Maternal Depression and Dyadic Interaction: The role of Maternal Attachment Style

Marjo Flykt*a,*, Katri Kanninenb, Jari Sinkkonenc and Raija-Leena Punamäkid

*aDepartment of Psychology, University of Tampere, Tampere, Finland
bCity of Kirkkonummi, Finland
cSave the Children, Finland
dCollegium of Advanced Studies, University of Helsinki, Helsinki, Finland

Maternal mental health and the contents of her representational world are important determinants of early parent–child relationship. We examined, first, the role of prenatal and postnatal depressive symptoms and maternal attachment style in predicting the quality of mother–child interaction. Second, we analysed whether the secure-autonomous attachment style can protect the dyadic interaction from the negative effects of maternal depression. The participants were 59 mother–infant pairs examined during pregnancy (T1), 4–5 months postpartum (T2) and when the children were approximately 14 months old (T3). Maternal attachment style was assessed with a modified Adult Attachment Interview -procedure, depressive symptoms with Edinburgh Postnatal Depression Scale, and observed mother–child interaction with Care Index. The results show that autonomous mothers were more sensitive and responsive and their children more cooperative than dyads with dismissing maternal attachment style. As hypothesized, mothers with the combination of both prenatal and postpartum depressive symptoms were highly unresponsive in their dyadic interaction. Further, prenatal depressive symptoms had a stronger impact on maternal unresponsiveness than postnatal symptoms. As hypothesized, mother’s autonomous attachment style protected the mother–child interaction from the negative impact of maternal postnatal depressive symptoms, whereas dyads with preoccupied mothers were especially at risk for interaction problems when mothers had postpartum depressive symptoms. Copyright © 2010 John Wiley & Sons, Ltd.

*Correspondence to: Marjo Flykt, Department of Psychology, 33014 University of Tampere, Tampere, Finland. E-mail: Marjo.Flykt@uta.fi

Copyright © 2010 John Wiley & Sons, Ltd.
Attachment behavior may be largely dormant in adulthood, but becomes activated by stress and significant life events (Bowlby, 1980; Crittenden, 1997) such as transition to parenthood (Van IJzendoorn & Bakermans-Kranenburg, 1997). Mother’s attachment-related working models are crucial for the early dyadic relationship, as they underlie her perceptions and interpretations of the infant’s interactive signals (Fonagy, Gergely, Jurist, & Target, 2002; Stern, 1995). Maternal depression constitutes a risk for healthy child development (Beck, 1998, 2006) and its harmful effects are often mediated by problems in mother–infant interaction. It is possible that maternal autonomous attachment style could protect the early interactive relationship from the negative impact of maternal depression, although research evidence is still scarce and inconclusive. In our study we examine the role of maternal attachment style as a moderator between maternal prenatal and postnatal depressive symptoms and mother–child interactive relationship.

Maternal Depression and Early Interaction

Transition to motherhood involves profound changes in life style and adaptation to new responsibilities, which can evoke mental health problems (Campbell, Cohn, & Meyers, 1995; Stern, 1995). About 8–14% of new mothers experience serious depressive symptoms (Evans, Heron, Francomb, Oke, & Golding, 2001; Matthey, Barnett, Ungerer, & Waters, 2000). Prenatal depression may be at least as common, and has been estimated to affect 10–25% of mothers (Bennett, Einarson, Taddio, Koren, & Einarson, 2004; Evans et al., 2001; Field, Diego, & Hernandez-Reif, 2006). Mild depression or distress is even more common.

Researchers no longer ask whether prenatal and postnatal maternal depression exert a risk upon child development, but rather through which pathways they affect it. Three main routes have been described. First, children of depressed parents may be genetically predisposed to stronger physiological stress responses (Field et al., 2006; Goodman & Gotlib, 1999), and are thus more vulnerable to the environmental adversities often associated with parental depression. Second, maternal prenatal depression is associated with harmful physiological effects on the foetus: elevated heart rate, increased physiological reactivity, delayed growth, prematurity and low birth weight have been reported (Diego et al., 2009; Field et al., 2004, 2006). Newborns of depressed mothers show biochemical and physiological profiles that parallel those of their depressed mothers, including higher cortisol levels and lower dopamine and serotonin levels (Field et al., 2004). Compared with newborns of non-depressed mothers, they also perform less optimally on several Brazelton scales, e.g. habituation, orientation, motor and autonomic stability (Field et al., 2004), and are less responsive to human faces and voices and physical pain (Field, Diego, & Hernandez-Reif, 2009; Warnock, Bakeman, Shearer, Misri, & Oberlander, 2009).

The third, and the most widely studied, is the negative interactional pathway associated with maternal postnatal depression (meta-analysis: Beck, 1995; Edhborg, Lundh, Seimyr, & Widström, 2001). Depressed mothers face difficulties in understanding and responding to their children’s needs (Bettes, 1988; Donovan, Leavitt, & Walsh, 1998) and in timing their responses adequately (Hoffman & Drotar, 1991; Leadbeater, Bishop, & Raver, 1996). They have been described to
express more negative feelings and intrusiveness on the one hand (Campbell et al., 1995; Herrera, Reissland, & Shepherd, 2004; Hoffman & Drotar, 1991), and more flat affect and withdrawal on the other (Field, 1984; Herrera et al., 2004; Martinez et al., 1996). Negative influences have been reported even with mild depression (Herrera et al., 2004; Hoffman & Drotar, 1991).

The children of depressed mothers mimic their mother’s interactive behaviour: they tend to show lower responsiveness (Field et al., 1985; Hoffman & Drotar, 1991) and less positive and more negative emotions than other children (Campbell et al., 1995; Cohn, Campbell, Matias, & Hopkins, 1990; Field et al., 1985). Their behavioural signals are also more difficult to interpret (Hoffman & Drotar, 1991), which may, together with their more negative interaction style, form a vicious circle of mutual rejection that further increases maternal interaction problems and depression (Hammen, Burge, & Stansbury, 1990; Murray, Stanley, Hooper, King, & Fiori-Cowley, 1996).

To our knowledge, there are no published studies differentiating the effects of maternal prenatal and postnatal depression on the dyadic interactive relationship, but Chazan (1998) found in her unpublished dissertation that it was prenatal rather than postnatal depression that explained dyadic interaction problems. This is also supported by the findings that maternal prenatal depression has a more profound impact on infant’s fussiness and stress behaviour (Diego, Field, & Hernandez-Reif, 2005) and later childhood psychopathology than postnatal depression (Luoma et al., 2001). It is possible that maternal depressive symptoms in pregnancy could exert a dual risk on the dyadic relationship: first, by affecting the infant’s self-regulatory capacity via the adverse foetal physiological effects, and second, by interfering with maternal psychological preparation to motherhood. We may thus hypothesize that even though both timings of depressive symptoms are detrimental to the interaction quality, prenatal symptoms may have a more severe impact.

Postpartum depressive symptoms could, however, be directly associated with the infant’s sense of security. Along these lines, previous research has shown that infants who have experienced the combination of prenatal and postnatal maternal depression exhibit the most pronounced developmental problems (Diego et al., 2005). Thus, not the timing, but the chronicity of maternal depression would be the most crucial for the quality of dyadic interaction. Subsequently, we test the hypothesis that the combination of prenatal and postnatal depressive symptoms is the most harmful for the mother–child interaction.

**Maternal Attachment Style and Early Interaction**

Maternal attachment style—internal representations of self and significant others in close relationships—guides mother’s perceptions, interpretations, emotions and behaviour with her infant (Main, Kaplan, & Cassidy, 1985; Van IJzendoorn & Bakermans-Kranenburg, 1997). Dyads with secure-autonomous mothers tend to show a higher quality of interaction, including higher sensitivity, affectivity, structure, synchrony and child responsiveness (Biringen et al., 2000; Cohn, Cowan, Cowan, & Pearson, 1992; Crandell, Fitzgerald, & Whipple, 1997; Das Eiden, Teti, & Corns, 1995; Pederson, Gleason, Moran, & Bento, 1998). The two insecure attachment styles are known to communicate highly different relational preferences and emotional responses (Main et al., 1985; Bretherton, 1996; Gerhardt, 2005), but the results of their specific impact on early mother–infant interaction are somewhat contradictory. Some studies report the most
pronounced interaction problems among dyads with insecure-preoccupied mothers (Adam, Gunnar, & Tanaka, 2004; Bosquet & Egeland, 2001; Crowell & Feldman, 1988; Das Eiden et al., 1995), and others among dyads with insecure-dismissing mothers (Crowell, O’Connor, Wollmers, Sprafkin, & Rao, 1992; Pederson et al., 1998).

The discrepant findings may be explained by the qualitative difference in the underlying problems among the two insecure groups: Dyads with insecure-dismissing mothers typically show more withdrawal and passivity (Crowell & Feldman, 1988), and their interaction problems may thus concentrate more around the lack of positive affection and over-regulation of emotions. Dyads with insecure-preoccupied mothers, for their part, tend to show intrusiveness and under-regulated, unpredictable emotional responses that oscillate between negative and positive affect (Adam et al., 2004; Cohn et al., 1992; Crowell & Feldman, 1988). Owing to these differences, it is probable that distinct moderating factors affect the dyadic interactions of mothers with these two insecure attachment styles differently (Crittenden, 1997).

Depression, Maternal Attachment Style and Mother–Infant Interaction

Quite puzzlingly, depressed mothers tend to show highly heterogeneous interaction patterns with their children (Field, Healy, Goldstein, & Guthertz, 1990; Hoffman & Drotar, 1991; Rosenblum, Mazet, & Bénovy, 1997), ranging from optimally sensitive to either intrusive or withdrawing. Maternal attachment style may be an important factor explaining these differences, as maternal autonomous attachment style may have a buffering effect on the quality of the dyadic relationship when the mother suffers of depression. McMahon, Barnett, Kowalenko, & Tennant (2006) found this buffering effect in their study: 60% of children of autonomously attached, chronically depressed mothers (postnatal depression lasting over 12 months) were securely attached, compared with only 24% of the children of the chronically depressed and insecurely attached mothers. Moreover, Adam et al. (2004) found a specific vulnerability effect: Maternal depression was associated with low warmth in parent–child relationship only among mothers with insecure-dismissing attachment style. On the contrary, Bosquet and Egeland (2001) found neither a buffering nor a vulnerability effect of maternal attachment style on the dyadic interaction between depressed mothers and their children. However, previous studies have not considered the role of prenatal depression. We thus do not know if the moderating effect of maternal attachment style on the dyadic interaction is different when maternal depression has its onset already at pregnancy or occurs only during pregnancy.

In this study we examine, first, whether maternal prepartum and postpartum depressive symptoms are differently associated with the quality of the early mother–child interaction, indicated by maternal sensitivity, control (overstructuring or intrusiveness) and unresponsiveness, and child’s co-operative, difficult, compulsive and passive behaviour. We hypothesize that both maternal prenatal and postnatal depressive symptoms are predictive of dyadic interactive problems, but prenatal symptoms are even more influential than postnatal symptoms, and the combination of depressive symptoms at both times has the most harmful impact. Second, we hypothesize that maternal secure-autonomous attachment style protects the early dyadic interaction from the negative effects of maternal prenatal and postnatal depressive symptoms, i.e. depressive symptoms are not associated with negative interaction characteristics among autonomously
attached mothers and their children, but only among dyads with insecurely attached mothers.

METHODS

Participants and Procedure

The participants were 59 mothers (age = 29 ± 5 years) and their children (48% girls and 52% boys, child age at the final phase of the study = 14 ± 7.76 months). Of the mothers, 64.4% were primiparous, and 35.6% had 1–3 older children. More than half (52.5%) of the mothers were married, about a third (35.6%) cohabiting and 11.9% single. A third (34.7%) had a university degree, half (46.9%) had polytechnic school education, and about a fifth (18.4%) had vocational schooling or high school. The sample clearly belonged to the Finnish middle class, indicated by relatively high education and monthly income.

The basic sample consisted of 150 women in their third trimester of pregnancy, visiting maternity health-care centres in southern Finland. The data collection proceeded in three stages: The public health nurses presented their clients the purpose of the study (the well-being and experiences of mothers-to-be), and asked for voluntary participation. If they agreed, the women provided written informed consent and received a questionnaire to be completed at home. 61% (n = 91) returned the questionnaire to the nurse in a closed envelope (T1), and 64 expressed willingness to continue in the later phases of the study. These mothers received the second questionnaire by mail, when the child was 4–5 months old, and 53 women returned it (T2). All the mothers who had expressed their willingness to continue in the study at postpartum (n = 64), were contacted by telephone and asked whether they would like to participate in the third phase, which involved a home visit and videotaping of a dyadic free play situation when the child was in average 14 months old (T3). Forty-nine women agreed, which is 53.3% of the sample at T1.

The mothers who had participated at baseline and in at least one later phase of the study (n = 59) were included in the analyses and the missing data were replaced. The decision regarding replacement of missing data is consistent with previous studies with multiple assessment points (e.g. Conners, Grant, Crone, & Whiteside-Mansell, 2006). Ten mothers had participated only at T1 and T2, and six mothers only at T1 and T3, so the missing data were replaced with EM for 16 mothers. The decision to use EM was based on Little’s MCAR-test that showed the data were not missing completely at random, χ² = 45.33, p < 0.05. If the data are not MCAR, listwise deletion may result in biased estimates and is not recommended (Schafer & Graham, 2002; StatNotes: Topics in Multivariate Analysis, North Carolina State University, Public Administration Program 2010). Because repeated measurements on an individual tend to be correlated, Schafer & Graham (2002) recommend procedures that use all available data for each participant such as EM, because missing information can then be partially recovered from earlier or later waves of the longitudinal study. A number of authors have recently argued that missing data on dependent variables should also be replaced (Enders, 2008; Little, Card, Preacher, & McConnell, 2009; Schafer & Graham, 2002). To follow their line, the missing data were replaced with EM on dependent variables for 10 cases. This was also justified because we detected a systematic pattern of missingness: When the mothers with complete and non-complete data in the original sample (n = 91) were compared, there was marginally more attrition among mothers with lower education, χ²(2) = 5.10,
There was also a similar pattern, when the mothers who had and had not participated at T3 were compared, $\chi^2(2) = 4.68, p < 0.10$, but not when the mothers who had and had not participated at T2 were compared, $\chi^2(2) = 2.41, p = ns$, suggesting that the educational level did not yet differ from the original sample at T2, but did so at T3. After the EM, there were no longer differences in the educational level. Maternal attachment style, prenatal depression, age, number of children, marital status or monthly income did not differ between mothers with complete and non-complete data. Nor was participation at T3 dependent on the level of postpartum depression at T2.

**Measures**

Mother–child interaction quality was assessed with a free mother–child play interaction, lasting 5–10 min, that was videotaped and coded according to Care Index (Crittenden 1988, 2003). This is an assessment of playful adult–child interaction under non-stressful conditions. It is specifically designed for infants up to 24 months of age and is commonly used in Finnish clinical settings. The age and developmental level of the child are inherently taken into account in scoring, so the method can be used to compare children of varying ages. The scale has been found to differentiate risk group mothers and their children (e.g. abused or neglected) from normative dyads (Crittenden, 1981; Crittenden & Bonvillian, 1984) and preterm infant–mothers dyads from their full-term controls (Muller-Nix et al., 2004).

The videotaping took place at home to make the interactions as natural as possible. The mother was instructed to play or interact with her child as they normally would. The scale assesses maternal interactive behaviour in seven aspects (facial expressions, voice, position/body contact, affection, turn-taking contingencies within an activity, control between activities and the appropriate choice of activity) according to three qualifications (sensitive, controlling and unresponsive). The child’s interactive behaviour is coded in the same aspects according to four qualifications (co-operative, compulsive, difficult and passive). Although maternal and child behaviour are coded separately, the interaction is assessed dyadically, for instance maternal interactive quality is based on its concordance with child’s temperament, developmental level and expressed satisfaction. Separate summary scales ranging from 0 to 14 were formed for all the dimensions. Based on Crittenden (2003), mothers were classified into highly sensitive (scores 11–14), adequately sensitive (scores 7–10), ineptly sensitive (scores 5–6) and high-risk group (scores 0–4). Scores under 7 indicate intervention range. The videos were scored by the second author (K. K.), and 18% ($n = 9$) were also analysed by the third author (J. S.), who both are reliable coders trained by Patricia Crittenden. The inter-rater reliabilities indicated by Pearson’s correlation coefficients were satisfactory: 0.85 for maternal sensitivity, 0.87 for maternal control, 0.65 for maternal unresponsiveness, 0.79 for child co-operation, 0.98 for child compulsiveness, 0.69 for child difficulty and 0.97 for child passivity. Differences were negotiated. The coders were blind to maternal background data.

Adult attachment style was measured during pregnancy with a paper-and-pencil questionnaire (see for details: Kanninen, Salo, & Punamäki, 2000), derived from Adult Attachment Interview (George, Kaplan, & Main, 1985). The participants were given a five-page booklet with instructions: first, to describe their childhood relationship separately with their mother and father, by giving five adjectives and five illustrative examples for each adjective. Second, they were
asked to describe what had happened when they were upset, ill, felt rejected or had experienced loss as children and what they did when they experienced distress in both childhood and adulthood. Finally, they were inquired how they thought their upbringing had affected their adult personality and why they thought their parents had behaved as they had.

The Main and Goldwyn (1991) scoring system was applied to code and quantify the written reports. It provides continuous estimates of the main domains of adult information processing of attachment experiences, i.e. what the subjects remember (Childhood memories and Dealing with Stress) and how they process their memories (Coherence of Answers and Memory Modalities). The scoring system results in 30 continuous variables with the following contents: (1) Childhood memories, (2) Dealing with Distress in Childhood, (3) Coherence of the Answers involving (a) An overall incoherence score (b) Current anger (c) Idealization and (d) Derogation and (4) Memory modalities.

The inter-rater reliability of the attachment variables is based on a sample of 30 reports using Kappa and Pearson’s correlation statistics. The second author K. K. and a clinical expert scorer were reliable coders of the Main and Goldwyn (1991) system. The results show that coefficients were acceptable (0.70–1.00) for the variables of Childhood Memories, Dealing with Distress and Memory Modalities, whereas coherence variables were less reliable in the preliminary scoring. In case of discrepancies between the two coders, a third trained coder in AAI was consulted in order to resolve the differences and establish practical scoring criteria.

The classification of attachment styles was based on cluster analysis (Ward’s method and Euclidian distance; for details, see Kanninen et al., 2000). The final clustering solution is based on 27 standardized sum scores of these attachment variables, which adequately discriminated the styles. The three clusters of secure-autonomous, insecure-dismissing and insecure-preoccupied attachment styles differed from each other in accordance with the theoretical characteristics (e.g. quality of childhood relationships, balance versus imbalance between semantic and episodic memories, current anger, derogation, withdrawal and integrative capacity). (Crittenden, Claussen, & Partridge, 2000; Main & Hesse, 1990).

Prenatal and postnatal depressive symptoms were measured in pregnancy and at 4–5 months postpartum by Edinburgh Postnatal Depression Scale (Cox, Holden, & Sagovsky, 1987), which involves descriptions of depression-related feelings, thoughts and behaviours, and respondents answer on a 4-point scale (0–3) how well the description matches the severity and persistency of their symptoms. The time reference is the previous week. We used the depressive symptoms measure as a continuous variable in our analyses, because the number of diagnosed postpartum depressions is small in a normative sample like ours. Separate summary variables were constructed for prepartum and postpartum depressive symptoms. Their reliabilities (Cronbach’s α) were 0.85 and 0.80, respectively.

RESULTS

Descriptive Statistics

Of the 59 mothers, 39% (n = 23) were classified as autonomously attached, 28.8% (n = 17) as insecure-dismissing, and 32.2% (n = 19) as insecure-preoccupied. Concerning maternal interaction with the child, almost a half (44.1%; n = 26) of the mothers were adequately sensitive, 13.6% (n = 8) were highly sensitive and
almost a fourth (23.7%, \( n = 14 \)) ineptly sensitive. 18.6% (\( n = 10 \)) of the mother–child dyads were classified as belonging to interactional risk group. Using the recommended cut-off criteria of 14 for prenatal depression and 12 for postnatal depression (Gibson, McKenzie-McHarg, Shakespeare, Price, & Gray, 2009), 10.2% (\( n = 6 \)) of mothers were considered clinically depressed prenatally and 8.5% (\( n = 5 \)) postnatally. Owing to the small amount of clinical depression in a normative sample like ours, depressive symptoms were used as a continuous variable in further analyses. Maternal attachment style was not associated with maternal depressive symptoms prenatally, \( F(2, 56) = 0.57, p = ns \), or postnatally, \( F(2, 56) = 1.82, p = ns \).

Table 1 shows the means and standard deviations of mother–child interaction scores and maternal prenatal and postnatal depressive symptoms according to maternal educational level and child gender, and the correlations between child age and mother–child interaction and maternal depression variables. Child compulsiveness was dropped from the analyses due to its extremely low incidence. Educational level was associated with the quality of mother–child interaction. Post-hoc tests (Bonferroni) specified that mothers having a middle level of education were more responsive than mothers having a low education. Mothers with high education were between the two other groups, but did not differ significantly from either. Similarly, children of mothers with middle level of education were less passive than children of mothers with low education. Children of highly educated mothers were between the other two groups in their passivity, but they did not differ significantly from either. Child gender was not associated with maternal or child interactive behaviour in multivariate analyses, but in univariate analyses boys were marginally more difficult than girls. Older child age was associated with higher maternal sensitivity and child co-operation and with lower maternal control. Child age, gender and maternal education were not associated with the level of maternal prenatal and postnatal depressive symptoms.

Table 2 shows the means and standard deviations for maternal and child interaction variables according to maternal attachment status and analysis of variance statistics. Maternal autonomous attachment style was associated with more positive features of maternal (\( F\text{Roy's Largest Root}(3, 55) = 3.45, p < 0.05 \)) and child (\( F\text{Roy's Largest Root}(3, 55) = 3.15, p < 0.05 \)) interaction. Autonomous mothers were more responsive and marginally more sensitive than dismissing mothers, and their children were more co-operative than the children of dismissing mothers. Preoccupied mothers and their children were between the autonomous and the dismissing groups in their sensitivity, unresponsiveness and child co-operation scores, but did not differ significantly from either group. The results remained after controlling for maternal educational level and child gender, but maternal sensitivity was no longer significant after controlling for child age. Older child age was associated with higher maternal sensitivity (\( F(1, 43) = 23.94, p < 0.001 \)), lower maternal control (\( F(1, 43) = 6.98, p < 0.05 \)) and higher child co-operation (\( F(1, 43) = 28.02, p < 0.001 \)). Child gender was also significant as a covariate, indicating that boys were more difficult than girls (\( F(1, 43) = 6.44, p < 0.05 \)).

**Depressive Symptoms and Dyadic Interaction**

Hierarchical regression analyses were conducted to test the impact of maternal prenatal and postnatal depressive symptoms and their combination
Table 1. Means, standard deviations and correlations of mother–child interaction variables and maternal antenatal and postpartum depressive symptoms according to mother’s education, child age and child gender

<table>
<thead>
<tr>
<th>Mother’s educational level</th>
<th>Child gender</th>
<th>Child age (T3)</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational/high school</td>
<td>Polytechic school</td>
<td>University</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>S.D.</td>
<td>M</td>
<td>S.D.</td>
</tr>
<tr>
<td>Dyadic interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>6.21</td>
<td>0.76</td>
<td>7.42</td>
</tr>
<tr>
<td>Control</td>
<td>3.21</td>
<td>0.75</td>
<td>4.17</td>
</tr>
<tr>
<td>Unresponsiveness</td>
<td>4.57a</td>
<td>0.66</td>
<td>2.42b</td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operation</td>
<td>5.93</td>
<td>0.86</td>
<td>6.92</td>
</tr>
<tr>
<td>Difficulty</td>
<td>2.64</td>
<td>0.63</td>
<td>3.17</td>
</tr>
<tr>
<td>Passivity</td>
<td>4.50a</td>
<td>0.70</td>
<td>1.88b</td>
</tr>
<tr>
<td>Material depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antenatal (n = 91)</td>
<td>8.22</td>
<td>0.94</td>
<td>6.72</td>
</tr>
<tr>
<td>Postpartum (n = 59)</td>
<td>7.64</td>
<td>1.10</td>
<td>5.54</td>
</tr>
</tbody>
</table>

Note: *p < 0.10; **p < 0.05; ***p < 0.01; ****p < 0.001. F-values are for Univariate Analyses. Values with different letters (a,b) differ from each other significantly (p < 0.05) according to Bonferroni post-hoc tests.
on mother–child interaction variables. Child age, gender and maternal education were entered at Step 1, maternal prenatal depressive symptoms at Step 2 and postnatal depressive symptoms at Step 3. Finally, at Step 4 the centered Prenatal/C2 Postnatal Depressive Symptoms—interaction term was added. The results are presented in Tables 3 and 4.

Regression models significantly explained the variations of mother–child interaction in maternal sensitivity (37.7%), control (26.2%) and unresponsiveness (31.7%), and child co-operation (40%). Our hypothesis that the combination of both prenatal and postpartum depressive symptoms is the most harmful for the dyadic relation was substantiated only concerning maternal unresponsiveness \( \beta = 0.31, \ t = 2.06, \ p < 0.05; \Delta R^2 F(41, 1) = 4.25, \ p < 0.05 \). The model for maternal unresponsiveness further showed that, as hypothesized, prenatal depressive symptoms were more harmful for dyadic interaction quality than postpartum depressive symptoms, as \( \Delta R^2 = 0.13, \ F(1, 43) = 7.32, \ p = 0.01 \), but not when postnatal depressive symptoms were added at Step 3 \( \Delta R^2 = 0.02, \ F(1, 42) = 1.35, \ p = ns \). The \( \beta \)-weight for prenatal depressive symptoms was also significant at Step 2 \( \beta = 0.38, \ t = 2.71, \ p = 0.01 \), but its significance disappeared after the addition of the interaction term for Prenatal \( \times \) Postnatal Depressive Symptoms into the model at Step 4.

Figure 1 graphically illustrates that when mothers had a high level (2 S.D. above mean) of depressive symptoms both at prenatal and postnatal period, they showed high unresponsiveness to their child. It further shows that having high prenatal but low postnatal (2 S.D. below the mean) depressive symptoms was also associated with relatively higher maternal unresponsiveness than having high postnatal but low prenatal depressive symptoms.

Curiously, and contrary to our hypothesis, at Step 2 maternal prenatal depressive symptoms predicted low maternal control in the dyadic interaction, indicated by a significant \( R^2 \) change, when prenatal depressive symptoms were added into the model \( \Delta R^2 = 0.08, \ F(1, 43) = 4.62, \ p < 0.05 \), but not at Step 3, when postnatal depressive symptoms were added \( \Delta R^2 = 0.00, \ F(1, 42) = 0.006, \ p = ns \).

Table 2. Means and standard deviations of mother–child interaction variables according to maternal attachment style and ANOVA statistics

<table>
<thead>
<tr>
<th>Maternal attachment style</th>
<th>Secure-autonomous</th>
<th>Insecure-dismissing</th>
<th>Insecure-preoccupied</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>S.D.</td>
<td>M</td>
<td>S.D.</td>
<td>M</td>
</tr>
<tr>
<td><strong>Dyadic interaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>7.96</td>
<td>0.57</td>
<td>5.82b</td>
<td>0.67</td>
</tr>
<tr>
<td>Control</td>
<td>3.44</td>
<td>0.59</td>
<td>3.47</td>
<td>0.69</td>
</tr>
<tr>
<td>Unresponsiveness</td>
<td>2.65a</td>
<td>0.52</td>
<td>4.71b</td>
<td>0.66</td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operation</td>
<td>7.73a</td>
<td>0.64</td>
<td>5.12b</td>
<td>0.74</td>
</tr>
<tr>
<td>Difficulty</td>
<td>2.91</td>
<td>0.49</td>
<td>2.35</td>
<td>0.57</td>
</tr>
<tr>
<td>Passivity</td>
<td>2.61</td>
<td>0.59</td>
<td>3.82</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Note: † p<0.10; * p<0.05. F-values are for Univariate Analyses. Values with different letters (a,b) differ from each other significantly \( p<0.05 \) according to Bonferroni post-hoc tests.
### Table 3. Hierarchical regression models of maternal pre- and postnatal depressive symptoms on maternal interaction variables

<table>
<thead>
<tr>
<th>Maternal sensitivity</th>
<th>Maternal control</th>
<th>Maternal unresponsiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R^2 )</td>
<td>( \Delta R^2 )</td>
<td>( B )</td>
</tr>
<tr>
<td>Step 1</td>
<td>\begin{align*} \text{Child gender} &amp; \end{align*} &amp; \begin{align*} 0.35 \quad 7.90^{**<em>} \end{align</em>} &amp; \begin{align*} -0.23 \quad -0.04 \end{align*} &amp; \begin{align*} 0.76 \end{align*} &amp; \begin{align*} 0.16 \quad 2.85^{<em>} \end{align</em>} &amp; \begin{align*} -0.47 \quad -0.08 \end{align*} &amp; \begin{align*} 0.85 \end{align*} &amp; \begin{align*} 0.09 \quad 1.44 \end{align*} &amp; \begin{align*} 0.71 \quad 0.14 \end{align*} &amp; \begin{align*} 0.71 \end{align*}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\begin{align*} \text{Mother’s education} &amp; \end{align*} &amp; \begin{align*} -0.23 \quad -0.06 \end{align*} &amp; \begin{align*} 0.56 \end{align*} &amp; \begin{align*} -0.54 \quad -0.13 \end{align*} &amp; \begin{align*} 0.63 \end{align*} &amp; \begin{align*} 0.22 \quad 7.32^{<em>} \end{align</em>} &amp; \begin{align*} -0.17 \quad -0.42^{**} \end{align*} &amp; \begin{align*} 0.06 \end{align*} &amp; \begin{align*} 0.22 \quad 7.32^{<em>} \end{align</em>} &amp; \begin{align*} 0.08 \quad 0.15 \end{align*} &amp; \begin{align*} 0.09 \end{align*}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\begin{align*} \text{Child age} &amp; \end{align*} &amp; \begin{align*} 0.23 \quad 0.58^{<strong><em>} \end{align</em>} &amp; \begin{align*} 0.05 \end{align*} &amp; \begin{align*} -0.17 \quad -0.42^{</strong>} \end{align*} &amp; \begin{align*} 0.06 \end{align*} &amp; \begin{align*} 0.24 \quad 4.62^{<em>} \end{align</em>} &amp; \begin{align*} -0.14 \quad -0.23 \end{align*} &amp; \begin{align*} 0.11 \end{align*} &amp; \begin{align*} 0.24 \quad 4.62^{<em>} \end{align</em>} &amp; \begin{align*} 0.08 \quad 0.15 \end{align*} &amp; \begin{align*} 0.09 \end{align*}</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>\begin{align*} \text{Prenatal depression} &amp; \end{align*} &amp; \begin{align*} 0.35 \quad 0.06 \end{align*} &amp; \begin{align*} 0.06 \quad 0.10 \end{align*} &amp; \begin{align*} 0.10 \end{align*} &amp; \begin{align*} 0.24 \quad 4.62^{<em>} \end{align</em>} &amp; \begin{align*} -0.14 \quad -0.23 \end{align*} &amp; \begin{align*} 0.11 \end{align*} &amp; \begin{align*} 0.24 \quad 4.62^{<em>} \end{align</em>} &amp; \begin{align*} 0.08 \quad 0.15 \end{align*} &amp; \begin{align*} 0.09 \end{align*}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\begin{align*} \text{Postnatal depression} &amp; \end{align*} &amp; \begin{align*} 0.37 \quad 1.07 \end{align*} &amp; \begin{align*} -0.11 \quad -0.16 \end{align*} &amp; \begin{align*} 0.11 \end{align*} &amp; \begin{align*} 0.24 \quad 0.01 \end{align*} &amp; \begin{align*} -0.01 \quad -0.02 \end{align*} &amp; \begin{align*} 0.12 \end{align*} &amp; \begin{align*} 0.25 \quad 1.35 \end{align*} &amp; \begin{align*} 0.13 \quad 0.19 \end{align*} &amp; \begin{align*} 0.10 \end{align*}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\begin{align*} \text{Prenatal \times Postnatal depression} &amp; \end{align*} &amp; \begin{align*} 0.38 \quad 0.64 \end{align*} &amp; \begin{align*} -0.02 \quad -0.12 \end{align*} &amp; \begin{align*} 0.02 \end{align*} &amp; \begin{align*} 0.26 \quad 0.99 \end{align*} &amp; \begin{align*} -0.03 \quad -0.16 \end{align*} &amp; \begin{align*} 0.03 \end{align*} &amp; \begin{align*} 0.32 \quad 4.25^{<em>} \end{align</em>} &amp; \begin{align*} 0.05 \quad 0.31^{<em>} \end{align</em>} &amp; \begin{align*} 0.02 \end{align*}</td>
<td></td>
</tr>
</tbody>
</table>

\[ F(41, 6) = 4.14, p < 0.01 \]
\[ F(6, 41) = 2.42, p < 0.05 \]
\[ F(6, 41) = 3.17, p < 0.05 \]

37.7% of variance explained
26.2% of variance explained
31.7% of variance explained

\( *p < 0.05, **p < 0.01; ***p < 0.001 \). \( \beta \)-values are from the final 4th step of the regression models.
### Table 4. Hierarchical regression models of maternal pre- and postnatal depressive symptoms on child’s interaction variables

<table>
<thead>
<tr>
<th>Step</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>$\beta$</th>
<th>S.E.</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>$\beta$</th>
<th>S.E.</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>$\beta$</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child gender</td>
<td>0.38</td>
<td>9.03***</td>
<td>-0.40</td>
<td>-0.06</td>
<td>0.83</td>
<td>0.13</td>
<td>2.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s education</td>
<td>-0.23</td>
<td>-0.05</td>
<td>0.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child age</td>
<td>0.26</td>
<td>0.60***</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>0.38</td>
<td>0.11</td>
<td>0.05</td>
<td>0.07</td>
<td>0.11</td>
<td>0.21</td>
<td>4.34*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prenatal depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prenatal depression</td>
<td>0.39</td>
<td>0.76</td>
<td>-0.10</td>
<td>-0.13</td>
<td>0.12</td>
<td>0.21</td>
<td>0.01</td>
<td>0.01</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>0.40</td>
<td>0.44</td>
<td>-0.02</td>
<td>-0.09</td>
<td>0.03</td>
<td>0.21</td>
<td>0.18</td>
<td>-0.01</td>
<td>-0.07</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postnatal depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre- and postnatal depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**F(6, 41) = 4.55, p < 0.01 40% of variance explained**

**F(6, 41) = 1.81, p = ns. 20.9% of variance explained**

**F(6, 41) = 0.72, p = ns. 9.5% of variance explained**

* $p<0.05$, *** $p<0.001$. $\beta$-values are from the final fourth step of the regression models.
Also the $\beta$-weight for prenatal depressive symptoms was significant at Step 2 ($\beta = -0.30, t = -2.15, p < 0.05$), but its significance disappeared after the addition of the postnatal depressive symptoms into the model.

The background variables (Step 1) significantly contributed to the models of maternal sensitivity and control and child co-operation, confirming the correlation result that the dyadic interaction quality was higher when children were older.

**Maternal Attachment, Depressive Symptoms and Dyadic Interaction**

We hypothesized that maternal secure-autonomous attachment style would protect the early dyadic interaction from the negative impact of maternal depressive symptoms. Maternal attachment style was used as a categorical variable and prenatal and postnatal depressive symptoms as continuous variables, as the SPSS General Linear Model allows the customization of the model so that continuous variables may be used as predictors.

The results supported our hypothesis as regards maternal postnatal depressive symptoms, revealing marginally significant Maternal Attachment $\times$ Postnatal Depressive Symptoms—interaction effects on maternal ($F_{Roy's \text{ Largest Root}}(3, 48) = 2.45, p < 0.10$) and child ($F_{Roy's \text{ Largest Root}}(3, 48) = 2.76, p = 0.053$) interactive behaviour. Univariate tests were significant, revealing that the moderation concerned maternal sensitivity ($F(2, 49) = 3.67, p < 0.05$) and child co-operation ($F(2, 49) = 3.89, p < .05$). In dyads with secure-autonomous mothers, the levels of maternal sensitivity (Figure 2) and child co-operation (Figure 3) remained adequate ($\geq 7$) despite an increase in maternal depressive symptoms. Preoccupied mothers were adequately sensitive and their children adequately co-operative ($\geq 7$), when mothers had low depressive symptoms. However, when depressive symptoms increased, the dyads with preoccupied mothers began to show less than adequate levels of maternal sensitivity and child co-operation ($< 7$). Curiously, among dismissing mothers, the levels of maternal sensitivity and child co-operation, which were initially lower than in other attachment groups, even somewhat increased when mothers reported increasing depressive symptoms. The interaction effect of Maternal Attachment $\times$ Prenatal Depressive Symptoms was not significant on either maternal or child’s interactive behaviour, $F_{Wilk's \lambda}(6, 94) = 0.82$, $p = ns$, and $F_{Wilk's \lambda}(6,94) = 0.77$, $p = ns$, respectively.
The results remained after controlling for child age, gender and maternal educational level.

DISCUSSION

Despite abundant evidence that maternal depression may compromise the delicate early interaction (Beck, 1995; Paulson, Dauber, & Leiferman, 2006), a fair number of depressed mothers are able to remain adequately sensitive in their dyadic interaction with their children. We examined the role of the specific timing of depressive symptoms (prenatal and postnatal) and maternal attachment style as possible explanations for this individual diversity in the association between depression and dyadic interaction quality.

The results supported our hypothesis that the combination of relatively high depressive symptoms both prenatally and postnatally constitutes the highest risk for problematic mother–child interaction. The impact of prenatal depressive symptoms seems, however, more severe than the impact of postnatal symptoms: mothers with relatively high depressive symptoms only prenatally were less
responsive with their children than mothers who had depressive symptoms only at postpartum. Prenatal depression is especially harmful for the early relationship as it combines the dual risks of biology and psychology. There is evidence that depression during pregnancy affects, through hormonal changes, the child’s regulatory capacity and increases several developmental risks, which may negatively influence the mother–child interaction (Field et al., 2006). Pregnancy is a crucial time for preparation to motherhood, and prenatally depressed mothers may be lacking in their ability for intrapsychic re-organization necessary for the development of maternal identity and formation of a prenatal emotional bond with their baby (Broden, 2004). It has also been suggested that prenatal depression would be more related to a person’s general depressive tendencies, whereas postnatal depression would be activated by life-span transitions (Tamminen, 2001).

Our result about the most harmful effect of the combination of both prenatal and postnatal depressive symptoms on maternal responsiveness concurs with Diego et al. (2005) who found that it was the combination of maternal prenatal and postnatal depression that was most harmful for the infant development. It is probable that the compromised dyadic interaction quality, together with the foetal effects of prenatal depression, is the pathway for maladaptive development. Earlier research has also shown that the chronicity of maternal postnatal depression is an important predictor of compromised dyadic interaction quality (Campbell et al., 1995), and our results further suggest that the continuation of prenatal depressive symptoms to the postpartum period may have the same effect.

Researchers agree that depression compromises maternal sensitivity (Beck, 1995; Hoffman & Drotar, 1991; Murray, Fiori-Cowley, Hooper, & Cooper, 1996) which is a central characteristic of early parenting. We could not, however, find associations between either prepartum or postpartum depressive symptoms on global maternal sensitivity or any child interaction characteristics. Some recent studies have failed to find the association between maternal postpartum depression and parenting quality in mildly depressed mothers without comorbid risk factors (Cornish, McMahon, & Ungerer, 2008; Van Doesum, Hosman, Riksen-Walraven, & Hoetnagels, 2007). This can also explain our results of a minor impact of maternal postnatal depression symptoms on some dimensions of mother–infant interaction, as the data did not consist of high-risk mothers and few were clinically depressed. Curiously, higher prenatal, but not postnatal depressive symptoms actually predicted lower maternal control in our study. It may be that for some reason, prenatal depressive symptoms are more predictive of under- than over-regulating problems in later dyadic interaction, at least in our sample. However, as most mothers in our sample were not clinically depressed, it is probable that among severely depressed mothers, also controlling or intrusive interactive behaviour is typical.

Our second aim was to study the role of maternal attachment style in mitigating the impact of prenatal and postnatal depressive symptoms on mother–child interaction. The results supported our hypothesis that secure-autonomous mothers and their infants are capable of adequately sensitive and co-operative interaction despite maternal postnatal depressive symptoms. The results concur with McMahon et al. (2006), who found that maternal postpartum depression, even when persisting over a long postnatal period, did not increase the risk for child’s insecure attachment style when the mother was autonomously attached.

Concerning the two insecure attachment styles, we found a mirror-like opposite impacts of postnatal depressive symptoms on maternal sensitivity. Dyads
with preoccupied mothers were as sensitive and their children as co-operative as dyads with secure-autonomous mothers, if the mother had low postnatal depressive symptoms. However, when depressive symptoms increased, dyads with preoccupied mothers were highly susceptible to interactional problems both in maternal and child domains: maternal sensitivity and child co-operation. The parenting of preoccupied mothers may be more vulnerable to stress and depression due to their tendency to emotional and behavioural under-regulation. Their dormant shattered insecure attachment models may become activated when under distress (Bowlby, 1980; Mikulincer & Orbach, 1995; Kanninen, Punamäki, & Quota, 2003), leading to overwhelming, under-regulated emotions that distract them from adequately perceiving and interpreting the child’s cues. The activation of attachment-related models seemed to be especially intensive under the stress caused by postpartum depression, making dyads with preoccupied mothers more vulnerable and dyads with secure-autonomous mothers more resilient.

Quite puzzlingly, dyads with dismissing mothers displayed less than adequate maternal sensitivity and child’s co-operation when they had low depressive symptoms, whereas when depressive symptoms increased, their dyadic interaction actually improved. The explanation may lie in that for dismissing mothers, experiencing and reporting more depressive symptoms might indicate that their defensive facade of independence and distancing is broken and their internal conflicts are being processed and solved, instead of denied. It is possible that those dismissing mothers who were able to admit and recognize some negative moods were more in touch with their own emotions, and thus more responsive towards their children’s needs. This explanation may, however, be valid only among mothers with sub-clinical levels of depression, but the situation is different, in case of more severe depression (Adam et al., 2004).

It is noteworthy that maternal secure-autonomous attachment style did have a protective role in postnatal depression, but could not prevent the harmful impact of maternal prenatal depression on the mother–child relationship. This is probably due to the dual psychological and biological vulnerability associated with maternal prenatal depression that affects both physiological and hormonal development of the foetus and maternal psychological preparation for motherhood. Even though autonomously attached mothers were able to compensate for their depression in creating and maintaining adequate dyadic interactive behaviour after the birth of the child, they could not fully compensate for the high vulnerabilities of the foetal period. Postpartum depressive symptoms may be more directly or visibly associated with the infant’s sense of security, and the autonomously attached mothers may be better able to recognize their infants’ needs for security and comfort and to act accordingly, despite their own mood.

There are several limitations to this study. First, it would have been ideal to use more than one-time postnatal assessment of depressive symptoms, as mild depression has been suggested to compromise the mother–child interaction only when it lasts for over 6 months (Campbell et al., 1995). The duration of postnatal depressive symptoms was not controlled for in our study. If the maternal depressive symptoms were only transient, this could further explain the minor effect of maternal depressive symptoms on some maternal and child dyadic interaction qualities.

The second limitation is the small sample size, and our results thus have to be considered only preliminary in nature. The loss of participants was fairly high from pregnancy (n = 91) to postpartum (n = 59), but the attrition was not associated with demographic factors, attachment style or maternal prenatal and...
postnatal depression. Our sample also represents middle class mothers who are
quite well-being, and thus the results can only be generalized to relatively low-
risk and advantaged populations.

Third, our measurement tool of attachment style deserves criticism. The
paper-and-pencil method of discerning adult attachment style was able to
identify only the three main patterns, but not the sub-patterns. Moreover, un-
resolved attachment style could not be classified. Naturally, the application of the
original AAI and its updated scoring procedure (Main, Goldwyn, & Hesse, 2002)
would have provided more dynamic information, as the full extent of attach-
ment-related information cannot be obtained from self-reports. However, our
measure of AAI was predictive of mother–child interaction in similar ways to
those described in the previous literature, supporting its validity. Also, earlier
studies have received valid results using paper-and-pencil versions of AAI (e.g.
Crandell et al., 1997; Kanninen et al., 2000, 2003).

Fourth, child age at the interaction assessment varied. Even though our
Care-Index interactive measure implicitly takes account different kinds of
developmental tasks for each age group, and children of different ages can
thus be compared, it would have been preferable to have all the children
videotaped at the same age. The effect of child age was, however, used as a
covariate in all analyses, and did not change the results for the analyses of
research questions.

Clinical Implications
Clinically, our results increase the understanding of specific and cumulative risk
factors for mother–child relationship, and help explain why depressed mothers
may show highly variable interaction profiles with their children (Field et al.,
1985; Hoffman & Drotar, 1991; Rosenblum et al., 1997). It is important to consider
both the effects of maternal attachment style and the duration, severity and onset
(pre/postnatal) of her depressive symptoms. Our findings suggest that mothers
with insecure-preoccupied attachment style suffering from postnatal depressive
symptoms were the most susceptible for dyadic adversity. Insecure-dismissing
mothers, for their part, in general showed the most pronounced interactive
problems with the child, but seemed less vulnerable to the specific effects of
maternal depressive symptoms, at least when the depression is mild.

Transition to parenthood is a period with strong potential for reorganizational
change in the attachment models, and mother–child relationship interventions
should therefore be tailored according to the attachment style. Dismissing mo-
ters apparently need to be encouraged for emotional responsiveness, reciprocal
joy and enrichment of their interactions. Occurrence of distress, here maternal
depressive symptoms, can provide an opportunity to confront and process one’s
internal conflicts and, according to our results, even improve the parent–child
relationship among dismissing mothers. Preoccupied mothers, instead, may fare
reasonably well in their motherhood at times of low stress, but need additional
support when their insecure working models are activated by depression or
distress. They can benefit from guidance towards purposeful responses to the
infant’s needs and towards more structured interaction with the infant.

To promote healthy mother–child relationship and child development, ma-
ternal mental health problems should be routinely screened in both prenatal and
postnatal health care, and interventions aimed at enhancing the mother–infant
relationship should start during pregnancy, continuing over a sufficiently long
period postpartum, as both periods seem to have unique meanings for the development of mother–child relationship.

ACKNOWLEDGEMENTS

We thank researcher Jallu Lindblom from the University of Tampere, Finland for his help in methodological questions. This study was supported by the Academy of Finland (No. 11232276) and Graduate School of Psychology in Finland.

REFERENCES


