Convergence between 6-way Attachment Scales (PARS) and Attachment Classifications (PACS)

Attachment scale (PARS)	Attachment classification (PACS)						Univariate <i>F</i> -test (η_p^2)	Significant post-hoc differences between classifications
	Secure	Avoidant	Ambivalent	Behaviorally-disorganized	Controlling-caregiving	Controlling-punitive		
<i>Model 1: Child-mother attachment</i>								
B	6.75	3.25	3.37	2.34	2.81	2.03	73.54*** (.80)	B > A, C, D, CC, CP C > D
A	2.03	6.04	2.04	2.77	2.33	1.60	5.32*** (.22)	A > B, C, D, CC, CP
C	2.10	1.48	6.19	3.66	3.58	3.97	27.85*** (.60)	C > B, A, D, CC, CP D, CC, CP > B, A
D	1.18	1.43	1.41	6.92	3.51	4.26	83.78*** (.82)	D > B, A, C, CC, CP CC, CP > B, A, C
CC	1.99	2.67	2.25	3.49	6.31	3.06	8.70*** (.32)	CC > B, A, C, D, CP D > B, C
CP	1.13	1.06	1.27	1.44	2.22	6.46	40.25*** (.68)	CP > B, A, C, D, CC CC > B, A, C, D
<i>Model 2: Child-father attachment</i>								
B	6.74	3.33	3.02	2.44	2.80		90.21*** (.79)	B > A, C, D, CC
A	2.06	6.24	2.24	2.37	3.39		30.14*** (.56)	A > B, C, D, CC D, CC > B, C
C	1.95	1.89	6.58	2.93	3.11		31.84*** (.58)	C > B, A, D, CC D > B, A
D	1.30	1.35	1.47	6.53	2.09		69.40*** (.75)	D > B, A, C, CC CC > B, A, C C > B
CC	1.87	1.55	1.76	3.62	5.58		9.64*** (.29)	CC > B, A, C, D
CP	1.00	1.04	1.58	1.39	2.92		4.12** (.15)	CC > B, A C > B

Note. *N*=107. B=security, A=avoidance, C=ambivalence, D=behavioral-disorganization, CC=caregiving-control, CP=punitive-control. Controlling for child age, child gender, and family income. Multivariate effect: Model 1: $F(30)=26.92, p<.001, \eta_p^2=.61$. Model 2: $F(26)=28.73, p<.001, \eta_p^2=.59$.

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