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**POSTPARTUM DEPRESSIVE SYMPTOMS IN FAMILY  
PERSPECTIVE: SOME INDICATORS EXPERIENCES  
AND CONSEQUENCES**

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## ABSTRACT

**Aim:** The aim of this thesis was to examine the 1) consequences of maternal depressive symptoms 2-3 months postpartum on parents' experiences of parenthood at one year and on parent-child interactions 15-18 months postpartum, and the 2) circumstances in the early postpartum, which might predict depressive symptoms 2 months postpartum.

**Method:** A community sample of 574 women was screened for depressive symptoms, using the Edinburgh Postnatal Depression Scale (EPDS) two months postpartum.

Forty-two women (7%) showed signs of depression, and 24 of these women and 11 of their partners consented to be videotaped during a parent-child interaction observation at 15-18 months. Twenty-one women showing no signs of depression, and 14 of their partners were selected as a comparison group. At one year, parents reported on their experiences of parenthood. To study early indicators for depressive symptoms parents were approached at the maternity clinic, Karolinska University Hospital, Solna. One hundred and six couples filled out all questionnaires about their maternity blues during a period of five consecutive days in the first week after birth, and additionally completed an EPDS, along with a questionnaire about their bonds to the child. At two months postpartum, follow-up questionnaires about the parents' mood and bonding to the child were filled out. Twenty-two mothers showing signs of depression at this occasion were interviewed about their experiences of the first months with the child.

**Results** The videotaped parent-child interactions 15-18 months postpartum showed that children of mothers who demonstrated signs of depression at 2 months exhibited less interest in and attention to an explorative play situation with their mothers. Fathers in the families with a mother showing signs of depression were, however, more positively involved with their children and, in turn, their children showed less negative affect in the interaction with their fathers than children in families where the mother did not show signs of depression. In the interviews with mothers having depressive symptoms at 2 months, it was found that the mothers expressed strong feelings of guilt, failure, and unfulfilled expectations. They struggled with life as it related to the self, with the relations with partner and with the child. At one-year postpartum, women with signs of depression at 2 months, experienced motherhood more stressfully than did mothers without signs of depressive symptoms. However, no difference was found in their respective partners' experiences of fatherhood. Severe blues, bonding problems and a partner with depressed mood were found to be early indicators for depressive symptoms in both mothers and fathers. For mothers, previous depression and an emergency Caesarean section were also predictive for depressive symptoms.

**Conclusions:** The results indicate that self-reported depressive mood in mothers might affect the child negatively, but also that fathers might compensate for the mother's mood. Postpartum depressive symptoms still seems to be a "hidden" condition, since mothers do not easily talk about their feelings. It is important to identify these women early. Thus, to be attentive to severe blues and bonding problems during the first week and to give the mothers an opportunity to speak about their feelings, maybe through active "listening" without giving advice. This may alleviate depressive symptoms and possibly prevent negative interactions between mother and child in the future.

**Key words:** Postnatal depression/depressive symptoms, blues, bonding, mother-child interactions, father-child interaction, child temperament, and child attachment.

## LIST OF PUBLICATIONS

This thesis is based on the following articles, which will be referred to in the text by their Roman numerals

- I M. Edhborg, L. Seimyr, W. Lundh & A-M Widström. (2000). Fussy child - difficult parenthood? - Comparisons between families with a "depressed" mother and non-depressed mother two months postpartum. *Journal of Reproductive and Infant Psychology* 18 (3), 225-238.
  
- II M. Edhborg, L. Seimyr, W. Lundh & A-M. Widström. (2001). The long-term Impact of Postnatal Depressive mood on the Mother - Child Interaction. A Preliminary Study. *Journal of Reproductive and Infant Psychology* 19 (1), 62-71.
  
- III M, Edhborg, W, Lundh, L, Seimyr, and A-M. Widström. (2003). The parent-child relationship in the context of maternal depressive mood. *Archives of Women's Mental Health* 6 (3), 211-216.
  
- IV Edhborg, M., Matthisen, A-S., Lundh, W. and Widström, A-M. Early indicators for depressive symptoms and bonding 2 months postpartum – a study of new mothers and fathers. Submitted.
  
- V Edhborg, M., Friberg, M., Lundh, W. and Widström, A-M. “Struggling with life” - Narratives from women with signs of postpartum depression. Accepted for publication in *Scand J Public Health*

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## **LIST OF ABBREVIATIONS**

|         |  |
|---------|--|
| CHC     | Child Health Centre  |
| DSM-IV  | Diagnostic and Statistical Manual of Mental Disorders, 4th edition |
| EMQ/EFQ | Experience of Motherhood/Experience of Fatherhood                  |
| EPDS    | Edinburgh Postnatal Depression Scale                               |
| ICQ     | Infant Characteristic Questionnaire                                |
| MHC     | Maternity Health Centre  |
| PBQ     | Postpartum Bonding Questionnaire                                   |
| PCERA   | Parent- Child Early Relationship Assessment                        |

## **INTRODUCTION**

While it is often considered as a positive event to become a parent, it is well known that the birth, at least for mothers, represents a time of vulnerability for mood disorders. The traditional view suggests that there are three postpartum psychiatric disorders, which range in severity from postpartum blues to postpartum psychosis. Postpartum psychosis is a severe illness, affecting 1-2 mothers per 1000 births, characterised by confusion, delusions and hallucinations, and hospitalization is often required (Seyfried and Marcus, 2003). At the other end of the spectrum, postpartum blues has been described as "brief and benign and therefore not a serious problem in clinical practice" (Kennerly and Gath, 1989a; p. 365). Located in between these two extremes is postpartum depression, which is more difficult to identify, and if not identified and treated could last throughout the first postpartum year (Beeghly *et al.*, 2002).

During the 1990s an increased interest for postpartum depression has arisen both in research and among clinicians actualizing a need for prevention, early detection and intervention. Approximately one third of local county governmental authorities in Sweden have introduced a screening instrument, the Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden and Sagovsky, 1987), in order to detect and be able to support mothers expressing depressive symptoms (Kornfält, 2000). Today, the EPDS is often administered when the child is six weeks old, but a new recommendation is 8 -10 weeks postpartum, since many women still, at six weeks, have not adjusted to the birth and might have high scores on the EPDS for this reason (Cox and Holden, 2003; Wickberg and Hwang, 2004). On the other hand, since 40% of women with depressive symptoms postpartum also display depressive symptoms during the pregnancy (Austin, 2004; Rubertsson, 2004) and a strong relationship has been demonstrated between depressive mood during the first week after birth and depressive mood later (Chabrol and Teissedre, 2004; Dennis, 2004), it would be of interest to detect earlier these women at risk for postpartum depression.

Thus, knowledge of early indicators in both mothers and fathers related to the child's start in life, and the parents' experience of the first time with her child, might give a better understanding as to how to detect and acknowledge depressive symptoms in order to prevent onset of postpartum depression later on. We also wanted to study long term consequences of early maternal depressive symptoms on the mother-child/ father-child relationships, the child's attachment to the mother and father in a community sample and the father's role when the mother's show depressive symptoms postpartum.

## **POSTPARTUM DEPRESSION IN MOTHERS**

The prevalence of maternal postpartum depression varies depending on the study population, the assessment method and the timing of the postpartum period when the evaluation is done (O'Hara and Swain, 1996). In Swedish studies the prevalence of postpartum depression varies between 7 and 14.5% (Bågedahl Strindlund and Monsen Börjesson, 1998; Edhborg, Seimyr, Lundh and Widström, 2000; Josefsson ,Berg, Nordin and Sydsjö, 2001; Wickberg and Hwang, 1997). In an international study from nine countries representing five continents, the frequency of women with depressive

symptoms (measured by the EPDS with a cut off of 9/10) varied between 13% to 73.7%, with the lowest prevalence in Sweden and Australia and the highest in Guyana and Taiwan (Affonso, Anindya, Horowitz and Mayberry, 2000).

The issue of postpartum depression, as a specific or non-specific disorders, has been studied since Pitt (1968) described it as an "atypical" depression (O'Hara, 1997). However, the empirical evidence does not support a strong distinction between postpartum- and non-postpartum depressions (Eberhard-Gran, Eskild, Tambs, Samuelsen and Opjordsmoen, 2002; O'Hara, Zekowski, Philipps and Wright, 1990). Thus, postpartum depression today is regarded as a non-psychotic depression with symptoms and prevalence not differing from depression at other times of life (Cooper, Campbell, Day, Kennerly and Bond, 1988; Murray, Cox, Chapman and Jones, 1995), except that more cases of new depression have been observed to occur in the first three months of the first postnatal year (Cox, Murray and Chapman, 1993), along with a threefold higher rate of onset of non-psychotic psychiatric disorders within five weeks of childbirth (Cooper et al., 1988). In general, postpartum depression disappeared spontaneously within two and six months (Cooper et al., 1988). However, Watson, Elliott, Rugg and Brough (1984) showed that 25% of depressed mothers had depressive episodes lasting six months or longer, and Kumar and Robson (1984) found as much as 50% had depressive episodes lasting six months or more. Finally, Beeghly et al. (2002) reported that first-time mothers with high levels of depressive symptoms early in the postpartum period continued to experience high levels of distress and depressed mood throughout the first postpartum year.

The question has been raised whether there are two different groups of women who become depressed postpartum, the first being those whose depression is specifically related to the child and to the emotional demands of motherhood, and those whose depression shows no relationship to the birth (Murray, 1989; Warner, Appleby, Whitton and Faragher, 1997). This suggestion has received some support in a study, which found that women with a first onset depression during the postpartum period had a shorter duration than women with a recurrence of depression. These women were also at elevated risk for further postpartum depression. In turn, there was a higher risk for depression in women for whom the depression was a recurrence, although not with postpartum onset (Cooper and Murray, 1995).

In the Diagnostic and Statistical Manual for Mental Disorders, the fourth edition (DSM IV American Psychiatric Association, 1994), postpartum depression has been categorised as a type of major depression with postpartum onset, and the diagnostic criteria for major depressive episodes are: (1) Depressed mood, most of the days, all days. (2) Marked diminished interest or pleasure in almost all activities. (3) Decreased appetite and weight loss, sometimes weight gains. (4) Insomnia or hypersomnia. (5) Psychomotor retardation, flat facial expression and sometimes psychomotor agitation. (6) Fatigue or loss of energy (7) Recurrent thoughts of death and suicidal ideation. At least five of these symptoms must be present, with criteria (1) or (2) being necessary. Additionally, these symptoms should be present most days, most of the day during a two-week period (Wasserman, 1998). Women's own experience of depression could, according to Affonso (1992), be summarized by feelings of inability to concentrate, difficulties in sitting still or ability to persist with a task for a reasonable time, anxious

thoughts or "panic-like attacks", difficulties in getting things done, easily losing one's temper and frequent outbursts of anger and frustration at things that used to be manageable.

Although the dramatic hormonal changes (e.g. the high drop of progesterone and estradiol) that occur in women the first days after delivery, little evidence has been found to support a biological base for postpartum depression (Cooper and Murray, 1998; O'Hara, 1997). The consistent research findings carried out to date are that the major factors of etiological importance for postpartum depression are largely of psychosocial nature (Cooper and Murray, 1998; O'Hara, 1997; Warner, Appleby, Whitton and Faragher, 1996), e.g. a lack of social support, particularly from their partners (e.g. Cutrona and Troutman, 1986, Beck, 1996a; O'Hara and Swain, 1996; Rubertsson, 2004), and poor marital relationship and marital dissatisfaction (Kumar & Robson, 1984; Merchant, Affonso and Mayberry 1995; O'Hara and Swain, 1996; Marks *et al.*, 1996). Loss or threat of loss, and long-term difficulties have been known to increase the risk for depression in non-puerperal women (Brown and Harris, 1978), and has also been found to raise the risk for postpartum depression (e.g. Kumar and Robson, 1984, O'Hara and Swain, 1996).

## **POSTPARTUM DEPRESSION IN FATHER**

Although the positive aspects for men having a child are beginning to be recognised, the negative aspects have been little discussed. Epidemiological studies have consistently shown that women are twice as likely to suffer from depression in their lifetimes than are men (Kornstein, 2001), and the same has been shown in the postpartum period (Matthey, Barnett, Ungerer and Waters, 2000). Depressive symptoms in men begin later postpartum as compared to women, often following the onset of depression in mothers, and the depressive rates in fathers increase over the first postpartum year (Areias, Kumar, Barros and Figueiredo, 1996 a+b; Matthey *et al.*, 2000). Ballard, Davis, Cullen, Mohan and Dean (1994) were the first to systematically examine postpartum depression in men. They studied 200 couples at points 6 weeks and 6 months postpartum and found that the prevalence of depressive mood in men was 9% at 6 weeks and 5.4% at 6 months postpartum. Since then several studies have been carried out and a literature- review found 20 studies that included depressive levels in fathers during the first year after birth, but only nine of these actually used the term postpartum depression in reference to fathers (Goodman, 2003). The incidence of paternal depression in community samples range from 1.2% - 25.5% during the first year (Areias *et al.*, 1996a, 1996b; Ballard, *et al.* 1994; Lane *et al.*, 1997; Matthey *et al.*, 2000; Soliday, McCluskey-Fawcett and O'Brian, 1999). In addition, Dieter-Deckard, Pickering, Dunn and Golding (1998) found that men living in stepfamilies and partners of single mothers had significantly higher levels of depressive symptoms than men in traditional families.

## POSTPARTUM BLUES

In 1962, James Hamilton outlined the dysphoric mood in the early puerperium as “transitory syndrome” characterized by fatigue, crying, anxiety, confusion and headache (Henshaw, 2003), and by 1968, it was named postpartum blues syndrome by Yalom, Lunde, Moss and Hamburg (1968). The term blues might lead to the assumption that all symptoms are related to low mood. However, the predominant postpartum mood is usually joy, but the new mothers may also experience tearfulness, extreme lability of mood, irritability, dysphoria, hypersensitivity and exaggerated empathy. The central feature of the affective experience seems to be increased reactivity to stimuli, such as crying, and becoming profoundly joyful or sad in response to stimuli that would normally not provoke such intense reactions (Miller and Rukstalis, 1998). The new mothers simultaneously experience happiness and dysphoria (Hapgood, Elkind and Wright, 1988) and Lane *et al.* (1997) found that although 11.4% women scored more than 13 on the EPDS on the third day postpartum, 18.3% of the women showed hypomania at the same time according to the “High Scale” developed by Glover *et al.* (1994). Kennerly and Gath (1989b) have argued that depression is not a part of the blues-spectrum at all, and Miller and Rukstalis (1998) suggest that a more fitting term for this postpartum phenomenon may be postpartum reactivity, representing a normal part of mother-child attachment.

Most new mothers experience some mood changes, which begin in the first few days after delivery, peaking somewhere between the third and fifth days (Handley, Dunn, Baker, Cockshott, Gould, 1977; Harris, Lowett, Newcombe, Walker and Riad-Fahmy, 1994; Pitt, 1973; Rohde *et al.*, 1997), and are over by day seven to ten (Henshaw, 2003). Since there is no clear consensus about the nature of postpartum blues, the reported frequency varies depending on how the blues period is defined and measured (Miller and Rukstadius, 1998). Postpartum blues seems to be a cross-cultural phenomenon, with Japanese studies showing the lowest prevalence rates 15.3% (Murata, Nadaoka, Morioka, Oiji and Saito, 1998) and the highest prevalence rates being in the Western World. In fact, Stein, Marsh and Morton (1981) reported a frequency of 85% among English women, and Yalom *et al.* (1968) reported 67% in American women.

Since blues occur with a unique pattern of timing that coincides with a period of dramatic physical changes, some investigators have posited psychological causes for blues, with the “hormone withdrawal hypothesis” being the most supported hypothesis in this area. Since estrogens and progesterone slowly rise to levels several hundred times higher than their prepregnancy levels—and then fall rapidly when delivery occurs—it has been suggested that these high dropouts of hormones could contribute to the mood changes (Harris *et al.*, 1994; O’Hara *et al.* 1990). However, not all studies support the “hormone withdrawal hypothesis” (Miller and Rukstalis, 1998). Psychosocial risk factors failed to consistently correlate to blues, nor did a history of previous depressions, demographic status, current stressors or social support (Kennerly and Gath, 1989b). Obstetric complications also failed to demonstrate a consistent correlation (Pitt, 1973; Hapgood *et al.*, 1998). Henshaw (2003) suggested

that it is simply a marker for an affective vulnerability in women. Another explanation to blues could be the “biological attachment hypothesis,” an hypothesis built on the idea that mood changes around childbirth are subjective expressions of the postpartum activation of a biological system that promotes mother-infant attachment. The posterior pituitary hormone Oxytocin seems to play a central role in this hypothesis (Miller and Rukstadis, 1998).

## **EXPERIENCES OF PARENTHOOD**

### **Mothers' with depressive symptoms**

The majority of research in the area of postpartum depression is within a medical, psychiatric or experimental psychology framework where postpartum depression is conceptualised as a “disease” or “illness” (Mauthner, 1999) and depressive experiences have been explained as something apart from women’s lives as mothers (Small *et al*, 1994; Stoppard, 2000; Nicolson, 1990, 1998). However, over recent years, social- and feminist scientists have challenged the medical model and explored women’s subjective experiences of postpartum depression. In a phenomenological study by Beck (1992a) women described their lived experience of postpartum depression as anxiety, loss of control and thoughts of hurting the baby. Jennings, Ross, Popper and Elnor (1999) reported that 41% of the depressed women in their study had thoughts of harming their children as compared to 6.5% in the control-group. Fear of being alone with the child and an inability to care for the child was admitted by 24% of the depressed women. Coping with postpartum depression has been described as teetering on the edge, including encountering terror, the dying of self, struggling to survive, and regaining control (Beck, 1993). Tammentie, Paavilainen, Åstedt-Kurki and Tarkka (2004) found that there was great discrepancy between expectations and reality in depressed mothers’ families, and that the mothers strove for perfection and perceived that the child tied them down. A metasynthesis including 18 qualitative studies on postpartum depression, showed that eight of the studies focused on conflicting expectations and experiences of motherhood for the development of postpartum depression (Beck, 2002).

### **Spouses of women with depressive symptoms**

Spouses of depressed women reported more life-stress, felt more restricted in parenthood and experienced more difficulties in the marital relationship 3, 6 and 12 months after birth as compared to spouses of non-depressed women (Milgrom and McCloud, 1996). In addition, they found their children more demanding and rated themselves less competent as fathers than spouses of non-depressed women. Zelkowitz and Milet (1996) also found that spouses of postpartum depressed women were less satisfied in their marriage, more worried about family responsibilities and dissatisfied with changes in household routines and intimacy with the partner. In later study, Zelkowitz and Milet (1997) found that spouses of depressed women, 6-8 weeks postpartum, experienced more stress from the work, the economic pressure, and the loss of social support, and had higher levels of psychological symptoms than did

spouses of non-depressed women. In a follow-up study at 6 months postpartum, Zelkowitz and Milet (2001) revealed that almost two thirds of the fathers who had a psychiatric diagnosis at 2 months still met diagnostic criteria at 6 months postpartum.

In a study conducted by Meighan, Davies, Thomas and Droppleman (1999), postpartum depressed partners were classified as “becomes an alien” when fathers were asked to describe their lived experiences with these women. The fathers defined their experiences as “attempts to fix the problems,” as having to “make sacrifices,” and “that the world collapses,” or they feel a “loss of control,” or a “loss of intimacy,” or an “altered relationship”, and that “postpartum depression is a real crisis”. Boalt, Pryce and Cox (1998: 201) reported that spouses of depressed women expressed that "they worried about their relationship" and that "things are tense in the house" and that they "don't know how to approach her because of her mood".

## **CONSEQUENCES OF POSTPARTUM DEPRESSIVE SYMPTOMS**

### Consequences on the mother-child relation

Depressed mothers, due to their symptoms such as sadness, self-preoccupation, social withdrawal, irritability, and loss of interest and energy (Stein *et al.*, 1991), have been described as having either a withdrawn, or an intrusive, interaction style (Cohn, Matias, Tronick, Lyons-Ruth and Connell, 1986). Withdrawn mothers were found to be more disengaged, unresponsive, and affectively flat, and did little to support their children's activities. Intrusive mothers engaged in rough handling, spoke in an angry tone of voice, poked at their children and actively interfered with their activities (Tronick and Weinberg, 1997). Furthermore, depressed mothers spent less time looking at their children, touching and talking to them, and showed fewer positive and more negative faces than did non-depressed mothers (Cohn *et al.*, 1986). They also showed a tendency to code their infants' behaviour more negatively than did observers.

In turn, children of depressed mothers showed lower activity levels, demonstrated less attention, they vocalised less, showed less positive and more negative faces, looked away more frequently and protested more often than children of non-depressed mothers (Field, 1995). However, child behaviour showed different profiles depending on maternal interacting style. Children of withdrawn mothers were more likely to protest and to be distressed than children of intrusive mothers, whose children showed predominantly avoidance, spent most of their time looking away from the mother and seldom looked at objects. This depressed style of the children's interactions with their mothers was found to generalise to interactions with non-depressed adults, such as nursery teachers (Field *et al.*, 1988), but not to non-depressed fathers (Hossain, Field, Gonzales and Malphurs, 1994) nor to other non-depressed mothers (Martinez *et al.*, 1996). When the mother was depressed, the mother-child-dyads matched negative behaviour states more often, and positive behaviour state less often, and spent more time in negative states and less time in playful states together, than did non-depressed mother-child dyads (Field, Healy, Goldstein and Guthertz, 1990).

In contrast to these findings, recently published studies, with mother-child dyads recruited from low-risk areas, have failed to replicate these apparently disturbed mother-child interactions (Murray and Cooper, 1997a; Campbell, Cohn and Meyers, 1995). The only difference reported by Murray (1992), was the incidence of disrupted behaviour between depressed and non-depressed mother-child interactions at two months postpartum, when the child would momentarily arrest his or her active engagement and avoid contact. However, this disrupted behaviour at two months postpartum did predict the child's cognitive functioning at 18 months postpartum (Murray, Fiory-Cowley, Hooper and Cooper, 1996a; Murray and Cooper, 1997b).

### Consequences on the child's cognitive and socio-emotional development

The associations between maternal depression and child outcomes are complex (Cumming and Davies, 1994; Downey and Coyne, 1990). Although, there are some inconsistencies in the research, it is likely that early experience of a mother's postnatal depressive symptoms may be of importance for the child's cognitive development. Hay (1997) has proposed that insensitive and incontinent responses resulting from the mother's depressive symptoms prevent the child from learning how to regulate their own attention and emotion and might therefore have deleterious effects on cognitive as well as social development. Murray, Cooper and Hipwell (2003) draw attention to the fact that depressed mothers show reduced levels of imitation of the child's expressions during interaction that could, theoretically, negatively effect the child's ability to make distinctions between self and others.

In a literature-review, Grace *et al.* (2003) reported effects, although small, of postpartum depression on factors of cognitive development such as language and IQ, particularly among boys. Cogill, Caplan, Alexandra, Robson and Kumar (1986) found a significant association between postnatal depression during the first year and cognitive deficits while using the Mc Carthy Scales, a series of global cognitive tests, with four-year-old children in a low-risk area in North London. Using the McCarthy Scales on 170 children at an age of 46 months in two relatively deprived areas of South London, Sharp *et al.* (1995) also found an association between postnatal depression during the first year and deficits in cognitive development,. In this sample, the effect of maternal depression coincided with infant gender. Boys of formerly depressed mothers performed almost a standard deviation below those sons of non-depressed women, but daughters of depressed mothers had scores slightly above those of children of non-depressed mothers. A follow-up study, when these children were 11-years-old, found that the children whose mothers had been depressed at 3 months postpartum had significantly lower IQ scores, attentional problems, difficulties in mathematical reasoning and were more likely than other children to have special educational needs. Boys were still more severely affected than girls (Hay *et al.*, 2001).

Although Murray (1992), in her low-risk sample, found that postpartum depression was associated with a worse performance on the Piaget's object concept test both at 9 and 18 months, no differences were found in performance at the age of five years when assessed by –the McCarthy Scales for the children whose mothers had been depressed and those children whose mothers were not during the first year of life (Murray,

Hipwell, Hooper, Stein and Cooper, 1996b). Neither did Kurstjen and Wolke (2001) find any effect of postpartum depression on the child's cognitive development at 20 months, 4 years and 8 months, and 6 years and 3 months.

However, Murray, Kempton, Woolgar and Hooper (1993) found that depressed mothers expressed more negative affect, were less focused on the child's experiences and tended to show less acknowledgement of the child's agency which might mediated the association between depression and the child's cognitive development in the first 18 months. However, this was only the case for boys and so confirmed the findings that boys seemed to be more vulnerable to maternal depression than girls (Murray, 1992, Sharp *et al.*, 1995).

One way of studying the impact of postnatal depression on social-emotional development is to assess the level of behavioural problems in the child (Murray and Cooper, 1997b). Murray (1992) found that mothers who had been depressed reported more behavioural disturbance in their children at 18 months postpartum (mostly sleeping-, eating- and separation problems) than children of mothers who had not been depressed. When these children were five-years-old, they were followed up in school and teachers were asked to complete questionnaires about the children's adjustment to school after the first term. Both postpartum and recent depressions in mothers were associated to child disturbances, such as hyperactivity and distractibility in boys, particularly in lower social class families. However, daughters of postpartum depressed mothers were described by their teachers as well-adjusted to school (Sinclair and Murray, 1998). Observations and maternal reports from the same population indicated higher levels of child disturbance at age five, which could be associated with maternal depression in the early postpartum (Murray *et al.*, 1999). In contrast, Caplan *et al.* (1989), who investigated 4-year old children of formerly depressed and non-depressed mothers, did not find any link between the children's behavioural difficulties and postnatal depression.

# CONCEPTUAL FRAMEWORK

## BONDING

Childbirth presents many challenges to the parent, but the central and most important is the psychological process of developing a bond to the child (Brockington, 2004). The term bonding refers to the tie from parent to child, whereas the term attachment refers to the tie from the child to the parent. A bond can be defined as a unique relationship between two people that is specific and endures through time, is characterized by various kinds of behaviour, for example between the parent and the child, such as kissing, cuddling and prolonged gazing behaviour that helps to maintain contact and exhibits one's affection towards a particular individual (Klaus, Kennell and Klaus, 1995).

The concept of bonding originated from research in the 1970s by two American paediatricians, Klaus and Kennell (Billings, 1995). The bonding theory rests on the premise that mother-child attachment is a biologically determined process, which unfolds spontaneously in an undisturbed natural environment. Central to the theory is the postulate of an optimal sensitive period in the first hours and days after the birth, during which mother and child must have continuously close contact for later developments. The bonding theory implies that the mother's environment must be given full priority in order to provide appropriate conditions for her propensity toward maternal behaviour (Crouch, 2002). Thus, the theory has had a profound impact on the management of postnatal care in the Western world and has resulted in the encouragement of greater contact between mother and child following birth, and has facilitated "rooming-in" which now has become a normal procedure (Billings, 1995).

However, the theory has been questioned and other studies have attempted instead to confirm a hypothesis of rapid bonding during an early sensitive period; these studies show contradictory results (Billings, 1995) regarding both timing and long-term effects of the sensitive period (Crouch and Manderson, 1995). Concerns have also been expressed about the theory proposed by Crouch and Manderson (1995) because research since the 1980s has shown that many women believed bonding at birth to be a prerequisite for satisfactory mothering. This belief might have led to anxiety and guilt if the conditions for bonding not have been met (Crouch, 2002). The startling reality of the responsibility for their child's survival strikes most mothers with enormous force after the birth. For some, the realization comes while they still are at the maternity ward, while for others it comes a week or so later (Stern and Bruschiweiler-Stern, 1998). Mac Farlane et al. (in Klaus *et al.*, 1995) found that 41% felt love for the baby already during the pregnancy, 24% at birth, 27% the first week and 8% after the first week. Robson and Kumar (1980) reported that 40% of women, who had sought help in psychiatric units, showed indifferent feelings about the newborn at the birth, while 12% showed mixed and ambivalent feelings; the remaining recalled immediate affection and liking for their babies. Reasons why some mothers immediately feel attracted to their neonates while other does not are not clear. Crouch (2002) argues that the pervasive vigilance and anxiety of contemporary new mothers can overwhelm the mothers and

result in a reduction in mother-child interaction. This reduction thus, depends on the lack of continuous social stimuli necessary for the optimum development of maternal responsiveness for mothers in our society and lack of social support. Other explanations for a lack of maternal affection postpartum are painful deliveries, the expectations of the experience being worse than anticipated (Robson and Kumar, 1980), and mother-child separation (Righetti-Veltema *et al.*, 2002).

## Bonding and depressive symptoms

Disruptions and “failure” of maternal-child bonding have been causally linked to postpartum depression (Crouch, 2002). Although several studies had shown the negative impact of depression on the mother-child interaction and on the child’s attachment to the parent, only a few studies have explored the relationship between mild depressive symptoms and the mothers’ attachment to her child in the early postpartum period (Nagata *et al.*, 2000). These authors studied associations between self-rated depression and maternal attachment between day 5 to 10 postpartum in 417 mothers and found that maternity blues had a great negative influence on the maternal attachment (Nagata *et al.*, 2000). In a follow-up study one year postpartum with 247 of the initial selected mothers, Nagata, Nagai, Sobajima, Ando and Honjo (2003) revealed that problems in the mother-child attachment during the puerperium could negatively effect the mother-child relationship later on and that weak maternal attachment during the puerperium was associated with maternal depression at one year.

## CHILD ATTACHMENT

Bowlby (1997) proposed that the child's insistence on maintenance of proximity to protective figures was attributable to an attachment behavioural system, which regulates primate safety and survival. This system is as equal in importance as is the systems guiding feeding and reproduction. The attachment system leads the child to continually monitor the accessibility of one or a few protective, older figures and to turn to them as a haven of safety in times of alarm (Bowlby, 1994). In times of safety, the attachment figure is used as a secure base for exploration (Bretherton, 1987). The first attachments are usually formed in the child by seven months of age. Only a few persons are selected as attachment figures, and the selection of attachment figures is based upon social interactions (Main, 1996). According to attachment theory, the quality of early mother-child interaction is responsible for the quality of a child’s attachment (Ainsworth, Blehar, Waters and Wall, 1978). Attachment theory holds that each child will become attached to a caregiver, but the quality of the caregiver-child transactions will result in different patterns of attachment. These different patterns will result in the child constructing representations or "working models" of themselves and their interactions with others. In these "working models" the key feature is the child's notion of how acceptable or unacceptable he/she is in the eyes of the attachment figure, and the accessibility and responsivity of the attachment figures. From this complementary internal "working model," the child perceive events, forecasts the future, and constructs his/her plans (Bowlby, 1998).

Ainsworth *et al.* (1978) developed a method, The Strange Situation, to examine children's different attachment patterns. The Strange Situation consists of a standard series of eight episodes, each lasting for three minutes. The episodes are recorded on videotape. The method includes a child's introduction to a strange person, two separations and two reunions with the mother in a strange environment. Using this procedure with low-risk, non-depressed mothers, Ainsworth *et al.* (1978) identified three basic infant attachment patterns. They are secure (Type B), insecure-avoidance (Type A) and insecure-ambivalent (Type C). Main and Solomon (1990) added a fourth category, disorganised-disoriented (Type D). Secure attachment pattern is related to sensitive, empathic parenting and insecure-avoidance and ambivalent to insensitive, to unresponsive parenting. But in both these patterns of insecure attachment, the children seem to use a rather coherent and organised way to find access to their attachment figures in times of stress. However, type D-attachment is used to describe the children who lack a coherent strategy, who show confusion or fearful behaviour in the Strange Situation. This attachment pattern has been found to be characteristic of infants in high-risk samples, such as in the case of child maltreatment, child abuse or parental alcoholic dependence or abuse.

### Child attachment and depressive symptoms

Murray (1992) found a significant association between the occurrence of depression in the postpartum period and insecurity of attachment at 18 months postpartum, as measured by the Strange Situation Procedure (Ainsworth *et al.*, 1978). Also Teti, Gelfand, Messinger and Isabella (1995) found insecure child attachment significantly associated with maternal depression among both infants and pre-schoolers. They noted extremely high percentages of insecure attachment in relation to maternal depression among their 61 depressed and 43 non-depressed mothers. The study showed eighty percent of the infants and 87% of pre-schoolers as insecurely attached to their depressed mothers. In particular, many were classified as disorganised attached (Type D). The high rate of insecurity is probably due to the fact that the depressed mothers in the study of Teti *et al.* (1995) were recruited from therapy-groups and were severely depressed. This finding was supported by Hipwell, Goossens, Melhuish and Kumar (2000), whose study found a high frequency of insecurity in the children of mothers with psychiatric disorders. In a group of mother-child dyads who had been hospitalised, early postpartum showed 78% of the children with insecure attachment, but also, in a community sample with severe non-psychotic depression 62% of the children showed insecurity. However, children of mothers with a manic/bipolar disorder displayed less insecure attachment than children of mothers with a psychotic/nonpsychotic depression. In contrast to these studies, Campbell *et al.* (1995) found no association between attachment quality and postnatal depression in their low-risk sample even when the mothers' depression was chronic through six months.

### CHILD TEMPERAMENT

Variations in maternal care-giving and the child's temperament are two potential predictors of the quality of the mother-child relationship in early life (Goldsmith and Alansky, 1987). All healthy children are born with a natural ability to regulate their

states of consciousness about when and whether they want to take part in and respond to the world around them (Brazelton and Cramer, 1990). This ability, which is referred to by the term 'temperament,' mirrors innate individual differences in children and can be documented from the birth onwards (Korner, Hutchinson, Koperski, Kraemer and Schneider, 1981). By interviewing parents in-depth about their infant's everyday behaviour, Thomas and Chess (1984) defined nine dimensions of temperament and three patterns of behaviours based on those dimensions that classified the vast majority of their sample. "Easy" children were disposed to be rhythmic, adaptable, approaching, generally positive in mood, and mild in intensity. "Difficult" children were irregular, unadaptable, withdrawing, negative, and intensive. The third pattern was called "slow-to-warm-up" children. These children were low in activity, withdrawing in new situations, slow to adapt, mild in intensity, and negative in mood (Lyons-Ruth and Zeanah, 1989). Although there are disagreements on the components of temperament, Bates (1987) notes that most theorists agree on three qualities that capture the major dimensions of temperament: Emotionality, activity/reactivity, and sociability. Bates, Freeland and Lounsbury (1979) defined temperament as dimensions of personality that are basic, appear early, biologically rooted and fairly continuous throughout life.

The problematic aspects of temperament primarily concern negative emotionality, which is salient to caregivers on a daily basis (Petit and Bates, 1984) and might be expected to place the child at increased risk for behavioural problems. However, Chess and Thomas (1989) found that negative temperament alone or the influence of the environment alone could not explain the behaviour disorders developed by children in their study. Rather, they found it required consideration of the natural interplay of temperament and environment. They used the concept "goodness of fit" to describe when the child's capacities, motivations and temperament are adequate to master the demands, expectations and opportunities of the environment and that such consonance between child and environment promotes optimal positive development. "Poorness of fit", on the other hand is when a child's characteristics are inadequate to master the challenges of the environment, which leads to maladaptive functioning and distorted development.

### Child temperament and depressive symptoms

The temperament of a child has been suggested to have an impact on the onset of a postpartum depression in mothers, particularly negative emotionality. Cutrona and Troutman (1986) found that 30% of the variance in the mothers depression scores, as measured by the Beck Depression Inventory (BDI) three months postpartum, could be explained by a child's difficult temperament. Similarly, Whiffen and Gotlib (1989) reported that depressed mothers found it more difficult to care for their two-months-old infants than non-depressed mothers did and that their children were more tense and deteriorated more rapidly under the stress of developmental testing. In a prospective study, Murray, Stanley, Hooper, King and Fiori-Cowley (1996c) assessed children of high-risk mothers for depression 10 days postpartum, using the Brazelton Neonatal Behavioural Assessment Scale (BNBAS), and found infants with poor motor functioning and irritability strongly predictive of the onset of depression eight weeks postpartum (Brazelton, 1984).

## AIMS

This thesis has two general aims: First, in a Swedish community sample, to explore the consequences on parenthood after one year following maternal depressive symptoms at 2-3 months postpartum, and on the parent-child interaction 15-18 months postpartum. Second, to get a better understanding of how circumstances in the early postpartum period might relate to depressive symptoms 2-3 months postpartum in both women and men.

The specific aims were:

- To study consequences of depressive symptoms 2-3 months postpartum on the parents' perception of their child's temperament and the parents' experiences of parenthood one year postpartum (**Paper I**).
- To study consequences of maternal depressive symptoms at 2-3 months on the parent-child relationship and the child's attachment to its parents 15-18 months postpartum (**Paper II, II**)
- To, within couples, study, associations between postpartum blues, postpartum bonding, the parents' perceptions of the child's temperament and postpartum depressive symptoms two months postpartum (**Paper IV**).
- To, with a Grounded theory approach, study how new mothers with signs of depressive symptoms at two months experienced the first two months with the child (**Paper V**).

# MATERIAL AND METHODS

## DESIGNS AND PROCEDURES

### Paper I

**Paper I** is based on a descriptive, longitudinal study with the aim to study consequences of maternal depressive symptoms on the parent-child interaction. All Swedish-speaking women at seven Maternal Health Centres (MHC) in two areas in Stockholm, Sweden, were asked to participate in the study, either alone or with their partners. The women were informed by their midwives and received written information about the study. If they consented to participate, the women and their partners were given questionnaires after 30 weeks of pregnancy, two months and one year postpartum.

At two months, questionnaires about the mothers' mood (Edinburgh Postnatal Depression Scale; EPDS) and the parents' perceptions of the child's temperament (Infant Characteristic Questionnaire; ICQ) were sent to all the parents who were originally asked to participate, even if they did not return the first questionnaires during the pregnancy. Two reminders were sent. One year postpartum, questionnaires of demographic data, EPDS and the parents' experiences of parenthood (Experiences of motherhood/fatherhood Questionnaire; EMQ/EFQ) were mailed to those parents who returned the questionnaires two months postpartum. No reminders were sent at this time.

Of the 434 parents solicited during the pregnancy, 326 women (75%) and 304 men (70%) answered the questionnaires two months postpartum. Two hundred and thirty-eight of these women (73%) and 223 of their partners (73%) also participated one year postpartum. The mean age of women was 29.1 years (Sd=4.7) with 48% of the mothers being primiparous. The length of cohabitation was on average 6.2 years (Sd=3.8); thirteen of the women (4%) were single mothers two months postpartum. At one year postpartum, 47% of the participants were primiparous and 10 were single mothers. The final sample consisted of 304 couples at two months and 223 couples one year postpartum (**Paper I**).

### Paper II and III

When the children participating in **Paper I** were 15-18 months old, mothers with signs of depression at two months (i.e. scored 13 or more on the EPDS) and their partners were contacted and asked to participate in a videotaped parent-child observation. For comparison, an equivalent number of women (matched for parity, sex of the child and geographical area) without signs of depression at two months (i.e. less than 9 on the EPDS) and their partners were solicited for participation in the study. To increase the number of mothers with signs of depression at two months, an additional study was

carried out six months later at seven Child Health Centres (CHC) in the same areas as in **Paper I**. Mothers in the additional sample were informed and asked to participate in the study by their nurses at the CHC when their children were two months old. Those who agreed to participate received written information about the study and a questionnaire (EPDS) in order to assess the mothers' mood. When their children were 15-18 months old, the mothers with signs of depression (score of 13 or more on the EPDS) and their partners and an equivalent numbers of matched women without signs of depression at two months (a score of 9 or less on the EPDS) from the same area and their partners, were asked to participate in a parent-child interaction. In **Paper II** only mothers were studied, and in **Paper III** both mothers and fathers.

In all 42 women scored 13 or more on the EPDS two months postpartum; 24 (56%) who agreed to participate (index group) as well as 21 women who scored 9 or less on the EPDS (comparison group) were videotaped in a mother-child observation 15-18 months postpartum. The comparison group was matched on parity, sex of the child and geographic area (**Paper II**).

In **Paper III** both parents' interactions with their child were videotaped 15-18 months postpartum. The sample consisted of 11 couples where the mother scored 13 or more on the EPDS two months postpartum (index group) and 14 couples where the mother scored 9 or less on the EPDS (comparison group).

#### Paper IV and V

**Papers IV and V** are based on a prospective study about how circumstances in the early postpartum period related to depressive symptoms in both mothers and fathers and how mothers with signs of depression experiences the first 2-3 months with their child. Swedish-speaking parents at the Karolinska University Hospital Maternity Clinic in Stockholm, with a healthy child, were approached by the first author and informed verbally and in writing about the study on the delivery-day or the day after. In situations where only the mother was present at the ward when the information was given, she was asked whether or not she believed that her partner wanted to participate in the study. All mothers giving informed consent were handed two sets of questionnaires, one for herself and one for the partner.

During the first week, the parents were asked to independently enter data about their background, obstetric experience and the newborn child, and to subsequently complete questionnaires about their mood (The Blues Questionnaire) on each of five consecutive evenings, starting the first day after the delivery. In addition, on the seventh day the parents were requested to complete questionnaires about depressive symptoms during the first week (EPDS) and feelings of bonding to the newborn child (Postpartum Bonding Questionnaire; PBQ). Because all mothers were discharged before the seventh day (mean length of hospital stay in this study was 61.5 hours), the parents were encourage to complete the questionnaires at home and return them within 14 days by mail in a pre-stamped envelope.

At two months postpartum, follow-up questionnaires EPDS, PBQ, and questionnaires about the child's temperament (ICQ) were sent to the parents who had agreed to participate in the study while still at the Maternity clinic. In addition, mothers were asked about breast-feeding and breast-feeding problems two months postpartum. One reminder was sent by mail if those questionnaires mailed at two months were not returned within two weeks (**Paper IV**).

The mothers, who showed signs of depression two months postpartum (i.e. scored 10 or more on the EPDS), were contacted and asked for an interview about their experiences during the first 2-3 months with the child (**Paper V**).

In **Paper IV**, 465 mothers and 429 fathers agreed at the maternity clinic to participate. After the first week postpartum, 223 (48%) mothers and 164 (38%) fathers returned the questionnaires. Two months postpartum, 280 (60%) mothers and 235 (55%) fathers had completed the second set of questionnaires. For this study we selected only couples, which had completed all questionnaires both times. Thus, the final sample was 106 couples (23% of the approached mothers and 25% of the fathers). For an extensive drop out analysis, see **Paper V**. The mean age for mothers was 32.1 (Sd 4.4) and for fathers, 34.2 (Sd 5.5) years. Fifty-two percent of the parents were primipara, and 58% of the mothers and 50% of the fathers had university educations. Thirty (28%) of the women reported previous depressive mood as compared to 14 (13%) among the fathers. Of the children, 53 (50%) were boys.

In **Paper V**, 22 women with signs of depression, i.e. EPDS-scores ranging between 10 to 23 points out of possible 30 with a median value of 12.5, were interviewed. These women were selected from the 46 women (16%) who scored 10 or more on the EPDS at two months. For a more detailed description of the selection of the sample see **Paper V**. The mean age of these mothers was 32.2 years and 12 (54%) were first time mothers. Thirteen (59%) had a university/college degree and all were married or cohabiting with the child's father; 12 (54%) of the women reported previous depressive mood. Fifteen of the children (68%) were boys.

## **METHODS**

### Questionnaires/self-rating scale

*Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden and Sagovsky, 1987)* was used to assess depressive symptoms in parents two months and one year postpartum. EPDS consists of 10 items, each item rated from 0-3. Five of the items concern dysphoric mood, two anxiety, one item concerns guilt, one suicidal ideas and one coping with the daily life. The scale rates the intensity of depressive symptoms during the previous seven days. A high score indicates more symptoms of depression. A threshold value of 12/13 (out of possible 30 scores) is recommended as a definition of postpartum depression (Cox, Holden and Sagovsky, 1987; Murray and Carothers, 1990) and a cut-off score of 9/10 are suggested for screening purpose for women in the postpartum period (Cox *et al.*, 1987). Recently, the cut off for screening purpose has

been recommended to be changed to 11/12 to eliminate the risk of false positive depressive symptoms (Cox and Holden, 2003). The EPDS has been validated in Sweden for women (Lundh and Gyllang, 1991; Wickberg and Hwang, 1996a) and showed similar sensitivity and specificity as in other countries (Eberhard-Gran, Eskild, Tambs, Opjordsmoen and Samuelsen, 2001).

In **Paper I- III**, a cut off of 12/13 was used to identify women with depressive symptoms and as an indicator of potential depression. Using this cut-off score, Murray and Carothers (1990) found a sensitivity of 96% and a specificity of 68%. We chose the higher cut off 12/13 as an indicator of a potential depression in this study, because we wanted to be more sure of really catch mothers with signs of depression (**Papers I-III**). During recent years, EPDS has been used to assess depressive symptoms in men, and Matthey, Barnett, Kavanagh and Howie (2001) found it both valid and reliable for fathers with the optimal cut-off score 9/10. In **Paper IV-V** we thus used a cut off score of 9/10 for both mothers and fathers to be able to compare them. Matthey *et al.* (2001) found with this cut-off score for men, a sensitivity of 95.8% and specificity of 82.3%. For women, a sensitivity of 71.4 and a specificity of 93.8 were found with the same cut off (Murray and Carother, 1990).

The *Infant Characteristic Questionnaire, ICQ* (Bates *et al.*, 1979) was used to measure the parents' perception of the infants' temperament two months postpartum (**Paper I, IV**). The ICQ contains 24 items rated on a seven-point scale, with the rating of one describing an optimal combination of temperamental traits and seven a "difficult" temperament. Since the ICQ is developed for six-month old children and we applied the ICQ on two-month old infants, we excluded items not relevant for children younger than two months, mostly from the subscale *unadaptable*. The subscales *fussy-difficult* (items about how easy or difficult it is to soothe the child), *dull* (items about the social responsiveness and activity level of the child) and *unpredictable* (items about how easy or difficult it is to predict the child's needs, such as hunger and sleep) were almost concordant with the original subscales of Bates *et al.* (1979), except for some adaptation to the child's age. For more detailed description, see **Paper I and IV**.

The *Experience of Motherhood/Fatherhood Questionnaire (EMQ/EFQ)* (Astbury, 1994) measures the parental experience of parenthood at one year postpartum in **Paper I**. The EMQ is a 20-item questionnaire, using a four-point scale of intensity, measuring both negative, stressful aspects of motherhood and positive, enjoyable aspects of life. Items tapping the positive aspects of parenthood are recorded when scoring the questionnaire, so that both positive and negative items are scored in the same direction. The sum of scores for the 20 items is then calculated for each parent. A high score indicates a high level of stress and dissatisfaction, and difficulties in coping with the situation. A low score indicates the opposite. The scale has been translated into Swedish for the purpose of this study and has not been given to men before. Astbury (1994) conducted a factor-analysis of the scale and six sub-scales were found. However, due to the low Cronbach alpha found in the present study on the six sub-scales, only four of these were used: *Anxiety and concern* (six items reflecting the effects of the baby on the parents' emotional state), *coping with the baby* (six items reflecting the practical demands involved in looking after a baby), *personal autonomy* (four items about how having a baby affected parents' enjoyment of their lives as separate individuals), and *coping with*

*life* (six items reflecting the parents' ability to cope with stress in parenthood). For a more detailed description, see **Paper I**.

The *Blues Questionnaire* (Kennerly and Gath, 1987a) was used to assess the postpartum blues in **Paper IV**. It consists of 28 items and the participant is asked to indicate how he/she has been feeling that particular day for each of the 28 items by checking if the feeling is present or absent. For eight items relating to positive feelings, a score of 1 is given if the emotion is absent that day. The other 20 items, relating to negative feelings, are scored 1 if the emotion is present (See **Paper IV** for an overview of the items). The participants are thus given an overall score, maximum 28 points, on the scale and a higher score indicate more blues symptoms. For analyses, a total score is expressed as a percentage, where the numbers of scores indicating symptoms of blues related to the amount of all completed items that were calculated for each individual woman for each of the five days postpartum in accordance with Kennerly and Gath (1987a). A mean percentage score was calculated for each woman over the five days, and an overall mean percentage score for the whole sample was calculated. The scale has been translated into Swedish for the purpose of this study and was given to both parents to be completed 5 days during the first week postpartum with start on the day after the delivery (**Paper IV**).

*Postpartum Bonding Questionnaire (PBQ)* (Brockington *et al.*, 2001) was chosen to assess the parent-child relationship at one week and two months postpartum (**Paper IV**). The PBQ consists of 25 items rated on a scale 0-5. The sum of scores for all the 25 items is calculated for each parent and a high score indicates more pathological responses. Brockington *et al.* (2001) also performed a factor analysis, and four subscales were developed. The first factor is called *Impaired bonding* (12 items), the second *Rejection and anger* (seven items), the third *Anxiety about care* (four items), and the last factor assessed the *Risk of abuse*, with two items. For an overview over the subscales of the PBQ and its items, see **Paper V**. The sum of scores for each subscales was calculated and unfavourable parent-child relationships were scored if the rating showed a score of 12 or more on the first factor, 17 on the second, 10 or more on the third, and 3 and over on the fourth. The scale has been translated into Swedish for the purpose of this study. To test the quality of translation, an English-speaking person retranslated it back into English. The scale was given to both men and women at one week and two months postpartum (**Paper IV**).

### Parent-child observations 15-18 months postpartum

The parent-child observations were carried out in the families' home and were videotaped according to the Parent Child Early Relational Assessment instrument (PCERA; Clark, 1985). When both parents were participating, the mother-child- and father-child interactions were videotaped on different days, to avoid tiring the children. Different situations were videotaped and assessed in order to tap areas of conflict and parental competencies, such as a structured play/teaching/limit-setting or a free play situation may elicit (Clark, 1985; Clark, Paulson and Conlin, 1993). Parents and children were videotaped together in 5-minute segments for three different situations:

1. A structured task, where the mother was instructed to play with a standard set of toys, including cups, cubes and a picture book.
2. A free play session during which the child and the mother could choose from a range of toys provided by the research team.
3. A separation/reunion intervention, which was arranged directly after the free play situation. The parent was instructed to leave the room and to tell the child that he/she would be absent for a short while. If the child started to cry, the parent might return on her/his own initiative, or be called back by the observer. The videotaping went on for about five minutes, when the child was alone in the room with the camera and the filming person. Filming continued for a couple of minutes after the reunion, in order to study the child's recovery from the experience, and to observe any changes in the resumed interaction between the parent and the child.

### Interviews with mothers 2-3 months postpartum

The interviews in **Paper V** were conducted by a Grounded theory approach based on Glaser (1978) and Glaser and Strauss (1999), and were carried out in the families' homes when the children were between 67 to 125 days (Md 80 days). Mostly the children were together with the mothers during the interviews, and in some cases also the partners were home but were not present at the interviews. The interviews lasted between 25-60 minutes, were tape-recorded and transcribed verbatim. According to theoretical sampling, as recommended in Grounded theory, each interview was coded, analysed and compared with previous interviews in order to follow up emerging concepts in subsequent interviews.

For an overview of the study design, method and participants, see Table 1.

Table 1. An overview of study designs, methods and participants in the five studies.

| <b>Study design</b>   | <b>Method</b>   | <b>Participants</b>  |
|---|---|--|
| <b>Study I</b><br>Longitudinal, descriptive<br>2 months and 1 year                              | <b>Questionnaires/self-ratings scales</b><br>-Demographic data<br>- EPDS at 2 month and 1 year<br>- ICQ at 2 month<br>- EMQ/EFQ at 1 year   | <i>At 2 months</i><br>304 women with spouses<br><br><i>At 1 year</i><br>223 women with spouses   |
| <b>Study II</b><br>Prospective, descriptive<br>2 months and 15-18 months<br>postpartum          | <b>Observations</b><br>Videotaped mother-child<br>interactions 15-18 months<br>postpartum according to the<br>PCERA   | 24 mother-child dyads,<br>mother 13 or more on the<br>EPDS at 2 months.<br>21 mother-child dyads,<br>mother 9 or less on the<br>EPDS at 2 months |
| <b>Study III</b><br>Prospective, descriptive<br>2 months and 15-18 months<br>postpartum         | <b>Observations</b><br>Videotaped mother-child- and<br>father-child interactions 15-18<br>months postpartum according to<br>the PCERA   | 11 families, mothers 13 or<br>more on the EPDS at 2<br>months<br>14 families, mothers 9 or<br>less on the EPDS at 2<br>months                    |
| <b>Study IV</b><br>Prospective – during the first<br>week postpartum and 2 months<br>postpartum | <b>Questionnaires/Self-ratings scales</b><br>- Demographic, obstetric/child data<br>- Blues Questionnaire, day 1-5<br>-EPDS 1 week and 2 months<br>- PBQ 1 week and 2 months<br>- ICQ at 2 months | 106 couples who<br>completed all<br>questionnaires at both<br>occasions.   |
| <b>Study V</b><br>Grounded theory approach-<br>2-3 months postpartum                            | <b>Interviews</b><br>Tape-recording semi-structured<br>interviews in the families homes   | 22 mothers scoring 10 or<br>more on the EPDS<br>2 months postpartum  |

## DATA ANALYSIS AND STATISTICS

### Analysis of videotaped parent-child interactions

The *Parent Child Early Assessment (PCERA)* (Clark, 1985) was used to assess the affective and behavioural characteristics that the parent and the child each bring to the interaction (Clark, Hyde, Essex and Klein, 1997) in **Paper II and III**. This scale comprises 65 variables, including 29 related to the parent, 28 to the child and eight to the dyad. Two trained senior psychologists, blind to the EPDS scores of the mother, scored the mother-child-interactions. They did simultaneous independent ratings. In

case of disagreements when comparing their written notes, the tape was rewound and the coders reassessed the variable and a consensus score was noted in the PCERA protocol. A low score of 1-2 indicates an area of concern, a score of 3 indicates an area of some concern, and 4-5, an area of strength. Six composite variables, *Maternal emotional availability*, *Maternal negative affect*, *Child quality of play, interest, and attention skills*, *Child negative affect*, *Child positive affect*, *social and communicative competence* and *Dyadic mutuality and reciprocity* were derived by factor-analyses of the maternal-, child- and dyad variables in PCERA. Of the 65 variables in PCERA, four maternal-, seven child- and one dyadic variable were not used in the analysis because the behaviour did not occur during the observed periods of interactions. Table 1 in **Paper II** shows the 53 variables included in the six composite variables and Cronbach alpha for each composite variable.

In **Paper III**, eight of the 29 variables that related to parents' behaviour and mood were selected to measure *positive parental involvement*. Seven variables were picked to assess the *child's behaviour* and seven were selected to assess the *child's mood*. Thus, 14 of 28 variables related to the child were selected, and dyadic variables were omitted. These variables were selected in advance of the analysis, partly based on a report given by Roseanne Clark at the World Association for Infant Mental Health (WAIMH) seventh world congress in Montreal 2000. Another reason for excluded items was that the occurrences of some items were too infrequent to permit analysis, e.g. parental negative behaviour. For an overview of the 22 variables included in each of the three selected composite variables and Cronbach alpha for each composite variable, see Table 1 in **Paper III**.

The *separation/reunion intervention* arranged directly after the free play according to the PCERA (Clark, 1985) was analysed using the coders' detailed, written descriptions of what happened during the parent's absence at and after the reunion (**Paper II, III**). The classification of the child's attachment to their parents was derived from attachment theory (Bowlby, 1969) and from traditional attachment classification of child interactive behaviour in the Strange Situation (Ainsworth *et al.*, 1978). The classification developed were the following; (1) *Secure attachment* - the children greeted their fathers or their mothers with obvious signs of relief and joy, accepted being comforted and soon returned to their earlier interaction with the parent or started a new game. (2) *Secure attachment but restricted in terms of expressed enjoyment and pleasure* - the children seemed to regard their mothers as a secure base, but showed little of the joy and vitality which could be expected as part of secure attachment behaviour on reunion. (3) *Insecure attachment* - at the reunion, the children showed signs of avoidance, i.e. they looked at the parent, but did not give him/her a smile or greeting, or showed signs of resistance behaviour, i.e. ambivalence between rejecting and clinging to the parent or else they had no strategy at all at the reunion with their parents (**Paper II, III**).

#### Analysis of tape-recorded interviews

In **Paper V**, data were analysed using the constant comparative method and coded on three levels. First-level coding or open coding involved reading through the verbatim

transcripts and carefully examining the data line by line. Data was broken down into meaningful units, which could range from a phrase to several paragraphs, and subsequently conceptualised in first-level codes, using the respondents' words as much as possible (Schreiber, 2001). In first-level coding we constantly coded and compared incident to incident. When similarities in the first-level codes were identified, we began second-level coding which involved examining and collapsing first-level codes into categories or higher-level concepts. According to Glaser (1978), the goal of second-level coding is to generate categories that fit, work and are relevant for integration in a theory. By abstracting categories, the core variable "struggling with life" was identified. Following this identification we delimited the coding to those categories related to the core variable and thus we started the selective coding. A core variable represents the central phenomenon in the study and should be systematically related to the other categories (Schreiber, 2001). Third-level coding focuses on a systematic examination of the relationships between and among the categories and results in an emergence of a conceptual framework. Throughout the process of data collection and analysis memos were written, i.e., ideas, questions, and thoughts, which helped to speculate and analyse the data. Glaser (1978) meant that writing memos is a core stage in the process of generating theory.

### Statistics methods

Parametric methods were used to analyse the included instruments, because these were originally based on parametric methods. Polit and Beck (2004) says that although instruments produce data that are, strictly speaking ordinal, most researcher treat them as interval measures. Differences between continuous variables were studied with Student's two-tailed T-tests and between nominal variables with Chi-square analysis and Fischer Exact tests.

In **Paper I and III**, group differences between families with high- and low-scoring mothers were analysed by multivariate analyses, MANOVA and MANCOVA. Multivariate analyses were used to avoid too many tests increasing the Type I error (Hassmén and Koivula, 1996). In **paper II**, the PCERA- six composite variables were derived from separate factor-analyses of maternal-child- and dyad variables, using principal components with varimax rotation. Eigen values >1 as criteria were used for numbers of factors (Spector, 1992) and six factors was found. Variables that loaded 0.5 or above were retained.

To identify differences in the children's interactional styles, cluster-analysis was performed on the 28 child variables of the PCERA in the free play situation. Three clusters were found. To study differences between these three clusters, one-way analysis of variance (ANOVA) was used with *post hoc* test Scheffe (Hassmén and Koivula, 1996) (**Paper II**). In **Paper IV**, a series of exploratory regression analyses using depressive symptoms (EPDS) and postpartum bonding (PBQ) at two months as dependent variables were performed to evaluate which factors best predicted by EPDS and PBQ scores at two months.

## **ETHICAL CONSIDERATIONS**

The Ethical Committee at Karoliska Institutet approved the study behind **Papers 1-III** (Dnr 93:154) and The Ethical Committee, North at the Karolinska University Hospital approved the study behind **Paper IV-V** (Dnr 01-405). Both verbal and written information about the study was given, and the voluntary nature of participation as well as the possibility of discontinuing at any time without explanation, was stressed both verbally and in writing. The participants were also informed that data should be treated as strictly confidential. In all studies the researchers themselves had informed, handed out or sent questionnaires, made appointments and telephone calls to the participants, except for the first step in **Paper I**. In that study midwives at the Maternity Health Centres (MHC) or nurses at the Child Health Centre (CHC) informed verbally and handed out the first set of questionnaires, including information in writing.

Asking questions about depressive mood is a sensitive topic and questionnaires, interviews and observations could be emotional for the respondent. In **Paper II, III and V**, the researcher made telephone calls and asked for videotaped parent-child interactions and interviews. During these telephone contacts and home-visits, questions of concerns could be asked and when appropriate, mothers were advised to seek help. In the first instance, the mother was recommended to contact her CHC for support or eventual further referral. When both the mother and father participated in parent-child interactions or interviews, the interviewer met the parents with signs of depression at least twice, and thus gave the parent(s) the possibility to verbally express their feelings. It may be likely that the high drop-out rate is a reflection of the parents' sensitivity to the topic.

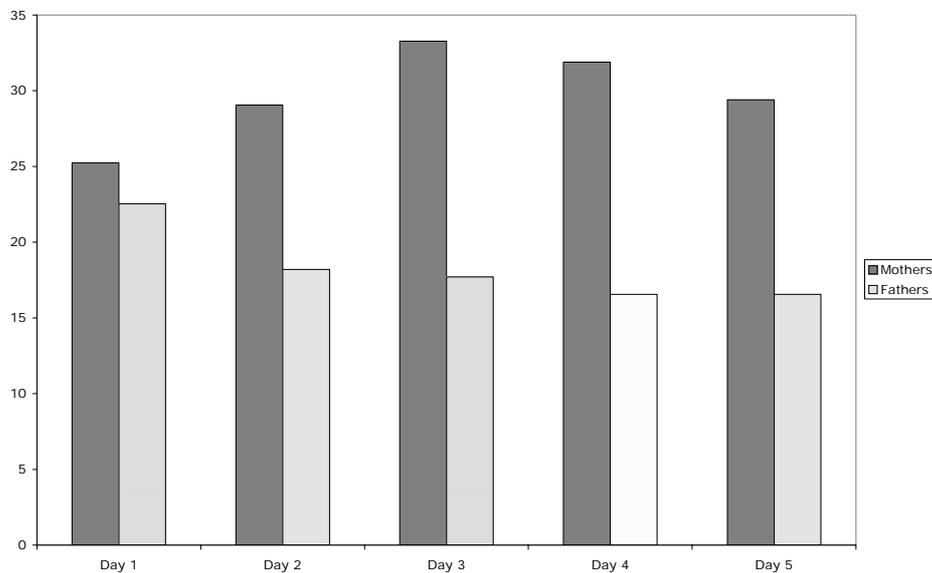
# RESULT

## FREQUENCY OF DEPRESSIVE SYMPTOMS AND BLUES

A community sample of 574 women (326 +248) were screened for depressive symptoms with the EPDS two months postpartum. Using a cut-off score of 12/13 on the EPDS, 42 (7%) of these women were identified as being “depressed” two months postpartum (**Paper I, II, III**).

In **Paper IV and V**, when we used a cut off of 9/10 on the EPDS, 46 of the 280 women (16%) who returned the EPDS at two months scored 10 or more on the EPDS. To compare scores between the sample of 280 women with the former sample of 574 women, a cut off score of 12/13 on the EPDS was used on the 280 women. It was determined that 18 (6.5%) women scored 13 and more on the EPDS. Thus, the two samples had approximated the same frequency of women with depressive symptoms. The corresponding figures for the partners of these 235 women, who had answered the EPDS two months postpartum, were 8 (3.4%) fathers with the cut off 9/10 and 2 fathers who scored 13 or more on the EPDS.

In **Paper IV**, when only the 106 couples participated, new mothers experienced a higher level of blues than fathers during the first week (Table 2). The mothers’ mean percentage scores peaked on day 4, while the fathers’ had already peaked on day 1 immediately following the delivery (Figur 1).



**Figur 1. Mothers’ and fathers’ mean percentage scores over five days as measured by the Blues Questionnaire.**

Mothers also showed higher mean EPDS scores than fathers both at one week and at two months (Table 2). One week postpartum, 22 (21%) mothers and 3 (3%) fathers scored 10 or more on the EPDS. Two months postpartum, 10 (9%) mothers and one father scored 10 or more on the EPDS. Only three mothers and no fathers scored above 13 on the EPDS at two months. Among the 106 couples, 30 (28%) of the new mothers reported that they had experienced previous depression in life, and 14 (13%) of the fathers reported the same.

## **FREQUENCY OF POSTPARTUM BONDING**

In the sample of 106 couples the mean values on the PBQ were low in both mothers and fathers, well below the cut off for an unfavourable parent-child relationship on all the PBQ subscales (Table 2). Only one difference was found between mothers and fathers regarding the bonding at one week postpartum, i.e. fathers showed more rejection and anger. At one week, nine mothers and three fathers scored above the recommended 12 scores on the subscale *impaired bonding*, and were thus showing “mild bonding disorders” as classified by Brockington *et al* (2002). However, when the child was two months old, fathers scored significantly higher on PBQ and all its subscales, indicating that fathers had more bonding problems than mothers. At this time, only one mother, and six fathers scored more than 12 on the PBQ subscale *impaired bonding*. No parent had scores showing an unfavourable relationship according to the other PBQ subscales.

Table 2. Differences between mothers' and fathers' scores on the Blues Questionnaire, Edinburgh Postnatal Depression Scale (EPDS), Postpartum Bonding Questionnaire (PBQ) and the Infant Characteristic Questionnaire (ICQ) (N=104-106)

|                                      | Mothers M (Sd) | Fathers M (Sd) | P        |
|--------------------------------------|----------------|----------------|----------|
| <b>Blues Questionnaire –</b>         |                |                |          |
| <b>Overall mean percentage score</b> | 29.77 (16.57)  | 18.32 (10.11)  | < 0.0001 |
| <b>EPDS mean score</b>               |                |                |          |
| At one week                          | 6.09 (5.05)    | 4.28 (2.64)    | 0.0002   |
| At two month                         | 4.38 (3.79)    | 2.5 (2.37)     | < 0.0001 |
| <b>PBQ mean score at one week</b>    | 7.51 (7.49)    | 7.98 (6.42)    | ns       |
| <i>Impaired bonding</i>              | 4.27 (4.11)    | 4.25 (3.51)    | ns       |
| <i>Rejection and anger</i>           | 1.59 ( 2.37)   | 2.15 (2.37)    | 0.0479   |
| <i>Anxiety about care</i>            | 1.71 (1.77)    | 1,64 (1.32)    | ns       |
| <b>PBQ mean score at two month</b>   | 6.04 (5.13)    | 8.26 (6.8)     | 0.0007   |
| <i>Impaired bonding</i>              | 3,62 (3.09)    | 4.32 (3.78)    | 0.0586   |
| <i>Rejection and anger</i>           | 1.24 (1.78)    | 2.35 (2.52)    | < 0.0001 |
| <i>Anxiety about care</i>            | 1.17 (1.18)    | 1.60 (1.32)    | 0.0009   |
| <b>ICQ mean score at two month</b>   | 8.84 (1.89)    | 9.35 (1.69)    | 0.0111   |
| <i>Difficulty</i>                    | 3.02 (0.82)    | 3.03 ( 0.74)   | ns       |
| <i>Dull</i>                          | 3.22 (0.94)    | 3.27 (0.62)    | ns       |
| <i>Unpredictable</i>                 | 2.61 (0.76)    | 3.05 (0.81)    | < 0.0001 |

## EARLY INDICATORS FOR DEPRESSIVE SYMPTOMS AND BONDING 2 MONTHS POSTPARTUM

Although differences were found in the frequencies of blues and depressive symptoms between mothers and fathers, there were indeed many similarities in how the measured variables related to high EPDS scores. Blues and the PBQ subscale *impaired bonding* (at one week and two months), and the other partners' EPDS scores were related to EPDS scores at two months in both mothers and fathers (Table 3). Previous depression was associated significantly to high EPDS scores in the mothers', but not in the fathers' regression analysis. In addition, emergency Caesarean section showed up as a predictor for high EPDS scores in this sample population of mothers (Table 3). However, the child's temperament and the mothers' breastfeeding/ breastfeeding problems were not significantly associated to the EPDS at two months in neither mothers nor in fathers in this community sample of fairly privileged parents (**Paper IV**).

Table 3. Variables related to depressive symptoms (EPDS) at two month in mothers ( $r^2=0.41$ ) and fathers ( $r^2=0.43$ ).

|   | Mothers     |           |         | Fathers     |           |          |
|---|-------------|-----------|---------|-------------|-----------|----------|
|   | Coefficient | Std Error | p-value | Coefficient | Std Error | p-value  |
| <b>Intercept</b>                                | 0.552       | 0.645     | 0.3939  | - 0.353     | 0.439     | 0.4191   |
| <b>Previous depression</b>                      | 1.703       | 0.745     | 0.0244  | -           | -         | -        |
| <b>Emergence Caesarean Section</b>              | 2.835       | 1.110     | 0.0122  | -           | -         | -        |
| <b>Blues day 1-5</b>                            | 0.063       | 0.022     | 0.0059  | 0.098       | 0.018     | < 0.0001 |
| <b>PBQ subscale at 1 week</b>                   |             |           |         |             |           |          |
| <i>Impaired bonding</i>                         | - 0.261     | 0.110     | 0.0266  | - 0.163     | 0.064     | 0.0122   |
| <b>PBQ subscale at 2 month</b>                  |             |           |         |             |           |          |
| <i>Impaired bonding</i>                         | 0.469       | 0.147     | 0.0019  | 0.237       | 0.06      | 0.0001   |
| <b>The partners depressive mood at 2 months</b> | 0.253       | 0.138     | 0.0707  | 0.164       | 0.05      | 0.0016   |

In **Paper I**, the high scoring mothers ( $n=22$ ) on the EPDS at two months rated their children significantly higher on the ICQ subscale *fussy-difficult*, i.e. perceived their children as more fussy and overall more temperamentally difficult than did low scoring mothers ( $F(1,278)=17.17$ ,  $p<0.0001$ ). Also, the partners of high EPDS scoring mothers rated their children higher on the ICQ subscale *fussy-difficult* than partners of low EPDS scoring mothers ( $F(1,278)=6.46$ ,  $p<0.02$ ). No corresponding difference was found in the parents' ratings on the ICQ subscales *dull* and *unpredictable* (**Paper 1**)

When assessing which variables were affecting the total PBQ, it was found that the subscales *impaired bonding* and *rejection and anger* (at one week), the child's temperament, i.e. the ICQ and the EPDS at two months, were significantly related to the PBQ at two months in both mothers and fathers. However, there was a difference between mothers and fathers according to the child's temperament. In the mothers' regression analysis, the ICQ subscale *fussy and difficult* was related to the PBQ, while in fathers' the ICQ subscales *dull* and *unpredictable*. A history of previous depression was significantly associated with the PBQ at two months in mothers, but not in fathers (Table 4). The factors of blues, the mothers' breastfeeding/breastfeeding problems, or the mode of delivery did not relate significantly to the PBQ two months postpartum, neither in mothers nor in the fathers (**Paper IV**).

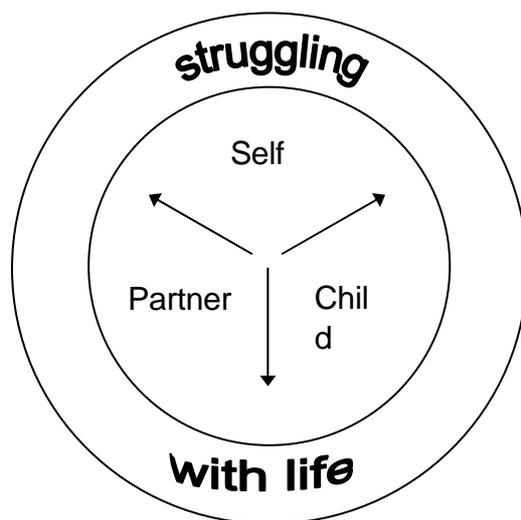
Table 4. Variables related to postpartum bonding (PBQ) at two month in mothers ( $r^2=0.64$ ) and fathers ( $r^2=0.61$ ).

|                               | Mothers     |           |         | Fathers     |           |          |
|-------------------------------|-------------|-----------|---------|-------------|-----------|----------|
|                               | Coefficient | Std Error | p-value | Coefficient | Std Error | p-value  |
| <b>Intercept</b>              | -2.828      | 1.191     | 0.0195  | - 11.165    | 2.658     | < 0.0001 |
| <b>Previous depression</b>    | 2.258       | 0.764     | 0.0039  | -           | -         | -        |
| <b>PBQ subscale at 1 week</b> |             |           |         |             |           |          |
| <i>Impaired bonding</i>       | 0.386       | 0.124     | 0.0025  | 0.536       | 0.219     | 0.0165   |
| <i>Rejection and anger</i>    | 0.406       | 0.203     | 0.0486  | 0.666       | 0.323     | 0.0417   |
| <b>EPDS at 2 month</b>        | 0.273       | 0.095     | 0.0051  | 0.859       | 0.189     | < 0.0001 |
| <b>ICQ subscales 2 month</b>  |             |           |         |             |           |          |
| <i>Fussy-difficult</i>        | 1.576       | 0.434     | 0.0004  | -           | -         | -        |
| <i>Dull</i>                   | -           | -         | -       | 2.491       | 0.780     | 0.0019   |
| <i>Unpredictable</i>          | -           | -         | -       | 1.806       | 0.641     | 0.0059   |

## EXPERIENCE OF PARENTHOOD

### Mothers' with signs of depression

The 22 interviewed women who showed signs of depression (Md=12.5 on the EPDS) two months postpartum described the 2-3 first months with their child as a struggle with life, related to the self, the child and the partner (Figur 2).



**Figur 2. Core-variable and categories in mothers' experiences of motherhood.**

The new mothers felt overwhelmed by strong feelings of failure, guilt, disappointment, worry, uncertainty and unfulfilled expectations. They struggled to redefine a sense of identity and tried to live up to the many moral beliefs regarding the image of a "good

mother”. A “good mother” would supposedly be happy when she got a healthy child, have patience with all her children, always think about the children before her, and she would breastfeed her children. As a consequence of these beliefs, the mothers felt guilt and failure because they did not feel happy or patient, but instead wanted personal space and time for themselves (but they never blamed the child for these feelings). Thus, they were reluctant to speak about their feelings with relatives and friends and always had to fake a display of happiness.

The mothers also struggled with the practical care and emotional feelings related to the child and expressed uncertainty and ignorance, particularly if they could not breastfeed or did not feel immediate love for the child. Some mothers expressed painful feelings of being rejected by the child in the beginning, and then felt guilt for these early feelings. They often blamed themselves for not having spent enough time with the child in the early postpartum. Most mothers expressed negative influences on their marital relationship since the child was born. They experienced that they had less time for each other and for their mutual interests, and that misunderstandings with their partners arose more easily. But the mothers, with a few exceptions, had faith in their relationships to the partner and struggled to understand their partners’ situation and to get their relationship to work. Although they felt supported by their partners, the mothers expressed thoughts and worries about how they should be able to combine occupational life with family life and they struggled to get their partners involved in childcare and with trying to create parenthood on equal terms between the sexes.

#### Parents’ experiences at one year, if the mother showed signs of depression 2 month postpartum

At one year postpartum the 16 women who scored high on the EPDS at two months and remained in the study reported that they experienced motherhood as more stressful and dissatisfactory, according to the total EMQ, than did women who scored low on the EPDS ( $F(1,190)=12.30, p<0.0006$ ). When looking into the EMQ subscales, it was found that these high EPDS scoring women, at two months postpartum, scored higher on the EMQ subscales *personal autonomy* and *coping with life* after one year, i.e. they experienced higher levels of stress related to their lives as a mother than did the low EPDS scoring women. They also scored higher on the EMQ subscale *anxiety and concerns* with respect to their children than did the low EPDS scoring women. But in contrast, they did not report problems of coping with the baby. No significant difference was noted between the 13 spouses of the high EPDS scoring women and spouses of low EPDS scoring women regarding their experiences of stress in parenthood. However, spouses of high EPDS scoring women rated the EFQ subscale *personal autonomy* higher than did spouses of low EPDS scoring women at two months postpartum (Table 5). Looking deeper into this finding between the two groups of fathers, it was shown that the difference could be derived from the EFQ item about the sexual relationship, thus the spouses of high EPDS scoring women at two months, were more dissatisfied with the sexual relationship one year postpartum than spouses of low EPDS scoring mothers.

Table 5. Parents' experience of parenthood assessed by Experience of Motherhood/fatherhood (EMQ/EFQ) and subscales in families with a mother with signs and without signs of depression (MANOVAS)

| Experiences of Parenthood | Families with high EPDS scoring mother |                   | Families with high EPDS scoring mother |                   | Depr vs non-depr mothers<br>F & sign | Depr vs non-depr partners<br>F & sign |
|---------------------------|--|-------------------|--|-------------------|--------------------------------------|---------------------------------------|
|                           | Mothers Mean (Sd)                      | Fathers Mean (Sd) | Mothers Mean (Sd)                      | Fathers Mean (Sd) |                                      |                                       |
| EMQ/EFQ                   | 2.18 (0.38)                            | 1.69 (0.28)       | 1.69 (0.31)                            | 1.55 (0.31)       | 12.3                                 | 1.66                                  |
| Anxious and concerned     | 1.67 (0.57)                            | 1.39 (0.31)       | 1.32 (0.29)                            | 1.38 (0.35)       | 12.3                                 | 0.001                                 |
| Coping with the baby      | 1.90 (0.55)                            | 1.81 (0.34)       | 1.68 (0.43)                            | 1.63 (0.44)       | 1.46                                 | 1.14                                  |
| Personal autonomy         | 2.58 (0.53)                            | 2.31 (0.42)       | 2.11 (0.52)                            | 1.91 (0.529)      | 19.4                                 | 5.91                                  |
| Coping with life          | 2.65 (0.41)                            | 2.04 (0.55)       | 1.82 (0.47)                            | 1.77 (0.43)       | 29.54                                | 3.65                                  |

p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001; \*\*\*\* p < 0.0001

## CONSEQUENCES OF MATERNAL DEPRESSIVE SYMPTOMS 2 MONTHS POSTPARTUM

The mother-child interaction 15-18 months postpartum

In **Paper II**, 24 mothers with high EPDS scores at two months and their children (index group) were compared to 21 mothers with low EPDS scores and their children (comparison group) in a mother-child interaction when their children were 15-18 months old. According to PCERA-analysis, the videotaped mother-child interaction only revealed one significant difference between the index- and comparison-groups. This was in the free play session, where the children with a high EPDS scoring mother showed less interest in exploring the environment and less attention when playing with their mothers than did the children of mothers with low EPDS scores (M=37.0 (Sd=2.5) versus M=40.4 (Sd=3.7), p<0.03). Although mothers with high EPDS scores did not differ on the PCERA composite variable *Maternal Emotional Availability*, one of the variables in this composite variable differ; namely Maternal structuring and mediation. This finding indicated that mothers with high EPDS scores had significantly more difficulties in modulating the child's affect and stimulation in play, particularly in the structural task (See Table 6).

Table 6. Differences in mean scores for index- and comparative groups on PCERA variables (Sd s given in parentheses).

| PCERA composite variables        | Structured task       |                      |      |        | Free play             |                      |       |        |
|----------------------------------|-----------------------|----------------------|------|--------|-----------------------|----------------------|-------|--------|
|                                  | Index Group<br>M (sd) | Comp Group<br>M (sd) | t    | n      | Index Group<br>M (sd) | Comp Group<br>M (sd) | t     | p      |
| Maternal emotional availability  | 69.7 (8.6)            | 72.5 (8.7)           | 1.09 | ns     | 70.0 (8.9)            | 69.1 (8.8)           | 0.34  | ns     |
| Maternal negative affect         | 37 (3.9)              | 37.9 (4.6)           | 0.87 | ns     | 38.1 (2.5)            | 38.2 (2.3)           | -0.13 | ns     |
| Child quality of play            | 38.1 (4.2)            | 39.1 (4.6)           | 0.75 | ns     | 37.0 (5.3)            | 40.4 (3.7)           | -2.34 | < 0.03 |
| Child negative affect            | 24.6 (3.2)            | 25 (4.3)             | 0.34 | ns     | 25.3 (2.7)            | 25.9 (2.7)           | -0.76 | ns     |
| Child positive affect            | 39.5 (5.8)            | 40.9 (5.4)           | 0.83 | ns     | 38.2 (5.8)            | 39.6 (6.0)           | -0.79 | ns     |
| Dyadic mutuality                 | 28.8 (3.7)            | 29.5 (4.6)           | 0.53 | ns     | 28.3 (4.2)            | 29.4 (3.2)           | -0.92 | ns     |
| <b>PCERA variable</b>            |                       |                      |      |        |                       |                      |       |        |
| <b>21</b>                        |                       |                      |      |        |                       |                      |       |        |
| Maternal structuring & mediation | 3.9 (0.8)             | 4.4 (0.6)            | 2,52 | < 0.02 | 3,9 (0.8)             | 4.3 (0.5)            | -1.95 | < 0.06 |

To further explore the difference of interaction styles between the children, a cluster-analysis was performed on data from the free play (Table 7). Three clusters emerged, which could be ranked from least to most optimal interacting style of the children. Thus, we found a group of nine children with rather impaired mother-child interaction. In particular, these children were less attentive and persistent in play and showed less interest in exploring the environment and objects around them than the children in the other two clusters (M=30.5 (Sd=3.7), vs M=40.4 (Sd=2.3) versus M=40.8 (Sd=2.4) p<0.0001). However, no significant association was found between the mothers EPDS-score and the children's interacting style in the three clusters. Seven of the nine children in Cluster I, with the least optimal interacting style had mothers who scored 13 or more on the EPDS at two months postpartum. In contrast, more than half of the index children (12 of 22) were identified as optimally interacting children and were also described as socially and communicatively competent.

Table 7. Comparisons of component scores for the three clusters (mean values and Sds given).

| Component (PCERA-variables & EPDS) | Cluster I (n=9) | Cluster II (n=12) | Cluster III (n=22) | F    | p        | Significant Contrasts |
|------------------------------------|-----------------|-------------------|--------------------|------|----------|-----------------------|
| Maternal emotional availability    | 65.1(11.2)      | 65.3 (8.3)        | 73.8 (5.6)         | 6.6  | < 0.004  | I vs II ns            |
| Maternal neg affect                | 37.3 (2.0)      | 37.6 (3.4)        | 38.7 (5.6)         | 1.6  | ns       |                       |
| Dyadic mutuality                   | 24.4 (3.0)      | 26.8 (1.7)        | 31.6 (2.2)         | 37.9 | < 0.0001 | I vs II p <0.02       |
| EPDS at 2 months                   | 12.8 (5.2)      | 8.7 (7.1)         | 10.1 (6.5)         | 1.06 | ns       |                       |

Cluster I=low PCERA scores; Cluster II =Medium PCERA scores; Cluster III= high PCERA scores

In **Paper III**, where only couples were assessed, no significant effect of maternal depressive mood was found in the mother-child interaction during the structural play situation (Table 8). However, in the free play situation a significant effect of maternal depressive mood was seen in the composite variable *child's behaviour*, and the follow up ANOVA showed that children of mothers with high EPDS scores demonstrated a low level of persistent in play with their mothers (F=4.11, p=0.05). Inconsistent with this, mothers with high EPDS scores showed a tendency to be more positively involved in the interactions with their children in the free play situation than mothers with low EPDS scores (Table 8). Follow-up analysis indicating that mothers with high EPDS scores at two months had significant more positive physical contact with their children (F=5.39, p<0.04) had in the free play situation (To be discussed later).

Table 8. Effect of maternal depressive mood on the mother-child- and father-child interactions assessed according to the PCERA-composite variables; parent positive involvement, child behaviour and mood in the two play situations, structural and free play respectively, comparing index- and comparisons groups (MANOVA)

|                                 | Structural task |         |               | Free play |         |               |
|---------------------------------|-----------------|---------|---------------|-----------|---------|---------------|
|                                 | n               | F-value | p-value       | n         | F-value | p-value       |
| <b>Mother-child interaction</b> |                 |         |               |           |         |               |
| Mother's positive involvement   | 25              | 2.01    | 0.1117        | 23        | 2.54    | 0.0576        |
| Child's behaviour               | 25              | 1.52    | 0.2274        | 23        | 4.35    | <b>0.0081</b> |
| Child's mood                    | 25              | 0.71    | 0.6796        | 23        | 1.29    | 0.3218        |
| <b>Father-child interaction</b> |                 |         |               |           |         |               |
| Father's positive involvement   | 24              | 2.89    | <b>0.0364</b> | 24        | 1.62    | 0.2009        |
| Child's behaviour               | 24              | 0.70    | 0.6705        | 24        | 0.51    | 0.8131        |
| Child's mood                    | 24              | 2.82    | <b>0.0396</b> | 24        | 1.55    | 0.2219        |

### The father-child interaction at 15-18 months postpartum

The 11 fathers in families where the mothers scored 13 or more on the EPDS two months postpartum showed more *positive involvement* in the structural task (Table 8). Follow up ANOVA revealed that fathers in these families demonstrated significant more enjoyment and pleasure ( $F=7.39$ ,  $p < 0.02$ ) and also a tendency toward more visual contact ( $F=3.74$ ,  $p < 0.07$ ) in the father-child interaction as compared to the 14 fathers in families where the mothers scored low on the EPDS. As seen in Table 8, a significant effect of the mothers' depressive symptoms also showed up in the PCERA composite variable the *child's mood* when the children interacted with their fathers. Follow-up ANOVA indicated that children of high EPDS scoring mothers expressed significantly less negative effect ( $F=4.16$ ,  $p < 0.05$ ) and showed a tendency to be less serious ( $F=3.73$ ,  $p < 0.07$ ) than the children in families with a low EPDS scoring mother (**Paper III**).

### The child's attachment to the mother at 15-18 months

The most significant finding regarding attachment was the restriction of joy and happiness, which was found in some of the index children's attachment to their mothers. Although the children seemed to regard their mothers as a secure base, joy and vitality in the interaction was missing. As seen in Table 9, this child behaviour was found in 7 out of 8 child-attachment to the mothers with high EPDS scores.

Table 9. Attachment pattern in children, age 15-18 months old related to maternal depressive mood two months postpartum (Chi-square 9.2,  $p < 0.01$ ).

| Attachment pattern                  | Index mother-child dyads<br>(n=23) | Comparison mother-child dyads<br>(n=20) | Total mother-child dyads<br>(n=43) |
|-------------------------------------|------------------------------------|---|------------------------------------|
| Secure and joyful attachment        | 6                                  | 14                                      | 20                                 |
| Secure, but restricted in enjoyment | 7                                  | 1                                       | 8                                  |
| Insecure attachment                 | 10                                 | 5                                       | 15                                 |

Thus, more children in families with a low scoring mother on the EPDS were securely attached, with joy and joyful toward their mothers ( $n=14$ ), as compared to children of mothers with high EPDS scores ( $n=6$ ). Two thirds (10 of 15) of the insecurely attached children had mothers who scored high on the EPDS at two months. Thus, the quality of the attachment using our classification system, was shown to differ between the children of mothers to high EPDS scoring and low EPDS scoring mothers (Chi-square 9.2,  $p=0.01$ ). The seven children with the least optimal interacting style, who had high EPDS scoring mothers, were all insecurely attached (**Paper II**).

In **Paper III**, where only couples were assessed, the same tendency was found, but statistical significance was not reached between the index- and comparison-children's attachment to their mothers (Chi-square Exact Test= 6.11, p=0.065). Only two children of the 11 high EPDS scoring mothers showed secure and joyful attachment behaviour at the reunion with their mothers, as compared to eight of 14 children of low EPDS scoring mothers. Five children showed a secure attachment, but were restricted in joy and enjoyment, and four displayed insecure attachment in the index mother-child dyads as compared to one child with secure but restricted attachment and five insecurely attached children in the comparison mother-child interaction.

### The child's attachment to the father at 15-18 months

Concerning the child's attachment to the father, no significant differences were found between the index- and comparison-groups. As seen in Table 10, the secure attachment model with restricted joy, which had been found with mothers', was not found in the child-father attachment. Only one child was insecurely attached to his father in the index group and thus, only one child of a high EPDS scoring mother was insecurely attached to both his parents as compared to four in the comparison-group. Thus, 10 index children showed secure and joyful attachments to their fathers as compared to only two to their mothers (Chi Square Exact Test=13.18; p<0.002). In the comparison group no significant difference was seen between mothers and fathers, according to the child-parent attachment (**Paper III**).

Table 10. Attachment pattern in children, age 15-18 months old related to their mothers and fathers in the index- and comparison groups, respectively

| <b>Attachment pattern</b>           | <b>Index mother-child dyads (n=11)</b> | <b>Index father-child dyads (n=11)</b> | <b>Comparison mother-child dyads (n=14)</b> | <b>Comparison Father-child dyads (n=12)</b> |
|-------------------------------------|--|--|---|---|
| Secure and joyful attachment        | 2                                      | 10                                     | 8   | 8   |
| Secure, but restricted in enjoyment | 5                                      | 0                                      | 1   | 0   |
| Insecure attachment                 | 4                                      | 1                                      | 5   | 4   |

Difference between index- and comparison-mothers, Chi Square Exact test=6.11; p=0.065

## DISCUSSION

The initial months following the birth of a baby is a fragile period for the family. During this time the new mother and father need support from each other, as well as from relatives, friends, and most especially, from postpartum-care professionals. Most relevant to this thesis is a potential risk for maternal postpartum depression, which is a mood disorder that could have an effect on the relationships between all family members, particularly on the child. Below, I will discuss methodological considerations in relation to the results of this thesis and the potential impact they present to earlier findings within this area of research. The relevance for clinical practice will also be discussed

### METHODOLOGICAL CONSIDERATIONS

The frequency of maternal depressive symptoms in our studies was lower as compared to the approximate prevalence rate of 12% found by Rubertsson (2004) and Wickberg and Hwang (1997). This difference could be due to the relatively low response rate in our studies or from the relatively stable population samples studied, which involved few immigrant or single mothers. Particularly in **Paper IV**, where only couples participated, the frequency of maternal depressive symptoms was relatively low.

The results in **Paper IV** should therefore be interpreted with great caution, since the drop out rate was high during the first week postpartum. It is possible that the high drop out rate mirrors the stress that many new parents in our society experience during the first postpartum period. One indicator for this suggestion is that at the time of the reminder phone call, stress was cited by the new parents as a reason for not answering the questionnaires. Another indication that stress was a key element during the initial one-week period following the birth is that the drop out rate was somewhat lower at two months postpartum, when parents were more likely settled with the baby. Thus, it simply may have been too much for the parents to fill out relatively complicated questionnaires, such as the Blues Questionnaire, which should have been completed during each of the first consecutive five days following the delivery. In addition, early discharge from maternity clinics is presently a common practice in Sweden, presenting a difficult challenge to having a continuous 5-day availability to the mother and father. The drop out analysis, however, did not show any differences according to maternal age and parity, mode of delivery, sex of the child and weight of the child, between the 106 mothers in **Paper IV** and those other mothers (n=398) approached at Maternity ward. In addition, we did not find any significant difference on education, civil status, a frequency of previous depressive mood, or a frequency of women with depressive symptoms at one week, between the 106 mothers in **Paper IV** and the mothers who did not return all the questionnaires or who had a non-participating partner. However, we did find a difference at two months, when the sample of 106 couples had (as measured by the cut off score of 9/10 on the EPDS) a significantly lower frequency of depressed mothers (9.4%) as compared to the mothers who did not return all questionnaires or who had a non-participating partner (20.5%). The drop out analysis may thus further

indicate that our sample population consisted of families living in more stable relationships and in less chaotic situations than those parents who had not answered all questionnaires. Our findings could lend support for the importance of the role of the father in preventing maternal depressive symptoms, a likelihood that is consistent with the findings of Marks *et al.* (1996).

Since the purposes of **Paper II and III** were to study women with depressive symptoms at two months postpartum, and to follow up on their impact on parent-child interactions at 15-18 months postpartum, we only report the presence of depressive symptoms as measured by the EPDS at two months. A limitation of the study is that we have therefore not determined the duration of the mothers' depressive mood, and we are thus not able to correlate our findings to other studies involving low-risk samples showing that the duration of depression is a factor of significance indicating a less positive mother-child interaction (Campbell *et al.*, 1995; Stanley *et al.*, 2004). We are thus only able to speculate about the duration of maternal depression and its involvement in optimal mother-child interaction. With regard to observing mother-child interactions, another limitation in our study is that only 24 of 42 women with high EPDS scores, and only 11 of their partners, agreed to participate in the videotaped parent-child interactions. Our sample might thus not be representative to a general population. Of particular interest, however, is that the EPDS score showed no difference between the participating women and the women who did not want to participate in the videotaping.

In **Papers I-III** we did not assess the fathers' mood. The reason was due to the fact that the EPDS was not accurately validated for men at the time those studies began. This implies that we were not able to tell if some of the fathers had a depressive mood when the father-child interactions were conducted. However, according to Field *et al.* (1999) this does not likely pose a problem, since depressed fathers in their study were found to perform as well as non-depressed fathers during the interactions with their children.

## **EARLY INDICATORS OF DEPRESSIVE SYMPTOMS AT 2 MONTHS**

The results in **Paper II and III** indicated that even in a low-risk sample with self-reported depressive mood the maternal depression symptoms negatively affected the mother-child interaction. Thus, we wanted to study circumstances around the birth, which might have an importance for the onset of depressive symptoms early postpartum, e.g. blues, an incidence of previous depression, couple morbidity, a birth by Caesarean section, postpartum bonding and the parents' perceptions of their child's temperament (**Paper IV**).

### **Blues**

Although that the mothers' frequency of blues and depressive symptoms was, as expected, higher than the frequency seen in fathers, we found many similarities in the mothers' and fathers' responses to the questionnaires when interpreting the regression analysis. The incidence of Maternity blues was in accordance with earlier studies

(Beck, Reynolds and Rutowsky, 1992b; Fossey, Papiernik and Budlowsky, 1997; Hannah, Adams, Lee, Glover and Sandler, 1992; Hapgood *et al.*, 1998; Hiltunen, Jokelainen, Ebeling, Szajnberg and Moilanen, 2004; Lane *et al.*, 1997; O'Hara 1991; Pitt, 1973; Stein, 1980; Yamashita, Yoshida, Nakano and Tashiro, 2000) found to be associated with high EPDS scores two months postpartum. However, even blues in the father was associated with depressive symptoms at two months.

The Blues Questionnaire was found to better predict depressive mood at two months, as compared to EPDS measured at one week, in both mothers and fathers. The advantages of the Blues Questionnaire might be the range of symptoms, which included, e.g. anxiety, irritability, happiness and lability, and that these are measured over time during a period of very changeable mood within women. The Blues Questionnaire may therefore catch the mothers/fathers overall mood more accurately than an instrument such as the EPDS, which retrospectively measures the mood over the previous seven days. Teissedre and Chabrol (2004) found that the *anxiety items*, 3,4, 5, 6 and 7 of the EPDS, according to factor-analyses, were the best predictors for later depressive symptoms. In line with this, Des Rivières-Pigeon, Saurel-Cubizolles and Lelong (2004) found that interviewer's perceptions of anxiety in new mothers on the second day postpartum was a better predictor for depressive symptoms at five months postpartum than when depressive mood was measured by a questionnaire about women's mental health. It is thus of interest for the health professional to pay attention if mothers express anxiety during the first days following birth to improve the identification of women at risk for developing postpartum depressive symptoms.

### Previous depression

Previous depression, as indicated in the mothers' regression analysis, associated with high EPDS scores at two months. This finding indicates that the caregivers should be attentive and ask new mothers if they had been depressed earlier. Henshaw (2000) found that both a past history of depression and blues were independent predictors for postpartum depression and each of them raises the risk almost three times, and she later suggested that blues is a marker for an affective vulnerability in women during this period (Henshaw, 2003). Surprisingly, in fathers we did not find an association between previous depression and high EPDS score at two months, although earlier studies found this to be one of the best predictors for postpartum depression in men (Goodman, 2004).

### Couple morbidity

Our results showed that high EPDS score at two months in one partner was an indicator for a high EPDS score in the other partner. This is consistent with other studies of risk factors, in particular for paternal depressive mood (Areias *et al.*, 1996a+b; Ballard *et al.*, 1994; Soliday *et al.*, 1999). Fathers in families with a depressed spouse have reported many worries about the family and the subsequent strains associated with their concerns (Boalt *et al.*, 1998; Meighan *et al.*, 1999). A Finnish study showed that it is typical for families with a depressed mother to display strong reactions to changes in

the family system, such as having a new baby (Tammentie *et al.*, 2004). Thus, it is important for health care personnel to be aware of the possibility that if a mother shows depressive symptoms, her partner may also be depressed and might need professional support.

### Emergency Caesarean section

We found that emergency Caesarean section was an indicator for a high EPDS score in mothers, which is in line with the findings of other authors. Boyce and Todd (1992) and Koo *et al.* (2003) found an increased risk for post partum depression after emergency Caesarean section when compared to elective Caesarean sections. The conflicting results about an association between postpartum depression and Caesarean sections (Clement, 2004), may according to Koo *et al.* (2003) be due to that many studies have not distinguish between elective and emergency Caesarean sections. The fathers' EPDS scores at two months were not affected if the partner had an emergency Caesarean section.

### Post partum bonding

The PBQ subscales *Impaired bonding* and *rejection and anger*, taken one week postpartum, were significantly related to high scores on the total PBQ at two months postpartum, in both mothers and fathers, indicating that early bonding problems may be an important predictor to later bonding problems. Further, if bonding, i.e. maternal affection for a child was absent at two months postpartum our results in **Paper IV** indicate that the mother could also have been depressed, especially since high EPDS scores were associated with high scores on the PBQ at two months postpartum. This was found for fathers, as well. In some parents, therefore, early bonding problems may lead to later bonding problems, and postpartum depression may also be a subsequent factor. At this point we can only speculate about the correlative relationships between EPDS and PBQ, but a mutual interaction can perhaps be gleaned since the PBQ subscale *impaired bonding*, as seen in both the mothers' and the fathers' regression analysis, was significantly related to the EPDS, and the EPDS in turn affected the PBQ. Factors influencing bonding and subsequent responses to positive versus negative interactions include societal beliefs surrounding the phenomenon of bonding, the immediacy of the feelings that the parent is bonded to the child, the presence of breastfeeding and the resulting stressors surrounding perceived attachment among the mother/child versus father/child dyad. The presence or development of depression may influence each of these variables. Crouch and Manderson (1995) expressed concern for anxiety and guilt that could follow a belief that bonding at birth is a prerequisite for satisfactory mothering. Given this finding, it is important to reassure mothers that it is not unnatural not to fall in love with the child at the first sight, and that the feelings will eventually come. In our studies, several of the mothers interviewed at 2-3 months postpartum (**Paper V**) expressed much guilt and regret over a lack of immediate bonding to their child. The mothers regretted that they did not spend enough time with

the child, did not pick up the child, or did not have enough energy to take care of the child the first time (**Paper V**).

Our results further indicate that fathers had more difficulties than mothers with the emotional relationship to the child at two months postpartum (**Paper IV**). In our sample comprised only of couples, 92% of the mothers reported that they breastfed their children at two months. This sample may included engaged and involved fathers; however, despite this fact, the close mother-infant relationship promoted by the breastfeeding might still have given the new fathers a feeling of being excluded from the child. Jordan and Wall (1990), in fact, found that fathers' concerns about breastfeeding included a lack of opportunity to develop a relationship to the child and they subsequently had feelings of inadequacy because they were unable to satisfy the child. Our findings support this idea, in that fathers with high scores on the PBQ, i.e. low bonding, rated their children more *dull* and *unpredictable* than did fathers with low scores on the PBQ. A subsequent dilemma is that fathers were more ignorant about the meaning of the child's signals, thus supporting his sense of alienation. This could be one explanation as to why fathers reported stress in parenthood related to the child and not to events in his own life as did the mothers at one year (**Paper I**).

However, the mother's reaction to seeing that the father is less engaged with the child may also lend to a sense of poor mothering and to depressive symptoms. In the interview study with 22 mothers exhibiting signs of depression (**Paper V**), the mothers described that they were aware of the their partners' difficulties and that they tried to leave room for the fathers to be alone with the child. A lack of positive bonding to the child at two months, therefore, seems to be connected to the presence of postpartum depression. Crouch (2002: 373) proposes that "postpartum depression is an evolved response to the mother's diminished capacity (for whatever reason) to care for the infant," displacing a more common view that postpartum depression is a cause of a problematic mother-child interaction (Kumar, 1997; Stanley et al., 2004) and an inability to look after the baby (Terry et al., 1996).

### Child temperament

A "difficult" temperament in a child has been suggested to be a potential predictor for the onset of post partum depression (Beck, 1996b; Cutrona and Troutman, 1986; Whiffen and Gotlib, 1989; Murray *et al.* 1996a). This was consistent with the finding in **Paper I**, where high EPDS scoring mothers perceived their child as more fussy and overall more difficult to care for than low EPDS scoring mothers. Also their partners rated their child significantly more fussy and difficult than partners in families with low EPDS scoring mothers. This finding suggests that these children were actually more difficult to care for and that the maternal depressed mood originated from the child's difficult temperament. However, our study was not designed to give any specific answers about whether a difficult child could cause maternal depression, or if the mother's depression itself made the child difficult. It is the mutual communication between the child and his parents that is important, and Chess and Thomas (1989) used

the concept “goodness of fit” to describe when the child’s capacities and temperament are adequate to master demands and expectations from its environment. But a child’s fussiness and irritability are well known causes of stress and depression in parents (Petit and Bates, 1994). In accordance with this, we found that both mothers and fathers reported more stress in parenthood according to the EMQ/EFQ at one year postpartum, if they had rated their child as temperamentally “difficult” at two months postpartum. In **Paper IV**, the child’s temperament was not significantly related to high EPDS scores at two months neither in the mothers’ nor in the fathers’ regression analyses. An explanation for this might be our fairly privileged sample of couples as explained in **Paper IV**, with low levels of depressive mood at two months postpartum and perhaps more stable relationships and partner support. Wilson, Hall and White (1993) found a positive relation among family stability and maintaining a proper rhythm in the child.

## EXPERIENCES OF PARENTHOOD

It becomes obvious in the interview study with mothers at 2-3 months postpartum (**Paper V**), that depressive mood postpartum still is a hidden condition. The new mothers said that they were reluctant to speak about their feelings, primarily because they felt that the feelings might be confirmed and consolidated when speaking about them. In accordance with Ugarriza (2002), we also found that the women felt guilt, failure and were fearful of losing control, and thus did not allow their feelings to be expressed. This finding is supported by other studies which described postpartum depression from the women’s own perspective (Birbrajer and Glas, Kullbratt, 2003; Lewis and Nicolson, 1998; McIntosh, 1993), and by a Swedish study that showed that only one third of the women identified as having depressed mood by their CHC-nurses had themselves told the nurses about their feelings (Wickberg-Johansson, Erlandsson and Hwang, 1996). Acknowledgement of negative feelings about one’s child or the relationship to the child could imply, according to Wollett and Parr (1997), that the women risk designating themselves as unnatural. The new mothers we interviewed thus struggled hard in order to manage independently, and they never blamed the child for their perceived failures as mothers. A cross-cultural qualitative study with participants at 15 centres from 11 countries, reported that mothers identified as a source of unhappiness difficulties with the emotional and practical care of the baby; breastfeeding was also cited as a contributor to unhappiness (Oates *et al.*, 2003). In **Paper V**, much of the struggling experienced by women during the first period concerns breastfeeding and the women who did not succeed breastfeeding felt like “bad mothers”. However, in **Paper IV** we did not find breastfeeding or breastfeeding problems significantly associated to high EPDS scores at two months. This could be due to our selected sample of presumably well-functioning parents with low frequency of depressive symptoms. In these families, which included a high breastfeeding frequency, fathers might have had positive attitudes toward breastfeeding, which is known to help mothers’ cope better with breastfeeding (Tarkka, Paunonen and Laipalla, 1999). Ultimately, gleaning a predisposition for depression based upon breastfeeding is difficult, due to the fact that results are inconsistent. Some studies have in fact shown that women who did not breastfeed were more likely to be depressed than breastfeeding women (Eberhard-Gran *et al.*, 2002; Hannah *et al.*, 1992; Warner *et al.*, 1996) and that

depressed mothers breastfeed for a shorter time (Field, Hernandez-Reif and Feijo, 2002; Henderson *et al.*, 2003; Seimyr, Edhborg, Lundh and Sjögren, 2004;).

We found in **Paper I**, that women who scored high on the EPDS at two months also showed at one year (as measured by the EMQ) a more stressful and dissatisfactory experience than low EPDS scoring mothers at two months. Thus, there is a risk that early depressive mood might, for a long duration, negatively influence the mothers' experiences of motherhood. In particular, the women with high EPDS scores at two months experienced also at one year that their personal autonomy was restricted and that they were still struggling with their life as a mother and with anxiety and concerns for their child. However, in contrast to other studies (Milgrom and Mc Cloud, 1996; Zerkowitz and Milet, 1996, 1997; Boalt *et al.*, 1998), we did not find that spouses of high EPDS scorers reported more stress and dissatisfaction in fatherhood, except that the fathers in our study were more dissatisfied with the sexual relationship than spouses of low EPDS scorers.

## CONSEQUENCES OF DEPRESSIVE SYMPTOMS AT 2 MONTHS

### On the parent-child interactions 15-18 months postpartum

The mothers' mental health in combination with her social circumstances has been found to be most critical for predicting an impaired mother-child interaction (Cohn *et al.*, 1986; Field *et al.*, 1990; Stein *et al.*, 1991; Murray, 1992; Beck, 1995; Murray *et al.*, 1996b; Murray *et al.* 1996c). In our study we found that children of mothers scoring 13 or more on the EPDS at two months showed less interest and attention in the free play situation with the mother 15-18 months postpartum and that almost one third of these children (7 of 24) showed a strikingly decreased interaction with their mothers, as particularly related to the quality of explorative play. These findings indicated that some children of mothers with depressive symptoms might have lacked contingent responsiveness from the mother in the early postpartum, resulting in adverse effects on the child's ability to pay attention to and learn about objects; an interference with the child's understanding of interactive rules and conventions has also been suggested as a result of such limited exposure (Hay *et al.*, 2001; Milgrom, Martin and Negri, 1999; Stanley *et al.*, 2004). Righetti-Veltma, Bousquet and Manzano (2003) also found at 18 months postpartum, mother-child dyads of depressed mothers demonstrated less playing as compared to the non-depressed mother-child dyads. However, the only difference we could see between high- and low-scoring women on the EPDS at two months post partum, was that high-scoring mothers were less effective in structuring the environment for their children in order to help them succeed in the structural task (**Paper II**). Our findings support the study by Stein *et al.* (1991) who found that mothers who had been depressed postpartum had a low capacity to facilitate 19 months after birth the child's acquisition of skills and mastery in a structured task. In turn, their children showed less affective sharing, a lower rate of interaction, and less concentration when compared with children of non-depressed mothers. Interestingly,

the relationship between post partum depression and adverse child outcomes still remained, even in cases where the depression had remitted.

In **Paper III** we were surprised to find out that the high EPDS-scoring mothers had more positive physical contact with their children as compared to low EPDS-scoring mothers. This result might reflect that mothers who scored high on the EPDS at two months had more performance anxiety, since they knew that they had been depressed, and given their knowledge that their interaction with the child would be assessed, they perhaps tried harder to help the child succeed in the tasks. Another explanation could be that high scoring mothers of children who were more difficult to facilitate for or who expressed a “difficult” temperament touched their children more and tried to calm them and help them to concentrate and to be more attentive. This maternal behaviour could be interpreted as a way for these mothers to overcome or to compensate for residual difficulties in the mother-child dyad, due to the mothers' depressive symptoms early in the post partum period. Weinburg and Tronick (1998) suggested that a mother-child relationship develops stable characteristics based upon the interaction history of the mother and child.

Half of the children of mothers scoring 13 or more on the EPDS at two months (12 of 24), however, showed a high level of quality in explorative play and these children were socially and communicatively competent (**Paper II**). This finding shows that half of the mothers in this low-risk sample (with self-reported depressive symptoms) were “a good enough mother” for their children. Stanley *et al.* (2004) suggests a few likely factors that may help to buffer adverse effects of maternal depressive symptoms, with these being an absence of hardships and the presence of continuous social support, including other caregivers. The adverse effects on the mother-child relationship we saw in one third of the children with high EPDS-scoring mothers might therefore be caused by a more severe and prolonged episode of depressive symptoms or by the presence of more adverse social contexts and/or less social support.

Our findings are consistent with studies from community samples in low-risk areas that displayed small differences in the mother-child interactions (Murray, 1992; Campbell *et al.*, 1995). Campbell *et al.* (1995) suggested that only women with protracted depression lasting more than six months were less positive in interaction with their children. However, Loh and Vostanis (2004) did not find that high EPDS scores were predictive of clinical diagnoses of depression and perceived mother-child interactions difficulties.

The partners of high EPDS scoring mothers who participated in father-child interactions at 15-18 months postpartum (**Paper III**) were more positively involved with their children than fathers in families with a low EPDS scoring mother. The children of high EPDS scoring mothers expressed less negative affect and were less serious while playing with their fathers than were children of fathers with a low EPDS scoring partner. We may interpret this to mean that fathers in families with high EPDS scoring mothers have established a more joyful way to interact with their children than spouses of low EPDS scoring mothers, where the mothers might be the primary caregiver in all aspects. In concordance with the studies of Cox *et al.*, 1992 and Volling

and Belsky, 1992, who have researched paternal sensitivity to their children's cues, we found that a significant effect of the fathers positive involvement in the father-child interaction only showed up in the structural task and not in the free play situation. Belsky (1996) raised the possibility that fathers' activity has to be restricted to a structured play situation in order to assess how fathering behaviour really "looks". Our findings indicate that fathers could make up for maternal depression and thus support the studies of Hossian *et al.*, 1994, Chabrol *et al.*, 1996, Field *et al.*, 1999. In addition, a Swedish study found that fathers in families with a mentally ill mother showed more warmth in the father-child interaction than did the mentally ill mothers (Albertsson-Karlgren, Graff and Nettelbladt, 2001). An possible explanation for fathers' devoted involvement in families where mothers have a tendency to react with psychological disorders, could be that those mothers might choose more considerate and caring men than women without this tendency.

### On the child's attachment to their parents

The child's attachment to his or her parents was assessed in this study according to the PCERA, which allowed us to evaluate the parents' ability and level of comfort in preparing the child for a brief separation. The child's capacity for self-regulation, quality of mood and exploratory play during the parents' absence, as well as the dyadic quality of affect and engagement at the reunion, were observed. Although only one separation was conducted, in a familiar setting for the child, the attachment system was triggered and different patterns of attachment were observed. Since there is no manual in the PCERA to code the separation/reunion, the analysis of the separation/reunion interventions was made on the written descriptions by the psychologists of what happened during the separation, at the time of and after the reunion. However, since home observations have been found to activate too little stress in order to allow differences between insecure groups to emerge (Ainsworth *et al.*, 1978; Salomon and Georg, 1999), we did not distinguish between insecure attachment behaviours, such as avoidant, resistant (Ainsworth *et al.*, 1978) or disorganised behaviour (Main and Salomon, 1990). The pattern of attachment called "secure but restricted in terms of enjoyment" is our own interpretation of the coders' descriptions and not a conventional classification. However, this restriction of joy and pleasure was the most striking feature of the findings, and indicated that children of high EPDS scoring mothers developed "working models" of the mother and the interactions with her as less joyful, even if they seemed to accustomed the mother as a secure base for exploration. However, the separation/reunion intervention conducted in our study is not comparable with standardised methods such as the Strange Situation (Ainsworth *et al.*, 1978).

### SUGGESTIONS FOR CLINICAL PRACTICE

Our results indicate that self-reported depressive symptoms in the mother may have an impact on the maternal experiences of parenthood at one year. Mothers who report depressive moods at 2 months are more likely to report a higher level of stress at one

year, as compared to mothers who report no depressive symptoms for this same period. Further, we found that children of depressed mothers are less interested in exploring their environments and show less attention while interacting with their mothers. The child's attention problem shown during this interaction, could be derived from non-contingent interaction in early life and might negatively influence the child's development over time, particularly for boys (Hay *et al.*, 2001)

Thus, it is important to identify women at risk for postpartum depressive symptoms in order to prevent their onset. Several instruments have been developed with this purpose in mind, but according to Austin and Lumley (2003), none show enough sensitivity to identify or to screen for women at risk for depressive symptoms. Thus, CHC personnel might find other ways to protect families from the negative impact of depressive symptoms.

We suggest that an enhanced collaboration between MHC and CHC would be necessary in order to identify those women who experience anxiety and depressive moods during the pregnancy. These women would enter the detection system earlier and thus would receive better support and care once the child has arrived. As depressive mood still seems to be a "hidden" condition and the women often are reluctant to speak about their feelings (**Paper V**), establishing an open dialog with CHC-personnel may help the mothers to talk freely and might help to alleviate anxiety, which seems to be an important part of postpartum depressive mood (Teissedre and Chabrol, 2004; Des Rivières-Pigeon *et al.*, 2004). In fact, if the women are identified early as depressed, a non-directive counselling can be used, i.e. a "listen intervention" (Clement, 1995), has been shown previously to be an effective tool for reducing the mothers' depressive symptoms in a shorter time than that found in routine care at CHC (Holden *et al.*, 1989; Gerrard *et al.*, 1994; Cooper and Murray, 2003; Wickberg and Hwang, 1996).

Another method could be to use an instrument for measuring the blues or depressive symptoms during the first week, since we, in accordance with several other studies, found that blues is a predictor for depressive symptoms (e.g. Beck *et al.*, 1992b; Henshaw, 2000). Our findings showed this to be at two months postpartum (**Paper IV**). We found that the blues questionnaire was a better predictive instrument than was the EPDS, which might depend on the fact that it measures a range of different emotions over time, i.e. anxiety, distress, excessive crying, lability and low mood. This complexity is also a disadvantage with the instrument, however, because it is difficult to use in the clinical setting. The mothers are not available at the clinic for the entire duration of the testing period and for this reason a reliability of participation is questionable. The EPDS is more simple to administer and several studies have shown high correlations between high EPDS during the first week and depressive mood later (Dennis, 2004; Hannah *et al.*, 1992; Chabrol and Teissedre, 2004). However, it was found in Chabrol and Teissedre (2004) that the anxiety items in the EPDS was the best predictor for later depressive symptoms. Thus, an easier instrument to use than the Blues Questionnaire would be desirable for identifying the increased reactivity to stimuli, which Miller and Rukstalis (1998) assumed to be the most typical for the blues,

and anxiety, which seems to be a part of the new mother's problem in the early postpartum period.

Until then we suggest that the CHC-personnel should be attentive to early postpartum indicators for depressive symptoms: these include disclosure of previous episodes of depression and/or severe blues, emergency Caesarean sections, and, albeit indirectly, also early bonding problems (**Paper IV**).

It might in some cases be essential to assess and to assist in the maternal-child interactions in a situation that involves a depressed mother. One way of doing this would be to educate the mother and to make her aware of her baby's communication needs in reference to her own more limited ability to provide proper care, and in this way she may learn to respond if her child signals different needs. As we have explained, women are very anxious about preconceived notions of immediate bonding and it remains therefore very important that the CHC-personnel reassures the mother that bonding does not always come at first sight, but will eventually grow over time. As EPDS is recommended as a screening instrument to assess depressive symptoms 8-10 weeks postpartum, Brockington *et al.* (2001) suggests that also the PBQ could be used as a screening instrument to assess the quality of bonding. However, it will first be necessary to validate PBQ on observations of mother-child interactions, which have not yet been done, before it can be used in clinical practice (Loh & Vostanis, 2004). Until then we suggest that CHC-personnel use their knowledge and skill to be attentive to the quality of the mother-child interaction.

The CHC-personnel should also bear in mind that partners of mothers with depressive symptoms also show an increased risk for exhibiting their own depressive symptoms. This demonstrates a need for the fathers to be supported in order to prevent the onset of these symptoms. The fathers' role and his needs for support should therefore be noticed equally as the mothers'.

In our sample that included only couples (**Paper IV**) we identified a low frequency of depressive symptoms in both mothers and fathers. From this we draw the conclusion that to be a couple makes early parenthood easier than being a single parent or having a non-supportive partner. This indicates that the CHC-personnel should try to identify any potential problems in the relationship, and to find out if whether there is an extended supportive social network surrounding the couple. Even if the fathers seem to bond to the child early postpartum, our results indicate that they still expressed lower bonding at two months postpartum than did the mothers. As explained elsewhere, this phenomenon may reflect feelings of being excluded from the mother and child possibly due to the intimacy of breastfeeding (Jordan & Wall, 1990).

It is a delicate task for the CHC-personnel to care for a family and possibly prevent, detect, alleviate or guide the family successfully through times of depressive mood, as it is such a relief if there is no negative impact on the future relationships between the family members, particularly for the child.

## CONCLUSIONS

- Postpartum depressive symptoms still seems to be a "hidden" condition since mothers do not easily talk about their feelings with relatives, friends or professionals. Instead they struggle with life as it relates to the self, to the relation with the partner and with the child. However, they never blame the child for their feelings of failure as a mother.
- Even self-reported depressive moods in mothers, as measured by the Edinburgh Postnatal Depression Scale (EPDS) might negatively affect the child's interaction with the mother.
- Previous depression increases the risk of postpartum depressive mood in mothers, but not for fathers, although this is suggested in other studies.
- If the mother has signs of depressive mood there is a higher risk that also the father will show signs of depression.
- The father might compensate for the mother's mood through joyful playing with the child. There is support from the literature that even if the father has depressed mood he will compensate for the mothers depressed mood.
- High postpartum blues was related to depressive mood in both mothers and fathers.
- Low bonding to the child during the first week postpartum was related to low bonding at two months in both mothers and fathers. In addition, low bonding at two months postpartum was related to signs of depression at two months in both mothers and fathers.
- Parents who perceive their child as temperamentally difficult experienced parenthood as stressed and dissatisfactory.
- The similarities found between mothers and fathers in predictors to postpartum depressive symptoms and bonding could potentially be interpreted in terms of a broader human way of reacting to childbirth, and not a gender specific way to react. However, there are also differences between mothers and fathers such as their understanding of the child, which mainly could be caused by biological differences, as well as by practical circumstances and different gender roles related to childbirth.

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## REFERENCES

- Affonso, D.D. (1992). Postpartum depression. A nursing perspective on women's health and behaviors. *IMAGE: Journal of Nursing Scholarship*, **24** (3), 215-221.
- Affonso, D.D., Anindya, K.De., Horowitz, J.A., and Mayberry, L.J.(2000). An international study exploring levels of postpartum depressive symptomatology. *Journal of Psykosomatic Research*, **49**, 207-216.
- Ainsworth, M.D., Blear, M.C., Waters, E., and Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Hillsdale, N.J: Earlbaum.
- Albertsson-Karlgren, U., Graff, M., and Nettelbladt, P. (2001). Mental disease postpartum and parent-infant interaction – Evaluation of videotaped sessions. *Child Abuse Review*, **10**, 5-17.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders*. 4<sup>th</sup> Ed. (DSM-IV). APA. Washington, DC.
- Areias, M. E. G., Kumar, R., Barros, H., and Figueiredo, E. (1996a). Comparative incidence of depression in women and men, during pregnancy and after childbirth. Validation of the postnatal depression scale in Portuguese mothers. *British Journal of Psychiatry*, **169**, 30-35.
- Areias, M.E. G., Kumar, R., Barros, H., and Figueiredo, E. (1996b). Correlates of postnatal depression in mothers and fathers. *British Journal of Psychiatry*, **169**, 36-41.
- Astbury, J. (1994). Making motherhood visible: The experience of motherhood questionnaire. *Journal of Reproductive and Infant Psychology*, **12**, 79-88.
- Austin, M.P. (2004). Antenatal screening and early intervention for “perinatal” distress, depression and anxiety: where to from here? *Archives of Women’s Mental Health*, **7**, 1-6.
- Austin, M.P., and Lumley, J. (2003). Antenatal screening for postnatal depression: a systematic review. *Acta Psychiatrica Scandinivica*, **107**, 10-17.
- Ballard, C. G., Davis, P. C., Cullen, P. C., Mohan, R. N., and Dean, C. (1994). Prevalence of psychiatric morbidity in mothers and fathers. *British Journal of Psychiatry*, **164**, 782-788.
- Bates, J., Freeland, C., and Lounsbury, M. (1979). Measurement of infant difficulties. *Child Development*, **50**, 794-803.
- Bates, J. (1987). Temperament in infancy. In J.D. Osofsky (Ed.), *Handbook of Infant Development*, 2nd edition. New York: John Wiley & Sons, Inc.

- Beck, C.T. (1992). The lived experience of postpartum depression. A phenomenological study. *Nursing Research*, **41**(3), 166-170.
- Beck, C.T., Reynolds, M.A., and Rutowsky, P. (1992). Maternity blues and postpartum depression. *JOGNN: Journal of Gynaecology Neonatal Nursing*, **21** (4), 287-293.
- Beck, C.T. (1993) Teetering on the edge: A substantive theory of postpartum depression. *Nursing Research*, **42** (1), 42-48.
- Beck, C.T. (1995). The effects of postpartum depression on maternal-infant interaction: A meta-analysis. *Nursing Research*, **44** (5), 298-304.
- Beck, C.T. (1996a). A meta-analysis of predictors of postpartum depression. *Nursing Research*, **45** (5), 297-303.
- Beck, C.T. (1996b). A meta-analysis of the relationship between postpartum depression and infant temperament. *Nursing Research*, **45** (4), 225-230.
- Beck C.T.(2002) Postpartum depression. A metasynthesis. *Quality Health Research*, **12**, 453-472.
- Beeghly, M, Weinberg, M.K., Olson, K.L., Kernan, H., Riley, J., and Tronick, E.Z. (2002) Stability and change in level of maternal depressive symptomatology during the first postpartum year. *Journal of Affective Disorders*, **71**, 169-180.
- Belsky, J. (1996). Parent, infant, and social-contextual antecedents of father-son attachment security. *Developmental Psychology*, **32** (5), 905-913.
- Billings, J.R. (1995). Bonding theory – tying mothers in knots? A critical review of the application of a theory to nursing. *Journal of Clinical Nursing*, **4**, 207-211.
- Birbrajer, A., Glas Kullbratt, M.(2003). Motherhood, a struggle against the wind. Women's experience of postpartum depression. A phenomenological study. *Psykisk hälsa* , **3**, 187-204. (In Swedish).
- Boalt, E.H., Pryce, A.J., and Cox, J.L. (1998). Postnatal depression: The impact on the family. *Journal of Reproductive and Infant Psychology*, **16**, 199-203.
- Bowlby, J. (1994). *En trygg bas. (A Secure Base)*. Stockholm: Natur och Kultur. (Original work published 1988).
- Bowlby, J. (1997). *Attachment and Loss: Volume 1*. London: Pimlico. (Original work published 1969).
- Bowlby, J. (1998). *Separation - Anger and Anxiety: Volume 2*. London: Pimlico. (Original work published 1973).

- Boyse, P.M. and Todd, A.L. (1992). Increased risk of postnatal depression after emergency caesarean section. *Medical Journal of Australia*, **157**, 799-806.
- Brazelton, T. B. (1984). Neonatal Behavioral Assessment Scale. 2<sup>nd</sup> Edition. *Clinics in Developmental Medicine*, No 88. London: S.I.M.P.
- Brazelton, T. B., and Cramer, B.G. (1990). *The Earliest Relationship. Parents, Infants and the Drama of Early Attachment*. Oxford: Perseus Books.
- Bretherton, I. (1987). New perspectives on attachment relation: Security, communication, and internal working models. In J.D. Osofsky (Ed.), *Handbook of Infant Development*, 2<sup>nd</sup> Edition. New York: John Wiley & Sons, Inc.
- Brockington, I.F., Oates, J., George, S., Turner, D., Vostanis, P., Sullivan, M., Loh, C. and Ourdoch, C. (2001). A screening questionnaire for mother-infant bonding disorders. *Archives of Women's Mental Health*, **3**, 133-140.
- Brockington, I. (2004). Postpartum psychiatric disorders. *Lancet*, **363**, 303-310.
- Brown, G. B., and Harris, T. (1978). *Social Origins of Depression. A Study of Psychiatric Disorder in Women*. London: Tavistock Publications.
- Bågedahl-Strindlund, M., and Monsen Börjesson, K. (1998). Postnatal depression: A hidden illness. *Acta Psychiatrica Scandinavica*, **98**, 272-275.
- Campbell, S. B., Cohn, J. F., and Meyers, T. (1995). Depression in first-time mothers: Mother-infant interaction and depression chronicity. *Developmental Psychology*, **31** (3), 349-357.
- Caplan, H. L., Cogill, S. R., Alexandra, H., Robson, K. M., Katz, R., and Kumar, R. (1989). Maternal depression and the emotional development of the child. *British Journal of Psychiatry*, **154**, 812-822.
- Chabrol, H., Bron, N., and Le Camus, J. (1996). Mother-infant and father-infant interactions in postpartum depression. *Infant Behavior and Development*, **19**, 149 - 152
- Chabrol, H., and Teissedre, F. (2004). Relation between Edinburgh Postnatal Depression Scale scores at 2—3 days and 4-6 weeks postpartum. *Journal of Reproductive and infant psychology*, **22** (1), 33-39.
- Chess, S., and Thomas, A. (1989). Issues in the clinical application of temperament. In G.A. Kohnstamm, J.E. Bates, and M.K. Rothbart (Eds.), *Temperament in Childhood*. New York: John Wiley & Sons.
- Clark, R. (1985). *The Parent-Child Early Relational Assessment. Instrument and Manual*. Madison: Department of Psychiatry, University of Wisconsin Medical School.

- Clark, R., Paulson, A., & Conlin, S. (1993). Assessment of developmental status and parent-infant relationships: The therapeutic process of evaluation. In C. Zeanah (Ed.), *Handbook of Infant Mental Health*. (pp.191-209) New York: Guilford.
- Clark, R., Hyde, J.S., Essex, M.J., and Klein, M. H. (1997). Length of maternity leave and quality of mother-infant interactions. *Child Development*, **68** (2), 364-383.
- Clement, S. (1995). "Listening visits" in pregnancy: a strategy for preventing postnatal depression? *Midwifery*, **11**, 75-80.
- Clement, S. (2001). Psychological aspects of caesarean section. *Best Practice & Research Clinical Obstetrics & Gynaecology*, **15** (1), 109-126.
- Cogill, S. R., Caplan, H. L., Alexandra, H., Robson, K.M., and Kumar, R. (1986). Impact of maternal postnatal depression on cognitive development of young children. *British Medical Journal*, **292**, 1165-1167.
- Cohn, J. F., Matias, R., Tronick, E. Z. Connell, D., and Lyons-Ruth, K. (1986). Face-to-face interactions of depressed mothers and their infants. In E.Z. Tronick and T. Field (Eds.), *Maternal Depression and Infant Disturbance* (pp. 31-46). San Francisco: Jossey-Bass.
- Cooper, P., Campbell, E. A., Day, A., Kennerley, H., and Bond, A. (1988). Non-psychotic psychiatric disorder after childbirth. A prospective study of prevalence, incidence, course and nature. *British Journal of Psychiatry*, **152**, 799-806.
- Cooper, P. J., and Murray, L. (1998). Postnatal depression. *British Medical Journal*, **316**, 1884-1886.
- Cooper, P.J., Murray, L., Wilson, A., and Romaniuk, H. (2003). Controlled trial of the short- and long-term effect of psychological treatment of post-partum depression. *British Journal of Psychiatry*, **182**, 412-419.
- Cox, J.L., Holden, J.M., and Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh postnatal depression scale. *British Journal of Psychiatry*, **150**, 782-786.
- Cox M. J., Tresch Owen, M., Henderson, K.V., and Margand, N. A. (1992). Prediction of infant-father and infant-mother attachment. *Developmental Psychology*, **28** (3), 474-483.
- Cox, J. L., Murray, D., and Chapman, G. (1993). A controlled study of the onset, duration and prevalence of postnatal depression. *British Journal of Psychiatry*, **163**, 27-31.
- Cox J.L. and Holden, J. (2003). *Perinatal mental health – a guide to the Edinburgh Postnatal Depression Scale (EPDS)*. London: Gaskell.

- Crouch, M. (2002). Bonding, postpartum dysphoria, and social ties. A speculative inquiry. *Human Nature*, **13** (3), 362-382.
- Crouch, M., and Mandelson, L. (1995). The social life of bonding theory. *Sociological Science Medicine*, **41** (6), 837-844.
- Cumming, M. E., and Davies, P.T. (1994). Maternal depression and child development. *Journal of Child Psychology Psychiatry*, **35** (1), 73-112.
- Cutrona, C., and Troutman, B. (1986). Social support, infant temperament and parenting self-efficacy: A mediational model of postpartum depression. *Child Development*, **57**, 1507-1518.
- Deater-Deckard, K, Pickering, K, Dunn, J.F, Golding, J.(1998). Family structure and depressive symptoms in men preceding and following the birth of a child. *American Journal of Psychiatry*, **155**, 818-823.
- Dennis, C-L. (2004). Can we identify mothers at risk for postpartum depression in the immediate postpartum period using the Edinburgh Postnatal Depression Scale? *Journal of Affective Disorders*, **78**, 163-169.
- Des Rivières-Pigeon, C., Saurel-Cubizolles, M-J., and Lelong, N. (2004). Considering a simple strategy for detection of women at risk of psychological distress after childbirth. *Birth*, 31 (1), 34-42.
- Downey, G., and Coyne, J.C. (1990). Children of depressed parents: an integrative review. *Psychological Bulletin*, **108** (1), 50-76.
- Eberhard-Gran M., Eskild A., Tambs ,K., Opjordsmoen, S.,and Samuelsen, SO. (2001). Review of validation studies of the Edinburgh Postnatal Depression Scale. *Acta Psychiatrica Scandinavica*, **104**, 243-249.
- Eberhard-Gran, M., Eskild, A., Tambs, K., Samuelsen, SO.,and Opjordsmoen, S. (2002). Depression in postpartum and non-postpartum women: prevalence and risk factors.*Acta Psychiatrica Scandinavica*, **106**, 426-433.
- Edhborg M, Seimyr L, Lundh W and Widström A-M. (2000). Fussy child – difficult parenthood? Comparisons between families with a “depressed” mother and non-depressed mother 2 months postpartum. *Journal of Reproductive Infant Psychology*, **18** (3), 225-238.
- Field, T., Healy, B., Goldstein, S., Perry, S., Debra, B., Schanberg, S., Zimmerman, E. A., and Kuhn, C. (1988). Infants of depressed mothers show "depressed" behaviour even with non-depressed adults. *Child Development*, **59**, 1569-1579.
- Field, T., Healy, B., Goldstein, S., and Guthertz, M. (1990). Behavior-state matching and synchrony in mother-infant interactions of non-depressed versus depressed dyads. *Developmental Psychology*, **26** (1), 7-14.

- Field, T. (1995). Infants of depressed mothers. *Infant Behaviour and Development*, *18*, 1-13.
- Field, T. M., Hossain, Z., and Malphurs, J. (1999) "Depressed" fathers interactions with their infants. *Infant Mental Health Journal*, *20* (3), 322-332.
- Field, T., Hernandez-Reif, M., and Feijo, L. (2002). Breastfeeding in depressed mother-infant dyads. *Early Child Development and Care*, *172*, 539-545.
- Fossey, L., Papiernik, E., and Bydlowski, M. (1997). Postpartum blues: a clinical syndrome and predictor of postnatal depression? *Journal of Psychosomatic Obstetric Gynecology*, *18*, 17-21.
- Glaser, B.G. (1978). *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Mill Valley, California: Sociology Press.
- Glaser, B.G., Strauss, A.L. (1999). *The discovery of grounded theory: strategies for qualitative research*. New York; Aldine de Gruyter. (Original work published 1967).
- Glover, V., Liddle, P., Taylor, A. (1994). Mild hypomania (the Highs) can be a feature of the postpartum week. *British Journal of Psychiatry*, *164*, 517-521.
- Goldsmith, H. H., and Alansky, J. A. (1987). Maternal and infant temperamental predictors of attachment: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, *55* (6), 805-816.
- Goodman, J.H. (2004). Paternal postpartum depression, its relationship to maternal postpartum depression, and implications for family health. *Journal of Advance Nursing*, *45* (1), 26-35.
- Grace, S.L., Evindar, A., and Stewart, D.E. (2003). The effect of postpartum depression on child cognitive development and behavior: A review and critical analysis of the literature. *Archive of Women's Mental Health*, *6*, 263-274.
- Gerrard, J., Holden, J.M., Elliott, S.A. McKenzie, P., McKenzie, L. and Cox, J.L. (1993). A trainer's perspective of an innovative programme teaching health visitors about detection, treatment and prevention of postnatal depression. *Journal of Advance Nursing*, *18*, 1825-1832.
- Handley, S.L., Dunn, T.L., Baker, J.M., Cockshott, C., and Gould, S. (1977). Mood changes in puerperium, and plasma tryptophan and cortisol concentrations. *British Medical Journal*, *2*, 18-20.
- Hannah, P., Adams, D., Lee, A., Glover, V., and Sandler, M. (1992). Links between early postpartum mood and post-natal depression. *British Journal of Psychiatry*, *160*, 777-780.

Hapgood, C.C., Elkind, G.S., and Wright, J.J. (1988). Maternity blues: Phenomena and relationship to later postpartum depression. *Australian New Zealand Journal of Psychiatry*, **22**, 229-306.

Harris, B., Lovett, L., Newcombe, R., Walker, R., Riad-Fahmy, D. (1994). Maternity blues and major endocrine changes: Cardiff puerperal mood and hormone study II. *British Medical journal*, **308**, 949-953.

Hassmen, P., and Koivula, N. (1996). *Variansanalys*. Lund: Studentlitteratur.

Hay, D.F. (1997). Postpartum depression and cognitive development. In L. Murray, P.J. Cooper (Eds.), *Postpartum Depression and Child Development* (pp.85-110), London: The Guilford Press

Hay, D.F., Pawlby, S., Sharp, D., Asten, P., Mills, A., and Kumar, R. (2001). Intellectual Problems shown by 11-years-old children whose mothers had postnatal depression. *Journal of Child Psychology and Psychiatry*, **42** (7), 871-889.

Henderson, J.J., Evans, S.F., Straton, J.A.Y., Priest, S.R. and Hagan, R. (2003). Impact of postpartum depression on breastfeeding duration. *Birth*, **30** (3), 175-180.

Henshaw, C., Foreman, D.M., Cox, J. (2000). Postpartum blues: a risk factor for postpartum depression. Marce Society Biennial Conference. 4-6 September, Hulme Hall. Manchester, UK.

Henshaw C (2003). Mood disturbance in the early puerperium: a review. *Archives of Womens Mental Health*, **6**, suppl. 2, 33-42

Hiltunen, P., Jokelainen, J., Ebeling, H., Szajnberg, N., and Moilanen, I. (2004). Seasonal variation in postnatal depression. *Journal of Affective Disorder*, **78**, 111-118.

Hipwell, A.E., Goossens, F.A., Melhuish, E.C., and Kumar, R. (2000). Severe maternal psychopathology and infant-mother attachment. *Development and Psychopathology*, **12**, 157-175.

Holden, J. M., Sagovsky, R., and Cox, J.L. (1989). Counselling in general practice setting: Controlled study of health visitor intervention in treatment of postnatal depression. *British Medical Journal*, **298**, 223-226.

Hossain, Z., Field, T., Gonzales, J., Malphurs, J., and Del Valle, C. (1994). Infants of "depressed" mothers interact better with their non-depressed fathers. *Infant Mental Health Journal*, **15** (4), 348-356

Jennings, K.D., Ross, S., Popper, S., and Elmore, M. (1999). Thoughts of harming infants in depressed and nondepressed mothers. *Journal of Affective Disorders*, **54**, 21-28.

Jordan, P.L., and Wall, V.R. (1990). Breastfeeding and fathers: Illuminating the darker side. *Birth*, **17** (4), 210-213.

Josefsson, A., Berg, G., Nordin, C. and Sydsjö, G. (2001). Prevalence of depressive symptoms in late pregnancy and postpartum. *Acta Obstetrica Gynaecologica Scandinavica*, **80**, 251-255.

Kennerley, H., and Gath, D. (1989a). Maternity Blues. I. Detection and measurement by questionnaire. *British Journal of Psychiatry*, **155**, 356-362.

Kennerly, H., and Gath, D. (1989b). Maternity blues III. Associations with obstetric, psychological and psychiatric factors. *British Journal of Psychiatry*, **155**, 367-373.

Klaus, M.H., Kennell, J.H., and Klaus, P.H. (1995). *Bonding. Building the foundation of secure attachment and independence*. Reading, Massachusetts, Addison-Wesley Publishing Company, Inc.

Koo, V., Lynch, J. and Cooper, S. (2003). Risk of postnatal depression after emergency delivery. *Journal Obstetric Gynecological Research*, **29** (4), 246-250.

Korner, A. F., Hutchinson, C.A., Koperski, J.A., Kraemer, H.C. and Schneider, P.A. (1981). Stability of individual differences of neonatal motor and crying patterns. *Child Development*, **52**, 83-90.

Kornstein, S.G. (2001). The evaluation and management of depression in women across the life span. *Journal of Clinical Psychiatry*, **62**, (Suppl 24), 11-17

Kornfält, R. (2000). Survey of the pre-school child health surveillance programme in Sweden. *Acta Paediatrica*, Suppl. 434, **89**, 2-8.

Kumar, R., and Robson, J. A. (1984). A prospective study of emotional disorders in childbearing women. *British Journal of Psychiatry*, **144**, 35-47.

Kumar, C.R. (1997). "Anybody's child": severe disorders of mother-to-infant bonding. *British Journal of Psychiatry*, **171**, 175-181.

Kurstjens, S., and Wolke, D. (2001). Effects of maternal depression on cognitive development of children over the first 7 years of life. *Journal of Child Psychology and Psychiatry*, **42** (5), 623-636.

Lane A, Keville R, Morris M, Kinsella A, Turner M and Barry S (1997). Postnatal depression and elation among mothers and their partners: prevalence and predictors. *British Journal of Psychiatry*, **171**, 550-555.

Lewis, S.E., and Nicolson, P. (1998). Talking about motherhood: Recognizing loss and reconstructing depression. *Journal of Reproductive and Infant Psychology*, **16**, 177-197.

- Loh, C-C. and Vostanis, P. (2004). Perceived mother-infant relationship difficulties in postnatal depression. *Infant and Child Development*, **13**, 159-171.
- Lundh, W., and Gyllang, C. (1993). Use of the Edinburgh Postnatal Depression Scale in some Swedish child health care centres. *Scandinavian Journal of Caring Science*, **7**, 149-154.
- Lyons-Ruth, K., and Zeanah, Jr. C.H. (1989). The family context of infant mental health: Affective development in the primary caregiving relationship. In C. H. Zeanah, Jr (Ed.), *Handbook of Infant Mental Health*. New York/London: The Guilford Press.
- Main, M. (1996). Introduction to the special section on attachment and psychopathology: 2. Overview of the field of attachment. *Journal of Consulting and Clinical Psychology*, **64** (2), 237-243.
- Main, M., and Salomon, J. (1990). Procedures for identifying infant as disorganized/disoriented during the Ainsworth Strange Situation. In M.T. Greenberg, D. Cicchetti, and E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, Research, and Intervention* (pp. 121-160). Chicago: The University of Chicago Press.
- Marks, M., Wieck, A., Checkley, S., and Kumar, C. (1996). How does marriage protect women with histories of affective disorders from postpartum relapse? *British Journal of Medical Psychology*, **69**, 329-342.
- Martinez, A., Malphurs, J., Field, T., Pickens, J., Yando, R., Bendell, D., Valle, C., and Messinger, D. (1996). Depressed mother's and their infants interactions with non-depressed partners. *Infant Mental Health Journal*, **17** (1), 74-80.
- Matthey, S., Barnett, B., Ungerer, J., and Waters, B. (2000). Paternal and maternal depressed mood during the transition to parenthood. *Journal of Affective Disorder*, **60**, 75-80
- Matthey, S., Barnett, B., Kavanagh, D.J., and Howie, P. (2001). Validation of the Edinburgh Postnatal Depression Scale for men, and comparison of item endorsement with their partners. *Journal of Affective Disorder*, **64**, 175-18
- Mauthner, N.S. (1999). "Feeling low and feeling really bad about feeling low" Women's experiences of motherhood and postpartum depression. *Canadian Psychology*, **40**; 143-161.
- McIntosh, J. (1993). Experience of motherhood and the development of depression in the postnatal period. *Journal of Clinical Nursing*, **2**, 243-249.
- Meighan, M., Davies, M.W., Thomas, S.P., and Droppleman, P.G. (1999). Living with postpartum depression: The father's experience. *MCN, American Journal of Maternal Child Nursing* **24** (4), 202-208.

- Merchant, D. C., Affonso, D. D., and Mayberry, L. J. (1995). Influence of marital relationship and child-care stress on maternal depression symptoms in the postpartum. *Journal of Psychosomatic Obstetrics Gynaecology*, **16** (4), 193-200.
- Milgrom, J., and McCloud, P. (1996). Parenting stress and postnatal depression. *Stress Medicine*, **12** (3), 177-186.
- Milgrom, J., Martin, P. R., and Negri, L. M. (1999). *Treating Postnatal Depression. A Psychological Approach for Health Care Practitioners*. Chichester: John Wiley & Sons Ltd.
- Miller, L.J., and Rukstalis, M. (1998). Beyond the “Blues”. Hypotheses about postpartum reactivity. In L.J. Miller (Ed.) *Postpartum mood disorder*. (pp 3-19). Washington DC: American Psychiatric Press.
- Murray, L. (1989). Childbirth as a life event: The Cambridge study of postnatal depression and infant development. In J. L. Cox, E.S. Paykel, and M.L. Page (Eds.), *Currents Approaches. Childbirth as a Life Event*. Southampton: Duphar Laboratories.
- Murray, L., and Carothers, A. D. (1990). The validation of the Edinburgh Post-natal Depression Scale on a community sample. *British Journal of Psychiatry*, **157**, 288-290.
- Murray L. (1992). The impact of postnatal depression on infant development. *Journal of Child Psychology and Psychiatry*, **33** (3), 543-561.
- Murray, L., Kempton, C., Woolgar, M and Hooper, R. (1993). Depressed mothers' speech to their infants and its relation to infant gender and cognitive development. *Journal of Child Psychology and Psychiatry*, **14** (7), 1083-1101.
- Murray, D., Cox, J. L., Chapman, G., and Jones, P. (1995). Childbirth: life event or start of a long-term difficulty? Data from the Stoke-on-Trent controlled study of postnatal depression. *British Journal of Psychiatry*, **166**, 595-600.
- Murray, L., Fiory-Cowley, A., Hooper, R and Cooper, P. (1996a). The impact of postnatal depression and associated adversity on early mother-infant interaction and later infant outcome. *Child Development*, **67**, 2512-2526.
- Murry, L., Hipwell, A., Hooper, R., Stein, A., and Cooper, P. (1996b). The cognitive development of 5-year-old children of postnatally depressed mothers. *Journal of Child Psychology and Psychiatry*, **(8)**, 927-935.
- Murray, L., Stanley, C., Hooper, R., King, F. and Fiori-Cowley, A. (1996c). The role of infant factors in postnatal depression and mother-infant interactions. *Developmental Medicine & Child Neurology*, **38**, 109-119.
- Murray, L., and Cooper, P. J. (1997a). Postpartum depression and infant development. *Psychology Medicine*, **27**, 253-260.

- Murray, L., and Cooper, P. J. (1997b). The role of infant and maternal factors in postpartum depression, mother-infant interactions, and infant outcome. In L. Murray, P.J. Cooper (Eds.), *Postpartum Depression and Child Development* (pp. 111-136) London: The Guilford Press.
- Murray, L., Sinclair, D., Cooper, P., Docournau, P., Turner, P., and Stein, A. (1999). The socioemotional development of 5-year-old children of postnatally depressed mothers. *Journal of Child Psychology Psychiatry*, **40** (8), 1259-1270.
- Murray, L., Cooper, P., and Hipwell, A. (2003). Mental health of parents caring for infants. *Archives of Women's Mental Health*, **6**, Suppl.2, 71-77
- Nagata, M., Nagai, Y., Sobajima, H., Ando, T., Nishide, Y., and Honjo, S. (2000). Maternity blues and attachment to children in mothers of fullterm normal infants. *Acta Psychiatrica Scandinavia*, **101**, 209-217.
- Nagata, M., Nagai, Y., Sobajima, H., Ando, T., and Honjo, S. (2003). Depression in the mother and maternal attachment – results from a follow-up study at 1 year postpartum. *Psychopathology*, **36**, 142-151.
- Nicolson, P. (1990). Understanding postnatal depression: a mother-centred approach. *Journal of Advance Nursing*, **15**, 689-695.
- Nicolson, P. (1998). *Post-natal depression: psychology, science and the transition to motherhood*. London: Routledge.
- Oates, M.R., Cox, J.L., Neema, S., Asten, P., Glangeaud-Freudenthal, N., Figueiredo, B., et al. (2004). Postnatal depression across countries and cultures: a qualitative study. *British journal of Psychiatry, Suppl.* **46**, 10-16.
- O'Hara, M.W., Zekoski, E.M., Philipps, L.H., and Wright, E.J. (1990). Controlled prospective study of postpartum mood disorders: Comparison of childbearing and nonchildbearing women. *Journal of Abnormal Psychology*, **99** (1), 3-15.
- O'Hara, M.W., Schlechte, J.A., Lewis, D.A., and Wright, E.J. (1991). Prospective study of postpartum blues. Biologic and psychosocial factors. *Archive of General Psychiatry*, **48**, 801-806.
- O'Hara, M. W., and Swain, A. M. (1996). Rates and risk of postpartum depression - a meta- analysis. *International Review of Psychiatry*, **8**, 37-54.
- O'Hara, M. W. (1997). The Nature of Postpartum Depressive Disorders. In L. Murray, P.J. Cooper (Eds.), *Postpartum Depression and Child Development* (pp. 3-31) London: The Guilford Press.
- Petit, G.S., and Bates, J. E. (1984). Continuity of individual differences in the mother-infant relationship from six to thirteen months. *Child Development*, **55**, 729-739.
- Pitt, B. (1973). Maternity blues. *British Journal of psychiatry*, **122**, 431-433.

- Polit, D.F. and Beck, C.T. (2004). *Nursing Research. Principles and Methods. (7<sup>th</sup> Ed)*. Philadelphia: Lippincott Williams & Wilkins.
- Righetti-Veltema, M., Conne-Perréard, E., Bousquet, A., and Manzano, J. (2002). Postpartum depression and mother-infant relationship at 3 months old. *Journal of Affective Disorder*, **70**, 291-306.
- Righetti-Veltema, M., Bousquet, A., and Manzano, J. (2003). Impact of postpartum depressive symptoms on mother and her 18-month-old infant. *European Child Adolescent Psychiatry*, **12**, 75-83.
- Robson, K.M., and Kumar, R. (1980). Delayed onset of maternal affection after childbirth. *British Journal of Psychiatry*, **136**, 347-353.
- Rodhe, L., Busnello, E., Wolf, A., Zomer, A., Shansis, F., Martins, S., and Tramontina, S. (1997). Maternity blues in Brazilian women. *Acta Psychiatry Scandinavian*, **95**, 231-235.
- Rubertsson, C. (2004). *Depression and partner violence before and after childbirth*. (Doctoral dissertation). Department of Nursing, Karolinska Institutet, Stockholm.
- Salomon, J., and George, C. (1999). The measurement of attachment security in infancy and childhood. In J. Cassidy and P.R. Shaver (Eds.), *Handbook of Attachment. Theory, Research, and Clinical Applications* (pp. 287-316). New York: The Guilford Press
- Schreiber, R.S. (2001). The “How To” of Grounded Theory: Avoiding pitfalls. In R. S. Schreiber and P. N. Stern (Eds). *Using grounded theory in nursing* (pp 55-82) New York: Springer Cop.
- Seimyr, L., Edhborg, M., Lundh, W., and Sjögren, B. (2004). In the shadow of maternal depressed mood: Experiences of parenthood during the first year after childbirth. *Journal of Obstetric Gynaecology*, **25**, 23-34.
- Seyfried, L.S., and Marcus, S.M. (2003). Postpartum mood disorders. *International Review of Psychiatry*, **15**, 231-242.
- Sharp, D., Hay, D. F., Pawlby, S., Schmucker, G., Allen, H., and Kumar, R. (1995). The impact of postnatal depression on boys' intellectual development. *Journal of Child Psychology and Psychiatry*, **36** (8), 1315-1336.
- Sinclair, D., and Murray, L. (1998). Effects of postnatal depression on children's adjustment to school. Teachers report. *British Journal of Psychiatry*, **172**, 58-63.
- Small, R., Brown, S., Lumley, L., and Astbury, J. (1994). Missing voices: What women say and do about depression after childbirth. *Journal of Reproductive and Infant Psychology*, **12**, 89-103.

- Soliday, E., McCluskey-Fawcett, K., and O'Brien, M. (1999). Postpartum affect and depressive symptoms in mothers and fathers. *American Journal of Orthopsychiatry*, **69** (1), 30-37.
- Spector, P.E. (1992). *Summated Rating Scales Construction. An Introduction*. (Sage University paper series on quantitative applications in social sciences, series no 07-082). Newbury Park, CA: Sage.
- Stanley, C., Murray, L., and Stein, A. (2004). The effect of postnatal depression on mother-infant interaction, infant response to still-face perturbation, and performance on an instrumental learning task. *Development and Psychopathology*, **16**, 1-18.
- Stern, D. N., Bruschiweiler-Stern, N., and Freeland, A. (1998). *The birth of a mother. How the motherhood experience changes you forever*. New York: Basic Books.
- Stein, G., Marsh, A., Morton, J. (1981). Mental symptoms, weight changes, and electrolyte excretion in the first postpartum week. *Journal of Psychosomatic Research*, **25**, 395-408
- Stein, A., Gath, D. H, Bucher, J., Bond, A., Day, A., and Cooper P. J. (1991). The relationship between post-natal depression and mother-child interaction. *British Journal of Psychiatry*, **158**, 46-52.
- Stoppard, J. M.(2000). *Understanding depression. Feminist social constructionist approaches*. London: Routledge.
- Tammentiee T, Paavilainen E, Åstedt-Kurki P and Tarkka M-T. (2002) Family dynamics of postnatally depressed mothers –discrepancy between expectations and reality. *Journal of Clinical Nursing*, **13**, 65-74.
- Tarkka, M-T.,Paunonen, M.,Laippala, P.(1999). Factors related to successful breastfeeding by first-time mothers when the child is 3 months old.*Journal of Advance Nursing*, **29** (1), 113-118.
- Teissèdre, F., and Chabrol, H. (2004). Detecting women at risk for postnatal depression using the Edinburgh Postnatal Depression Scale at 2 to 3 days postpartum. *Canadian Journal of Psychiatry*, **49** (1), 51-54.
- Terry, D.J., Mayocchi, L., and Hynes, G.J. (1996). Depressive symptomatology in new mothers: A stress and coping perspective. *Journal of Abnormal Psychology*, **105** (2), 220-231.
- Teti, D. M., Gelfand, D. M., Messinger, D. S., and Isabella, R. (1995). Maternal depression and the quality of early attachment: An examination of infants, preschoolers, and their mothers. *Developmental Psychology* **31** (3), 364-376.
- Thomas, A., and Chess, S. (1984). *Origins and Evolution of Behavior Disorders*. New York: The Guilford Press.

Tronick, E. Z., and Weinberg, K. M. (1997). Depressed mothers and infants: Failure to form dyadic States of consciousness. In L. Murray, P.J. Cooper (Eds.), *Postpartum Depression and Child Development* (pp.54-81) London: The Guilford Press.

Ugarriza, D.N. (2002). Postpartum depressed women's explanation of depression. *Journal of Nursing Scholarship*, **34** (3), 227-233.

Warner, R., Appleby, L., Whitton, A., and Faragher, B. (1996). Demographic and obstetric risk factors for psychiatric morbidity. *British Journal of psychiatry*, **168**, 607-611.

Warner, R., Appleby, L., Whitton, A., and Faragher, B. (1997). Attitudes toward motherhood in postpartum depression: Development of the maternal attitudes questionnaire. *Journal of Psychosomatic Research*, **43** (4), 351-358.

Wasserman, D. (1998). *Depression en vanlig sjukdom. Symtom, orsaker och behandlingsmöjligheter. (Depression a common disease. Symptoms, causes and possibilities of treatments)*. Stockholm: Natur och Kultur.

Watson, J.P., Elliott, S.A., Rugg, A.J., and Brough, D.I. (1984). Psychiatric disorders in pregnancy and the first postnatal year. *British Journal of Psychiatry*, **144**, 453-462.

Weinberg K. M., and Tronick E. Z. (1998). The impact of maternal psychiatric illness on infant development. *Journal of Clinical Psychiatry*, **59**, (suppl 2), 53-61.

Whiffen, V. E., and Gotlib I. H. (1989). Infants of postpartum depressed mothers: Temperament and cognitive status. *Journal of Abnormal Psychology*, **98** (3), 274-279.

Wilson, M.E., Hall, E.O.C., and White M.A. (1993). Family dynamic and infant temperament in Danish families. *Scandinavian Journal of Caring Science*, **8**, 9-15.

Volling, B. L., and Belsky, J. (1992). Infant, father, and marital antecedents of infant-father attachment security in dual-earner and single-earner families. *International Journal of Behavioral Development*, **15** (1), 83-100.

Wickberg, B., and Hwang, P.C. (1996a). The Edinburgh Postnatal Depression Scale: Validation on a Swedish community sample. *Acta Psychiatrica Scandinavica*, **1**, 1-4.

Wickberg, B., and Hwang, P. C. (1996b). Counselling of postnatal depression: A controlled study on a population based Swedish sample. *Journal of Affective Disorders*, **39**, 209-216.

Wickberg-Johansson, B., Erlandsson, B., and Hwang, P. (1996c). Primary health care management of postnatal depression in Sweden. *Journal of Reproductive and Infant Psychology*, **14**, 69-76.

Wickberg, B., and Hwang, C.P. (1997). Screening for postnatal depression in a populationbased Swedish sample. *Acta Psychiatrica Scandinavica*, 95 (1), 62-66.

Wickberg, B., and Hwang, C.P. (2004). *Post partum depression – nedstämdhet och depression i samband med barnafödande (Postpartum depression – low mood and depression related to the birth of a child)*. Stockholm: Statens folkhälsoinstitut. (In Swedish).

Wollett, A., Parr, M. (1997). Psychological tasks for women and men in the postpartum. *Journal of Reproductive Infant Psychology* **15**: 159-183.

Yalom, I.L., Lunde, D.T., Moss, R.M. and Hamberg, D.A. (1968) Postpartum blues syndrome. *Archive Gen Psychiatry* , **18**, 16-27

Yamashita, H., Yoshida, K., Nakano, N., and Tashiro, N. (2000). Postnatal depression in Japanese women detecting the early onset of postnatal depression by closely monitoring the postpartum mood. *Journal of Affective Disorders*, **58**, 145-154.

Zelkowitz, P., and Milet, T. H. (1996) Postpartum psychiatric disorders: Their relationship to psychological adjustment and marital satisfaction in the spouses. *Journal of Abnormal Psychology*, **105** (2), 281-285.

Zelkowitz, P., and Milet, T. H. (1997) Stress and support as related to postpartum paternal mental health and perceptions of the infant. *Infant Mental Health Journal*, **18**(4), 424-435

Zelkowitz, P., and Milet, T.H. (2001). The course of postpartum psychiatric disorders in women and their partners. *The Journal of Nervous and mental disease*, **189** (9), 575-582.