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# Links between former childcare settings and child attachment to the mother and to the teacher at preschool age

Elsa Deslandres<sup>1</sup> and Jaqueline Wendland<sup>1,2</sup>

A substantial and growing number of young children attend a regular out-of-family daycare setting before entering preschool. In France, attendance at daycare centers for babies and young children is largely sought by parents as it is expected to promote child socialization, school adaptation and achievement, as well as cognitive and emotional development (French National Observatory of Early Childhood—ONPE 2016a; 2016b; Wendland, Puccinelli, Tereno, and Spencer 2019). From the Eighties, a wide body of studies has examined the effects of daycare modalities on child cognitive, emotional and social development and, in particular, on the parent-child attachment relationship. Both the quality and the quantity of time spent in non-parental daycare during early childhood are believed to have an impact on the nature of child attachment to parents and on other child outcomes. The seminal series of studies carried out by the National Institute of Child Health and Human Development (NICHD 1997; 2001a; 2001b; 2004) in the United States showed that none of the isolated child, family or childcare factors had a significant and direct effect *per se* on child attachment, and that the effects are mediated by a large and complex array of individual and context influences (Love et al. 2003; Thompson 2008). However, research relating different daycare settings during the first three years of life (e.g. parental care, care by a childminder, care by a relative, care in small-scale groups, daycare center) and attachment relationships at preschool age remains limited, in particular with respect to potential secondary attachment figures such as preschool teachers.

Concurrently with the construction of the relationship to the primary attachment figure, children often develop other significant attachment relationships (Ainsworth, Blehar, Waters, and Wall 1978). Schaffer and Emerson (1964) and Bowlby (1969) observed that, during the second year

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of life, a large majority of children directed their attachment behaviors towards more than one discriminated caregiver. Among these, professional caregivers, those which regularly take care of the child when the parents are absent, occupy a particular place. Studies have shown that young children in fulltime daycare may use carers as attachment figures and that the formation of attachment relationships in childcare settings appears to follow a similar process to that of infant–mother attachment (Howes 1999; Howes and Hamilton 1992). However, while some studies found that the likelihood of developing a secure attachment with non-parental caregivers is equivalent to doing so with parents (Goossens and van Ijzendoorn 1990), others found that this was less frequent (Ahnert and Lamb 2000).

The development of secure attachment bonds to professional caregivers requires their number to be limited (no more than one adult per three children would be an optimal ratio according to the American Academy of Pediatrics, the American Public Health Association, and the National Resource Center for Health and Safety in Child Care 2002), and that care is provided in a regular, predictable and coherent manner, both materially and emotionally. In addition, the regularity and the amount of time spent together are of great importance: attachments can only be tied with steady caregivers. Anhert et al. (2006)'s meta-analysis concluded that secure attachments to care providers were more common in home-based care arrangements than in center-based care, and that childcare providers were more able to offer sensitive caregiving in small groups, or with a low child-adult ratio than in large group settings. In an observational study in a daycare center, De Schipper, Tavecchio and Van Ijzendoorn (2008) showed that the frequency of caregivers' positive interactions and involvement with the child was particularly important for the child's attachment security. Sensitive interactions of caregivers in themselves, however, were not enough for a child to develop such a confidence in a caregiver who must share his or her attention among several children simultaneously. High child-adult ratio in childcare may also, in turn, affect mother-child attachment. Sagi, Koren-Karie, Gini, Ziv, and Joels (2002) found that center-cared infants with a high child-adult ratio (>3) were significantly more likely to become insecurely attached to their mothers, as compared with infants who were either in maternal care, individual non parental care with a relative, individual non parental care with a paid caregiver, or in family daycare. Their results showed that it was the very high infant–caregiver ratio that accounted for the increased level of attachment insecurity among center-cared infants.

In line with these ideas, Richard Bowlby (2007) insisted on the fact that attachment bonds are more easily tied with a single carer or in a family-type setting rather than in a group. He stressed that an attachment-supportive daycare, liable to encourage secondary attachment bonds, should, among other criteria, refuse babies younger than 9 months; caregivers should have in charge no more than 3 children and, if possible, well-spaced in age; and care duration should be short during its first weeks and do not exceed a part-time until 18 months of age.

In France, daycare arrangements for babies and toddlers are often far away from these principles. Daycare centers and childminders receive babies as soon as the statutory maternity leave ends, i.e. 10 weeks of age. Carers in daycare centers have in charge five non-walker infants and eight walker children, and this ratio includes not only carers but also the administration staff. In addition, when the two parents work, children are in out-of-family daycare for at least seven hours a day, spending near 50 hours per week in childcare (ONPE 2016a). A childcare home setting usually includes three children of varying ages, and care providers try to provide a “home-like” setting that involves mostly free play. Childcare centers organize children into larger groups, often based on age, and usually two or more adults are responsible for the children’s care during the day, and more than 6 different adults during a week. Children in center care spend more time in structured, adult-directed activities than do children in home-based care. Childcare centers are usually equipped with a greater number and a variety of toys and materials for children, have more space, and are designed as educational settings. Home-care environments lack some of these physical advantages, but typically they have fewer children per adult and children are liable to receive more individual attention.

Compared to early childhood research, fewer studies explored the quality of the child-teacher relationship in the preschool period (3 to 6 years old), which is not necessarily an attachment relationship (Bergin and Bergin 2009; Verschueren and Koomen 2012). Contrary to the relationship to parents, the child-teacher relationship is not exclusive and often not durable. Nevertheless, at preschool, given the children’s relative young age, their limited capacity to self-regulate and the considerable amount of time spent together, teachers may become attachment figures. Although the relationships between children and preschool teachers might not meet all the criteria for a full-blown attachment relationship, children may show similar patterns of attachment and exploration

behavior to those described for parental attachments (Beckh and Becker-Stoll 2016). Koomen and Hoeksma (2003) stressed the role of kindergarten teachers as safe haven and secure base by showing high initial scores for child security seeking behaviors at school entry and sharp decreasing in the weeks thereafter.

In the French preschool education system (3 to 6 years old), the child-teacher relationship is likely to offer the conditions required for the unfolding of an attachment relationship. The children spend the full day in preschool and with the same teacher throughout the year, sometimes for more than one year. The teacher does not only help the child to learn, but also to dress and undress, to eat, to use the toilets, to regulate emotions and to overcome daily frustrations generated by separation from parents and peer relationships, and he or she also supports and comforts the child when he or she is distressed, wounded or needs help at nap time. Preschool children often seek physical contact with the teacher and share their fears and sorrows, discoveries and joys with him or her.

According to Bowlby (1969), the quality of attachment to primary caregivers is expected to be linked to such towards other attachment figures. The attachment security to parents has been found to be related to attachment security to caregivers or teachers throughout early childhood and childhood (Booth, Kelly, Spieker and Zuckerman 2003; O'Connor and Mc Cartney 2006; Sabol and Pianta 2012). In their meta-analysis of studies on infants and toddlers (mean age 29 months), Ahnert et al. (2006) found however only modest correlations ( $r=.14$ , for child-mother, and  $r=.35$  for child-father) between the attachment to the two parents and the attachment to the caregiver.

With regards to the links between attachment to primary caregivers and to teachers during the preschool period, associations are often modest in size and not necessarily concordant (Howes and Hamilton 1992; Macé and Florin 2007). O'Connor and McCartney (2006) found that insecure children at 36 months had lower quality relationships with teachers than secure children at 54 months, at kindergarten, and at first grade, but the relationship quality with teachers at 54 months more strongly predicted kindergarten and first grade' teacher-child relationships than maternal attachment. DeMulder, Denham, Schmidt and Mitchell (2000) found, only for boys, that the security with the mother was significantly related to the security with the teacher in preschool (using an adapted version of the Attachment Q-Sort, Waters and Deane 1985). Using the closeness subscale of the STRS (Student Teacher Relationship Scale; Pianta 2001),

Buyse, Verschueren and Doumen (2011) found that lower mother–child attachment quality in preschool predicted less teacher–child closeness in kindergarten, but only under conditions of low teacher sensitivity; when the teacher’s sensitivity was high, this association disappeared.

In a prospective study, Zhang’s study (2011) showed that the quality of early childhood relationships to the mother (using the Child–Parent Relationship Scale—CPRS; Pianta 1992) was associated to the relationship to the teacher (with the STRS) in the first year in preschool, but no longer in the second and third years. Moreover, the correlations between the relationships to the parents and to the teacher were only slightly positive, meaning that the first attachment experiences explained only a small portion of the child’s attachment to the preschool teacher variations. More recently, Champenois and Tereno (2016) found that children who had attended a childcare center with no stable primary caregiver assigned to each child tended to show, during their first year in preschool, more attachment insecurity towards the teacher than those who had had a stable primary caregiver in the childcare center (less security base behavior, assessed with the Perception of Attachment Behavior Questionnaire, Violon, Tereno, Dias, and Wendland 2012).

Taken together these results suggest that the relationship models with parents may be partially carried over to the teacher-child relationship. Besides, when both mother-child and teacher-child relationships were assessed, the impact of mother-child relationships has generally proved to be stronger than that of teacher-child relationships (Beckh, and Becker-Stoll 2016). Further, the formation of attachment relationships with alternative caregivers may also be influenced by the quality of the ongoing attachment relationship with the primary caregiver. Sensitive care by an emotionally available primary caregiver not only allows the child to use this caregiver as a secure base but also predisposes the child to show a more positive, secure orientation toward alternative caregivers such as preschool teachers. However, the links between different former childcare arrangements and the ongoing relationship to the teacher and to the mother at preschool age remain barely explored.

## The present study

In the present study, we sought to investigate, in a French population, the associations between different childcare settings during the child’s first three years of life (family care by the mother, childminder caring for

no more than three children in a home setting, and daycare center) and the quality of attachment to the mother and to the preschool teacher in 3-to-6-years-old children. In addition, we explored the links between the child's age at the beginning of daycare and the quality of attachment to the mother and to the teacher. It was expected that the earlier the child was put in out-of-family daycare, the more insecure would be the child's attachment to the mother. Also, children who have been cared for exclusively by their mothers until their entry to preschool were expected to have the highest attachment security scores to their mother. Conversely, children cared for in daycare centers would present the lowest attachment security scores, while those cared for by a childminder in small groups in a home setting would have intermediate scores. Regarding the attachment to the teacher, given the lack of studies relating former childcare modalities and attachment to the preschool teacher, no assumptions were made. Moreover, attachment security/insecurity to the mother was expected to be positively correlated to attachment security/insecurity to the preschool teacher. Lastly, links between children's (age, gender), mothers' (age, education level), family (number of children) and teachers' (age) sociodemographic data and child attachment scores to the mother and to the teacher were explored.

## Materials and Methods

### Participants

The study has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. Data were collected for 162 children ( $M=55.6$  months;  $SD=12.59$ ; [35;82]), 101 girls (58.4%) and 72 boys (41.6%). All children attended a preschool in French urban centers (Paris, Orléans, Montpellier). A total of 150 mothers filled in the parent questionnaires and 64 teachers completed the teacher questionnaires. However, we were able to match the mother and the teacher questionnaires for only 36 children.

The mother's mean age was 35 years and 4 months ( $SD=4.23$ ; [25 ;48]). Despite our desire to collect data from all segments of the population, our sample of mothers is not in line with French national population statistics (INSEE). Most mothers had two children (53%) rather than one (18.8%), whereas the opposite is observed in the general population (38.4% and 45.1%, respectively) (INSEE 2016a). Our sample included 92.7% two-parent families as opposed to 78% on a national

level (INSEE 2016b), and parents had higher education and more qualified jobs (52.7% of mothers, 62% of fathers) than the general population (INSEE 2016c). Mothers who reached their A-level represented 3.3%, those with an undergraduate level were 30.7%, and those with a Master or PhD degree were 62%.

The preschool teachers ( $N=36$ ) were all women and were on average 39 years and 11 months old ( $SD=9.07$ ; [23;60]). They had on average 16.11 years of teaching experience ( $SD=11.10$ ; [1;33]), and all work fulltime. Thirteen teachers worked with 3-to-4 years old children (first year of preschool), eleven with 4-to-5 years old children (second year of preschool), and twelve with 5-to-6 years old children (last year of preschool). Preschool classes comprised on average 25 children, which corresponds to the French national norms. All first-year preschool classes had one teacher and one classroom assistant that helped with children's safety and daily routines (e.g. toilette, meals).

During their first three years of life, 27 children (19.7%) were looked after by their mother exclusively, 55 (40.15%) were cared for in a home-based small group (not in the child's residence) by a licensed childminder ( $M=35$  hours per week; [28-41]), 55 (40.15%) attended a public daycare center with on average less than one adult for every three children, following the national public service norms (5 non-walking children/carer and 8 walking children/carer;  $M=35$  hours per week; [28-39]). Thirteen children experienced mixed daycare settings and were therefore excluded from the analysis. Thus, 137 children composed the final sample. Out of the 39 children for whom we obtained mother's and teacher's assessments, 3 were excluded because of mixed childcare settings, 7 (19;4%) were taken care for exclusively by their mother, 15 (41;7%) were cared for in a small group home-based setting by a licensed childminder, and 14 (38;9%) in center-based daycare.

The recruitment of mothers and preschool teachers was made through announcements in preschools. All subjects received a letter detailing the objectives of the study and those who agreed to participate had signed an informed consent form. The participation was voluntary, anonymous and unrewarded. The participants either received paper-based questionnaires or were directed to an online version available on a web platform, both guaranteeing confidentiality and anonymity. In both cases, the mother and the teacher were then offered the possibility to give the paper version or to send the online link to the other person in relationship with the same child (mother or teacher). We were able to

put together the mother and the teacher's questionnaires based on both the date of birth and the home zip code of the recruited children.

## Measures

The *Perception of Attachment Behavior* in its both versions for *teachers* (PCA-P) and for *mothers* (PCA-M) was used in the present study. These tools are Portuguese self-reports questionnaires originally designed to assess the perception of mothers and teachers of attachment behaviors in children aged 6 to 8 years old (Dias, Soares, and Freire 2002; 2004; Dias, Soares, Freire, and Rios 2008). The construction of these tools relied on the Student-Teacher Relationship Scale (Pianta 2001) and on the Partnership Supervision Q-Sort for 6 to 12 years (Waters, Kondo-Ikemura, Posada, and Richters 1991). These tools have been used to study attachment to the mother and to the teacher in preschoolers, as well as in schoolers from different populations (Champenois and Tereno 2016; Simões, Filipe, and Farate 2014; Simões, Filipe, Soares, and Duarte 2013).

The *Perception of Attachment Behavior—Teacher's version—PCA-P* examines the teacher's perception of the attachment behaviors for a child, based on the observation of these behaviors directed to the teacher. This assessment is based on two essential dimensions of the attachment theory. The "Secure Base Behavior" (SBB) dimension reflects the child's progressive ability to move away from the attachment figure and to move from a need for adult physical presence to a need for his or her availability and accessibility. The "Emotional Self-Regulation" dimension describes the development of the emotional control and language management allowing a greater sharing of emotions and experiences, both positive and negative, with the entourage and a better appreciation of danger.

The French PCA-P is a self-report questionnaire composed of 28 items that has been adapted and validated for children aged 3 to 6 years old (Violon, Tereno, Dias, and Wendland 2017). The teacher is asked to evaluate the degree of resemblance between a behavior described and the observed behaviors of a child on a 5-point Likert scale (ranging from 1 "disagree" to 5 "totally agree"). The PCA-P items were split into two dimensions and were balanced in the questionnaire presentation: 12 focuses on the child's Emotional Self-Regulation (ESR) and 16 on the Secure Base Behavior (SBB). The scores obtained reflect the teacher's perception of the child's attachment security in the preschool context. A high score in the SBB dimension means that the child uses the teacher as a secure base during exploration and as a safe haven for

emotional comfort in case of distress. A high score in the ESR scale indicates a good ability of the child to regulate his or her own behaviors and emotions when facing a difficulty. The Total Attachment Security Scale (TASS) describes the global security of attachment of the child to the teacher. The higher the child's score for each of the dimensions and the overall scale, the more secure the attachment appears.

*The Perception of Attachment Behavior—Mother's version—PCA-M*—Similar to the teacher's version, the PCA-M is a French adaptation of the original Portuguese self-report questionnaire (PCV-M-Dias, Soares, Freire, and Rios 2008) that assesses the perception the mother has of her child's security of attachment based on her observation of the attachment behavior in daily life. This questionnaire was recently adapted and validated for the French population and targets children from 3 to 6 years old (Wendland et al., in press). It consists of 29 items that the mother is asked to answer on a 5-point Likert scale, ranging from “disagree” to “totally agree”, that assess the degree of resemblance between a behavior described and the behaviors she observed in her child. The PCA-M items can be split into three dimensions: 10 relate to “Emotional Self-Regulation Difficulties” (ESRD), 6 to “Secure Base Behavior” (SBB) and 9 to “Affect Sharing” (AS). The last 4 items assess Social Desirability (SD). A high score in the “Secure Base Behavior” dimension means that the child uses the mother as a secure base to explore the environment and as an emotional support in case of activation of the attachment system. A high score in the “Affect Sharing” dimension reflects a frequent sharing of experiences and of both positive and negative emotions with the mother. A high score in the “Emotional Self-Regulation Difficulties” dimension indicates that the child has difficulty regulating his or her own behaviors and emotions. A high score on the Total Attachment Security Scale (TASS) (with a reversal in the scoring of items on the ESRD dimension) describes the global security of attachment of the child to the mother. Finally, a high score in the “Social Desirability” scale warns against the validity and the reliability of the mother's answers to the questionnaire.

### **Sociodemographic questionnaire**

In order to assess some relevant sample characteristics, the mothers and the teachers completed a sociodemographic questionnaire which was attached to the PCA-M and PCA-P questionnaires. Mothers were asked about: the child's gender, the child's date of birth, the child's former

childcare settings, the number of children taken into home-based care by the childminder (if applicable), the child's age at the beginning of childcare, the mother's own age, education level, and work status, the zip code of residence, and the number of children in the family.

The teachers completed questions related to the child (gender and age), as well as to themselves: gender, age, years of teaching, number of working hours per week, and number of children per class.

### Data analyses

All statistical analyses were performed using SPSS (IBM, version 24). A *p* value below 5% was considered as significant. Continuous variables were expressed as mean  $\pm$  SD and categorical variables as count. Independent sample Student's *t* tests were used to compare the differences between mean values. Spearman's correlations were carried out to calculate the relationship between the attachment to the mother and the attachment to the teacher. Analyses of variance (ANOVA) were conducted to test whether children looked after by their mother exclusively, children taken into center-based daycare and children taken into home-based care differ with respect to the attachment to the mother and to the teacher.

## Results

### Preschool children's attachment to the mother and to the teacher

Table 1 presents global and dimensional scores of the child's attachment to the mother and to the teacher. Global mean scores of attachment security to the mother for the 137 children ranged from 77 to 140, with a mean score of 111.09 ( $SD=11.74$ ). As for attachment to the teacher, the global mean attachment scores were slightly higher ( $N=36$ ;  $M=118.14$ ,  $SD=11.00$ ) than those reported for the mother, ranging from 92 to 137.

### Links between children's, mothers' and teachers' sociodemographic data and child's attachment scores to the mother and to the teacher

No significant links have been found between the mothers' age and education level, the teachers' age, the number of children in the family and any of the children's attachment dimensions scores to the mother and / or to the teacher. However, girls ( $N=80$ ) were given significant higher scores than boys ( $N=57$ ) for the Affect Sharing dimension ( $M=23.70$ ,

**Table 1. Global and dimensional mean scores of preschool children's attachment to the mother (PCA-M) and to the teacher (PCA-P)**

Attachment to the Mother			Attachment to the teacher			
Scores	N=137	Min/Max	Mean (SD)	N=36	Min/Max	Mean (SD)
Total attachment security		77,00/140,00	111,0876 (11,73824)		92,00/137,00	118,1389 (11,00429)
Emotional self-regulation (difficulties- for the mothers' version)*		33,00/60,00	49,1460 (5,96132)		41,00/59,00	51,8889 (4,70731)
Secure base behavior		19,00/35,00	29,0292 (3,04848)		35,00/79,00	66,2500 (8,60025)
Affect sharing		9,00/98,00	22,5912 (7,78531)			
Social Desirability		4,00/16,00	6,6715 (2,95334)			

Note: \* Scores on the dimension Emotional Self-Regulation refers to Difficulties in Emotional Self-Regulation (DESR) for the mother's version (PCA-M), while in the teacher's version (PCA-P) scores refers to the ability of the child to regulate his/her own behaviors and emotions.

Min/max = minimum and maximum scores; SD = standard deviation.

$SD=9.41$ ;  $M=21.03$ ,  $SD=4.24$ , respectively;  $t$  test=1.99,  $p=.048$ ) and the Social Desirability dimension ( $M=7.08$ ,  $SD=3.40$ ;  $M=6.08$ ,  $SD=2.05$ , respectively;  $t$  test=1.97,  $p=0.035$ ) of the PCA-M. Similarly, girls ( $N=21$ ) also received significant higher scores than boys ( $N=15$ ) for the Secure Base Behavior dimension ( $M=69.38$ ,  $SD=5.87$ ;  $M=61.86$ ,  $SD=10.01$ , respectively;  $t$  test=2.83,  $p=.008$ ) and the Total Attachment score ( $M=122.33$ ,  $SD=8.92$ ;  $M=112.26$ ,  $SD=11.20$ , respectively;  $t$  test=2.99,  $p=.005$ ) of the PCA-P. There is no significant link between the children's age and any of the attachment dimensions scores of the PCA-P. However, a weak but significant positive correlation ( $r=0.17$ ,  $p=.04$ ) was found between the children's age and the Affect Sharing score of the PCA-M.

## The child's age at onset of childcare and the attachment to the mother

No significant linear correlation between the child's age at onset of childcare and the attachment to the mother scores was found. We decided then to compare children taken care of before the age of 9 months to those taken care of after that age, given that Bowlby (1969) described the onset of focused attachment between 7 and 9 months, that is, the emergence of a discriminated attachment figure for the infant. This allowed us to form two groups of children: 91 (66.4%) were taken into care before 9 months and 46 (33.6%) after 9 months of age. Children taken into care before the age of 9 had on average Total Attachment scores to

**Table 2. Total and dimensional scores of attachment to the mother (PCA-M) according to child's age at onset of childcare**

Attachment scores	Onset of childcare	N	Mean (SD)	Mean standard error	T Test	p
Total attachment scores	Before 9 months	91	109,4396 (11,82766)	1,23988	-2,349	<b>0,02</b>
	9 m and over	46	114,3478 (10,96706)	1,61700		
Difficulties emotional self-regulation	Before 9 months	91	48,7033 (6,21377)	0,65138	-1,225	ns
	9 m and over	46	50,0217 (5,38512)	0,79399		
Secure base behavior	Before 9 months	91	28,7582 (3,19493)	0,33492	-1,469	ns
	9 m and over	46	29,5652 (2,68868)	0,39642		
Affects sharing	Before 9 months	91	22,3846 (9,13573)	0,95768	-0,436	ns
	9 m and over	46	23,0000 (4,00000)	0,58977		
Social desirability	Before 9 months	91	6,2308 (2,60374)	0,27295	-2,504	<b>0,013</b>
	9 m and over	46	7,5435 (3,41048)	0,50285		

Note: ns=not significant.

the mother significantly lower ( $M=109.44$ ,  $SD=11.83$ ) than those of children who began daycare after 9 months ( $M=114.35$ ,  $SD=10.97$ ,  $t$  test=-2.349,  $p=.02$ ; Table 2). For the other dimensions of the PCA-M, the only significant difference observed was for the Social Desirability dimension which was higher for mothers of children taken care of after 9 months of age ( $M=7.54$ ,  $SD=3.41$ ;  $M=6.23$ ,  $SD=2.60$ , respectively;  $t$  test=-2.504,  $p=.013$ ).

### Child's age at onset of childcare and attachment to the teacher

No significant linear correlation was found between child's age at onset of childcare and attachment to the teacher. As previously performed for attachment to the mother, in order to examine the links between onset of childcare and attachment to the preschool teacher, we recoded the child's age at onset of childcare into 2 modalities: before and after 7 months. This threshold allowed us to design two comparable groups and corresponds to the beginning of the differentiation period between primary attachment and secondary attachments. Fifteen children (41.67%) were taken care of before 7 months and 21 (58.33%) were taken care of after that age. No significant difference was found in any of the PCA-P scores between the two groups of children.

## Former childcare settings and attachment to the mother

When we examined Total Attachment scores to the mother as related to former childcare settings, we found that these scores followed an increasing order, with the lowest values being those of children in center-based care ( $M=108.16$ ,  $SD=11.04$ ), followed by children in small groups home-based care by a childminder ( $M=111.80$ ,  $SD=11.9$ ), with the highest values being those of children into maternal care ( $M=115.88$ ,  $SD=11.46$ ;  $F(3, 134)=4.202$ ,  $p=.017$ ).

Similarly, scores in the Difficulties in Emotional Self-Regulation dimension also followed an increasing order going from children in maternal care ( $M=47.29$ ,  $SD=6.508$ ) to those in home-based care ( $M=50.07$ ,  $SD=5.156$ ), and then those in center-based care ( $M=51.19$ ,  $SD=5.359$ ;  $F(3, 134)=5.229$ ,  $p=.007$ ). The differences observed for the other dimensions pointed towards the same direction, but were not significant (Table 3).

**Table 3. Global and dimensional scores of attachment to the mother according to childcare settings**

Childcare Settings		Total Attachment Score	Difficulties Emotional Self-regulation	Secure Base Behavior	Affect Sharing	Social Desirability
Mother (N=26)	Mean (SD)	115,8846 (11,45540)	51,1923 (5,35925)	29,6538 (2,26172)	23,0769 (4,71528)	7,5769 (3,73281)
Small groups home-based care (N=55)	Mean (SD)	111,8000 (11,90145)	50,0727 (5,15628)	28,9455 (3,28531)	23,4182 (11,22941)	6,4000 (2,65693)
Center-based daycare (N=56)	Mean (SD)	108,1607 (11,04005)	47,2857 (6,50794)	28,8214 (3,13402)	21,5536 (3,75097)	6,5179 (2,79604)
Total (N=137)	Mean (SD)	111,0876 (11,73824)	49,1460 (5,96132)	29,0292 (3,04848)	22,5912 (7,78531)	6,6715 (2,95334)
F (p)		4,202 (p=.017)	5,229 (p=.007)	0,693 ns	0,856 ns	1,542 ns

Note: ns=not significant

## The child's former childcare settings and the attachment to the teacher

Interestingly, the Total Attachment scores to the teacher examined as a function of the child's former childcare settings showed a different pattern of that found for the attachment to the mother. Children looked after by their mother exclusively were given an intermediate score ( $M=118.14$ ,  $SD=15.36$ ), while those taken into center-based daycare obtained the highest scores ( $M=120.21$ ,  $SD=8.76$ ), and those cared for in small groups in home-based care had the lowest scores ( $M=116.2$ ;

$SD=11.05$ ;  $F(3, 33)=0.467$ , ns). This was also the case for the Secure Base Behavior dimension: children looked after by their mother exclusively obtained intermediate scores ( $M=64.57$ ,  $SD=14.55$ ), while those taken into center-based daycare obtained the highest scores ( $M=67.64$ ,  $SD=5.27$ ), and those cared for in small groups in home-based care were given the lowest scores ( $M=65.73$ ,  $SD=8.05$ ;  $F(3,33)=0.331$ , ns). However, for the Emotional Self-Regulation dimension, children looked after by their mother exclusively were given the highest scores ( $M=53.57$ ,  $SD=4.61$ ), those taken into center-based daycare obtained intermediate scores ( $M=52.57$ ,  $SD=4.67$ ), and those taken into home-based care obtained the lowest scores ( $M=50.47$ ,  $SD=4.69$ ;  $F(3,33)=1.301$ , ns).

### **Correlations between the child's attachment to the mother and to the teacher**

Total scores of attachment security to the mother and to the teacher were found to be positively and moderately correlated ( $N=36$ ;  $r=.332$ ;  $p=.048$ ). This correlation was stronger when we considered children taken into care before the age of 7 months ( $N=15$ ;  $r=.631$ ,  $p=.012$ ). The Total Attachment to the mother score was also strongly correlated with the attachment to the teacher score on the Secure Base Behavior dimension ( $r=.714$ ,  $p=.003$ ). As for children taken into care after the age of 7 months ( $N=21$ ), no significant correlation was found.

Regarding the correlations between the child's attachment to the mother and to the teacher in relation to former childcare settings, there were no significant results for the children looked after by their mother and for those who attended a center-based daycare. For the 15 children who experienced home-based care, the Total Attachment scores for the PCA-M and the PCA-P were positively correlated ( $r=.667$ ;  $p=.007$ ). The Total attachment score of the PCA-M was also strongly correlated to the Secure Base Behavior dimension of the PCA-P ( $r=.743$ ;  $p=.002$ ). However, the Social Desirability dimension of the PCA-M was positively correlated with both the Secure Base Behavior ( $r=.516$ ;  $p=.0049$ ) and the Emotional Self-Regulation dimensions ( $r=.561$ ,  $p=.030$ ) of the PCA-P.

## **Discussion**

The present study sought to explore the links between different types of childcare during infancy and toddlerhood and the child's attachment relationships to the mother and to the teacher in the preschool period.

Three different childcare settings (family care by the mother, small group home-based care by a childminder, and daycare center) as well as the child's age at the onset of childcare were considered.

The results showed that former childcare settings and the child's age at the beginning of external childcare may have a distinct impact on later attachment relationships, in particular on the child's attachment to the mother. Children taken care of exclusively by their mother during their 3 first years of life scored significantly higher on attachment security than those who attended out-of-family care. In particular, children taken into care after the age of 9 months received significantly higher attachment scores to the mother than those taken into care before 9 months. In contrast, children cared for in daycare centers received the lowest attachment scores to the mother when compared to children cared for in the other childcare settings. Besides, while global scores of the child's attachment to the mother and to the teacher were only modestly correlated, as in other studies (Zhang 2011; Howes and Hamilton 1992; Macé and Florin 2007), these scores were stronger correlated for children taken into care before the age of 7 months. This suggests that attachment models formed with the mother during infancy and toddlerhood are likely to serve as models for future attachment relationships with the teacher at preschool age (Howes 1999). The child's former daycare settings, as well as the child's age at the onset of childcare, both seem to play a role in the child's attachment relationships in the preschool period, in particular with respect to attachment security to the mother.

As expected, in our sample, children who have been cared for exclusively by their mothers until they started preschool were given the highest attachment security scores to their mother, followed by those cared for by a childminder, whereas children cared for in daycare centers were given the lowest attachment security scores. The children's Difficulty in Emotional Self-Regulation score was the highest in children cared for in childcare centers and the lowest for those in maternal care. These results are in line with the Anheret et al. (2006)'s conclusions that stated that secure attachments to care providers were more common in home-based care arrangements than in center-based settings. They also point towards an influence of previous types of childcare on attachment security that extends beyond the child's first 3 years of age and goes over the preschool period. More specifically, these results draw attention towards an impact of the caregiver/child ratio during infancy and toddlerhood, not

only on attachment security to the mother at that time, as observed in other studies (De Schipper et al 2008; Sagi et al 2002), but also later in the preschool period. However, it is important to underline that, as no attachment assessment was made prior to preschool entry, these results do not allow us to deduce children's attachment quality during infancy and toddlerhood, or to infer a continuity or discontinuity of attachment security/insecurity from toddlerhood to preschool age.

The child's former childcare settings were found to have no significant effect on the child's attachment to the teacher at preschool age. This lack of significant results may be partially explained by our limited sample size. Besides, the attachment measures initially designed to assess attachment to parents may not be well-suited to assess attachment to teachers (Sabol and Pianta 2012). Teachers may also be less skilled to detect attachment behaviors than child caregivers and mothers. While in the childcare setting the caregiver assumes a caregiving role in which he or she attempts to elicit individual children's engagement with him or her, in the preschool the teacher occupies a primarily instructional role, interacts with larger groups of children, and focuses on academic goals (Howes and Hamilton 1992). Furthermore, during the preschool years, the attachment behavior shifts from the need for continual guidance and emotional support towards instrumental support (Sroufe, Egeland, Carlson, and Collins 2005). The preschool teachers move then gradually from children's guidance and support towards stimulation and instruction, and encouragement of mastery, achievement, and social interactions between children (Beckh and Becker-Stoll 2016). Teachers are indeed trained to assess children school competences and readiness, and children behavior in the classroom in general or with peers, but not to gauge security-seeking-like behaviors directed towards them. It may be also arduous to evaluate this kind of behaviors for a specific child among 25 other students. Lastly, the child's attachment to teachers, similar to parents, may be influenced by a large array of child, teacher and context influences that are complex to measure (Ahnert, Pinquart, and Lamb 2006; Goossens and van IJzendoorn 1990).

It is noteworthy, however, that teachers' ratings of Total Security Attachment and of Secure Base Behavior scores were the highest for children who attended a childcare center prior to their preschool entry, while those looked after by their mother were given an intermediate score, and those cared for in small groups received the lowest scores. Thus, it appears that, in the teachers' view, children who attended a

childcare center prior to their preschool entry show more secure attachment behavior than those cared for in other settings. One might speculate that teachers perceive these children, coming from a collective childcare setting, as more adapted to the preschool context and showing therefore more positive social behaviors. It can be hypothesized that children cared for by their mothers or in home-based setting show more difficulty forming a secure relationship with the preschool teacher, as they did not experience such kind of relationship during the initial period of attachment formation. Howes and Hamilton (1992) found that children enrolled in childcare for a higher number of hours per week as infants were given higher teacher security scores not only as infants (12 months) but also at 4 years old. In contrast, children who entered childcare as 3-year-olds had significant lower teacher security scores when they were 4 years old than as 3-year-olds, showing thus a decrease in attachment security over time. Thompson (2005) and Zhang (2011) argued that the influence of the previous experiences was noticeable when the child entered school and then lessened as the child got older. Thus, as the children in our study were on average 55 months of age, this may contribute to explain the only moderate correlation found between mother and teacher attachment scores, as observed in previous studies (Howes and Hamilton 1992; Macé and Florin 2007). However, our cross-sectional design did not allow us to test whether the influence of former care arrangements decreases over time.

Our study lends support to the idea that the child's age at the onset of childcare may impact the child's attachment scores to the mother, but not to the teacher, at preschool age. In particular, attachment scores to the mother of children taken into care after the age of 9 months by a professional caregiver were found to be higher than those of children taken into care earlier. Bowlby (1969) described the onset of focused attachment between 7 and 9 months, that is, the emergence of a discriminated attachment figure for the infant. Richard Bowlby defended the idea that babies aged less than 9 months should not be put in childcare. We found that the correlations for the attachment to the mother and to the teacher were stronger for children taken into care before they were 7 months old than after this age, in particular for the Secure Base Behavior dimension. Others studies pointed the first year of life as a benchmark. Pierrehumbert et al. (1991) found that children taken into care before the age of one year showed less attachment behaviors towards their mother than those taken care of after one year when they

were 24 months. Thus, our results support the idea of the existence of a pivotal age around 7-9 months beyond which the time spent in maternal care might not significantly improve the quality of child attachment (as measured by a maternal self-questionnaire a few years later), but this hypothesis deserves to be further tested.

With respect to sociodemographic characteristics of mothers, teachers and children, no effect was found of the mothers' age and / or education level, the teachers' age, and / or the number of children in the family on any of the children's attachment scores to the mother and to the teacher. The NICHD study found that features of child care (the amount of, type of, number of arrangements for, the child's age at entry into, and the quality of child care experienced by children) were not associated with the child's attachment classification to the mother at 36 months as main effects, but were partially mediated by the caregivers' sensitivity (Love et al. 2003; NICHD 2001a; 2001b; Thompson 2008). They concluded that family factors exert far more influence than child-care factors on the mother-child relationship and on child social outcomes across toddlerhood and preschool periods. As we did not collect data about the past and present relational quality of childcare experienced by the children, namely the caregivers' sensitivity and responsiveness, either for external or maternal childcare, this constitutes a limitation of our study. Moreover, our results may be partially biased, as social desirability was higher for mothers of children who entered out-of-family care later (after 9 months of age). However, the childcare centers, the licensed home-based care and the preschool settings are presumed to have standardized features, as they respect the national public service norms (in terms of child-caregiver/teacher ratio, number of children per unit/class, caregivers/teachers training or education level etc.). Besides, all children spent a comparable number of hours in both the out-of-home daycare settings (35 hours per week) and in preschool, and most of them came from a rather homogenous low-risk sample (two-parent families, well-educated mothers with qualified work positions). Therefore, since only one (child gender) significant link was found between sociodemographic data and attachment scores, it seems reasonable that the differences observed reflect to some extent the effects of the child's former childcare arrangements on child attachment at preschool age.

Interestingly, one gender effect was observed: girls were given significantly higher scores than boys on the Affect Sharing dimension and on the Social Desirability dimensions of the PCA-M, as well as on the

Secure Base Behavior and the Total Attachment scores of the PCA-P. Although no direct assessment of child attachment was made, this finding corroborates the results from some previous studies that found more secure attachment in girls than in boys during the preschool period (Maia, Veríssimo, Ferreira, Silva, and Antunes 2012; Pierrehumbert et al 2009). This may reflect gender-related variations in both parenting behavior and expectations with girls and boys, in particular when dealing with emotional experiences (e.g. boys being socialized so as to control their emotions). Moreover, while the attachment literature generally considers gender as a non relevant contributor to attachment behaviors, empathy, prosocial reactions, and more broadly concern for others have been constantly found to be gender-sensitive, girls showing more concern than do boys, as early as the second year of life (Hastings, Zahn-Waxler, Robinson, Usher, and Bridges 2000). Moreover, it is noteworthy that both mothers and teachers perceived girls as having more secure attachment behaviors than boys. More systematic research is needed to better understand the ways in which gender could contribute to attachment behaviors at preschool age as perceived by parents and teachers.

This study presents several limitations that need to be considered. First of all, while a fair number of teachers agreed to participate (N=64), we were able to match the mother's and the teacher's questionnaires for only 36 children. Curiously, this limit seems to originate from difficulties or even a lack of communication between the mothers and their children's teacher. Many mothers explained that it was difficult for them to contact their child's teacher and ask him or her to complete the questionnaires. Teachers also declared having few or no contact with many mothers. This surprising finding may reflect a misunderstanding, a rivalry and a fear of the judgment of others within the mother-teacher relationship. This difficulty severely limited the number of children for whom the two versions of the PCA were completed and prevented more sophisticated analyses from being performed (e.g., considering children's gender). Secondly, as stated above, although we obtained a rather homogeneous and low-risk final sample, we gathered only few data on relevant background variables (individual and family characteristics, child-rearing environment, quality of childcare), and could not control for it in our analyses. Moreover, we used two recently validated self-administered questionnaires to assess attachment to the mother and to the teacher at preschool age. These questionnaires allow for a

**Abstract**

This study examined the links between former daycare settings and attachment bonds to the mother and to the teacher at preschool age, considering the child's age at the beginning of daycare and the type of daycare (daycare center, small groups by a childminder, or mother care). Child attachment at preschool age was assessed through mothers' and teachers' self-reports using the Perception of Attachment Behavior Questionnaire. The results showed that children who began external daycare after 9 months of age had higher scores of attachment to their mothers than those who were taken into care before that age. Children cared for by their mothers had higher attachment scores to their mothers than those looked after by a childminder in small groups, and the latter obtained higher scores than those who attended a daycare center. Children's attachment to their mothers and to their preschool teachers was positively and moderately correlated. These results extend the sparse literature relating former daycare settings and attachments at preschool age.

**Keywords**

Preschoolers

Attachment to the mother

Attachment to the teacher

Daycare

rapid, widespread, and well-accepted assessment of child attachment based on adult observation of the child in a naturalistic context, whereas laboratory and on-site observational studies can be complex to be carried out in the preschool setting. In the present study, they have the advantage of relying on same-type assessments for teachers and mothers, as both questionnaires are versions of the same assessment. However, their validity remains to be refined, in particular with respect to other assessment methods such as the Strange Situation or the Attachment Q-sort. Moreover, our results showed that assessments were subject, to some extent, to social desirability bias of respondents, which warns against the validity and reliability of the data. Although no significant link was found between mothers' background (education level, work status, family composition) and attachment scores, it is plausible that our sample of highly educated and qualified mothers has introduced some bias when they gauged the quality of the relationship they had with their children (Bornstein et al 2015; Leak and Parsons 2001). In addition, it is known that non-maternal care may have beneficial effects in disadvantaged environments, but may be less favorable to the child's emotional development when good quality care can be provided by the mother herself (Burchinal, Lee and Ramey 1989), which could be the case for some children in our low-risk sample.

Despite these limitations, this study extends the findings from previous studies on the effect of three distinct types of former childcare arrangements and of the child's age at the onset of childcare on later attachment relationships at preschool age. Since the time children spend in early childcare settings has been steadily increasing in many countries, and since a growing number of children enters out-of-home care at a very young age, there is a critical need to better understand the unique role that relationships to caregivers and teachers play in the development of young children, and how they are related to other attachment relationship experiences.

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