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Both Maternal Sensitivity and Atypical Maternal Behaviour Independently Predict Attachment Security and Disorganization in Adolescent Mother-Infant Dyads

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INTRODUCTION

➢ During the first year of life most infants acquire organized strategies to manage stressful circumstances reflected in secure, avoidant and ambivalent attachment relationships (Ainsworth et al., 1978).

➢ In contrast, 15-25% of low-risk and as many as 80% of high-risk populations display a disorganized pattern, thought to reflect the breakdown or absence of an organized attachment strategy (Main & Solomon, 1986).

- o Disorganized attachment is a major risk factor in the development of psychopathology and later coping difficulties (Carlson, 1998).

➢ Empirical evidence (Ainsworth et al., 1978: Pederson & Moran, 1996) supports the claim that secure attachment is a product of the mother's sensitive responding to her infant's distress and needs (Ainsworth, et al., 1978).

➢ Main and Hesse (1990) hypothesize that Disorganized attachment develops in relationships where a caregiver frightens the infant, either through frank abuse or frightened, fearful or disoriented behaviour.

- o The mother becomes both the cause of the child's fear and the sole source of comfort and reassurance - thus posing "threat without solution."
- o This leads to a collapse of behavioural strategies reflected in displays of anomalous behaviour by the child in the strange situation.
- o A recent meta-analysis (Madigan et al., 2006a) reinforced the claim that such anomalous caregiver behaviour is implicated in the development of Disorganized attachment relationships.

➢ Current theory and some research, therefore, suggests that disorganization has qualitatively distinct experiential roots that are orthogonal to the sensitivity continuum that is linked to secure attachment.

➢ There is some evidence, however, that maternal insensitivity may be associated with disorganized attachment, especially in some high-risk populations.

- o The association between maternal sensitivity and disorganization in higher-risk samples (r = .28; Bailey, Moran & Pederson, 2007) is comparable to that found between sensitivity and security across samples (r = .24; De Wolff & van IJzendoorn, 1997).
- o Carlson (1998) reported a correlation of r = .28 between sensitivity and disorganization in a poverty sample - an effect size similar to those found between atypical maternal behaviour and disorganization (r = .29; Madigan et al., 2006).
- o A recent study of adolescent mothers and infants (Bailey et al., 2007) found that maternal insensitivity not only was associated with disorganization but also mediated the association between unresolved/disoriented maternal state of mind and disorganization.

➢ There are parallel suggestions that, also contrary to extant theory, atypical maternal behaviour is associated with attachment security.

- In a study of a low-risk sample, Grienenburger et al., (2005) found that mothers who displayed low levels of atypical behaviour were more likely to be in secure relationships with their infants.
- True et al. (2001) in a study of the Dogon of Mali found that maternal sensitivity was a poor predictor of infant security but that adding atypical maternal behavior to the regression equation tripled the explained variance.

PRESENT STUDY

➢ On the basis of these findings, at odds with current models of the origins of secure vs disorganized attachment, the current study examined the association between distinct qualities of maternal interaction and attachment in a single study.

➢ The participants in the current study were adolescent mothers and their infants, a population that has been shown to be at substantial developmental risk and to exhibit a range of markedly atypical interactions with their infants (Jaffee, Caspi, Moffitt, Belsky, and Silva, 2001).

METHOD

PARTICIPANTS

➢ 82 mother-infant dyads (45 girls, 37 boys). Mothers had a mean age of 18.4 years, 11.0 years of education and a mean household income between $10,000 and $19,999 (range: LT $5,000 to $29,999).

➢ Fifty-seven percent of mothers were single, 28% were living in common-law relationships, and 15% were married. Eighty-one percent of mothers were Caucasian.

➢ The study also involved an intervention aimed at increasing sensitivity and attachment security (Moran et al., 2006)

MEASURES

➢ *Strange Situation Procedure (SSP; Ainsworth et al., 1978; Main & Solomon, 1990)*

- o Mother-infant attachment relationships were assessed at 12 months using the Strange Situation procedure and were classified as either Organized (Secure, Avoidant, Ambivalent) or Disorganized.

➢ *Maternal Behaviour Q-sort (MBQS; (Pederson & Moran, 1996)*

- o The MBQS consists of 90 items that describe maternal behaviour in the home and are sorted into piles ranging from 1-least like this mother, to 9-most like this mother. A continuous score for maternal sensitivity was calculated for each mother. The MBQS was completed after a 2-hour home visit at 12 months.

➢ *Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Lyons-Ruth et al, 1999)*

- The AMBIANCE was used to assess the level of maternal atypical interaction on on a 7-point scale of disrupted communication during a 3 minute play session without toys at 12 months.

RESULTS

DESCRIPTIVE STATISTICS

➢ Nine percent of infants were classified as avoidant, 33% as secure, and 59% as disorganized. Of the dyads classified as disorganized, 44% were disorganized/avoidant, 25% were disorganized/secure, and 31% were disorganized/resistant. For all analyses reported here, classifications were reduced to Organized/Disorganized or Secure/non-Secure.

➢ Mean sensitivity in a sample of N = 99 was .14 (SD = .62).

➢ Fifty-eight per cent of mothers were classified as being disrupted and 42% were classified as non-disrupted in their interactive behaviour with their infants.

MATERNAL BEHAVIOUR AND ATTACHMENT

A. Correlations

➢ As can be seen in Table 1, both maternal sensitivity and disrupted maternal behaviour were significantly correlated with both security and disorganization

Table 1
Bivariate correlations between maternal behaviour and attachment variables

Variable	4.	3.	2.
1. Attachment security (0/1)	-.37[b]	.28[a]	-.58[b]
2. Disorganization (0/1)		.51[b]	-.44[b]
3. Maternal sensitivity			-.49[b]
4. Disrupted maternal behaviour			

a: p < .01; b: p < .001

B. Regression Analyses

➢ A hierarchical regression analysis (Table 2a) found that a) maternal sensitivity is a significant predictor of attachment security variance beyond that explained by the intervention; and b) that disrupted maternal behaviour adds significantly to the variance accounted for by the overall model.

➢ A similar hierarchical regression was conducted with disorganization as the dichotomous dependent variable (Table 2b): disrupted maternal behaviour was entered first, accounting for a significant proportion of disorganization variance; the second step revealed that maternal sensitivity added significantly to the model for disorganization.

Table 2
Summary of regressions predicting attachment security and disorganization

a. Dependent Variable: Attachment Security

Variable	ΔR^2	beta	p
Step 1. Intervention	5.9	-.21	.50
Step 2. Maternal Sensitivity	4.8	.21	.01
Step 3. Disrupt Matern Beh	8.2	-.09	.01

($F(3, 81) = 6.06$, $p<.01$) Model R^2 = 18.90%

b. Dependent variable: Attachment Disorganization

Variable	ΔR^2	beta	p
Step 1. Disrupt Matern Beh	26.3	.51	.0001
Step 3. Maternal Sensitivity	4.2	-.23	.05

($F(2,81)$ =17.27, p < .0001) Model R^2 =30.42%

CONCLUSIONS

➢ This study is the first to explore, in a single sample, two distinct theoretical models of the development of attachment: sensitivity leads to secure attachment and frankly atypical interaction promotes disorganization.

➢ Consistent with theory and previous research, we found associations between 1) maternal sensitivity and attachment security and 2) atypical maternal behaviour and attachment disorganization.

➢ Contrary to current theoretical models, we also found that: 1) atypical maternal behaviour added to maternal sensitivity's prediction of attachment security and, 2) that consideration of maternal sensitivity enhanced the prediction of disorganization by atypical maternal behaviour.

➢ These parallel findings raise a number of theoretical and methodological issues:

- o The association of sensitivity assessed in the home with disorganization, supports Lyons-Ruth, Bronfman & Parson's (1999) suggestion that frank inadequacy and anomalies in maternal interaction, in addition to frightening behaviour, may contribute to the development of disorganization.
- o The results of this study also support a broader alternative interpretation: the two descriptive systems - the MBQS and AMBIANCE - and two observational contexts - the home and a relatively demanding play situation - simply provide complementary perspectives on variation in the quality of maternal interaction with her infant.
- o Sensitivity and atypical maternal behaviour may not be orthogonal but rather reflect a single developmental factor - the quality of maternal interaction - with atypical maternal behaviour being the negative extreme of a sensitivity-insensitivity continuum – at least in higher risk populations.

Study in press in *Infant Behaviour and Development* and available at http://psychology.uwo.ca/faculty/pedmor_bio.htm