Contents lists available at SciVerse ScienceDirect

Early Human Development

Maternal interactive behaviour as a predictor of preschoolers' attachment representations among full term and premature samples

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ARTICLE INFO

ABSTRACT

Background: Associations between maternal sensitivity and child attachment have been established in many samples, but the strength of the association varies across populations. The sensitivity–attachment link has never been examined at the level of representations nor among premature samples.
Objective: The present study is aimed at exploring associations between maternal interactive behaviour and children's attachment representations in a population of preterm and full-term infants.
Method: Maternal interactive behaviour was assessed at 6 and 18 months (Ainsworth Sensitivity Scale & Care Index) and children's attachment representations were measured at 42 months (Attachment Story Completion Task) in a sample of preterm (N = 48) and full-term (N = 23) infants.
Results: Maternal unresponsiveness at 6 months and sensitivity at 18 months explained 54% of the variance of disorganized attachment representations in the full-term group but was not significantly related to attachment patterns in the preterm group.
Conclusion: These results corroborate previous work on the causes of disorganized attachment and also point to the need to consider the development of attachment differently for children evolving in specific developmental contexts. They especially stress the importance of distinguishing between risk factors associated with the mother as opposed to the child.

1. Introduction

In the first years of life, children form attachment relationships and associated representations of the responsiveness and accessibility of their primary caregivers based on their early care experiences [1]. Bowlby [2] referred to these representations as internal working models (IWM) that provide the initial templates for future close relationships.

Associations between maternal sensitivity and child attachment have been established in many samples, but the strength of the association varies across populations and is weaker in lower class or clinical samples [3]. Although several authors have investigated the impact of premature birth on maternal behaviour [4] and on subsequent attachment [5], we have very limited understanding of the link between sensitivity and the quality of the attachment relationship in the context of premature birth.

Pioneering work suggests that the relation between mother–infant interaction and later attachment quality of preterm differs from that observed in full-term infants [6]. Goldberg et al. [6] found expected associations between maternal sensitivity and child attachment in the preterm sample at 6 weeks but, contrary to predictions, at 3, 6, and 9 months, mothers in secure (B1 and B4) dyads were judged less sensitive than those in non-secure relationships. The study predated the identification of disorganized attachment, perhaps contributing to the unanticipated findings, and warrants replication. In a more recent study, Pederson and Moran [7] found, as theoretically anticipated, that higher levels of maternal sensitivity at 8 and 12 months of age were associated with secure attachment at 18 months in both full term and preterm samples. This latter study, too, did not utilize the disorganized classification. Given De Wolff and van IJzendoorn's meta-analytic data [3] suggesting that the impact of maternal sensitivity may be overriden by stresses present in high-risk samples, the influence of maternal behaviour might be expected to be weaker within preterm than in full-term samples. The observation that prematurity is more common in lower SES samples renders this prediction all the more credible.

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To our knowledge, no research has been conducted on the impact of mother–child interactions on preterm children's attachment representations; in fact, the links between these two variables have rarely been investigated even in low-risk samples. Despite many studies showing associations between maternal sensitivity and child attachment [3] and, in turn, between attachment and subsequent or concurrent representations [9,10], only a few studies have documented the link between quality of mother–child interactions and children's attachment representations [11–13]. Overall, these findings are consistent with the claim that preschoolers internalize their caregiving relationships and that these representations are reflected by the content of their narratives. Yet none of these studies involve preterm infants.

Not surprisingly, then, no longitudinal studies of the mechanisms underlying the development of preterm children's attachment representations are currently available. Moreover, because the majority of studies on the sensitivity–attachment representation link have been conducted on high-risk [11,13] or clinical samples [12], generalization to low-risk dyads is also problematic. The present study is aimed at exploring associations between maternal interactive behaviour and children's attachment representations as assessed via a story stem procedure in a population including both preterm and full-term infants. Weaker associations between maternal interactive behaviour and child attachment representations are expected in the preterm group.

Because the association between maternal interactive behaviour and attachment has been shown to vary as a function of the measures of sensitivity [3], some researchers have suggested that assessing maternal sensitivity as a single global dimension may fail to capture important variation in the quality of interactions that influence attachment [14]. In this study, therefore, more detailed descriptions of maternal interactions (i.e. Care Index) were employed to complement a measure of overall sensitivity (Ainsworth Maternal Sensitivity Scales).

2. Method

2.1. Participants

During a 12-month period, all preterm infants (<33 gestation weeks) admitted to the neonatal intensive care unit were considered for inclusion in this longitudinal, prospective study. Written informed consent was obtained from one of the parents. The study has been approved by the Swiss ethical committee. There were 113 surviving preterm infants (survival rate 91%). Exclusion criteria were: infant malformation, chromosome abnormality, fetopathy, parental psychiatric illness and/or drug abuse, and language barriers. Of the remaining 93 eligible infants, 73 families (78%) agreed to participate. Three infants were later excluded because they developed neurodevelopmental complications (cerebral palsy, deafness, serious visual impairment); 4 dyads (6%) dropped out between 0 and 18 months. Dropouts and infants whose parents refused to participate did not differ from participants on perinatal risk inventory scores (t(103) = 0.52, ns). Seven children from multiple births were also excluded and data was missing for 11 families because of technical problems. The remaining preterm group was composed of 48 infants (24 girls) and their mothers.

Control healthy full-term infants (gestational age > 37 weeks) were recruited from the maternity ward of the same hospital during the three to four day hospital stay following birth. Exclusion criteria were: problems during pregnancy or delivery, somatic abnormalities, parental psychiatric problems, language barriers. Sixty-eight families were contacted. The acceptance rate was 38% (N = 26); the dropout rate between 0 and 42 months was 11%; leaving 23 dyads (13 girls).

Socioeconomic status (SES) as well as parents' age for each group is presented in Table 1. SES was coded using a score, which was derived from the Hollingshead Index, combining education and work position for both parents.

Table 1
Socio-demographic characteristics, maternal interactional behaviour, and children's attachment scores among full-term and premature samples.

	Full-term (n = 23)	Premature (n = 48)	t (df)
SES	2.91 (.61)	2.36 (.59)	3.65 (69)[a]
Maternal age	31.78 (4.61)	31.85 (4.45)	−.06 (69)
Paternal age	35.50 (6.10)	33.31 (5.62)	1.49 (69)
Maternal interactive behaviour (6 months)			
Overall sensitivity	5.61 (1.75)	4.61 (1.91)	2.10 (69)[b]
Control	1.57 (1.31)	2.41 (1.86)	−2.19 (59.25)[b]
Unresponsiveness	2.13 (1.77)	1.91 (1.63)	.51 (69)
Maternal interactive behaviour (18 months)			
Overall sensitivity	6.13 (1.69)	5.81 (1.70)	.75 (69)
Control	1.43 (1.38)	1.85 (1.81)	−1.07 (55.76)
Unresponsiveness	1.83 (1.85)	1.96 (1.89)	−.28 (69)
Child attachment representations			
Security	.21 (.28)	.10 (.23)	1.66 (69)
Deactivation	−.15 (.30)	−.03 (.25)	−1.70 (69)[c]
Hyperactivation	−.05 (.15)	.02 (.16)	−1.69 (69)[c]
Disorganization	−.23 (.36)	−.17 (.32)	−.71 (69)

Values represent means, with standard errors in parentheses.
[a] p<.001.
[b] p<.05.
[c] p<.10.

2.2. Procedure and instruments

The *Perinatal Risk Inventory* [15] was administered at the end of the hospital stay. At both 6 and 18 months (corrected age for the preterm infants), maternal interactions with their infants were assessed in our laboratory during a free play session using the *Ainsworth Maternal Sensitivity Scale* [16] (global measure of maternal sensitivity) and the *Care index* [17] (specific aspects of maternal behaviour). Attachment representations were measured at 42 months with the *Attachment Story Completion Task* [9] (coded according to the *ASCT Q-sort* [18]). Interactions and child narratives (ASCT) were video-recorded and later coded by two postgraduate students blind to other research data, one of whom was a certified coder trained by Crittenden. The interaction of 64 dyads was double-coded (both AMSS and Care index), as were 62 child narratives. In the case of a disagreement, they reviewed the tape until agreement was reached. Single codings were used for statistical analyses in all other cases.

2.2.1. The Perinatal Risk Inventory [15]

The PERI is an 18-item inventory used to describe the severity of perinatal problems on the basis of factors such as the APGAR index, gestational age, weight, head growth, EEG, ultrasonograph, and ventilation. This index can also be computed for full-term infants. A clinical cutpoint (5 points or more) is used to classify the infants as high or low-risk.

2.2.2. Ainsworth Maternal Sensitivity Scale

The AMSS was used as a global measure of maternal sensitivity. Mothers were asked to play freely with their child for 3 to 5 min using their choice from a set of toys. Ratings of maternal sensitivity were performed using Ainsworth et al.'s coding system [16] for videotaped observations of play interactions. Four aspects of maternal behaviour are evaluated as a reflection of overall maternal sensitivity: (a) mother's awareness of her baby's signals, (b) accurate interpretation of them, (c) appropriate response, and (d) prompt response. A final score (1–9) represents the degree to which all four of these components are observed during the interaction. The intraclass coefficient (model α) for the AMSS before consensus coding was .91.

2.2.3. The Care-Index

In order to assess more specific aspects of maternal behaviour, the same play episodes were also coded using the Care-Index [17], a coding system specifically designed for infants under 24 months of age. This