

**Mother-Infant Interaction and the Role of  
Attachment in the Onset of Postnatal  
Mental Illness**

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## Abstract

No single risk factor has been linked to the onset of postpartum mental illnesses. Most research has centred on postnatal depression and the most predictive risk factors appear to be marital discord, poor social support, and negative childhood representations. These risk factors are all linked to relationship issues and it may therefore be helpful to investigate the onset of postpartum mental illnesses from an attachment perspective rather than to investigate isolated risk factors. In this study the relationship between attachment style, mother-infant interaction, interpersonal relationships, and the onset of postpartum mental illness was explored in a group of 25 mothers who had been or who were currently in-patients on a mother and baby unit. Mothers were found to be less secure compared to a published normative sample. Insecure attachment style was linked to impairments in mothering abilities, single motherhood, and poor relationship with significant others. Mothers' self-rating of interaction did not correlate with observers' ratings which is in accordance with attachment theory. However, there was no evidence to suggest that insecure attachment style or diagnostic category was linked to mother-infant interactions based on observers' ratings. There was also no evidence to suggest that mothers with insecure attachment styles were more likely to be experiencing marital discord compared to mothers with a secure attachment style. Implications of the findings both for theories of the onset of postpartum mental illnesses and for treatment strategies are discussed.

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# 1. Introduction

## 1.1 Overview of study

Childbirth is often an event of profound psychological significance but it is also a time of major physiological upheaval, involving endocrine and circulatory changes with widespread secondary effects on other systems. The psychiatric disorders associated with childbirth have attracted considerable attention in the last decade. Relatively little, however, is still known about the aetiology of either puerperal psychoses or postnatal depression.

Most research has centred on postnatal depression and no single factor has yielded a comprehensive explanation of the aetiology of this condition. So far the main trend has been to consider general stressors as having more predictive value than actual birth-related factors (Campbell, Cohn, Flanigan, Popper, & Meyers, 1992; Watson, Elliott, Rugg, & Brough, 1984). Marital problems (e.g., Marks, Wieck, Checkley, & Kumar, 1992a), poor maternal relationship (e.g., Kumar & Robson, 1984), and lack of social support (O'Hara & Swain, 1996) have all been implicated in the onset of postnatal depression. Little attention, however, has been given to the role of another important relationship; that of the infant.

Insight about the origins of postpartum psychiatric disorders may be gained from exploring the mother's recall of childhood experiences with her own

caregiver. Bowlby (1980) and Bretherton (1990) have spoken of the internal working model that the mother harbours concerning her own infancy experience. Of significance is that the mother's internal working model has been found to influence her relationship with her child. Main, Kaplan and Cassidy (1985) found that it was not the adversity of childhood experiences per se that influenced how an adult recalled his/her childhood experiences but rather how the person's attachment memories were organised (coherent Vs incoherent) and whether the person had resolved past experiences relating to loss and/or trauma (resolved Vs unresolved). A mother who have coherently organised mental representations of her childhood relationship with her own caregiver and who has resolved past experiences of loss or trauma tend to establish a secure attachment relationship with her infant. However, when a mother's representations of her childhood relationship is not organised coherently and when past experiences of loss or trauma are unresolved, the attachment relationship with the child tends to replicate this through maladaptive behaviour (e.g., Crittende, 1990; Fonagy, Steele, & Steele, 1991). Interestingly, the child's temperament does not appear to influence the mother-infant relationship. Studies have found that the child's security is more strongly related to the caregiver's qualities and behaviour than to the child's temperament (Bates, Maslin, & Frankel, 1985; Sroufe, 1985).

Several studies have linked an individual's negative childhood representations with a later episode of depression (Gerlsma, Das, & Emmelkamp, 1993; Stern, 1991). For example, Gerlsma and colleagues

(1993) found that the depressed patients in their sample reported more memories of adverse parenting that did their non-depressed control subjects. Various other sources support the view of a link between the quality of the parent-child relationship and depression (e.g., Puig-Antich, Lukens, & Davies, 1985; Weissman & Bothwell, 1976).

Research suggests that several domains of interactive behaviour may be affected by depressed maternal mood. For example, depressed maternal affect may inhibit normal regulatory function of maternal facial expressions and emotional signals, which in turn may have an impact on infant affective behaviour (e.g., Cohn & Tronick, 1983). Studies investigating infant attachment using the Ainsworth Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978) have consistently found that insecure attachment is most frequently found in children whose mothers have a history of mental illness (Field, 1984; Persson-Blennow, Näslund, McNeil, Kail, & Malmquist-Larsson, 1984; Radke-Yarrow, Cummings, Luczinski, & Chapman, 1985; Stein, Gath, Butcher, Bond, Day, & Cooper, 1991).

Studies on interventions with mothers and babies have yielded further information on the role that conflicting relationships may play on adversely affecting maternal mood. Studies on therapeutic interventions have indicated that maternal depressed mood can be improved if the mother-infant dyad is treated with dynamic psychotherapy during the postpartum period (Murray & Cooper, 1992; Trad, 1995).

It appears that a possible contributing factor to the onset of postnatal depression could be the caregiver's mental representations of her own experience with caregivers. Mothers whose mental representations of their caregiving experience are negative (incoherent or unresolved) may be apathetic about engaging the infant in interaction and resistant about accepting the maternal role. To date, no study has examined this in the aetiology of the full range of puerperal disorders. That is, most studies have investigated depression without psychotic symptoms and schizophrenia, but not depression with psychotic symptoms, puerperal psychosis or bipolar disorders.

Observation of mother-infant interaction (unpublished Audit study) suggests that not all dyads are affected by the mother's mental illness. Some mothers appear to be engaging well with their infants despite being severely depressed or psychotic. This observation suggests a possible association between the factors causing the psychiatric symptoms and those influencing mother-infant interaction. To date, no study has found any single aetiological cause for postpartum mental illnesses and it may be that different factors affect different women. If poor mother-infant interaction in women with postpartum mental illness is found to be linked to negative representations of their own caregiving experience, then psychotherapeutic intervention may be more appropriate in the treatment of the disorder rather than the pharmacological treatment that is widely used to date.

## 1.2 Postpartum Illnesses

### 1.2.1 Overview of Postpartum Illnesses

The postpartum period has been considered a time of increased risk for the development of mental illnesses in women (Nonacs & Cohen, 1998). However, not all illnesses present for the first time in the postpartum period and women suffering from postpartum mental illnesses can be broadly divided into three subgroups with regard to their relationship to pregnancy (Melhuish, Gambles, & Kumar, 1988):

- 1) Women whose illness is diagnosed before the pregnancy; for example women with a history of schizophrenia, bipolar disorders, affective disorders, or personality disorders.
- 2) Women who become mentally ill during the pregnancy for the first time ever. The incidences of mental illness during pregnancy is far less than after childbirth (Brockington, Winokur, & Dean, 1982; Kumar, 1982).
- 3) Women whose mental illness begins after childbirth. These illnesses mainly take two forms:
  - a) puerperal psychosis
  - b) postnatal depression

The common dysphoric reaction often described as the maternity blues is not an illness and will therefore not be discussed further in this thesis.

Approximately one in every 500 women is admitted to a psychiatric hospital within a few months of childbirth and about half of these patients become ill within the first four weeks (Brockington et al., 1982). There are about 1000 mothers each year in England and Wales who become severely mentally ill following childbirth and about two-thirds of them will have had their first child and their first ever psychotic breakdown (Melhuish, et al., 1988). Women with a history of severe mental illness are at particular high risk of relapse after delivery (Dean, Williams, & Brockington, 1989; Schöpf, Bryois, Jonquière, & Lee, 1984). Some will have a non-psychotic illness, some will become psychotic, and between 50% and 80% will remain well enough not to require medical intervention (Brockington, et al., 1982). Over the past 150 years it has been consistently reported that between 2% and 17% of all admissions to mental hospitals of women in their reproductive years have resulted from illnesses related to childbearing (Clarke, 1913; Esquirol, 1845; Gundry, 1860; Jacobs, 1943; Kraepelin, 1906; Madden, Luhan, Tuteux, & Bimmerle, 1958; Oltman & Friedman, 1965; Piker, 1938; Polonio & Figueiredo, 1955; Reid, 1848; Stevens, 1971; Webster, 1848) indicating that postpartum mental illnesses (whether first episode or relapse of pre-existing mental illness) are relatively common.

## 1.2.2 Postnatal Depression

### *Definition*

Postpartum depression usually refers to a non-psychotic depressive episode that begins in or extends into the postpartum period (Cox, Murray, & Chapman, 1993; O'Hara, 1994; Watson et al., 1984). Depression after childbirth is clinically similar to any other depression. Its symptoms include depressed mood, appetite and sleep disturbance, tearfulness, suicidal ideation, apathy, a sense of despair and hopelessness, and often multiple somatic complaints. It differs from normal depression since symptoms are often worse in the evenings with sleep disturbance most marked in the beginning of the night (Martin, 1977). In addition, the mother's ruminations of guilt and inadequacy feed her worries about being an incompetent and inadequate parent.

### *Prevalence*

Postpartum depression is relatively common and between 10% and 15% of all recently delivered women meet the Research Diagnostic Criteria (RDC: Spitzer, Endicott, & Robins, 1978) for major depressive illness (Cox, et al., 1993; Kendell, 1985; Kumar & Robson, 1984; O'Hara, 1994; Pitt, 1968; Playfair & Gowers, 1981; O'Hara, Schlechte, Lewis, & Varner, 1991; Watson et al., 1984; Wolkin, Zajicek, & Ghodsian, 1980). The rate of postnatal depression has been investigated in a number of Western and

non-western countries and it appear to be similar the world over (Aoki, Kitamura, Sinia, & Sugawara, 1989; Cox, 1983; Dennerstein, Leherr, & Riphagen, 1989; Ghubash, Abou-Saleh, & Daradkeh, 1997; Pop, 1991; Righetti-Valtema, Conne-Perreard, Bousquet, & Manzano, 1998; Thorpe, Dragonas, & Golding, 1992; Watson & Evans, 1986). Although the onset is usually within a few weeks of delivery, the women come to medical attention later on in the postpartum period, if they do so at all. If the depression is left untreated it tends to remit spontaneously (Cooper, Campbell, Day, Kennerly, & Bond, 1988) but in 30% of women the depression can last for at least 12 months (Nott, 1987; Pitt, 1968) and some women remain chronically depressed (Hamilton, 1989) with the condition recurring in 10 to 35 percent of patients (Kumar & Robson, 1984).

It is known that the detection rate of postnatal depression in primary care is poor (Cox, Connor, & Kendell, 1982). This is due to a multitude of reasons. Firstly, general practitioners are likely to miss at least half of all cases of depressive illness (Tylee, Freeling, & Kerry, 1993) and postnatal depression is no exception (Seeley, Murray, & Cooper, 1996). Secondly, postnatal depression is often unrecognised, as its symptoms may be easily attributed to changes in lifestyle incidental to infant care. Thirdly, many mothers do not seek help, despite knowing that they are not coping well. For example, Kumar and Robson (1984) found that less than half of a group of depressed mothers in their survey made contact with their family doctor or with specialist services for help with their psychological problems.

There are two main reasons for this reluctance to seek professional help. Firstly, as many women attribute their depression to external/social pressures rather than a medical illness, professional health care is often not viewed as appropriate to their problems. Secondly, some mothers may fear the consequences of talking about their emotional state. For example, they may have concerns about being labelled mentally ill and unfit to care for their children (McIntosh, 1993).

### **1.2.3 Puerperal Psychosis**

#### *Definition*

Puerperal psychoses are severe illnesses, which usually require admission to hospital. They have been of enduring interest to psychiatrists ever since Esquirol first described them in 1845. They characteristically start suddenly in the first two or three weeks after childbirth but may have an onset as early as the first 48 to 72 hours postpartum or even in very late pregnancy. Many of the women are primiparae experiencing their first psychotic illness (Brockington et al., 1982; Meltzer & Kumar, 1985). The psychoses are frequently of a manic nature and the symptoms may include confusion, agitated and bizarre behaviour, delusions, paranoia, and hallucinations. Symptoms may change quite rapidly and this changeability is one of the most remarkable features. Patients may move from marked euphoria to deep depression within a short period of time and intermittently a patient may feel 'well' (Hamilton, 1989).

## *Prevalence*

Puerperal psychoses are relatively rare with an estimated frequency of 1 in 1000 births (Kendell, Chalmers, & Platz, 1987; McNeil, 1987; Meltzer & Kumar, 1985; Videbech & Gouliaev, 1995) and the rate has remained broadly the same between 1848 and 1992 (Kumar, 1994). Cross-cultural studies have established that the rate is also similar in other countries, including non-western countries (Cheetham, Rzadkowolski, & Rataemane, 1981; Okano, Koshikawa, Nomura, & Tatsunuma, 1992; Shoeb & Hassan, 1990; Swift, 1972). Although puerperal psychoses appear to be a rare event, women are between 16 and 30 times more likely to be hospitalised for a psychotic episode in the first 30 days after delivery than at any other times before or after childbirth (Kendell et al., 1987; Kendell, Rennie, Clarke, & Dean, 1981; Paffenberg, 1964).

Most puerperal psychoses have a stormy and sporadic course but many women recover completely, usually within two months of being admitted to hospital, although it may take up to a year before they feel fully recovered (Kumar, Marks, Platz, & Yoshida, 1995; Meltzer & Kumar, 1985). Prior to treatment, puerperal psychoses had an average duration of about 6 months (Esquirol, 1845; Menzies, 1893), but the prognosis is now considered good. The risk of further psychotic relapse in a subsequent pregnancy is 30 to 50% (Dean et al., 1989).

### *Classification of Postnatal Depression and Puerperal Psychosis*

Although both postnatal depression and puerperal psychoses have been recognised conditions for more than a century, current classification systems such as the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV: American Psychiatric Association, 1994) and the tenth edition of the International Classification of Diseases (ICD-10: World Health Organisation, 1992) do not recognise them as distinct entities, but rather incorporate them under different disorders.

In past research postnatal depression has been defined in a variety of ways (O'Hara & Zekoski, 1988). More recent studies have defined postnatal depression as based on standardised diagnostic criteria for depression (Cooper & Murray, 1995; Cox et al., 1993; O'Hara, Zekoski, Philipps, & Wright, 1990; Troutman & Cutrona, 1990). According to a number of investigators (e.g., Cox et al., 1993; O'Hara et al., 1990) depressive states following delivery are no more frequent than at other ages. However, studies investigating the timing of postnatal depression have found that more than three times as many new cases are observed at 3 months postpartum (Kumar & Robson, 1984). If postnatal depression was merely the same as depression normally observed in women then the onset ought to be evenly distributed throughout the postpartum period. O'Hara et al. (1990) have also specified that new mothers experience more severe depressive symptoms when compared with a group of non-

childbearing women.

Although puerperal psychosis has been the subject of many investigations it is not a formal diagnostic category in DSM-IV (American Psychiatric Association, 1994) or the ICD-10 (World Health Organisation, 1992). It has been suggested that childbirth is merely a trigger that exposes a pre-existing vulnerability to psychosis such as schizophrenia or affective psychosis (e.g., Kraepelin, 1906). Indeed, exclusive puerperal episodes are rare and account for only 4% of cases (Videbech & Gouliaev, 1995). However, there is some evidence that the clinical features are perhaps more florid (Dean & Kendell, 1981) and that there is more confusion present (Brockington, Margison, Schofield, & Knight, 1988). In light of this, puerperal psychosis has emerged in ICD-10 (World Health Organisation, 1992) but the guidelines suggests that this classification should only be used for mental disorders associated with the puerperium that do not meet the criteria for disorders classified elsewhere in the manual. The other clinical features of puerperal psychosis are indistinguishable from other illnesses and as a result it is usually diagnosed as, for example, manic episode, depressive episode, or brief psychotic episode. In the DSM-IV, both postnatal depression and puerperal psychoses may be formally characterised as having a postpartum onset if the episodes begin within 4 weeks of childbirth.

#### **1.2.4 Risk Factors Associated with Postpartum Mental Illnesses**

A number of risk factors thought to be associated with puerperal mental illnesses have been investigated but no single factor has emerged to explain the increased rate of women who experience mental health problems following childbirth. It is possible that the aetiology is multi-determined and that constitutional factors may interact with psychological and social factors (Ramana & Bebbington, 1995). However, most risk factors have been investigated in isolation.

##### *Physiological and Biological Risk Factors*

Many investigators have looked for a biological component in the development of postpartum illnesses. Interest in the biological aetiology is in part due to the dramatic hormonal changes that occur in women in the first few days after delivery. However, studies looking at hormonal changes such as levels of progesterone, oestrogen, cortisol, and prolactin in women who have developed postnatal depression have in general been mixed and inconclusive (O'Hara, 1997). The evidence for increased dopamine sensitivity at four days postpartum (Wieck, Kumar, Hirst, Marks, Campbell, & Checkley, 1991) is also insubstantial (Meakin, Brockington, Lynch, & Jones, 1995) and the effectiveness of chemical prophylactic treatment has not yet been adequately tested. Obstetric factors, such as difficult labour and caesarean section, have also been found to be unrelated to the development of postnatal depression (Martin, 1977; Pitt,

1968; Warner, Appleby, Whitton, & Faragher, 1996). Paykel, Emms, Fletcher, and Rassaby, (1980) actually found a significant negative relationship between postnatal depression and the complications of labour. Finally, there is almost no evidence that previous abortions or miscarriage increase the risk for postpartum depression (Kumar & Robson, 1984; Paykel et al., 1980; Watson et al., 1984)

Most investigators believe that the causal mechanisms underlying puerperal psychosis arise out of some kind of physiological dysfunction (Campbell & Winokur, 1985; Deakin, 1988; George & Sandler, 1988; Wieck, et al., 1991) and that psychosocial factors have little or no role to play in the onset of this condition (Brockington, Martin, Brown, & Goldberg, 1990; Dowlatshahi & Paykel, 1990; Kendell et al., 1981, 1987; Martin, Brown, Goldberg, & Brockington, 1989). For example, it has been speculated that abnormalities in the hormonal change of the early postpartum period occur and that the psychiatric disorder represents some kind of endocrine psychosis. However, no endocrine pathology has so far been identified (Schöpf, Bryois, Jonquière, & Scharfetter, 1985). Obstetric factors have also been investigated as possible risk factors predisposing some women to puerperal psychosis. Dystocia and prematurity (Brockington et al., 1982), and caesarean section (Kendell et al., 1981) are all positively associated with puerperal psychosis.

### *Primiparous Vs Multiparous*

Some data suggests that primiparous women are at greater risk than multiparous women are for the development of puerperal psychosis. Thomas and Gordon (1959) first illustrated this in a survey of 13 studies carried out between 1913 and 1958 and confirmed later by Protheroe (1969), Paffenberg (1964), Brockington et al. (1982), and Kendell et al. (1987). Paffenberg (1964) and Kendell et al. (1987) both calculated that the risk of puerperal psychosis in primiparae was twice as high as in multiparae and that the difference was not secondary to an association with youth.

There is no evidence of an increased risk for primiparae to develop postnatal depression (Kendell, 1985).

### *Pre-Existing Psychiatric Disorders*

About a quarter of psychiatric admissions in the puerperium are in cases where mothers have a definite history of previous mental illness (Meltzer & Kumar, 1985; Kendell et al., 1987). According to Kendell et al. (1987) women with prior histories of a bipolar disorder are at greatest risk of admission in the three months following childbirth followed by those with a history of depressive psychosis. Women with other pre-existing mental illnesses such as schizophrenia and depressive neurosis account for the remaining admissions. This finding has been supported by a number of

other studies (Davidson & Roberts, 1985; O'Hara, 1994; O'Hara, et al., 1991). Women with bipolar disorders are readmitted because they suffer an acute puerperal relapse (Dean & Kendell, 1981; Meltzer & Kumar, 1985). Schizophrenic women do not appear to have their illness exacerbated or recurring following childbirth (Kendell et al., 1987) but are usually admitted for assessment purposes (Kumar, 1992).

Women with a history of puerperal psychosis are also at great risk of relapse following subsequent deliveries. Relapse rates have been reported to be as high as 70% (Brockington et al., 1982; Davidson & Robertson, 1985; McNeil, 1987). Women with histories of postpartum depression are also at risk of relapse, with rates of postpartum recurrence as high as 50% (Davidson & Robertson, 1985; Kendell et al., 1987; Reich & Winokur, 1970).

### *Demographic Risk Factors*

Many groups have investigated the relationship between risk for postnatal depression and various demographic variables including age, marital status, parity, education level, and socio-economic status (O'Hara, 1994; O'Hara, Neunaber, & Zekoski, 1984; Paykel, et al., 1980). However, there is little consistent evidence to suggest that any particular demographic factor places a woman at risk for postnatal depression. One of the most strikingly consistent observations has been the lack of any association between the incidences of postnatal depression and social class (Jermain,

1992; O'Hara & Zekoski, 1988; Romito, 1990).

Current literature on puerperal psychosis and demographic risk factors suggests that there is no relationship between the two (Marks et al., 1992a).

### *Life Events*

General studies on relapse rates in the schizophrenic population have repeatedly found that patients have experienced a significant excess of life events in the three week period preceding onset (Birley & Brown, 1970; Brown & Birley, 1968; Hultman, Wieselgren, & Öhman, 1997). Schizophrenics who relapse have also found to have restricted social support preceding relapse (Hultman et al., 1997). Negative life events which have been found to increase the likelihood of depression in non-puerperal women (Brown & Harris, 1978) have also been found to raise the risk of depression after delivery (Martin, et al., 1989; O'Hara, 1986, 1994; O'Hara, Rehm, & Campbell, 1982; Paykel, et al., 1980), especially financial and employment difficulties (O'Hara et al., 1984). However, there have also been some failures to find the expected association between negative life events and postnatal depression (Hopkins, Campbell, & Marcus, 1987; Kumar & Robson, 1984; Pitt, 1968).

Two recent studies have examined the role of life events on the development of puerperal psychosis in at risk mothers and have found no

association (Dowlatshahi & Paykel, 1990; Marks, Wieck, Checkley, & Kumar, 1991).

### *Social Support*

Women who have postnatal depression have been found to perceive her social support network as unsupportive (O'Hara & Swain, 1996). Lack of an adequate confidant or lower levels of support with a confidant are also associated with postnatal depression (O'Hara et al., 1982; Paykel et al., 1980).

### *Family History of Psychopathology*

Family history of psychopathology has also been found to be a predictor of postnatal depression (Campbell et al., 1992; O'Hara et al., 1984; Watson et al., 1984). However, a recent meta-analysis suggests that overall there may be little or no association between family history of psychopathology and postnatal depression (O'Hara & Swain, 1996).

### *Relationship Difficulties*

Relationship factors have been implicated in bipolar relapse following childbirth, particularly the marital relationship. In women who are at risk of postpartum illness, because they have a history of affective disorder, those who are dissatisfied with their partners (Marks, et al., 1992a) or whose

partners are uncommunicative (Marks, Wieck, Seymor, Checkley, & Kumar, 1992b), or who have no partner (Kendell et al., 1987) are all more likely to have a relapse of illness after childbirth. Marks, et al. (1996) have also suggested that a positive marital relationship may in fact protect the psychologically vulnerable woman from a postpartum illness.

The quality of the couple's functioning appears to be one of the most accurate predictors of postnatal depression (Cox et al., 1982; Kumar & Robson, 1984; Stein, Cooper, Campbell, Day, & Altman, 1989; Watson et al., 1984) . For example, O'Hara & Swain (1996) found that a significant number of mothers suffering from postnatal depression experienced their partner as providing little in the way of social support. Other studies have shown that the presence of marital problems during the pregnancy predicted subsequent postnatal depression (Kumar, Robson, & Smith, 1984; Watson et al., 1984). In fact, no one who has looked for a relationship between postnatal depression and marital conflict has failed to find it.

Poor marital relationship appears to be associated with psychotic relapse in at risk mothers (Marks, et al., 1991). Marks et al. (1992a) also found that the presence of a poor marital relationship was significantly predictive of puerperal psychosis. Kendell et al. (1981) found a significant number of women with puerperal psychosis to be single mothers and also in those who were separated, divorced or widowed. Thus, the women had no marital support as their partner was absent.

A few investigators have studied the effect of parental conflict and loss on the likelihood of postnatal depression. Kumar and Robson (1984) found that a poor relationship with the mother's own mother was associated with postnatal depression. Gotlib and colleagues (Gotlib, Whiffen, Wallace, & Mount, 1991) reported that the more negative perceptions, measured during pregnancy, of maternal and parental care during childhood were associated with diagnosis of postnatal depression.

Finally, it has been suggested that puerperal mental illness is secondary to a bonding disorder (Kumar, 1997). Kumar (1997) found that severe disorders of maternal affection were associated with the occurrence of some form of puerperal mental illness. Women's self-reports about their emotional experience as mothers revealed two broad and overlapping themes: first indifference to, and alienation from the baby; and second, hostility and resentment. Although Kumar (1997) did not directly find that mothers who presented with a bonding disorder were primarily those who themselves had histories of damaged early childhood or disturbed current relationships the theory was not discarded. Kumar (1997) concluded that bonding disorders occur slightly more frequently with first babies, and as many women experiencing bonding disorder with their first-born decide not to risk another pregnancy, it is important systematically to examine the contribution of early and current important relationships.

### *Summary of Risk Factors*

The puerperium is a period during which significant physiological and psychosocial changes occur. The extent to which a rapid changing hormonal environment influences the emergence of affective illness has been considered by many (e.g., Harris, 1993; Harris, 1994). However, one cannot underestimate the importance of psychosocial factors (O'Hara, 1986; Paykel et al., 1980) in the development of affective illness after childbirth. In Western societies, neither social class nor parity appear to affect the incidence of postnatal depression (Kumar & Robson, 1978; Paykel et al., 1980). Any association between negative life events and the development of postnatal depression is controversial, since while some studies have found evidence of a link (e.g., Paykel et al., 1980), others have failed to show this (e.g., Kumar & Robson, 1984). Obstetric complications have been shown either to have no association with postnatal depression (e.g., Martin, 1977) or to be positively protective (e.g., Paykel et al., 1980). Consistently important predisposing factors appear to be a poor quality of the marital and parental relationship and inadequate social support.

Collectively these data give much credit to a non-specific view of the aetiology of postpartum mental illness, especially in terms of its predisposing factors. While the role of the relationship to the spouse has been amply underlined, only scant attention has been given to the role of another relationship just as crucial in the postpartum period – that is, the

relationship to the infant. Mental illness during the puerperium is a serious problem for women and its consequences have serious implications for the family and the psychological development of the child (Boyce & Stubbs, 1994; O'Hara, 1994; Philipps & O'Hara, 1991). It therefore seems senseless to study risk factors without taking the woman's family dynamics, past and present, into consideration. A previous history of mental illness and relationship issues, such as marital dissatisfaction, social support and a woman's relationship with her own mother, appear to be two of the most consistent risk factors associated with puerperal illnesses. Further, the evolving quality of the infant-mother relationship, central to attachment theory and research, merits careful consideration. In view of this, attachment theory seems to offer a substantiated base for considering the aetiology of puerperal mental illnesses as it takes a range of relationship factors into consideration.

## **1.3 Attachment**

### **1.3.1 Attachment Theory**

Attachment theory (Bowlby, 1958, 1969/1982, 1973, 1980, 1988) is similar to psychoanalytic theory in the sense that it emphasises the early developmental determinants of adult attachment and love relations. However, unlike the main body of psychoanalytic theory, the empirical foundations for attachment theory are not developmental reconstruction. Rather, it is founded on direct observation and experimentation with infant samples from which attachment phenomena are classified, with subsequent extension of these findings into empirical investigation and classification of adult attachment.

Bowlby (1969) stated that the “behavioural system” governing attachment predisposes individuals to form selective bonds with proximate caring figures in their environment, beginning with the earliest and most formative discriminations of attachment figures in infancy. The function of the system is to monitor the whereabouts of identified caretakers and to promote proximity to them in the service of protection and survival. This system is activated in conditions of danger and distress; the response of the caregiver under these conditions determines not only the infant’s physical safety, but also his or her inner sense of security. Thus, the adult provides the child with a “secure base” from which he or she is free to explore the environment in the knowledge that the caregiver will provide

him or her with protection in the event of danger (Bowlby, 1969, 1973).

Children develop increasingly stable attachment styles as a result of repeated contact with caregivers; these are encoded as internal working models of the self, the attachment figures, and the attachment relationship in which he or she is engaged. The working model functions as a heuristic, helping the developing child to interpret and define his or her interactions with attachment figures. Over time, these models become stronger, more structured, and increasingly resistant to change (Bowlby, 1988). The internal working model includes beliefs regarding the worthiness of one's self as a loveable person, whether one can trust others, how close one can get to others, and so on.

As the theory of attachment has evolved, internal working models have become a central aspect of the theory. Internal working models are often referred to as mental representations, defined by Main et al. (1985) as "a set of conscious and/or unconscious rules for the organisation of information relevant to attachment and for obtaining or limiting access to that information, that is, to information regarding attachment-related experiences, feelings, and ideations" (pp. 66-67). The mental representations are assumed to reflect a person's real experiences with attachment figures, especially during childhood (Bowlby, 1988). The optimal function of these representations is to encode interactions in a way that will facilitate an ability to predict accurately how important others will behave and how the self might feel, think, and behave in response. This

view assumes an ongoing interplay among emotions, cognitions, and behaviour in personality development (Steele & Steele, 1994).

### **1.3.2 Infant Attachment**

The formation during early childhood of a smooth functioning attachment relationship with a primary caregiver, although the norm, is by no means guaranteed. Research by Ainsworth and her colleagues (Ainsworth, et al., 1978) suggests that a mother's sensitivity and responsiveness to her infant's signals and needs during the first year of life are important prerequisites. Ainsworth operationalised attachment theory first with extensive observations of infant-mother interaction in the familiar home environment and then showed that home observations predict behaviour in the "Strange Situation". This procedure provided a controlled method to observe parent-child attachment interactions in a laboratory setting. They identified several distinct patterns of attachment behaviour manifested by children upon reunion with the parent. The most commonly observed pattern was what Ainsworth labelled as secure attachment. The secure child manifested distress upon separation from the parent, sought out the parent upon his/her return, clung for a time, and then resumed independent play or exploration. The two insecure patterns observed were labelled insecure/avoidant and insecure/ambivalent. Both were characterised by distress upon separation, but in the former category the child either did not acknowledge or openly rejected the parent upon reunion; in the latter case, the child manifested intense ambivalence in the

form of requesting contact with the caregiver, although resisting it when offered and failing to be comforted. A newer insecure pattern, usually referred to as disorganised, describes a group of infants who do not possess a coherent strategy for responding to separation or reunion (Main & Solomon, 1986).

By one year of age an organised and functional internal working model has developed on the basis of the child's experience of interaction with their caregiver. If the attachment figure gives help and comfort when needed, the child will develop a working model of the caregiver as loving and of the self as worthy of help and support. Securely attached children have developed this working model because their mothers were consistently sensitive and responsive to their signals and so could confidently explore the environment. The typical mother of an anxious/ambivalent infant exhibits inconsistency in responding to her infant's signals, being sometimes unavailable or unresponsive and at other times intrusive. Mothers of avoidant infants appear rejecting and tend to reject or deflect their infants' bid for proximity, especially for close bodily contact (Ainsworth et al., 1978). Disorganised infants are much more common in maltreated and high-risk samples (Carlson, Cicchetti, Barnett, & Braunwald, 1989; van IJzendoorn, Goldberg, Kroonenberg, & Fenkel, 1992). Their odd behaviour on reunion is thought to be a result of their attachment figure's helpless, frightened, or frightening behaviour (Main & Hesse, 1990).

In a summary of American studies of the three types of infants, Campos,

Barrett, Lamb, Goldsmith and Stenberg (1983) concluded that 62% are secure, 23% are insecure/avoidant, and 15% are insecure/ ambivalent. If the disorganised category is included in the classification taxonomy then approximately 15% to 25% of infants in low-risk samples (including many previously assigned to the insecure/avoidant category) are now considered disorganised (Main & Solomon, 1990). The percentage of infants in each category remains broadly similar the world over (van IJzendoorn, 1995).

Security to mother has been found to be stable from 12 to 18 and 12 to 20 months of age so long there are no major changes in life circumstances. Elicker, Englund and Sroufe (1992) longitudinally assessed attachment style and related variables in a sample of children at 12 and 18 months, 4 years, and at 10 and 11 years of age. They found that the attachment pattern and its manifestations within interpersonal relationships remained largely consistent 10 years after the first assessment.

### **1.3.3 Adult Attachment**

Recently, theorists and researchers have begun to pay attention to adult attachment, as an expansion and elaboration of childhood attachment phenomena (e.g., Fishler, Sperling, & Carr, 1990; Main et al., 1985; Zelnick & Buchholz, 1990). Adult relationships, however, are much more complex and transitional than parent-child relationships, serving a variety of needs at different times. Weiss (1982) emphasised that attachment in adulthood differs from that in infancy in three meaningful ways: (a) instead of

appearing only in relationships with caretakers, attachment in adulthood also occurs with peers; (b) attachment in adulthood is less pervasive in its potential deleterious effect on other behavioural systems than in infancy; and (c) attachment in adulthood is often directed towards a person with whom a sexual relationship exists.

The difference in the relative contributions of pre-existing mental representations and current interpersonal processes to the development of adult attachment is an important issue. In infant-adult attachment, the infant has little prior history of attachment, so he or she initially contributes primarily interactional and temperamental aspects to the attachment bond. In adults, the presence of mental representations derived from prior experience greatly influences how one behaves with the potential attachment figure and how one experiences the other's behaviour. In addition, the caregiver and careseeker attachment roles are interchangeable in adults, whereas in healthy adult-infant attachment they are fixed and stable.

The development and validation of Ainsworth et al.'s (1978) system for infants has provided the foundation for increasing attempts to develop a related taxonomy of attachment in adults. At the forefront of this work is Mary Main who, with her colleagues, has developed the Adult Attachment Interview (AAI) to assess these issues (George, Kaplan, & Main, 1985). Main et al.'s (1985) resulting adult attachment taxonomy, based on cognitive and behavioural attributions during the interview, includes

autonomous, dismissing, and preoccupied styles. A fourth style, labelled unresolved has recently been added to the taxonomy (Main & Goldwyn, 1994). Although structurally similar to Ainsworth et al.'s (1978) taxonomy, this classification system labels and describes each of these styles somewhat differently, because it relates to adults in particular. It also diverges in that it is taxonomy of mental representations of attachment, not attachment behaviour per se. However, the adult categories can be mapped onto the infant categories as follows:

<b><u>Infant</u></b>		<b><u>Adult</u></b>
Secure	→	Autonomous-Secure
Insecure/Ambivalent	→	Preoccupied
Insecure/Avoidant	→	Dismissing
Insecure/Disorganised	→	Unresolved

In the interview, adults are asked to describe their representations of childhood attachment relationships with their own mother and father, to consider the influences of these childhood attachments on present relationships, and to describe their attitude toward attachment relationships in general. Adults who describe childhood attachments with consistency and emotional honesty are classified as secure in their attachment relationships. Adults who describe conflicted interactions without the ability to evaluate the relationship objectively have been classified as preoccupied in their attachment relationships. Adults with vague representations of childhood or those who provide idealised descriptions of their parents but

later recall contradictory details have been classified as dismissing in their attachment relationships. Adults classified as unresolved appear unable to maintain coherent discourse when discussing traumatic experiences such as loss or abuse. In a meta-analysis of 33 studies van IJzendoorn and Bakermans-Kranenburg (1996) found that 58% of adults are classified as secure according to the AAI, 24% are classified as dismissing, and 18% are classified as preoccupied. The authors also found that the distribution of the classifications were relatively independent of cross-cultural variations in Western countries. This distribution across the attachment categories corresponds to the distribution observed in children (van IJzendoorn, 1995).

The mother's internal working model has been found to influence her relationship with her child. That is, mothers who have coherent representations of their own childhood relationship with the caregiver tend to establish secure attachments with their infants. Conversely, when a mother's representations of her childhood relationship is incoherent, the attachment relationship with the child tends to replicate this negativity through maladaptive behaviour. Thus, mothers appear to superimpose representations from the past onto present interactions with the infant. Studies on intergenerational transmission of attachment indicate that about 75% of the parents with secure or insecure mental representations of attachment develop a similar secure or insecure attachment relationship with their baby (see van IJzendoorn, 1995). Other studies show that the quality of the infant's attachment at one year of age can be predicted from

the representations of attachment of that infant's parent when measured during pregnancy (Fonagy, et al., 1991). The argument for intergenerational transmission may be seen to closely follow the argument for stability of attachment organisation within an individual or may simply be seen as continuity between pregnancy-assessments of parents and the early infant-parent relationship. How far back, and how far forward, the AAI predicts is unclear. The unconscious nature of internal working models of attachment and their resistance to change guides expectations and evaluations of relationships, allowing one to construct new relationships consistent with internal working models. The behaviour of the mother with the child is therefore guided by her internal working models, determining the quality of her relationship with her child.

Investigations into romantic attachment have also found that individuals are guided by their internal working models in stressful situations within romantic relationships. For example, Hazan and Shaver (1987) and Lussier, Sabourin and Turgeon, (1997) showed that the attachment theory can help us understand marital dynamics. They found that securely attached individuals were able to recognise distress and seek support from their partner. They were also inclined to adjust their negative feelings in problem-solving situations. Insecure/preoccupied individuals were characterised by clinging and feelings of distress or ambivalence towards the relationship. Extreme anxiety, doubt, and obsession with the partner was also present. Insecure/dismissing attachment differed from others in that avoidant individuals were visibly egocentric and emotionally distant.

Insecure/dismissing individuals would hide their feelings of insecurity and fears of intimacy. They avoided feeling distressed; instead they were hostile and sensitive to rejection. These attachment styles can explain how satisfied the partners are and how much conflict is present in the relationship.

### *Summary of Attachment Development*

According to Bowlby (1982), the need for attachment figures persists “from cradle to grave” (p. 208). Bowlby used the concept of internal working models to describe the dynamic process through which individuals select, organise, and store images and impressions of themselves and their interaction with others. These mental representations start to form during infancy and are like an assemblage of both conscious and unconscious mentors, thoughts, and feelings, as well as strategies for affect regulation (Bowlby, 1969; Bretherton, 1985). Working models are seen as primarily constructed from attachment-related experiences where the infant has been in distress and are a fairly accurate record of actual environmental events and interactions. As the infant gets older the models serve as a set of rules and expectations that individuals use to interpret and anticipate the emotions and behaviours of others. When, over the years, caregivers and later affectional figures have proven to be available and responsive when needed, the person feels confident in their accessibility and also worthy of comfort and care. Representational models would likely be flexible, consistent, and easily updated to accommodate new information and

events. On the other hand, if attachment experiences have been characterised by emotional or physical abuse or neglect, threats to be abandoned or no longer loved, disconfirmation of feelings or perceptions, or prolonged separation or loss, certain attachment thoughts and feelings may be defensively excluded from awareness, resulting in rigid and contradictory models (Bowlby, 1973; Bretherton, 1988).

#### **1.3.4 Attachment and Psychopathology**

Because mental representations of attachment relationships tend to be stable and to persist, the distortions of multiple conflicting models affect subsequent relationships, rendering individuals with insecure attachments more vulnerable to psychological disturbance when confronted with stressful situations.

Individuals who grow up in families that are responsive and attuned to their affective needs, gain confidence that they can rely on others, that they deserve comfort and kindness at a time of needs such as illness or injury. When they do suffer emotional distress, it is likely to be relatively mild and of short duration mainly because they have trust in others that enables them to reach out for affection, care, and assistance (Bowlby, 1988; Dolan, Arnkoff, & Glass, 1993; Karen, 1994).

In contrast to this pattern of secure attachment and coherent working models that are consistent with healthy functioning, insecure/preoccupied

attached individuals are uncertain that they can rely on affectionate figures. As a result, they feel they must stay close to and keep a vigil on persons or places that represent safety and protection. Bowlby (1988) attributes ambivalence and fear of separation to inconsistent parenting, actual separation or loss experience, or threats of abandonment. However, because thoughts and feelings have been disconnected from the circumstances that elicit them, preoccupied attached individuals are not aware of why they feel ambivalent and afraid of separation. This may contribute to various disorders, such as, agoraphobia, anxiety disorder, depression, suicidal ideation or gestures, borderline personality disorder, obsessive compulsive personality disorder, histrionic personality disorder, or eating disorders (Bowlby, 1977; Dolan et al., 1993; Kobak & Sceery, 1988; Kobak, Sudler, & Gamble, 1991; Liotti, 1991; Patrick, Hobson, Castle, Howard, & Maughan, 1994; Rosenstein & Horowitz, 1996; Sable, 1992, 1994).

In contrast to the uncertainty of preoccupied attached individuals, those who are dismissingly attached have no confidence in the availability of affectional figures. Consequently, they avoid and deny the need for support and attention, defensively proclaiming a self-sufficiency, which hides their fear of trusting others. In these individuals, unreliable caregiving and unexpected separations have been intensified by rejection, pressure to inhibit feelings, or ridicule of acting childish when seeking comfort, so information that would activate attachment behaviour is defensively excluded. Because the protective cover of insistent self-

reliance is based on insecurity, it may contribute to depression, conduct disorder, distorted mourning, psychosomatic symptoms, personality disorders, alcoholism, or suicide, under stressful life span changes (Bowlby, 1977, 1980, 1991; Dolan et al., 1993; Holmes, 1993; Parker, 1993; Rosenstein & Horowitz, 1993; Sable, 1992).

Recent research on attachment has found a disorganised or detached style. In these individuals, affectional feelings and memories have been extensively excluded from awareness, with such a fear of getting close to others that the person acts removed and distrustful, and may become severely anxious, depressed, and/or angry if pushed into relating. Attachment histories are quite inarticulate, revealing traumatic, unresolved events such as emotional or physical abuse, or more prolonged separations or permanent losses. But, as with other patterns, there may exist an unconscious longing for affection as well as anger for what was inflicted or denied (Bowlby, 1977; Fish, 1996).

Each of these patterns of insecure attachment is perceived in terms of how individuals relate to others. Insecure attachment render adults more prone to develop disturbances under stress (Sable, 1997). In studies that have distinguished individuals as either secure or insecure there is a growing body of evidence linking insecure attachment styles to disorders, including schizophrenia (Hultman, et al., 1997), depression (Burbach & Borduin, 1986; Crook, Raskin, & Eliot, 1981, Sadowski, Ugarte, Kolvin, Kaplan, & Barnes, 1999), and postnatal depression (Stein, et al., 1991). Depressed

individuals are in general found to recall less care and affection, but more rejection and sometimes more control or overprotection on account of their parents than healthy controls (review by Parker, 1983, 1988). Furthermore, memories of parental behaviour are highly stable across clinically significant changes in depressed mood, so it seems unlikely that patients' negative recollections of their parents' behaviour is due to mood state dependent recall (Gerlsma, et al., 1993). As social support has been found to be a significant factor in preventing depression (Brown & Harris, 1978), it is not surprising to find that severely depressed women perceive themselves as less attached to peers throughout their life compared to healthy controls (Rosenfarb, Becker, & Kahn, 1994).

Because of the intergenerational transmission of attachment style, and because psychopathology is associated with insecure attachment styles it is no surprise to find that parents of disturbed children are more likely to show insecure representations of their own attachment experiences. In a group of parents of children with psychological problems, the parents classified as secure were in a minority (14%), whereas 41% of the parents were classified as dismissing. Parents classified as preoccupied were also strongly over-represented (45%) in the sample (van IJzendoorn & Bakermans-Kranenburg, 1996).

Affective illness in the mother may interfere with her ability to promote secure attachment in her child. Children of mothers with either unipolar or bipolar depression are significantly more likely to have insecure attachment

patterns than children of mothers with no affective illness (Gaensbauer, Harmon, Cytryn, & McKnew, 1984; Radke-Yarrow, et al., 1985; Rosenblum, Mazet, & Bénony, 1997; Teit & Gelfand, 1993). This finding has been replicated in samples with children of schizophrenic mothers (Persson-Blennow, et al., 1984) and in children of mothers with postpartum depression (Murray, 1992). To some degree, major depression precludes consistency of mothering, since depression is episodic and has a high relapse rate (both unipolar and bipolar). Depressed mothers are more likely, therefore, to be experienced by their children as unpredictable or inconsistent. Since confusion and preoccupations with self are conditions of depression, young children of depressed mothers are also likely to find their mothers unresponsive as well as physically and emotionally unavailable.

Significantly higher frequencies of psychopathology have been reported among children of parents with affective disorders than among children of normal parents (review by Akisal & McKinney, 1975; Beardslee, Bemporad, Keller, & Klerman, 1983; Rutter & Garnezy, 1983). According to Welsh-Allis and Ye (1988) and Weissman, Prusoff, Gammon, Merickangas, Leckman, & Kidd (1984), children of depressed mothers incur two to five times the risk of developing behavioural problems than do children of normal parents. Even in cases where the depressive symptoms have remitted (e.g., in cases of postnatal depression) significant deficits in relation to their child persists (Weissman & Paykel, 1974). Uddenberg and Engleson (1978) showed an association between an abnormal

postnatal maternal mental state and disturbed behaviour in children aged four and a half years. There may also be an increased risk of poor cognitive outcome regardless of whether the mother suffers from further episodes of depression in the child's lifetime beyond the postnatal period (Sharp, Hay, Pawley, Schmucher, Allen, & Kumar, 1995)

### **1.3.5 Intervention Studies**

Psychiatric disorders following childbirth are common and much of it is serious, warranting psychiatric attention. In addition childbirth poses a predictable and major risk to the mental health of women suffering from serious mental illness. Clinical management of severe postpartum illnesses typically involves hospital admission and, in Britain, this is very often with the baby (Kumar, 1992; Kumar, Meltzer, Heppelwhite, & Stevenson, 1986; Margison & Brockington, 1982; Prettyman & Friedman, 1991). The aim of joint admission is to try to preserve and to facilitate the relationship between mother and child, often despite the presence of very severe maternal mental and behavioural disorganisation.

The usual treatment for puerperal psychoses is conventional pharmacotherapy and/or ECT. Postpartum depression is also most commonly treated with pharmacotherapy (Nonacs & Cohen, 1998). Of course acute treatment with mood stabilisers and anti-psychotic medications is appropriate in women who are admitted to hospital with puerperal illnesses as failure to treat places the mother and baby at

increased risk of harm. In fact, rates of infanticide associated with untreated puerperal psychosis have been estimated to be as high as 4% (Davidson & Robertson, 1985; D'Orban, 1979). However, there are at least two reasons why psychological therapies should be considered, either in conjunction with pharmacological treatment, or in less severe cases, without. Firstly many mothers are reluctant to take medication (Appleby, Warner, Whitton, & Faragher, 1997) and many physicians may be reluctant to prescribe antidepressants because of the difficulty in doing so in breastfeeding women (Cooper & Murray, 1997). Secondly, given the considerable body of evidence implicating postpartum mood disorders in impairments in parenting and in a raised incidence of infant behavioural problems, insecure attachment, and compromised cognitive development it seems evident that psychological therapies should be included in the treatment of postpartum mental illnesses..

In the past decade several intervention studies examined the possibility of affecting infant-parent attachment with varying success (review by van IJzendoorn, Juffer, & Duyvesteyn, 1995). A meta-analysis involving 12 intervention studies showed that it is possible to enhance sensitive responsiveness in parents and promote infant's security. However, whereas the overall effect of the interventions on parental sensitivity was moderate (effect size,  $d=.58$ ), the overall effect on the infant's attachment appeared modest (effect size,  $d=.17$ ), indicating that it is easier to change the parents' behaviour towards their child than to change the relationship that develops between children and their parents. One long-term

intervention study of parental sensitivity, infant's attachment and parent's representation of attachment used the AAI to investigate representational change (Erickson, Korfmacher, & Egeland, 1992). Although a positive effect of intervention for sensitivity was reported, no positive change was reported on infant's security or on the parent's representation of attachment (Egeland, Adam, Ogawa, & Korfmacher, 1995). In another intervention study using the AAI to measure pre- and post-test representational change Juffer, van IJzendoorn, and Bakermans-Kranenburg (1997) found that although parental sensitivity and infant's security was improved the parents continued to show insecure representations. If, through intervention, the underlying mental representations of attachment are not changed then changes in parental sensitivity may only be temporary. If and when parents confront new developmental issues and demands from their growing child, they may not be able to generalise the acquired behavioural strategies to an older age. In this case the child would experience a breakdown in his or her parent's sensitivity.

Studies on therapeutic interventions have also indicated that maternal depressed mood can be improved if the mother-infant dyad is treated during the postpartum period. Murray and Cooper (1992) studied four treatment conditions of postnatal depression and found that within eight sessions, the different forms of treatment produced improvements in maternal mood. Improvement in maternal mood following psychotherapy has been reported by a number of other authors (Holden, Sagovsky, &

Cox, 1989; Johanson, 1993; Stuart & O'Hara, 1995a, 1995b). Appleby, Warner and Whitton (1996) also found that cognitive behavioural therapy was effective in improving maternal mood. Thus, psychotherapy in various forms appears to improve maternal mood and some may temporarily enhance the parent-child relationship. However, Murray and Cooper (1992) found that treatment of postpartum depression directed solely at the elevation of maternal mood, in the absence of any specific attention to the mother-infant engagement, did not have any effect on the mother-infant relationship.

The above studies suggest that it is not merely enough to improve parental sensitivity in the quest to change the parent's representations of their own attachment relationship. Cramer and colleagues (Cramer, Robert-Tissot, Stern, Serpa-Rusconi, De Muralt, Besson, Placico-Espasa, Bachmann, Knauer, Berney, & D'Arcis, 1990) attempted to change mothers' representations through two forms of therapy. Mothers with children under 20 months who had functional and behavioural disturbances were offered either brief psychotherapy or interactional guidance (a non-interpretative form of therapy). The authors found that there were major changes in symptom relief in the infants, mothers became less intrusive, and infants became more co-operative. The mother's representations also changed to become more coherent (secure) over the course of therapy. There was no difference between the two forms of therapy. Most interesting was that mothers continued to increase their sensitivity to infants' signals 6 months after treatment. In a study using infant-parent psychotherapy aimed at

removing affective obstacles in the mother-child relationship Lieberman, Weston and Pawl (1991) were able to shift mother-infant interaction in anxiously attached dyads, sometimes increasing security but also sometimes increasing disorganisation. This underlines the need for containment and careful follow-up wherever the therapist stirs up unconsciously stored information concerning a person's childhood.

## **1.4 Design of Study and Research Questions**

In the context of the research discussed above, the present study will aim to extend the literature with regard to the influence attachment issues have on the onset of postpartum illnesses. The study will also attempt to relate this to mother-infant interaction as observed on a Mother and Baby Unit. Research questions and hypotheses will follow comments on the choice of measures of attachment and mother-infant interaction.

### **1.4.1 Measuring Attachment and Mother-Infant Interaction**

The measures used in this study were chosen with regard to the following criteria:

1. Reliability and validity of the measures
2. Ease of administration/scoring in terms of time and expense.
3. Ethical acceptability with regard to intrusiveness and level of distress likely to be caused.

Since the development of Ainsworth et al.'s (1978) Strange Situation procedure a number of different paradigms have been developed in an attempt to measure attachment in adults. The following discussion reviews the range of measures in order to justify the choice of measure for this study.

The Adult Attachment Interview (AAI; Main & Goldwyn, 1984; George et al., 1985) has provided a basis for reliable and valid inferences as to the general organisation of adults' internal working models of relationships (Bakermans-Kranenburg & van IJzendoorn, 1993; Crowll & Feldman, 1988; Dozier & Kobak, 1992; Kobak & Sceery, 1988). However, the administration and scoring of the AAI is a lengthy and costly process. Furthermore, George et al. (1985) do not recommend using it on a clinical population without offering post-test counselling to deal with any unpleasant memories that the interview uncovers. Due to these constraints the AAI was not considered appropriate for this study.

Self-rating questionnaires have also developed out of infant and adult attachment literature. Hazan & Shaver (1987) developed a questionnaire investigating romantic attachments. The questionnaire is very short, consisting of three brief statements that were designed as a direct analogue to Ainsworth's classification types. Subjects are asked to indicate which statement most accurately describes his or her feelings concerning intimate relationships. In most studies using this measure the proportion of the three styles is similar to the proportion of the three kinds of infants in studies based on the strange situation (Koski & Shaver, 1997). Although the questionnaire has been found to be a reliable and valid instrument (Hazan & Shaver, 1987) it was felt that it was too simplistic for this study as it only concerns romantic relationships (although the authors argue that the attachment style is generalised to other relationships).

Bartholomew (1990; Bartholomew & Horowitz, 1991) created a questionnaire which combined some of the features of the AAI and the Hazan and Shaver questionnaire. Bartholomew (1990) argued that there were two kinds of avoidance in adolescent and adult relationships, “dismissing” and “fearful”, thus proposing four categories of attachment. Unfortunately no comparison study was available and its validity and reliability is therefore not easily assessed.

Sperling, Berman and Fagen (1992) encountered two problems when using the AAI. Firstly, they argued that there appeared to be attachment security in certain subjects with both the avoidant and resistant style. Within Ainsworth’s model security of attachment and stylistic variables cannot coexist; one is either secure or not. Sperling et al. (1992) discovered that relative security of attachment might coexist with a predominant, but not necessarily maladaptive, enactment of attachment style. For example, an adult with a resistant-ambivalent style may experience a relationship as stable and enduring, and thereby not be particularly reactive to contextual hurt, rejections, and separations as a sign of the unavailability of his or her attachment figure. Nevertheless, this same person, although desiring a relationship, may be quite ambivalent about the connectedness with his or her attachment figure and alternate between a position of mild approach and avoidance. Secondly, Sperling et al. (1992) agreed with Bartholomew (1990) that there may be more attachment styles present than Ainsworth et al. (1978) had originally

suggested. The existence of more styles in adults than just avoidant and resistant, including blends of styles, had already been noticed by investigators such as Main et al. (1985; i.e., disorganised/disoriented). From their observation of the clinical population Main et al. (1985) noticed that anger and hostility dominated attachment styles. In view of this finding Sperling and Berman (1991) developed a questionnaire based on four self-rated paragraphs, each describing a different categorical style of attachment (Dependent, Avoidant, Hostile, and Ambivalent). Participants are asked to indicate which of these four styles is most descriptive of their relationship with mother, father, friends, and romantic partners. They are also asked to rate how secure they feel in each of these relationships.

The Attachment Style Inventory (ASI: Sperling & Berman, 1991) has been found to be a valid and reliable measure of attachment in both normal and clinical populations (Heiss, Berman, & Sperling, 1996; Sack, Sperling, Fagen, & Foelsch, 1996; Sperling, Foelsch, & Grace, 1996). For example, Heiss, et al. (1996) demonstrated in a study comparing five different attachment questionnaires that the ASI was able to differentiate healthy from pathological bonding, that the construct being assessed had multiple dimensions, and that the scores were correlated with personality variables. (e.g., insecure attachment styles were positively correlated and the secure attachment style was negatively correlated with social incompetence, loneliness and lack of social self-confidence). On the basis of its reliability and validity and because it has greater depth than the other self-rating questionnaires, the ASI was chosen as the attachment measure for this

study.

The Bethlem Mother-Infant Interaction Scale (BMIS: Kumar & Hipwell, 1996) is used in this study to investigate mother-infant interaction. The nurses on the Unit had had many years experience of using this as part of an ongoing Audit study. It was developed to assess the mother's contribution to the dialogue with her baby (e.g., eye contact, talking, and holding), her general ability to manage and care for the infant, and any degree of risk to the baby. The scale has been found to be both a valid and reliable measure in assessing a mother-infant interaction (Kumar & Hipwell, 1996). Kumar and Hipwell (1996) demonstrated high inter-rater and test-retest reliability of ratings. The authors also found that the BMIS had high internal consistency, especially between the dialogue sub-scales and General Routine and compared with other methods used to assess mother-infant interaction it showed good criterion-related validity. The BMIS was chosen because it incorporates many of the features found to be important in normal mother-infant interaction (e.g., the mother's sensitivity to the infant's signals).

### *Control Group*

No control group was included in the study for two reasons. Considering the resources available, it would be virtually impossible to complete the BMIS for mothers who are not in an institutionalised setting. The observations take place over one week and as most women leave the

maternity unit within a few days of giving birth this was not a possible option. A control group was also not included in the study due to difficulties in gaining access to healthy women who had recently delivered. As an alternative it was decided to use a healthy control sample from an already published study (Sack et al., 1996). Although the healthy control sample did not consist of new mothers, it did contain mainly female participants (94%).

## **1.4.2 Research Questions and Hypotheses**

### **1. Is a mother's postnatal mental illness associated with an insecure attachment style?**

The attachment relationships we forge in early life are represented in our internal working model. In turn, these representations may be viewed as paradigms for our future relationships. For mothers, internal working models of their relationships with their own caregiver tend to influence the way they represent the infant during pregnancy and, after the birth, these models become blueprints for fashioning a relationship with the infant. Second, various pathological responses may be incorporated into the internal working model, causing a distorted representation, which is manifested through maladaptive behaviour. Third, the relationship between representational deficits – deriving from the mother's own childhood experience – and dysfunctional attachment patterns may help trigger dysphoria during the pregnancy and postpartum periods. Indeed, negative representations emanating from early experience with one's caregivers may contribute to the onset of postpartum mental illness.

**Hypothesis 1. More mothers in the study will show insecure attachment styles in relation to their parents, peers, and romantic partners, compared with a healthy control sample.**

## **2. Do mothers who are insecurely attached interact differently with their infants compared to mothers who are securely attached?**

Studies suggest that new mothers tend to foist their negative representations of early life onto the relationship with the infant (e.g., Radke-Yarrow et al., 1985). Further, a woman who has had a negative caregiving experience may be reluctant to assume the caregiving role for several reasons: First, the woman may fear that by assuming the maternal role she will revive the negative representations of her own childhood. Second, she may fear that without an adaptive model the negative behaviours she experienced with her own mother will be replicated during interaction with the infant. Finally, the mother's deficient experience with her caregiver may deprive her of the skills necessary to initiate an adaptive relationship with the infant. These reactions may cause the new mother to withdraw emotionally from the infant without being aware of her behaviour.

Past research has shown that a woman's poor evaluation of, or relationship to, her own mother correlates with the presence of depression after childbirth (Kumar & Robson, 1984; Pound et al., 1985). Main et al. (1985) have argued that resolutions of a mother's own experience of maternal rejection is critical in predicting whether or not she will reject her own child: this evidence thus reinforces and refines the general picture of intergenerational correlations, with the impact on the quality of the current parent-child relationship.

Earlier research suggests that several domains of interactive behaviour may be effected by depressed maternal mood. For example, dampened maternal affect may inhibit the normal regulatory function of maternal facial expressions and emotional signals, which in turn, may have an impact on infant affective behaviour (Cohn & Tronick, 1983; Emde & Sorce, 1983; Fogel, 1982). In addition to potential effects on affective exchange, one would also expect depressed maternal mood to lead to understimulation of the infant and eventually to reduction in rates of infant activity (Field, 1984; Trad, 1986). More specifically, Field (1984) found that women with postnatal depression showed less frequent positive and more frequent negative facial expressions. They also spent less time looking at and touching their children.

In contrast, very little is known about the immediate and long-term impact of more severe maternal mental illness such as puerperal psychosis on parenting ability or on the developing infant. Zilboorg (1933) regarded maternal rejection of the infant as the basis of puerperal psychosis and Brew and Seidenberg (1950) who inferred the presence of rejection in both schizophrenic and manic depressive mothers have echoed this view. In a series of patients with affective psychoses, Tetlow (1955) universally found signs of an abnormal relationship and denial of the existence of the child. A follow-up study of women with such feelings toward their child revealed that some mothers did develop a normal relationship with their child but there were others who later developed feelings of antagonism and blame

(Seager, 1960).

**Hypothesis 2. Mothers who are insecurely attached will show a poorer quality of mother-infant interaction compared to mothers who are securely attached.**

**3. Is poor quality of mother infant interaction associated with only affective disorders?**

As mentioned above, affective disorders have received far more attention than psychotic disorders in the literature on the role of mother-infant interaction in the aetiology of postpartum illnesses. If puerperal psychosis is not associated with psychosocial or attachment issues then one would expect any disturbance in interaction to be caused by the mother's disturbed mental state rather than an inherent inability to care for her baby appropriately. Although the BMIS assess mother-infant interaction it does not assess what caused potential problems in the interaction. By using a global measurement of the mother-infant interaction at the end of the admission period, which controls for problems in the dyadic relationship caused by the mother's acute illness, one will be able to assess whether puerperal psychosis is linked to representational deficits. If the mother interacts well with her baby once her symptoms have been controlled then puerperal psychosis would not appear to be linked to representational deficits. On the other hand, if poor mother-infant interaction continues after the mother's symptoms have lifted then representational deficits may

be part of the aetiology of psychosis after childbirth.

**Hypothesis 3a. Women with postnatal depression will continue to have problems with mother-infant interaction once their symptoms have been brought under control.**

**Hypothesis 3b. Women with puerperal psychosis will continue to have problems with mother-infant interaction once their symptoms have been brought under control.**

**4. Do women with insecure attachment styles have less social support compared to women who have a secure attachment style?**

This question arises out of the literature on risk factors associated with postpartum illnesses. Marital relationship difficulties have featured as a prominent risk factor for postnatal depression (e.g., Kumar & Robson, 1984). Relationship difficulties have also been discussed extensively in the attachment literature (e.g., Hazan & Shaver, 1987). Women who have insecure attachments would find it more difficult to either sustain a marriage or, if she is married, she may find her husband unsupportive. This can be illustrated by observing how many women are in relationships when they enter the Mother and Baby Unit for treatment. The mothers are also asked as part of the initial assessment whether they are experiencing relationship problems with their partner and significant others. Although

these measures are rather crude and subjective they may provide some insight into the women's formation of romantic relationships.

**Hypothesis 4. Women with insecure attachment styles will be more likely to be single or to be experiencing relationship problems compared to women who have a secure attachment style.**

**5. Are mothers able to objectively evaluate how well they interact with their infant?**

Mothers who show insecure attachment styles in the AAI either describe conflicted interactions without the ability to evaluate the relationship objectively, have vague representations of their childhood, or provide idealised descriptions of their parents but later recall contradictory details (Main, et al., 1985). When these mothers are observed with their infants they consistently misread the infants' negative affect and reject the infants' attempts to get comfort and reassurance (Haft & Slade, 1989). Both Main and Goldwyn (1984) and Haft and Slade (1989) have suggested that mothers may misattune to their infants' affect to preserve their own organisation of information regarding attachment. Studies evaluating mothers' ability to objectively evaluate how they interact with their infant have found that there is higher agreement between observers than between observers and mothers (Pederson & Moran, 1995; Pederson, Moran, Sitko, Campbell, Ghesquire, & Acton, 1990; Teti & McGourty,

1996). It has also been found that only observer scores on a scale designed to assess attachment (Attachment Q-Set; Waters & Deane, 1985) and not the mothers' scores converge with attachment patterns observed in the Strange Situation, even if the mother has a secure attachment style (Tarabulsky, Avgoustis, Phillips, Pederson, & Moran, 1997). Thus, it would appear that mothers are, in general, not in agreement with observers when evaluating their interaction with their infants. However, in the above studies the observers had made their assessment on the basis of a 2- to 4-hour long home visit whereas the mothers were able to assess their infants in more varied contexts over longer periods of time. It is therefore possible that the mothers' ratings were more representative of the relationship than were the observers'. As the nursery nurses closely monitor the mothers in this study when they visit their infants on the Baby Unit the observations are not time limited.

**Research Question 1. Is there a relationship between mothers' ratings of infant interaction and observers' ratings?**

## **2. Method**

### **2.1 Design**

This study used a correlational design, comparing subjective and objective measures of mother-infant interaction and adult attachment style.

### **2.2 Ethical Procedures**

Permission to carry out the study was obtained from the Research Ethics Committee at St George's Hospital, London (copies of relevant documentation appear in Appendix 1). Subjects contacted by post were initially contacted with a letter asking for their permission to send them a questionnaire (see Appendix 2). Only subjects who responded to this letter were sent a copy of the ASI questionnaire. All subjects were given an information sheet of the nature about the study to enable them to give informed consent (See Appendix 3 and 4 for copies to women contacted by mail and women approached on the Unit). All subjects were given the opportunity to raise any concerns before signing the consent form (See Appendix 5) and completing the questionnaire.

### **2.3 Participants**

A total of 25 women took part in the study. A consecutive series of 10 mothers was recruited while they were admitted to the Mother and Baby

Unit at Springfield hospital during the course of this study. Ninety letters were sent to mothers who had previously been admitted to the Unit over the past 4 years. Any mother whose baby had been taken into care or who had moved from the Mother and Baby Unit to a resource centre for assessment for her mothering skills was not contacted, as this was not considered appropriate (n=34). A total of 27 mothers requested a questionnaire of which 15 decided to take part in the study and returned the questionnaire.

Women who complete the Attachment Style Inventory were compared with the groups of women who did not complete the questionnaire. The results are presented in Tables 2.1 to 2.6. The discrepancy in degrees of freedom and percentages is due to missing data that could not be found either because the medical notes did not contain the relevant information or because the medical notes were missing.

### **2.3.1 Women who were not contacted for the study**

Visual inspection of Tables 2.1 and 2.2 suggests that there were several significant differences between the two groups of women. The women who were not contacted were more likely to be single (n=15, 44% compared to n=4, 16%), to have a lower level of employment status (n=22, 65% were semiskilled or had never been employed compared to n=7, 28%), to have a previous diagnosis of schizophrenia (n=21, 62% compared to n=10, 40%), and they were more likely to be admitted to the Unit because of a relapse

**Table 2.1** Chi square comparison between mothers who were not contacted and women who completed the ASI

Variable	chi-square	df	p
<b>Marital Status</b>	10.06	2	p<.01
<b>Employment Status</b>	15.55	4	p<.005
<b>Ethnic Status</b>	7.83	4	n.s.
<b>Sex of Infant</b>	.72	1	n.s.
<b>Parous</b>	.05	1	n.s.
<b>Purpose of Admission</b>	20.17	4	p<.001
<b>Previous Postpartum illness</b>	.14	1	n.s.
<b>Previous Diagnosis</b>	16.45	4	p<.005
<b>RDC diagnosis</b>	7.98	4	n.s.
<b>Clinical outcome</b>	18.88	3	p<.001
<b>Status of Infant at Discharge</b>	25.82	4	p<.001

n.s. = not significant

**Table 2.2** Independent samples t-test comparison between mothers who were not contacted and women who completed the ASI

Variable	Mean	SD	t-value	df	p
<b>Age on admission in years</b>	29.81	6.79	.88	55	n.s.
<b>Infant's age on admission in weeks</b>	7.94	10.11	.44	55	n.s.
<b>Onset of illness in weeks</b>	5.66	8.72	.69	55	n.s.
<b>Length of admission in weeks</b>	7.74	5.60	.19	57	n.s.
<b>BMIS Total week 2</b>	8.83	5.77	2.19	41	p<.01
<b>MISRS Total at week 2</b>	2.58	2.29	.79	42	n.s.

n.s.= not significant

of a illness or for assessment of their maternal skills (n=28, 82% compared to n=8, 32%). At discharge these mothers were also more likely to still have symptoms of their illness (n=25, 74% compared to n=8, 32%) and to have their infants placed on a formal supervision register or to have their infants taken into care (n=23, 68% compared to n=2, 8%). The mothers who were not contacted were also rated higher on the Bethlem Mother-Infant Interaction Scale two weeks into the admission period. As the mothers were excluded from the study because they were not able to look after their infants independently it is not surprising that the above variables were different (for example, the outcome of the admission and the status of the infant at discharge).

### **2.3.2 Women who were contacted but did not respond**

Inspection of Tables 2.3 and 2.4 reveal that only employment status and ethnic status differed significantly between women who were contacted but did not respond and women who completed the questionnaire. Women who did not respond were more likely to come from unskilled backgrounds or unemployed backgrounds (n=37, 41% compared to n=7, 28%). The women who did not respond were also of a more mixed ethnic background (n=46, 51% were from ethnic backgrounds compared to n=3, 12%). Many initial letters were returned to the sender as the occupant was no longer at the address. However, it is impossible to assess how many more had left their previous accommodation and never received the initial letter.

**Table 2.3** Chi square comparison between mothers who were contacted but did not respond and women who completed the ASI

Variable	chi-square	df	p
<b>Marital Status</b>	1.81	2	n.s.
<b>Employment Status</b>	11.79	4	p<.05
<b>Ethnic Status</b>	13.62	5	p<.05
<b>Sex of Infant</b>	2.21	1	n.s.
<b>Parous</b>	.05	1	n.s.
<b>Purpose of Admission</b>	8.42	5	n.s.
<b>Previous Postpartum illness</b>	.13	1	n.s.
<b>Previous Diagnosis</b>	6.48	4	n.s.
<b>RDC diagnosis</b>	2.55	4	n.s.
<b>Clinical outcome</b>	.71	3	n.s.
<b>Status of Infant at Discharge</b>	2.15	3	n.s.

n.s. = not significant

**Table 2. 4** Independent samples t-test comparison between mothers who were contacted but did not reply and women who completed the ASI

Variable	Mean	SD	t-value	df	p
<b>Age on admission in years</b>	29.84	5.64	1.16	110	n.s.
<b>Infant's age on admission in weeks</b>	10.11	9.52	.48	111	n.s.
<b>Onset of illness in weeks</b>	6.23	8.06	1.29	52	n.s.
<b>Length of admission in weeks</b>	7.39	4.93	.55	112	n.s.
<b>BMIS Total week 2</b>	5.66	4.09	.96	96	n.s.
<b>MISRS Total at week 2</b>	3.43	3.20	.26	83	n.s.

n.s.= not significant

Unfortunately, the housing situation was never assessed in the study, but the case notes suggest that many of the women of ethnic minorities were in temporary accommodation. This may explain the response bias observed in this study.

### **2.3.3. Women who requested a questionnaire but did not return it**

Inspection of Table 2.5 and Table 2.6 suggests that only marital status differed significantly between the two groups of women. However, 83% (n=10) of the women who requested a questionnaire but who did not return it were married compared to 84% (n=21) of the women who completed the ASI. The analysis was significant because the distribution of divorced and single women in the two groups. The two remaining women who requested a questionnaire but did not return it were divorced whereas none of the women who completed the ASI. However, four of the women who completed the questionnaire were single whereas none of the women in the other group fell into this category. Overall, this suggests that the significant result was due to a Type I error.

**Table 2.5** Chi square comparison between mothers who requested the ASI but did not return it and women who completed the ASI

Variable	chi-square	df	p
<b>Marital Status</b>	6.09	2	p<.05
<b>Employment Status</b>	3.06	4	n.s.
<b>Ethnic Status</b>	2.58	3	n.s.
<b>Sex of Infant</b>	.11	1	n.s.
<b>Parous</b>	.67	1	n.s.
<b>Purpose of Admission</b>	6.59	3	n.s.
<b>Previous Postpartum illness</b>	1.93	1	n.s.
<b>Previous Diagnosis</b>	6.20	4	n.s.
<b>RDC diagnosis</b>	4.65	4	n.s.
<b>Clinical outcome</b>	1.06	2	n.s.
<b>Status of Infant at Discharge</b>	.49	1	n.s.

n.s. = not significant

**Table 2.6** Independent samples t-test comparison between mothers who requested the ASI but did not return it and women who completed the ASI

Variable	Mean	SD	t-value	df	p
<b>Age on admission in years</b>	33.67	4.74	1.13	35	n.s.
<b>Infant's age on admission in weeks</b>	11.67	9.67	.78	35	n.s.
<b>Onset of illness in weeks</b>	10.50	9.88	2.01	16	n.s.
<b>Length of admission in weeks</b>	7.08	5.53	.53	35	n.s.
<b>BMIS Total week 2</b>	4.83	3.51	.06	35	n.s.
<b>MISRS Total at week 2</b>	3.83	3.59	.52	35	n.s.

n.s. = not significant

## **2.4 Measures**

### **A. Research Diagnostic Criteria**

A Research Diagnostic Criteria (RDC; Spitzer, Endicott & Robins, 1978) diagnosis was ascribed to each woman. The RDC diagnoses were achieved through retrospective case note evaluation by the Consultant Psychiatrist (Dr Jacobson) and the Specialist Psychiatric Registrar (Dr Aitken) following standardised guidelines outlined in the manual.

### **B. Marcé Checklist**

As a result of the increased interest in postpartum illnesses the Marcé Society was founded in the early 1980's to bring together knowledge from health specialists from five different continents (Brockington, 1982). From meetings between the participants in the Marcé Society, the Marcé checklist was developed in an attempt to standardise data collection. The check-list (See Appendix 6) is in questionnaire format and the data can be supplied from the mother, although some items, such as RDC diagnosis and discharge information, are obtained from the team working with the mother. The items include demographic information, social and marital data, past and current psychiatric history, obstetric data, medication, data on self-harm and harm to the child, and discharge information.

### **C. Bethlem Mother-Infant Interaction Scale.**

The Bethlem Mother-Infant Interaction Scale (BMIS; Kumar & Hipwell, 1996) (See Appendix 7) was originally developed at the Mother and Baby Unit at the Bethlem Hospital from clinical descriptions of key areas of disturbance and dysfunction in the mother-infant interaction. It provides a useful means of monitoring a mother's specific behavioural aspect and overall interaction with her baby, as well as an indirect index of her mental state. The emphasis of the scale is on the appropriateness of the mother's caregiving behaviour, and for this, six sub-scales are rated: the mother's ability to elicit and maintain visual, physical, and vocal contact with the baby, the sensitivity of her mood and her ability to tolerate the baby's distress, her ability to maintain a routine care of the baby independently and in a well organised manner, and the assessment of staff of any risk to the baby from the mother, either intentionally or otherwise. The first four scales are regarded as indices of the mother's contribution to the dialogue with her baby. Each sub-scale is scored on a five (0-4) point scale. A maximum score of four on any of the sub-scales signifies such highly disturbed and erratic patterns of interaction that the mother and baby are likely to be separated. A score of 0 represent appropriate care where the mother is judged to interact well with her baby. The sum of the four dialogue ratings plus the ratings of general routine and risk to the baby provide a total BMIS score. The infant's health and mood is given a separate rating and is not included in this study as this is independent to the mother-infant interaction. The estimated normal range of mother-infant

interaction total score is between 0 and 5 (Hipwell & Kumar, 1996).

#### **D. Mother-Infant Self-Rating Scale**

The Mother-Infant Self-Rating Scale (MISRS) was developed on the Mother and Baby Unit in an attempt to evaluate if the mothers could objectively judge how well they interacted with their infant over the past week. The scale (See Appendix 8) comprises of 6 sub-scales which corresponds to the sub-scales on the BMIS and are all rated on a five-point scale (0-4). A score of 0 on any of the sub-scales indicates that the mother found it very easy to interact with her baby while a score of 4 indicates that she found the interaction very difficult. The order of options on the sixth sub-scale (How likely is your baby to come to harm?) is reversed for the mothers.

#### **E. Global Rating Scale of Mother-Infant Interaction**

This scale was developed as part of this study. It was observed that there was great variation both within and between mothers in the way they interacted with their infants. As the BMIS does not allow for use when the mothers are on extended home leave it was not possible to assess how the mother was interacting with her infant for long periods of the admission. The Global Rating Scale makes it feasible to objectively assess how the mother interacted with her infant throughout admission by using the available BMIS and detailed case note material. The Global Rating Scale

(See Appendix 9) not only assesses mother-infant interaction but also whether any problems associated with poor interaction are associated with the mother's mental health or her abilities as a mother.

## **F. Attachment Style Inventory**

The Attachment Style Inventory (ASI; Sperling & Berman, 1991) was used to assess attachment style and level of security in relationships (See Appendix 10). The questionnaire consists of four brief descriptions, each relating to a different attachment style (avoidant, dependent, hostile, and resistant-avoidant). Subjects are asked to rate how characteristic each style is to their recent style of attachment on a 9-point scale where 1 signifies "not at all" and 9 signifies "extremely". Subjects are also asked to indicate with a tick which of the four styles best characterise their attachment relationship. In addition, a separate item assesses security/insecurity along a nine-point continuum where 1 to 4 signifies insecurity and 6 to 9 signifies security. The questionnaire is completed independently for each of the following four relationship categories: mother, father, friendships, and sexual relationships. If subjects have had no contact with their mother or father during the past year (through death or circumstances) they are asked not to complete the page for that particular relationship. Ratings for each attachment style are collapsed across the four relationships to yield four global attachment scores.

In the original questionnaire the statements referring to sexual relationships

imply that people have engaged in more than one sexual relationship. The Ethics Committee felt that some mothers might find this suggestion offensive. As a result the wording was changed with the author's permission (See Appendix 11) and the statements now refers to only one sexual relationship.

## **2.4 Procedure**

The Mother and Baby Unit at Springfield Hospital has places for up to eight mothers and their infants (up to the age of eight months) at any one time. The mothers live on a general ward whilst in hospital and their babies are kept in a separate unit, approximately 50 meters along a corridor from the general ward. The mothers have access to the Baby Unit 24 hours a day and are actively encouraged to spend as much time with their babies as possible. If a mother is not on the Baby Unit when her baby wakes up then she is call for immediately. Should the mother need to rest or if she is too disturbed the nursery nurse cares for the baby. Mothers who are severely disturbed or who are very insecure in their mothering abilities are closely supervised when they are with their babies. All mothers are continuously observed on the Baby Unit during the first two weeks of their admission period in order to assess their mothering skills and if they pose any risk to their infants. When a mother's mental state is considered relatively stable she is allowed on increasingly longer periods of home-leave with her baby. There is also a family room on the general ward where the mother and baby can live together in preparation for leaving the hospital.

The mothers and babies are cared for by a dedicated psychiatric team, which includes a part-time consultant psychiatrist, two part-time specialist psychiatric registrars, a part-time research psychologist, nurses, a nursery nurse, occupational therapist, and a health visitor. The Unit is also visited regularly by a paediatric consultant.

Weekly ratings on the BMIS of the quality of the mother-infant interaction during the past week were made by the Baby Unit Nursery Nurse. The ratings were based on the poorest level of interaction that had been observed during the previous week and that had lasted for most of the day. Kumar and Hipwell (1996) suggested that mothers should be rated on their poorest level of interaction as it made more clinical sense than to try to average a week's pattern of interaction given the possibility of considerable variation from day-to-day. In this study it was decided only to use the ratings of the BMIS from the second week of admission for three reasons. During the first week of admission many mothers feel unsettled and because of the novelty of their new environment they may not interact with their baby as well as they normally would. Secondly, Kumar and Hipwell (1996) noted that ratings taken from the second week of each mother's admission showed the greatest range and variation. This variability is observed because some mothers are beginning to become more appropriate in their interactions, while others are still disturbed. Finally, as mothers begin to go on home leave they are not on the Unit for long enough during the week to enable the Nursery Nurse to observe their

interaction in a manner that will produce a valid rating. Furthermore, the mothers go on home leave when their mental state is considered stable and they interact safely with their baby. As this time point happens at different times for each woman their final BMIS rating would be at different time points and would not produce a valid comparison.

The MISRS was administered to the mothers once a week on the same day as the BMIS was completed. The mothers were asked by the Research Psychologist to complete the questionnaire once a week throughout the admission period, even when they had been on home leave. In order to provide a valid comparison with the BMIS it was decided only to use the ratings from the second week.

The Marcé check list is divided into two subsections where section 1 refers to past history, demographics and psychosocial data, obstetric history, and history of current illness. The second section concerns admission and discharge data, such as RDC diagnosis, physical treatment, clinical outcome of admission, and legal status of the baby on discharge. The first section was completed for each mother with information gathered by the Research Psychologist through interview with the mother. The second section was completed with information gathered from discharge summaries, from case notes, and from information supplied by the Team.

Women who were recruited to the study through mail were initially contacted to ask their permission to be sent the ASI. The letter was sent

with a stamped addressed envelope and they were asked to return the 'yes' slip if they were interested in receiving the questionnaire. If they returned the authorisation, an information sheet, consent form, and the ASI was sent to them with a stamped addressed envelope. If subjects had any queries they were encouraged to contact the Consultant Psychiatrist. If the Consultant Psychiatrist was contacted he would pass on their details to the author who would then contact the mother. Only two mothers made contact and both requested another ASI as they had mislaid the original copy.

Women who were recruited from the Unit were approached by the author when they were considered well enough to go on home leave. They were all given an information sheet and if they chose to take part they were handed the consent form and the ASI. Any queries were dealt with by the author who was present when they completed the questionnaire. None of the mothers who were approached declined to take part in the study.

## **2.6 Inter-Rater Reliability**

**RDC:** The RDC diagnoses were made on the basis of detailed case note material. The diagnoses of the mothers in this study were made as part of a larger ongoing study at the Mother and Baby Unit. A diagnosis was made for each of 200 women referred to the Unit over a substantial number of years. Each mother was ascribed a diagnosis by the Consultant Psychiatrist and by the Specialist Psychiatric Registrar independently of

one another. The two psychiatrists agreed on 95% of the diagnoses made between them. The 5% that they did not agree on were reassessed jointly and an agreed diagnosis was then made.

**BMIS:** Inter-rater reliability on the BMIS was assessed during the normal clinical use of the scale. The Nursery Nurse has completed the scale for each mother once a week over the past five years and was thus very experienced with the scale. A second nurse completed the BMIS on ten mothers during their second week at the Unit. Both raters were blind to the hypotheses of this study. Using Pearson's correlation coefficients the inter-rater reliability on the individual sub-scales on the BMIS was Eye Contact .91, Physical Contact .94, Vocal Contact .82, Mood .94, and General Routine .95 . which is within the acceptable reliability standard.

**Global Rating Scale:** The Nursery Nurse and the author applied this scale independently to each of the 25 mothers who were included in the study. The two raters agreed on 23 ratings (92%). Using Pearson's correlation coefficient the inter-rater reliability was .99, which is considered an excellent reliability standard. However, as a single score for each woman was required for this study, the scores of the two women who had not met agreement were jointly assessed to achieve an agreed score. Both scores were initially scored one point apart (2 and 3) within the same category (i.e., disturbed mother-infant interaction due to the mother's mental health). One of the women had been re-admitted to the Unit following a relapse of an acute illness and the Nursery Nurse had rated her

interaction based on the second admission, whereas the author had rated her interaction in the original admission period. When her interaction was rated on the same period both raters agreed on her score.

## **3. Results**

### **3.1 Introduction**

Results are presented in seven sections. The first section reports on demographic and clinical characteristics of participants recruited on the Mother and Baby Unit and through mail. The second section reports on the distribution of scores on the Attachment Style Inventory (ASI) and whether these differ from a sample taken from a normal population. The third section reports on The Bethlem Mother-Infant Interaction scale (BMIS) and its interaction with insecure scores on the ASI. The fourth section reports on the interaction between RDC diagnosis and impairment in mothering abilities. The fifth section reports on marital status and problems experienced in relationships and whether these variables are related to ASI scores. The sixth section reports on the correlation between mother and infant interaction measured by self-report and from nurses observations. The seventh and final section reports on the power of the tests used and correction procedure for Type I errors. Analyses were carried out using SPSS and Excel statistical computer packages.

## **3.2 Participant Characteristics**

### **3.2.1 Analyses of Patient Characteristics**

In order to maximise the number of participants recruited for this study and to reduce error variance it was necessary to compare mothers who completed the ASI whilst in-patients with mothers who agreed to participate by mail before the two samples of women could be combined to form a single group of participants. This section details information regarding their demographic and clinical characteristics.

Continuous variables were compared using independent samples t-tests and are presented in Table 3.1. Where Levene's test suggested unequal variance the unequal t-value and degrees of freedom are reported.

There were no significant differences between the two groups of women on continuous characteristics. However, there was a trend ( $p = .06$ ) for in-patients to have an earlier onset of postnatal mental illness compared to participants recruited through mail.

It is possible that certain demographic variables determine whether a woman who was a previous in-patient on the Mother-Baby Unit decides to participate in the study. For example, white, middle class people are most commonly used as participants (Graham, 1992) and this may be because they are more likely to respond to requests for participation in studies. If

**Table 3.1. Patient characteristics of in-patients and mail participants**

Variable	In-Patients		Mail Participants		t-value	df	p
	Mean	SD	Mean	SD			
Age in years	31.00	7.06	31.60	5.89	.23	23	n.s.
Infants' age in weeks	7.90	8.56	9.87	9.94	.51	23	n.s.
Length of Admission in weeks	6.80	3.08	8.53	5.44	.91	23	n.s.
Onset of episode in weeks	7.80	8.57	1.87	2.10	2.15	10	n.s.t.

n.s.= not significant

n.s.t.= non-significant trend

**Table 3.2. Demographic characteristics of in-patients and mail participants.**

Variable	In-Patients	Mail Participants	chi-square	df	p
<b>Marital Status</b>					
Married/ Cohabiting	80% (8)	87% (13)	.20	1	n.s.
Single	20% (2)	13% (2)			
<b>Ethnic Status</b>					
Black Caribbean	0	13% (2)	2.27	2	n.s.
Indian/Pakistani/ Bangladeshi	0	7% (1)			
White	100% (10)	80% (12)			
<b>Employment Status</b>					
Professional	60% (6)	33% (5)	4.91	4	n.s.
Skilled Manual	20% (2)	33% (5)			
Semi or unskilled Manual	0	20% (3)			
Student	0	7% (1)			
Never Employed	20% (2)	7% (1)			

n.s.= not significant

this was the case then one would expect more white, middle class women to respond than women from other backgrounds. As the women on the Baby Unit were recruited as a consecutive series no attempt was made to control for these characteristics and this could be a potential problem if there was response bias in the women who mailed the questionnaire. The demographic characteristics are compared in Table 3.2.

As expected, women who responded by mail tended to be more often white, married, and from a middle class background. However, the in-patient group were from a similar demographic background and there were no statistical differences between the two groups of participants.

Clinical characteristics of mail respondents were also open to bias. For example, women with a previous diagnosis of schizophrenia or who were diagnosed with schizophrenia at discharge were often not contacted because they were discharged without their babies or because they moved into temporary accommodation. This outcome was not controlled for in women recruited as in-patients. The clinical characteristics are compared in Table 3.3.

From Table 3.3 it appears that more mail participants had a previous psychiatric diagnosis (53% compared to 20%) and were given a wider range of diagnoses at discharge compared to women who were recruited on the Unit. There was no difference between the two groups on previous

**Table 3.3** Clinical characteristics of in-patients and mail participants.

	<b>In-Patients</b>	<b>Mail Participants</b>	<b>chi-square</b>	<b>df</b>	<b>p</b>
<b>Previous Mental Illness</b>					
None	80% (8)	47% (7)	6.32	4	n.s.
Schizophrenia or other psychotic disorder	10% (1)	0			
Bipolar Disorder	0	20% (3)			
Affective Disorder	10% (1)	13% (2)			
Other	0	13% (2)			
<b>Previous Postnatal Disorder</b>					
None	80% (8)	80% (12)	.00	1	n.s.
Previous Postnatal Disorder	20% (2)	20% (3)			
<b>RDC Diagnosis at Discharge</b>					
None	0	6% (1)	4.40	3	n.s.
Schizophrenia or other Psychotic Disorder	40% (4)	20% (3)			
Bipolar Disorder	0	27% (4)			
Affective Disorder	60% (6)	47% (7)			

n.s. = not significant

episodes of postnatal illness and chi-square analyses confirmed that there were no statistical differences for all three clinical characteristics.

### **3.3.2 Summary**

The two groups of mothers were shown to be similar on demographic and clinical characteristics and could therefore be combined to yield a single group of participants (N=25). Power considerations suggest that this sample size would reveal large effects if present.

### **3.3 Analysis of the Attachment Style Inventory (ASI)**

#### **3.3.1 Analysis of Global Rating Scales**

As described in section 2.4 the ASI questionnaire consists of four brief descriptions, each relating to a different attachment style (avoidant, dependent, hostile, and ambivalent). Each description was rated on a 9-point scale where 1 signified "not at all" and 9 signified "extremely". In addition, a separate item assesses security/insecurity along a nine-point continuum where 1 signifies insecurity and 9 signify security. The questionnaire was completed independently for each of the following four relationship categories: mother, father, friendships, and sexual relationships. If participants have had no contact with their mother, father, or both, during the past year (either through death or circumstances) then they were asked not to complete the page for that particular relationship. Ratings for each attachment style were collapsed across the four relationships to yield four global attachment scores.

All 25 participants completed the 4 scales for attachment styles in friendships and sexual relationships. However, three participants did not complete the section on attachment to their mother, three participants did not complete the section on attachment to their father, and two participants did not complete the scales for both parents. Pro-rating was carried out using the available scores to obtain global attachment scores for each of the five scales for those participants who had missing data in order to

maximise the data set.

Pearson's correlation coefficients of the global ratings were used to examine the inter-relationships of the scales as the scale were continuous and are presented in Table 3.4.

From Table 3.4 it can be observed that there is a significant correlation between most of the global scores. The dependent global score is not significantly correlated with the hostile and ambivalent global scores. However, examining the overall pattern of correlation coefficients there appears to be a significant positive association between dependency scores and security scores and a negative relationship between these scores and global scores on avoidance, hostility and ambivalence. Similarly, there appears to be a positive association between avoidance, hostility and ambivalence global scores. This suggests that the dependency descriptions are related to a secure attachment style whereas avoidant, hostile and ambivalent descriptions are related to insecure attachment styles. Thus, mothers who score high on the dependency scale are also likely to score high on the security scale and mothers who score high on avoidance, hostility and ambivalent scales are likely to score lower on the security scale.

**Table 3.4** Correlations between ASI global scores (N=25).

	<b>Dependent</b>	<b>Hostile</b>	<b>Ambivalent</b>	<b>Security</b>
<b>Avoidant</b>	-.57 p<.01	.67 p<.001	.49 p<.05	-.68 p<.001
<b>Dependent</b>		-.22 n.s.	-.16 n.s.	.73 p<.001
<b>Hostile</b>			.65 p<.001	-.44 p<.05
<b>Ambivalent</b>				-.46 p<.05

**Table 3.5** Comparison between mothers and Sack's et al (1996) healthy controls' global ratings on the Attachment Style Inventory.

<b>Attachment Style</b>	<b>Mothers (n=25)</b>		<b>Healthy Controls (n=53)</b>		t-value	df	p
	Mean	SD	Mean	SD			
Avoidant	13.58	5.86	12.02	5.15	1.19	76	n.s.
Dependent	17.83	7.59	21.32	6.06	2.19	76	p<.05
Hostile	12.73	7.31	10.98	5.81	1.14	76	n.s.
Ambivalent	13.26	7.03	13.02	6.51	0.15	76	n.s.
Security	18.20	7.25	23.95	6.46	3.53	76	p<.001

Note. For the four attachment style global ratings, as well as the security global rating, the possible range of scores is 4 to 36.

n.s.. = not significant

**Table 3.6** Comparison between mothers who completed all 4 sub-scales and Sack's et al (1996) healthy controls' global ratings on the Attachment Style Inventory.

<b>Attachment Style</b>	<b>Mothers (n=17)</b>		<b>Healthy Controls (n=53)</b>		t-value	df	p
	Mean	SD	Mean	SD			
Avoidant	14.65	6.08	12.02	5.15	1.75	68	p<.05
Dependent	15.94	8.22	21.32	6.06	2.91	68	p<.005
Hostile	13.24	7.60	10.98	5.81	1.29	68	n.s.
Ambivalent	12.35	6.95	13.02	6.51	0.36	68	n.s.
Security	18.06	7.00	23.95	6.46	3.21	68	p<.005

Note. For the four attachment style global ratings, as well as the security global rating, the possible range of scores is 4 to 36.

n.s.= not significant

One of the aims of this study was to investigate whether mothers admitted to the Mother and Baby Unit were more likely to score lower on security and dependency and higher on avoidance, hostility and ambivalence compared to population norms. Unfortunately no population norms were available for the ASI. However, Sack et al. (1996) compared people with borderline personality disorder with healthy college students on the ASI. In order to compare the mothers in this study with a normal sample of people it was considered acceptable to use the means and standard deviations from the healthy sample reported on in Sack et al.'s (1996) study in comparison with the women recruited to the present study. The healthy control participants comprised 53 undergraduates (50 females and 3 males) from a large American East Coast university. The mean age for the healthy sample was 23.7 (SD=6.1). Approximately 92% of the college students were single, 4% were married, and 4% were separated or divorced. Ethnicity for the college sample was 57% White, 13% Black, 11% Hispanic, 6% Asian, and 13% unspecified. The healthy college participants were voluntarily recruited from psychology courses. Although not a clearly matched sample (i.e., somewhat different age, ethnic profile, and marital status), the two groups appeared to allow for contrasts with minimum confounding demographic factors. The sample standard deviation could not be relied on as an estimate of the population standard deviation as the healthy control sample was too small. As a result Student's independent samples t-test was employed to test the difference between the two samples using a pooled estimate of the population variance. No raw data were available from Sack et al (1996) so only the

reported means and standard deviations were used. The t-tests were performed in Excel. The means and standard deviations from mothers in this study and healthy controls from Sack et al's (1996) study are compared in Table 3.5

From visual inspection of Table 3.5 it appears that the mothers' global scores on dependency and security are lower than the scores observed for healthy controls. Independent samples t-tests were carried out to compare the means of the two samples and they confirmed that the mothers scored significantly lower on the scales associated with dependent attachment style and global security compared to the healthy sample. Avoidance, hostility and ambivalence global scores appear to be somewhat higher than the global scores for healthy controls. However, the differences were not large enough to demonstrate a significant difference using independent samples t-tests, suggesting that the mothers did not differ from healthy participants in terms of scores on the scales associated with insecure attachment styles. This result does in part support hypothesis 1, which predicted that the mother in this study would be more likely to have insecure attachment styles compared to a healthy sample. Although mothers failed to score higher than healthy participants on the attachment styles associated with insecurity (i.e., avoidant, hostile, and ambivalent global scales), the mothers did score significantly lower on scales associated with a secure styles of attachments (i.e., dependency and security global scales). It therefore appears that the mothers are less secure than the healthy sample but their score on the global scales for

insecure patterns are evenly distributed across the three styles (i.e., avoidant, hostile, and ambivalent) resulting in an insignificant difference when compared to healthy participants.

As mentioned earlier, the global scores were pro-rated for the mothers who lacked one or both of the parental parts of the ASI. To investigate whether the pro-ratings produced a reliable global rating score a comparison was made between the mothers who completed all four sub-scales and the healthy control participants from Sack et al's (1996) study. The result is presented in Table 3.6.

Table 3.6 illustrates that mothers who completed all four parts of the questionnaire tended to score lower on security scales and higher on scales associated with insecure styles compared to the healthy control sample. Independent samples t-tests confirmed that the mothers scored significantly lower on dependency and security, which is the same pattern as, was observed for the total sample. Mothers who completed all four sub-scales also scored significantly higher on the avoidance scale compared to the normal control sample. This finding was not significant for the total sample. It is possible that pro-rating the scales has added a degree of extra 'noise' to the data and so could hide a significant relationship.

### **3.3.2 Analyses of Cut-Off Scores.**

In order to determine whether the mothers scored significantly lower on dependency and security and significantly higher on avoidance, hostility and ambivalence on the global scores than would be expected, cut-off scores were calculated for each of the global scales. The absence of population normative scores on the ASI makes it difficult to assess where the cut-off score for abnormality would be. However, as a conservative estimate, the cut-off scores in this study was estimated to be the bottom 5% of security and dependency global scores and the top 5% of avoidance, hostility and ambivalence global scores calculated from the mean and standard deviations of the scores obtained from the healthy control sample. The proportion of mothers falling into each category was compared to the expected frequency and as the data was categorical a chi-square analysis was carried out to test for significance. The result is shown in Table 3.7.

From Table 3.7 it appears that only few participants fall above the cut-off score on the insecure attachment styles. Chi square analyses confirmed that there were not a significant amount of mothers scoring above the cut-off point on insecure attachment styles. There appears to be a larger number of mothers scoring below the cut-off score on dependency and security. Chi square analyses confirmed that the amount of mothers scoring below the cut-off score on dependency and security were significant. This finding is in agreement with the previous finding that

**Table 3.7** Chi square analysis of cut-off global scores on the ASI

<b>Variable</b>	<b>Cut-Off Score</b>	<b>Number of Mothers (of N=25)</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
Avoidance	20.45	3(above cut-off)	2.58	1	n.s.
Dependency	16.90	10(below cut-off)	64.47	1	p<.001
Hostility	20.51	3(above cut-off)	2.58	1	n.s.
Ambivalence	23.70	2(above cut-off)	0.47	1	n.s.
Security	13.36	8(below cut-off)	38.37	1	P<.001

n.s.= not significant

n.s.t.= non-significant trend

**Table 3.8** Chi square analysis of cut-off global scores on the ASI for mothers who completed all 4 sub-scales

<b>Variable</b>	<b>Cut-Off Score</b>	<b>Number of Mothers (of n=17)</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
Avoidance	20.45	3(above cut-off)	5.73	1	P<.05
Dependency	16.90	9(below cut-off)	82.05	1	p<.001
Hostility	20.51	2(above cut-off)	1.64	1	n.s.
Ambivalence	23.70	2(above cut-off)	1.64	1	n.s.
Security	13.36	6(below cut-off)	32.76	1	P<.001

n.s.= not significant

n.s.t.= non-significant trend

mothers of this study differed from healthy controls only on dependency and security scores and thus in part supports hypothesis 1 that the mothers in this study were more likely to have insecure attachments compared to a healthy control sample.

The same analyses were carried out for the mothers who completed all four sections of the questionnaire and the results are presented in Table 3.8.

Inspection of Table 3.8 suggests that the distribution of mothers falling above and below the cut-off scores appears similar to that observe for the total sample (Table 3.7). A significant amount of mothers scored below the cut-off point on dependency and on security. However, a chi square analysis also revealed that of these mothers a significant amount scored above the cut-off point on the avoidance global scale. Again this is in agreement with the previous finding that mothers who completed the global ratings for all four relationships differed from healthy controls on avoidance, dependency and security scores.

### **3.3.3 Analysis of Endorsement Profiles**

The instructions for completion of the ASI also asks participants to indicate with a tick which of the four styles best characterise their attachment experience within the particular relationship category under question. As

the data for these variables are categorical, chi square statistics were chosen to explore the inter-relationship between the four attachment styles within each relationship category. To maximise the number of participants in each category the women who chose avoidant, hostile and ambivalent styles were pooled together to form an insecure endorsement style which could then be compared to the group of women who chose the dependent style of attachment in the four relationship categories. The number of women endorsing each of the four categories in the four types of relationships is shown in Table 3.10. The chi square comparisons of the pooled endorsement categories are shown in Table 3.9.

From Table 3.9 it can be seen that the style chosen as the preferred attachment style in friendships is significantly associated with the style mothers endorse in their relationship with their sexual partner. There was also a non-significant trend for the participants to endorse a similar style of attachment within friendships and with their mother ( $p=.09$ ). The endorsement style in sexual relationships and the endorsement style in relationships with their mother were also significantly similar. Finally, the preferred attachment style in relationships with their mother was significantly similar to the style the participants endorsed with their father. This suggests that there is some degree of homogeneity between the endorsement style chosen in different relationships.

**Table 3.9** Chi square comparisons of endorsement categories on the ASI

	<b>Relationship with Sexual Partner</b>	<b>Relationship with Mother</b>	<b>Relationship with Father</b>
<b>Relationships with Friends</b>	X <sup>2</sup> =14.55, p<.001	X <sup>2</sup> =2.78, n.s.t.	X <sup>2</sup> =.64, n.s.
<b>Relationship with Sexual Partner</b>		X <sup>2</sup> =3.81, p<.05	X <sup>2</sup> =1.32, n.s.
<b>Relationship with Mother</b>			X <sup>2</sup> =6.20, p<.01

n.s. = not significant n.s.t.= non-significant trend

**Table 3.10** Attachment Style Inventory endorsements of most characteristic attachment style within relationship categories.

	<b>Avoidant</b>	<b>Dependent</b>	<b>Hostile</b>	<b>Ambivalent</b>
<b>Friendships</b>				
Mothers (n=25)	32% (8)	56% (14)	8% (2)	4% (1)
Controls (n=44)	14% (6)	68% (30)	4% (2)	14% (6)
<b>Sexual</b>				
Mothers (n=25)	16% (4)	48% (12)	8% (2)	28% (7)
Controls (n=44)	11% (5)	64% (28)	11% (5)	14% (6)
<b>Mother</b>				
Mothers (n=20)	20% (4)	30% (6)	25% (5)	25% (5)
Controls (n=39)	13% (5)	59% (23)	8% (3)	20% (8)
<b>Father</b>				
Mothers (n=20)	35% (7)	35% (7)	15% (3)	15% (3)
Controls (n=35)	11% (4)	60% (21)	9% (3)	20% (7)

To determine whether the mothers varied in endorsement styles from a normal control sample they were compared to the Sack et al.'s (1996) sample of normal college students. The percent for endorsement style in each relationship category is presented in Table 3.10.

From Table 3.10 it appears that fewer mothers choose the dependent style as their preferred style of attachment in all relationships compared to healthy control participants. Approximately 58% of adults are classified as secure according to the Adult Attachment Interview (van IJzendoorn & Bakermans-Kranenburg, 1996). From Table 3.9 it is visible that 59% to 68% of healthy controls choose the dependent style as their preferred attachment style which is slightly more than what van IJzendoorn and Bakermans-Kranenburg found. However, looking at the mothers in this study it is evident that they only choose the dependent style in 30% to 48% of cases apart from friendships where 56% of mothers chose the dependent style as their preferred attachment style. Chi square analyses were carried out between the mothers and the normal sample endorsements but there were no statistically significant differences between any of the relationship endorsement styles. This suggests that although the mothers choose the dependent style less often than the healthy control participants do, their alternative insecure choice was spread across the three insecure styles.

In order to investigate whether mothers were more inclined to endorse an insecure attachment style compared to healthy control participants, the

mothers who chose avoidant, hostile and ambivalent styles were pooled together to form an insecure endorsement style. This pooled group of women could then be compared to the group of women who chose the dependent style of attachment in the four relationship categories. The result is presented in Table 3.11.

Looking at the distribution of endorsement styles in Table 3.11 it appears that mothers endorse an insecure style of attachment in most relationships. Only in friendships is the preferred style of attachment dependency. This is in contrast to healthy control participants who endorse an insecure attachment style in a maximum of 40% of cases. However, chi square analyses found the difference between mothers and healthy control participants significant only in relationships with their mother. The mothers in this study were significantly more likely to endorse an insecure style of attachment compared to healthy control participants. There was also a trend for mothers to endorse an insecure style of attachment in relationships with their father ( $p=.07$ ). This result supports hypothesis 1 only partially as it was predicted that the mothers would endorse an insecure attachment style in all the relationships investigated.

**Table 3.11 Attachment Style Inventory endorsements of secure and dependent attachment style within relationship categories.**

	<b>Insecure</b>	<b>Dependent</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
<b>Friendships</b>					
Mothers (n=25)	44% (11)	56% (14)	1.02	1	n.s.
Controls (n=44)	32% (14)	68% (30)			
<b>Sexual</b>					
Mothers (n=25)	52% (13)	48% (12)	1.60	1	n.s.
Controls (n=44)	36% (16)	64% (28)			
<b>Mother</b>					
Mothers (n=20)	70% (14)	30% (6)	4.44	1	p<.05
Controls (n=39)	41% (16)	59% (23)			
<b>Father</b>					
Mothers (n=20)	65% (13)	35% (7)	3.18	1	n.s.t.
Controls (n=35)	40% (14)	60% (21)			

n.s.= not significant

n.s.t.= non-significant trend

### **3.3.4 Summary of ASI**

The hypothesis that a significant number of mothers would show insecure attachment styles to their parents, peers, and sexual partners was not fully supported. The mothers scored significantly lower on global scales associated with security but they failed to score significantly higher on global scales associated with insecure attachment styles. It may be that although the mothers were less secure than normal controls their scores on the insecure attachment styles were not higher in the same proportion as their security scores were lower and they may also have been spread evenly between the three insecure styles. The mothers failed to show an insecure endorsement style in relationships with their friends and sexual partner. There was a trend for the mothers to endorse an insecure attachment style with their fathers and this finding was significant in relationships with their mothers.

### **3.4 Analysis of Bethlem Mother- Infant Interaction Scale**

#### **(BMIS)**

##### **3.4.1 BMIS and its relationship with ASI**

As described in section 2.4 the BMIS is an observational measure of mother-infant interaction based on a week long observation of the mother on the Baby Unit. The scale consists of 6 sub-scales each rated on a 5 point scale where 0 signifies that the mother is interacting well with her infant and a score of 4 signifies a highly disturbed and erratic pattern of interaction resulting in the mother and infant being separated most of the time. The sum of the six sub-scales provides a total BMIS score.

A bivariate Pearson's correlation of the six sub-scales and the total score on the BMIS was carried out as the scales are continuous and the result is presented in Table 3.12.

The correlations illustrated in Table 3.12 show that there is a positive correlation between the majority of scales. The Pearson's correlation coefficient is highly significant for most of the scales apart from the correlation between routine and mood and on all the correlations involving the sub-scale measuring risk to the infant. It is perhaps not surprising that risk to the infant failed to correlate with any of the other scales as that sub-

**Table 3.12** Correlations between BMIS sub-scales and total score at week 2 of admission (N=25).

	Physical Contact	Vocal Contact	Mood	Routine	Risk	Total
<b>Eye Contact</b>	.87 p<.001	.62 p<.001	.71 p<.001	.49 p<.01	.05 n.s.	.74 p<.001
<b>Physical Contact</b>		.58 p<.01	.68 p<.001	.62 p<.001	.04 n.s.	.77 p<.001
<b>Vocal Contact</b>			.59 p<.01	.52 p<.01	.09 n.s.	.64 p<.001
<b>Mood</b>				.31 n.s.	.18 n.s.	.73 P<.001
<b>Routine</b>					-.19 n.s.	.54 p<.01
<b>Risk</b>						.12 n.s.

n.s. = not significant

**Table 3.13** Independent samples t-tests for BMIS sub-scales and total scale using global security of 13 as cut-off point.

BMIS	Cut-Off >13 (n=17)		Cut-Off ≤13 (n=8)		t-value	df	p
	Mean	SD	Mean	SD			
Eye contact	.58	.87	1.13	1.13	1.31	23	n.s.
Physical Contact	.65	.86	1.25	1.04	1.53	23	n.s.
Vocal Contact	1.29	.99	2.13	.84	2.06	23	p<.05
Mood	1.00	1.00	1.38	1.06	.86	23	n.s.
Routine	.82	.88	.75	.89	.19	23	n.s.
Risk	.059	.24	.00	.00	.68	23	n.s.
Total	4.53	3.69	5.20	4.59	.42	23	n.s.

n.s. = not significant

scale is not related to the actual dialogue between the mother and the infant.

One of the aims of this study was to assess whether mothers who scored higher on insecure styles of attachments would show poorer quality of mother-infant interaction compared to mothers who scored lower on attachment styles associated with insecure styles of attachments. The cut-off score derived in section 3.3.2 on global security was used to compare the means and standard deviations of the scales on the BMIS using Student's independent samples t-test. The result is shown in Table 3.13.

The means in Table 3.13 show that mothers who score below the cut-off on the global security scale score slightly higher on most of the BMIS scales, apart from the scales associated with routine and risk to infant. The first four scales are regarded as indices of the mothers contribution to the dialogue with her infant (Kumar & Hipwell, 1996) and the mothers who score below the cut-off point on the global security scale score slightly higher on all four. However, independent samples t-tests showed that the difference was significant only for vocal contact.

As the power was relatively low in the above analyses a Pearson's correlation coefficient was carried out between each of the scores on the BMIS with the security score in each of the four relationship categories. No significant correlation was found between the security scores and any of the BMIS scales suggesting that the significant difference observed for

vocal contact might have been due to a Type I error.

Hipwell and Kumar (1996) estimated the normal range of mother-infant interaction total score to be between 0 and 5. Sixty-three percent (n=5) of mothers who score below the cut-off score on the global rating scale for security show impaired interaction on the total score compared to 29% (n=5) of mothers who score above the cut-off score. However, a chi square analysis failed to find the difference significant ( $\chi^2(1)=2.48, n.s.$ ).

Chi square analyses were also carried out between BMIS total score and endorsement styles in relationships. The results are presented in Table 3.14.

Inspection of Table 3.14 suggests that there is no distinct pattern between security/insecurity and normal interaction/impaired interaction. None of the differences observed in Table 3.13 were significant suggesting that endorsed attachment style did not influence whether a woman had normal or impaired interaction with her infant. A Pearson's correlation coefficient analysis was carried out between the BMIS total score and scores obtained on the four different attachment styles in each of the relationship categories. None of the correlations revealed a significant difference suggesting that the BMIS total bore no relationship with ASI attachment style scores.

**Table 3.14** BMIS total scores and attachment style endorsements in relationships.

	<b>Impaired Interaction (BMIS total &gt; 5)</b>	<b>Normal Interaction (BMIS total ≤ 5)</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
<b>Friendships (n=25)</b>					
Dependent	39% (n=5)	61% (n=8)	.03	1	n.s.
Avoidant, Hostile or Ambivalent	42% (n=5)	58% (n=7)			
<b>Sexual Partner (n=25)</b>					
Dependent	50% (n=6)	50% (n=6)	.96	1	n.s.
Avoidant, Hostile or Ambivalent	31% (n=4)	69% (n=9)			
<b>Mother (n=20)</b>					
Dependent	67% (n=4)	33% (n=2)	.95	1	n.s.
Avoidant, Hostile or Ambivalent	43% (n=6)	57% (n=8)			
<b>Father (n=20)</b>					
Dependent	43% (n=3)	57% (n=4)	.02	1	n.s.
Avoidant, Hostile or Ambivalent	46% (n=6)	54% (n=7)			

n.s. = not significant

### **3.4.2 Summary of BMIS and its interaction with ASI**

One of the predictions of this study was that mothers with insecure attachment styles would show more disturbed mother-infant interaction. This hypothesis was not supported. Mothers who scored below the cut-off score on the ASI global security scale differed significantly from other mothers only on the BMIS scale measuring vocal contact between the mother and the infant. This finding may be a Type I error as correlations of BMIS sub-scales and total score was not significantly correlated with the security score in each of the four relationship categories respectively. ASI endorsement styles for each of the four friendships categories failed to find any significant difference between mothers who had impaired interaction with their infant and those that did not. This finding was further supported by a lack of correlation between BMIS total score and attachment style scores in each of the four relationship categories. Thus, the hypothesis that mothers who endorsed insecure attachment styles were more likely to have impaired mother-infant interaction was not supported.

## **3.5 Analyses of RDC Diagnosis and Impairment in Interaction.**

### **3.5.1 Global Rating Scale**

One of the aims of this study was to investigate whether a mother's final diagnosis was linked to the way she interacted with her infant. A Global Rating Scale was developed for this purpose. The scale aimed to assess whether the observed problem in mother-infant interaction was a by-product of the mother's mental health or reflected an inherent problem in her mothering abilities.

As the mothers were ascribed one of nine different RDC diagnoses at discharge it was necessary to combine some categories to enable statistical analysis. The diagnoses were combined to form primary diagnostic categories as follows:

#### **Psychotic Disorders**

Schizophrenia (n=1)

Schizo-Affective Disorder, Depressed Type (n=3)

Unspecified Functional Psychosis (n=2)

### Bipolar Disorders

Schizo-Affective Disorder, Manic Type (n=1)

Bipolar with Mania (n=2)

Bipolar with Hypomania (n=2)

### Affective Disorders

Major Depressive Disorder (n=10)

Minor Depressive Disorder (n=3)

One mother did not have a mental health problem whilst admitted and was excluded from the analyses in this section. It is, of course, not ideal to combine separate diagnostic entities (e.g., schizophrenia and unspecified functional diagnosis) as each entity has a unique population. This limitation must be taken into consideration when interpreting the results.

The Global Rating Scale was also re-coded to maximise the number of mothers falling into each category. Mothers who were experiencing problems with interaction due to their mental health were combined to form one group and mothers who were experiencing problems due to an impairment in their mothering abilities were combined to form a second group. The distribution of women in each group and their primary diagnostic category is illustrated in Table 3.15.

Inspection of Table 3.15 suggests that two thirds of mothers with affective disorders and half of mothers with psychotic disorders experience

problems in interaction with their infant due to an impairment in their mothering ability, rather than their mental health. A chi square analysis did not support this difference statistically ( $\chi^2(2)=4.84$ , n.s.). Looking at the number of mothers across diagnostic categories it is apparent that 58% (n=14) of them are experiencing problems with interaction due to an impairment in their mothering ability. Although this number is not statistically different from what would be expected by chance it still affects a substantial amount of mother-infant dyads.

### **3.5.2 Impairment on BMIS**

A second method of exploring mother-infant interaction in relation to diagnosis is to use the BMIS total score. Any score above 5 would indicate that the mother-infant interaction is impaired (Hipwell & Kumar, 1996). Table 3.16 illustrates the distribution of women scoring above and below the cut-off in relation to diagnostic category.

Inspection of Table 3.16 reveals that half of the women with psychotic disorders and just over half of the women with affective disorders show impaired interaction on the BMIS. None of the women with bipolar disorders showed any impaired interaction on the BMIS. A chi square analysis revealed a non-significant trend ( $\chi^2(2)=4.54$ ,  $p=.10$ ) between diagnostic category and interaction on the BMIS. However, it should be noted that the numbers in each cell are small.

**Table 3.15** Primary RDC diagnostic category and re-coded Global Rating Scale categories.

	<b>Psychotic Disorders</b> (n=6)	<b>Bipolar Disorders</b> (n=5)	<b>Affective Disorders</b> (n=13)
No Problems		20% (n=1)	
Problems in Interaction due to Mental Health	50% (n=3)	40% (n=2)	31% (n=4)
Problems in Interaction due to impaired mothering abilities	50% (n=3)	40% (n=2)	69% (n=9)

**Table 3.16** Mother-Infant interaction according to BMIS total score and diagnostic category.

	<b>Psychotic Disorders</b> (n=6)	<b>Bipolar Disorders</b> (n=5)	<b>Affective Disorders</b> (n=13)
<b>Normal Interaction</b> (BMIS≤5)	50% (n=3)	100% (n=5)	46% (n=6)
<b>Impaired Interaction</b> (BMIS>5)	50% (n=3)		54% (n=7)

### **3.5.3 Summary of RDC diagnosis and mother-infant impairment**

Although a higher percentage of mothers with affective and mothers with psychotic disorders had problems in mother-infant interaction viewed as a function of their mothering abilities, this difference was not large enough to be statistical significant. Mothers with affective disorders did not show impaired interaction on the BMIS more frequently than women with psychotic disorders and vice versa. However, women who were diagnosed with bipolar disorders all showed normal interaction on the BMIS. The difference between diagnostic groups was not significant but showed a non-significant trend. Because the Global Rating Scale and the BMIS have not been validated within a normal population it is difficult to conclude whether these observations are of importance. Similarly, by adding together distinct diagnostic categories, important characteristics of a specific disorder may be lost and that could potentially have biased the result. However, there was no overall statistical difference between the diagnostic categories and mother-infant interaction and it must therefore be concluded that hypotheses 3a and 3b were not supported. That is, mothers did not vary on why they were experiencing problems in mother-infant interaction as a function of their diagnoses.

## **3.6 Analysis of ASI Marital Status and Problems**

### **Experienced in Adult Relationships.**

#### **3.6.1 ASI and Marital Status**

The fourth hypothesis of this study concerned the mothers' marital status in relation to their attachment style and level of global security. Chi square analyses were carried out between marital status and the global security scale (using the cut-off point of 13 derived in section 3.3.2) and attachment style endorsements (the combined insecure category Vs dependency described in section 3.3.3) in the four relationship categories respectively. The result is presented in Table 3.17.

Inspection of Table 3.17 suggests that compared with married or cohabiting mothers, single mothers were more inclined to endorse an insecure attachment style than a dependent style. This was only the case for married mothers in relationships with their mother and their father respectively. On the global security scale the majority of married mothers score above the cut-off point. This was only the case for half the single mothers. Overall, a higher percentage of single mothers fell within the insecure categories compared to married mothers. However, chi square analyses only found this difference significant in the mothers' relationship with their sexual partner. Thus, the hypothesis that mothers who scored below the cut-off on the global security scale and mothers who endorsed

**Table 3.17** Marital status, ASI Global security and ASI endorsement style

	<b>Married/ Cohabiting</b>	<b>Single</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
<b>Security (n=25)</b>					
Secure (>13)	71% (n=15)	50% (n=2)	.71	1	n.s.
Insecure (≤13)	29% (n=6)	50% (n=2)			
<b>Friendships (n=25)</b>					
Dependent	57% (n=12)	25% (n=1)	1.40	1	n.s.
Insecure	43% (n=9)	75% (n=3)			
<b>Sexual Partner (n=25)</b>					
Dependent	57% (n=12)	0% (n=0)	4.40	1	p<.05
Insecure	43% (n=9)	100% (n=4)			
<b>Mother (n=20)</b>					
Dependent	35% (n=6)	0% (n=0)	1.51	1	n.s.
Insecure	65% (n=11)	100% (n=3)			
<b>Father (n=20)</b>					
Dependent	37% (n=6)	25% (n=1)	.23	1	n.s.
Insecure	63% (n=10)	75% (n=3)			

n.s.= not significant

an insecure attachment style in relationships were more likely to be single than married was only supported in part.

### **3.6.2 ASI and quality of relationship with partner.**

The mothers were asked on a categorical scale (good Vs poor) how they perceived their relationship with their partner or, if they were single, they were asked about their relationship with their infant's father. This data was collected as part of the Marcé checklist (section 2.4). Chi-square analyses were used to explore the interaction between quality of relationship with partner and global security scale (using a cut-off of 13) and attachment endorsement style (insecure Vs dependent) respectively. The results are presented in Table 3.18.

From Table 3.18 it appears that at least half of the mothers with a poor relationship with their partner endorse an insecure attachment style and score below the cut-off point on the global security scale. The majority of women with a good relationship score above the cut-off point on the global security scale and endorse a dependent style of attachment with their friends. However, their most frequent endorsement style with their sexual partner, mother, and father respectively, tends to be insecure. A higher proportion of mothers with poor relationships score below the cut-off on global security and endorse an insecure style of attachment in all relationships, apart from their relationship with their most recent sexual partner. However, none of the differences between the two groups of

**Table 3.18** Relationship with partner, ASI Global security and ASI endorsement style.

	<b>Good Relationship</b>	<b>Poor Relationship</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
<b>Security (n=25)</b>					
Secure (>13)	80% (n=12)	50% (n=5)	2.48	1	n.s.
Insecure (≤13)	20% (n=3)	50% (n=5)			
<b>Friendships (n=25)</b>					
Dependent	60% (n=9)	40% (n=4)	.96	1	n.s.
Insecure	40% (n=6)	60% (n=6)			
<b>Sexual Partner (n=25)</b>					
Dependent	47% (n=7)	50% (n=5)	.03	1	n.s.
Insecure	53% (n=8)	50% (n=5)			
<b>Mother (n=20)</b>					
Dependent	31% (n=4)	29% (n=2)	.01	1	n.s.
Insecure	69% (n=9)	71% (n=5)			
<b>Father (n=20)</b>					
Dependent	36% (n=4)	33% (n=3)	.20	1	n.s.
Insecure	64% (n=7)	67% (n=6)			

n.s. = not significant

women were large enough to produce a significant result. Thus, this exploration does not support hypothesis 4 that women who are insecurely attached are significantly more likely to be experiencing relationship problems with their partner.

### **3.6.3 ASI and quality of relationship with others.**

The mothers were asked on a categorical scale (good Vs poor) about how they perceived their relationship with significant others, such as their parents and their friends. This data was also collected as part of the Marcé checklist (section 2.6). Chi-square analyses were used to explore the interaction between quality of relationship with significant others and global security scale (using a cut-off of 13) and attachment endorsement style (insecure Vs dependent) respectively. For some mothers the data regarding relationship with significant others was not available and explains why the number of participants in each category has changed slightly. The results are presented in Table 3.19.

Inspection of Table 3.19 suggests that the majority of mothers who had a poor relationship with significant others were more likely to score below the cut-off point on the global security scale and to endorse an insecure style of attachment in relationships. Mothers with good relationships tended to score above the cut-off point on global security and to endorse a dependent style of attachment in relationships with friends and sexual partner. However, the majority of those mothers endorsed an insecure

**Table 3.19** Relationship with significant others, ASI Global security and ASI endorsement style.

	<b>Good Relationship</b>	<b>Poor Relationship</b>	<b>Chi Square</b>	<b>df</b>	<b>p</b>
<b>Security (n=23)</b>					
Secure (>13)	79% (n=11)	44% (n=4)	2.81	1	n.s.t.
Insecure (≤13)	21% (n=3)	56% (n=5)			
<b>Friendships (n=23)</b>					
Dependent	71% (n=10)	22% (n=2)	5.32	1	p<.05
Insecure	29% (n=4)	78% (n=7)			
<b>Sexual (n=23)</b>					
Dependent	64% (n=9)	33% (n=3)	2.10	1	n.s.
Insecure	36% (n=5)	67% (n=6)			
<b>Mother (n=19)</b>					
Dependent	46% (n=6)	0% (n=0)	4.05	1	p<.05
Insecure	54% (n=7)	100% (n=6)			
<b>Father (n=18)</b>					
Dependent	36% (n=4)	29% (n=2)	.12	1	n.s.
Insecure	64% (n=7)	71% (n=5)			

n.s.= not significant n.s.t.= non-significant trend

style of attachment with their mother and father respectively. Overall, a greater proportion of mothers with poor relationships with significant others scored below the cut-off point on global security and endorsed an insecure style of attachment compared to mothers who had a good relationship with significant others. Chi square analyses confirmed that the difference was significant in relationships with their friends and with their mother respectively. There was also a trend for mothers with poor relationships with others to score below the cut-off score on the global security scale compared to mothers who had good relationships with significant others ( $p=.09$ ). This finding partially supports hypothesis 4 that mothers with insecure attachment styles were significantly more likely to experience relationship problems with significant others.

#### **3.6.4 Summary of ASI and its relation to marital status, relationship with partner and its relationship with significant others.**

This section aimed to explore whether mothers who scored below the cut-off point on the global security scale and mothers who endorsed an insecure attachment style in the four relationship categories were more likely to be single, to experience problems with their partner, and to experience problems in their relationship with significant others. This hypothesis was supported only in part. All single mothers endorsed an insecure style of attachment with their most recent sexual partner but this occurred significantly less often for married mothers. There was no evidence that any particular group of mothers were experiencing problems

with their partner. However, mothers who endorsed an insecure style of attachment in relationships with their friends and/or their mother were more likely to report that they were experiencing problems with significant others. There was also a trend for mothers who reported that they were experiencing problems in relationships with significant others to score below the cut-off on the global security scale.

## **3.7 Analysis of Mother-Infant Self-Rating Scale and BMIS**

### **3.7.1 Correlation of MISRS**

In order to investigate whether the mothers' own view of their infant interaction was similar to the nurses' observations, the inter-relatedness for the MISRS was explored using Pearson's correlation coefficient. The result is presented in Table 3.20.

Inspection of Table 3.20 suggests that all the sub-scales and the total score are positively related to each other. As observed earlier in the inter-correlation of the BMIS the risk sub-scale is not significantly related to any of the sub-scales. Vocal contact is not significantly correlated to physical contact and mood. All other correlations are significant suggesting that the mothers view themselves consistently across the scales.

### **3.7.2 Correlation between MISRS and BMIS**

A final aim of this study was to explore if there was any relationship between how mothers perceived their interaction and how the nurses had observed the interaction over the preceding week. Pearson's correlation coefficient was used to analyse the interaction and the result is presented in Table 3.21.

**Table 3.20** Correlation of MISRS sub-scales and total score at week 2 of admission (N=25)

	<b>Physical Contact</b>	<b>Vocal contact</b>	<b>Mood</b>	<b>Routine</b>	<b>Risk</b>	<b>Total</b>
<b>Eye Contact</b>	.53 p<.01	.65 p<.001	.64 p<.001	.63 p<.001	.19 n.s.	.84 p<.001
<b>Physical Contact</b>		.44 p<.05	.55 p<.005	.33 n.s.	.34 n.s.	.69 p<.001
<b>Vocal contact</b>			.28 n.s.	.54 p>.005	.20 n.s.	.72 p<.001
<b>Mood</b>				.66 p<.001	.30 n.s.	.81 p<.001
<b>Routine</b>					.16 n.s.	.81 p<.001
<b>Risk</b>						.47 p<.05

n.s. = not significant

**Table 3.21** Interaction between MISRS and BMIS both at week 2 of admission (N=25)

	<b>BMIS Eye Con.</b>	<b>BMIS Phys. Con.</b>	<b>BMIS Vocal Con.</b>	<b>BMIS Mood</b>	<b>BMIS Routine</b>	<b>BMIS Risk</b>	<b>BMIS Total</b>
<b>MISRS Eye Con.</b>	.14 n.s.	-.01 n.s.	.16 n.s.	.11 n.s.	-.05 n.s.	-.17 n.s.	.16 n.s.
<b>MISRS Phys. Con.</b>		.31 n.s.	.08 n.s.	.16 n.s.	.08 n.s.	-.15 n.s.	.31 n.s.
<b>MISRS Vocal Con.</b>			.03 n.s.	.05 n.s.	-.30 n.s.	-.19 n.s.	.02 n.s.
<b>MISRS Mood</b>				.31 n.s.	.13 n.s.	-.17 n.s.	.21 n.s.
<b>MISRS Routine</b>					-.26 n.s.	-.20 n.s.	-.14 n.s.
<b>MISRS Risk</b>						-.10 n.s.	-.11 n.s.
<b>MISRS Total</b>							.08 n.s.

n.s.= not significant

Inspection of Table 3.21 suggests that there is no significant correlation between the mothers' views of their interaction with their infant and the nurses' observations of their interaction. This finding suggests that there is no significant relationship between mothers' ratings of infant interaction and observers' ratings.

### **3.7.3 Summary of MISRS and BMIS interaction**

The correlation of inter-relatedness of the MISRS alone showed that mothers were consistent between them in how they rated the scales. Mothers who scored low on one score would tend to score low on all scores and vice versa. However, the mothers' ratings of the interaction with their infant bore no relationship to the nurses' ratings on the BMIS.

### **3.8 Summary of Results**

This study aimed to explore a number of hypotheses in relation to attachment styles and mother-infant interaction but not all the hypotheses were supported in full, and some were not supported at all (see summaries in sections 3.3.4, 3.4.2, 3.5.3, 3.6.3, and 3.7.3). The number of participants in this study was relatively small and there are a number of problems associated with small sample sizes. Firstly, small sample sizes can only reveal large effects and thus increase the probability of Type II errors. Thus, there may be a significant difference between two variables but because the sample size is too small it is not revealed and assumed not to be present. On the other hand, those differences that are significant may be caused by Type I errors as the probability of Type I errors increase as the number of comparisons increase. The most common test to control for Type I errors is to use some form of Bonferroni-type correction. In this study the expected error rate was calculated per hypothesis.

Hypothesis 1 stated that the women in this study would be significantly more likely to have insecure attachment styles compared to a healthy control sample. A total of 28 tests (10 independent samples t-tests and 18 chi-square analyses) were carried out to test this hypothesis and 10 of these were significant. An average of 1.4 ( $28 \times 0.05$ ) tests would be expected to be significant by chance when controlling for Type I errors. This suggests that at least 8 of the significant results relating to attachment style were 'truly' significant.

Hypothesis 2 aimed to test whether women with insecure attachment styles were more likely to be experiencing problems with mother-infant interaction compared with women who had a secure attachment style. A total of 12 tests (7 independent samples t-tests and 5 chi-square) were carried out to test this hypothesis and one test was significant. The expected number of Type I errors is 0.6 ( $12 \times 0.05$ ) which suggests that the significant result was probably due to a Type I error.

The third hypothesis predicted that women with affective disorders and women with psychotic disorders would be more likely to have problems in mother-infant interaction and that this was due to an inherent problem in their mothering abilities rather than due to their mental health. Two chi-square tests were carried out and as none of them were significant it was not necessary to estimate the frequency of Type I errors.

Hypothesis 4 stated that women with insecure attachment styles were more likely to be single or to be experiencing problems in relationships compared to women with a secure attachment style. In total, 15 chi-square analyses were performed, of which 3 were significant. The expected frequency of a Type I error was 0.75 ( $15 \times 0.05$ ) which suggests that approximately one of the significant results was caused by a Type I error.

Finally, the research question aimed to explore whether there was a relationship between mothers' ratings of infant interaction and observers'

ratings. As a non-significant outcome was found it was not necessary to control for Type I errors.

Overall it appears that not all the significant findings were due to Type I errors. The control measure used does not allow predictions regarding which results are due to error and which are not. However, as the cell sizes for many of the chi-square analyses were small (<5) and the overall number of participants was relatively small, all the significant results should be treated as a guide rather than a definite conclusion.

Limitations to this study regarding sample size will be further considered in the Discussion section.

## **4. Discussion**

Attachment style and mother-infant interaction was the primary focus of this study. The results will be presented in sections relating to the hypothesis being tested. Each section will begin with a short summary of the main findings before the results are discussed in detail. The theoretical and therapeutic implications of the findings will be explored in a separate section. Methodological issues arising from the study will then be outlined and discussed followed by suggestions for further research. Finally, the main conclusions of the study will be summarised.

### **4.1 Discussion of Results**

#### **4.1.1 Attachment Style of Mothers**

It was predicted that a significant number of mothers would have insecure attachment styles to their parents, peers and sexual partner compared to a healthy control sample. The design of the Attachment Style Questionnaire (ASI; Sperling & Berman, 1991) required this hypothesis to be tested on a number of different dimensions: Did ASI Global scores differ significantly between the two groups? Were a significant number of mothers within an 'abnormal' scoring range on the global scales?; Did the endorsement profiles of the mothers differ significantly from healthy controls? Each of these questions will be discussed in turn.

*Did ASI Global scores differ significantly between mothers and healthy controls?* The analyses showed that the mothers only differed significantly from the healthy control sample on two global scales; the mothers scored significantly lower on the dependency global scale and on the security global scale. There was no statistical difference between the mothers and the healthy control sample on the global scores associated specifically with insecurity.

The correlations of the ASI Global scores illustrated that dependency was the only attachment style that correlated positively with security and it was therefore considered to be a secure attachment style which is in accordance with Sperling et al.'s findings (Heiss, et al., 1996; Sperling et al., 1992). The analyses of the mothers' global scores showed that they scored significantly lower on the scales associated with security and dependency compared to the healthy control sample.

The analyses comparing the global scales associated with insecurity (avoidant, hostile, and ambivalent) failed to demonstrate a significant difference between the mothers and the healthy control sample. This suggests that the mothers rated themselves as less secure only on the global scales associated with security (security and dependency).

It is possible that the failure to find a significant difference between the two groups on global scores associated with insecure attachment styles was

due to the pro-rating carried out for the women who had not completed the sections of the questionnaire regarding their relationship with their mother, father, or both. The analyses carried out between the women who completed the global rating scale for all four relationship categories showed that they scored significantly higher on the avoidant global scale compared to healthy control participants. The two sections of the questionnaire concerned with parental relationships stated that participants should only complete those sections if they had been in contact with their mother or father in the past year. However, the participants were not required to specify why they had not been in contact (i.e., whether it was because the parent was deceased or whether the loss of contact was through choice or circumstances). If the women had been asked to rate their relationship despite not having had any contact, it is possible that the overall difference between the women and healthy controls would also have been significantly different on the avoidant global scale. Past research suggests that because people with avoidant (or dismissing) attachment styles have no confidence in the availability of attachment figures, they avoid and deny the need for support and attention (Sable, 1997). Thus, some mothers who did not complete the questionnaire sections relating to either or both of their parents may not have done so because they were so avoidant of an intimate relationship with their parent(s) that they had chosen not to keep in contact with them. This possibility can not be verified at present and it must be concluded that the hypothesis was only partially supported: The mothers were less secure compared to a healthy control sample but only mothers who completed the

questionnaire for all four relationship categories score significantly higher than the control sample on insecurity (avoidance).

*Was there a significant number of mothers within 'abnormal' scoring range on the global scales?* A significant number of mothers scored below the cut-off range on global dependency and global security. There was not a significant number of mothers scoring above the cut-off score on the global scales associated with insecurity.

As there are no population norms and potential cut-off scores available on the ASI global rating scales, a conservative estimate was made on the basis of the means and standard deviations of the healthy control sample. Two sets of analyses were carried out on the data - analyses of the total sample, and analyses of the women who completed the scales in all four relationship categories. The first set of analyses found that a significant number of women scored below the estimated cut-off score on dependency and security. The amount of women who scored below the cut-off score on the insecure attachment styles did not differ significantly from that expected to be obtained by chance. When women whose scores were pro-rated were left out of the analysis, a significant amount of women also scored above the cut-off point on the avoidant global scale. These findings are similar to those observed on the comparison analyses of global scores between the women and the healthy control sample. This indicates that the failure to find a significant result relating to insecure attachment styles may have been a Type II error caused by pro-rating

some of the scores (Type I errors are discussed in Section 3.8).

*Did the endorsement profiles of the mothers differ significantly from healthy controls?* The mothers did not differ significantly on the endorsed attachment style when compared to a healthy control sample. They did, however, differ when the insecure endorsement styles were combined to form a single insecure category. The mothers were significantly more likely to endorse an insecure attachment style in the relationship with their own mother. No other endorsement style in relationships differed significantly.

It was expected that the mothers were significantly more likely to endorse an insecure attachment style compared to the healthy control sample. Analyses of the inter-relationship between the endorsement styles within relationship categories showed that the endorsed style in peer relationships and the endorsed style in sexual relationships were significantly related. Endorsement style with mother and endorsement style with father was also significantly related. Endorsement style with mother and endorsement style with sexual partner was also significantly related although not as strongly as in the other two analyses.

Some authors have suggested that romantic attachments are similar to mother-infant attachment (e.g., Hazan & Shaver, 1987; Scher & Mayseless, 1997). Obviously romantic attachments are not so reliant on physical proximity and safety as caregiver attachments are in infancy. However, they do provide emotional security and they have therefore been

argued to serve comparable purposes. Longitudinal studies focusing on romantic attachment stability have found that between 30 to 40 % of people change their attachment style over time (Baldwin & Fehr, 1995; Kirkpatrick & Hazan, 1994; Scharfe & Bartholomew, 1994). Although the internal working model remains relatively stable over time, it is constantly updated with new information regarding relationships. Kirkpatrick and Hazan (1994) suggested that the romantic attachment style might change in response to aspects of romantic relationship functioning. For example, someone who was previously secure might become insecure following a period of interpersonal conflict. Davalia, Burge and Hammen (1997) found that the women in their study who changed their romantic attachment style from secure to insecure over time were more likely to have had adverse earlier experiences and were more similar to women who remained insecure over time than to women who remained secure. This may suggest that, for some people, attachment status may change over time, depending on past (and present) interpersonal experiences and further explain why attachment style with peers is only significantly related with sexual relationships, and why mother and father attachment styles are significantly related. Friendships and sexual relationships are more transient and new experiences will continue to shape the internal working model. However, the relationship one forges with ones' parents is likely to remain stable in adulthood as the reliance on the parent as the main source of security is diminished during adolescence when peer and romantic attachments become more significant.

Two sets of analyses were carried out to explore the women's endorsement styles in each of the four relationship categories. The first set of analyses compared the endorsement profiles of the women in this study with the healthy control sample. Although it appeared that the mothers were more inclined to endorse an insecure attachment style more frequently than the control sample, this difference was not significant. Secondly, in an attempt to increase the power of the analysis the women who endorsed an insecure attachment style (avoidant, hostile, or ambivalent) were pooled together to form a single insecure style in each of the four relationship categories. The same procedure was carried out for the control sample. The analyses showed that only in maternal relationships were the women more likely to endorse an insecure attachment style when compared with the control sample. There was also a non-significant trend for the women to endorse an insecure attachment style in paternal relationships. The women did not differ in endorsement style compared to the control sample in relationships with friends and sexual partners.

Although this result did not fully support the hypothesis that a significant number of mothers would endorse an insecure attachment style compared to a healthy control sample, it is nevertheless an interesting finding. As mentioned earlier, attachment style to friends and romantic partners may change over time for some adults, depending on interpersonal experiences. Self-reported romantic attachment style and interview-assessed attachment style (AAI) tend to show poor correlation (e.g.,

Scharfe, 1995) and it is possible that this reflects some people's tendency to fluctuate between secure and insecure style depending on their current romantic relationship experience. However, these individuals might be classified as insecure on the basis of interview assessments because it is not reliant on information regarding current relationships, but rather on information regarding past attachment experiences with their primary caregiver, the coherency of the information, and whether they have resolved previous traumas. Thus, self-report questionnaires relating to romantic and peer attachments are largely time specific. It is not clear whether the same is true for self-report questionnaires regarding parental attachment styles. Literature on attachment theory suggests that parental attachment remains relatively stable over time (e.g., Grossman & Grossman, 1991; Main & Cassidy, 1988; Urban, Carlson, Egeland & Sroufe, 1991). If this is true it would suggest that the women in this study were more likely to have insecure attachment styles as this finding was significant in relationships with their own mother, which is a relationship that is not time specific and the internal working model is less flexible.

#### **4.1.2 Attachment style and mother-infant interaction**

It was hypothesised that women with insecure attachment styles were more likely to have impaired mother-infant interaction compared to women with a secure attachment style. This hypothesis was not supported as there were no overall significant differences between attachment style and mother-infant interaction.

Inter-correlations of the Bethlem Mother-Infant Interaction Scale (BMIS; Kumar & Hipwell, 1996) sub-scales were significant for most scales apart from those associated with assessing the risk the mother posed to her infant. Mood and routine were also not significantly correlated.

The analyses of security and BMIS sub-scales showed that only vocal contact differed significantly between women who scored above or below the 'abnormal' cut-off point on the security scale. Mothers who scored below the cut-off point on global security were significantly more likely to be viewed to show impairment in their ability to vocalise and maintain a dialogue with their infants. As a relatively low number of mothers scored below the cut-off point ( $n=8$ ), and because only one out of seven t-tests was significant, there is a high probability that this result was due to a Type I error. Correlations between the sub-scales and the global security score confirmed that there were no significant correlations between the global security score and any of the sub-scales on the BMIS, also suggesting that the result was due to a Type I error, however interesting it may seem.

Analyses of global security score, endorsement style, and women scoring within and outside the estimated normal range of mother-infant interaction (Hipwell & Kumar, 1996) showed that there were no significant differences on these measures. Thus, the hypothesis that mothers with insecure attachment styles would be more likely to have impaired mother-infant interaction compared to mothers with secure attachment styles was not supported.

There are a number of possible reasons why this hypothesis was not supported. Although there was no difference between the two groups of women on BMIS sub-scales and global security rating, the means did appear to move in the direction of the hypothesis. That is, the mean BMIS sub-scale scores for mothers who score below the cut-off point on global security tended to be slightly above the means of women who scored above the cut-off score (apart from the sub-scales measuring routine and risk). However, most of the scores on the sub-scales were positively skewed resulting in an overall lower mean. The range of the scores on the sub-scales was therefore not large enough to produce a significant result with such a small sample size. Secondly, by using the total score as an index of impairment, this obscures the idiosyncratic pattern of how insecurity may be related to each of the sub-scales. For example, it is possible that mothers who endorse an insecure attachment style (either avoidant, hostile, or ambivalent) may interact worse on sub-scales associated with the dialogue but better on the other sub-scales. Similarly,

there may be idiosyncratic patterns on the sub-scale within the insecure attachment styles that are obscured because the women that endorsed one of the three styles have been pooled together. Unfortunately the small sample size did not allow for the analyses relevant to testing those possibilities to be performed.

It is also possible that the hypothesis failed to be supported because the BMIS scores used for the analysis were those completed for the mothers' second week of admission. The BMIS was completed on the basis of the poorest level of interaction observed during the preceding week that had lasting for most of one day, in accordance with Kumar and Hipwell's (1996) guidelines. Many of the mothers would still have been very ill at that time and this may have influenced their interaction whether they were secure or insecure in their attachment styles. If, for example, it had been possible to observe each mother during the last week of her admission period, the ratings would have been a truer reflection of how she would normally interact with her infant or of the benefit she derived from being on the Unit. In other words, security scores (or endorsement style) at intake may predict outcome. However, no BMIS scores were available for mothers from their last week of admission. It was not possible to complete the measure because: I) the mothers usually go on extended periods of home-leave towards the end of their admission and only come to the ward for the weekly ward round, and II) the BMIS is not a reliable measure when conducted over shorter periods of time (Kumar & Hipwell, 1996).

Finally, it is also possible that the BMIS is a measure of interactions far more impaired than that observed in normal dyadic interactions. The BMIS was developed for a clinical population and although the women in this sample were all in-patients, they were not all equally disturbed. As the observers had no specialist knowledge about specific attachment issues (for example, differences in interaction depending on attachment style) it is possible that they were assessing the interactions more as a function of how disturbed the mother was, rather than subtle differences in interactions. For example, a mother who was depressed may have been interacting 'very well' with her infant compared to a mother who was psychotic. However, compared to a mother who was not mentally ill or to a mother with a secure attachment style, her interactions may have been considered to be impaired. As the observers were not used to comparing in-patients to women with no mental health problems it is possible that they had over-estimated some mothers abilities in their interactional skills. Thus, the BMIS was too crude a measure to identify the subtle differences observed in interactions between attachment styles (for example, whether a mother was consistent in the way that she interacted with her infant). Thus, a larger sample size would not increase the likelihood of a significant finding.

#### **4.1.3 Mother's diagnosis and mother-infant interaction**

The hypothesis that mother-infant interaction would be linked to the mothers' diagnosis was not supported.

There was no statistical evidence to suggest that mothers with different diagnoses varied in terms of impairment on the BMIS. There was a non-significant trend for mothers with bipolar disorders to interact normally with their infants but this trend should be viewed with caution as the number of mothers falling into this diagnostic category was very low ( $n=5$ ). There was also no statistical evidence to suggest that mothers with a particular disorder were more likely to experience problems in mother-infant interaction due to an impairment in their mothering abilities (as measured by the Global Rating Scale). It is interesting that the measures failed to show any differences between the diagnostic categories, in particular between mothers with affective disorders and mothers in different diagnostic groups.

Previous research has consistently demonstrated mothers with depressive disorders to be emotionally unavailable, withdrawn, and inconsistent in their infant interaction. For example, depressed mothers have often been described as alternating between disengagement and intrusive, controlling, or overstimulating maternal behaviour (Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986). Similarly, the contingency of maternal response to infant signals appears to be deficient in mothers with depression compared with controls (Field, 1984; Field, Healy, Goldstein, Perry, Bendell, Schanberg, Zimmerman, & Kuhn, 1988; Field, Sandberg, Garcia, Vagal-Lahr, Goldstein, & Guy, 1985; Flemming, Ruble, Flett, & Shaul, 1988). Notably, comparisons were to non-depressed groups rather than other

psychiatric groups. The present data suggests global impairments in mother-infant interaction are due to the psychiatric disturbance per se, and not specific to depression. Finally, in cases where the mother has been physically present but psychically absent despite evidence that the baby has been well cared for, it has been found that the mother-infant relationship is seriously impaired (see Rosenblum, et al., 1997). Overall, there is a large body of literature describing impaired mother-infant interaction in mothers with depressive disorders.

There is less literature concerning mother-infant interaction and mothers with bipolar and psychotic disorders. However, some research has suggested that although mothers with psychotic disorders or bipolar manic disorder may show extreme variability in caregiving as a result of disturbed and unpredictable behaviour caused by their symptoms, there were no long-term implications for infants of women with bipolar disorders. Hipwell (1992) studied a series of women who had been jointly admitted with their infants to a Mother and Baby Unit within 10 weeks of childbirth. Developmental assessment and maternal interviews were carried out at 2, 6, and 12 months postpartum. She found that at 1 year postpartum the women had few symptoms of their mental illness but there were differences in outcome depending on diagnosis: Women with a manic episode in the postpartum period were more likely to have infants with secure attachments, whereas women with psychotic or non-psychotic depression were more likely to have infants who were insecurely attached at one year of age. However, in a separate study, Hipwell and Kumar

(1996) found that women with bipolar disorders who were rated by nurses on the BMIS on the week of admission, in the second week, and at the week of discharge, as having more impaired mother-infant interaction compared with women with unipolar depression. This suggests that the BMIS may not be a sensitive instrument for assessing mother-infant interaction when trying to predict attachment outcome of the infant. No data is available from normal non-clinical dyads and it is possible that the BMIS distinguish the mothers' interaction on the basis of their diagnosis rather than on the basis of possible underlying attachment constructs.

The Global Rating Scale was developed in an attempt to distinguish whether a mother was experiencing problems in mother-infant interaction due to her mental health or due to an inherent problem in her mothering ability that was not resolved by an improvement in her mental health. Although high inter-rater reliability was obtained when using the measure, it failed to show a significant difference between the three diagnostic categories. As mentioned above, infants of women with psychotic disorders and non-psychotic depression are more likely to have insecure attachment patterns compared to infants of women with bipolar disorders (Hipwell, Goosens, Melhuish, & Kumar, in press). The underlying assumption of the hypothesis being tested in the present study was that women with insecure attachment styles were more likely to have impaired mother-infant interaction due to their mothering abilities rather than their mental health. Thus, if women with psychotic disorders and women with non-psychotic depression are equally likely to have infants with insecure

attachments, it would not be salient to analyse the Global Rating scale according to diagnostic classification as both groups of women are more likely to experience problems in mother-infant interaction due to impairments in their mothering abilities. It may therefore have been more salient to explore the Global Rating Scale in relation to attachment style, especially endorsement style in relationship with her own mother. Indeed, a post-hoc chi-square analysis confirmed that the women who were considered to be experiencing problems in mother-infant interaction due to impairment in their mothering abilities were found to be significantly more likely to endorse an insecure attachment style in relationships with their own mother ( $X^2(1) = 4.46, p < .05$ ). None of the other endorsement styles were significant when compared to the Global Rating Scale. This may suggest that when a mother is experiencing problems in the interaction with her infant and when the problems are considered to be due to impairments in her mothering abilities, then it is likely that she has an insecure attachment style in the relationship with her own mother. Research has suggested that this is often the case for women who develop postnatal depression (Gotlieb et al., 1991; Kumar & Robson, 1984) but the lack of difference between diagnostic categories and the Global Rating Scale implies that insecure attachment with a woman's own mother could also have a part to play in the onset of other postpartum mental illnesses.

Finally, the difference found between endorsement style in the women's relationships with their own mother and the Global Rating Scale further

supports the theory that this type of relationship may be a more accurate reflection of a person's internal working model than the other relationships explored by the ASI (see discussion in Section 4.1.1). However, the finding needs to be viewed with caution for a number of reasons. Firstly, the sample was very small and the analysis was carried out post-hoc. Secondly, the combination of different diagnoses to form diagnostic categories may bias any of the analyses carried out. For example, women with unspecified psychotic disorders are probably likely to be suffering from postpartum psychosis, which is quite distinct from schizophrenia. Similarly, schizo-affective disorder (depressed type) is also quite distinct from schizophrenia. It is possible that with a larger sample there would be differences on the Global Rating Scale according to distinct diagnoses. However, due to the small sample size it was necessary to combine certain diagnostic categories to enable meaningful analyses of the data.

#### **4.1.4 Attachment style and adult relationships.**

It was predicted that women with insecure attachment styles were more likely to be single, to be experiencing problems in the relationship with their partner, and to be experiencing problems in relationships with significant others. This hypothesis was only supported in part. Mothers who endorsed an insecure attachment style in sexual relationships were significantly more likely to be single compared to mothers with a secure attachment style. There was no significant differences between attachment style and the perceived quality of the marital relationship.

Mothers who perceived their relationship with significant others as poor were significantly more likely to endorse an insecure attachment style in their relationship with their own mother and with their friends.

The first set of analyses compared the women's marital status with their attachment endorsement style and security score. Women who endorsed an insecure attachment style with their sexual partner were significantly more likely to be single. Global security score and the other attachment relationships were not significantly related to marital status. It should be noted that although all the women who were single endorsed an insecure attachment style with their sexual partner, they only comprised 16% of all the women in this category and the result may have been due to a Type I error. However, if the finding is of real significance then it is perhaps not surprising that the attachment style in relationships with sexual partners was associated with marital status. Single motherhood has been found to be positively associated with puerperal illness (Kendell, et al., 1981) and from attachment theory one would expect women with insecure attachment style to experience more problems in intimate relationships.

There were no significant differences on the global security score or on endorsement style between women who perceived their relationship with their partner to be good and those who perceived the relationship to be poor. This lack of significance is not in agreement with most of the previous studies carried out in this field. For example, O'Hara and Swain (1996) concluded from a meta-analysis of 59 studies that women who

developed postnatal depression were likely to be experiencing marital difficulties and to view their partner as providing limited social support. The presence of a poor marital relationship has also been found to be significantly predictive of postpartum psychosis (Marks, et al., 1992a). It is possible that the small sample size accounted for the lack of significant difference between the women and their perceived functioning of their marital relationship. However, it is also possible that the method used for collecting the information (the Marcé check-list) was not a reliable measure as the women were simply asked whether or not they were experiencing problems in their marital relationship. If a standardised measure, such as the Social Problems Questionnaire (Corney & Clare, 1985), had been employed a significant difference might have been observed between marital satisfaction and attachment style. It should, however, be noted that other researchers (McNeil, 1988; Paffenberg, 1964; Seager, 1960) have also failed to find a significant relationship between marital problems and postpartum mental illness. In these studies the relationship between puerperal psychosis and marital discord has been investigated, and it is possible that marital dissatisfaction is not associated with all types of postpartum mental illnesses.

The analyses between relationship satisfaction with significant others and global security score and attachment endorsement style showed that women who perceived their relationship with significant others as poor were significantly more likely to endorse an insecure attachment style in relationships with their friends and in their relationship with their own

mother. There was also a non-significant trend for these women to score below the cut-off point on the global security scale. Most people rely on their friends or their immediate family for social support and it is therefore not surprising that women who have insecure attachment styles in relationships with their friends and/or with their mother also feel that they have a poor relationship with significant others. Findings from other studies linking social support and postpartum depression appear to be consistent. For example, O'Hara et al. (1983) found that lack of an adequate confidant or lower levels of support from a confidant were associated with postnatal depression. Similarly, women who report a poor relationship with their own mother has also been found in other studies (Kumar & Robson, 1984; Pound et al., 1985). Thus, it is possible that women who have an insecure attachment style with their mother, which was consolidated in childhood, develop a postpartum mental illness. They may perceive their mother and friends as unsupportive at a time when their own anxieties about being a parent are reinforced by the memories (conscious or unconscious) they have about the care that they themselves received as a child.

It is interesting that there were no significant differences observed between the perceived quality of the marital relationship and the mothers' endorsement styles, especially when marital status was significantly associated with an insecure attachment style in relationship with sexual partner, and a poor relationship with significant others was associated with insecure attachment style with friends and own mother. Boyce, Hickie and Parker (1991) found that different risk factors had their impact at different

times during the postpartum period. A woman who had experienced dysfunctional parenting herself, particularly low maternal care, may find the initial stress of mothering particularly difficult. This may lead her to decompensate in the immediate postpartum period, when she has to adapt to her new baby. Later in the postpartum period when the demands of the child increase the woman may look towards her spouse for increased support. Consequently, women whose spouse are uncaring or over-controlling, and are therefore less capable of responding, appear to be at increased risk of becoming depressed. Thus, women with a poor relationship with their mother are likely to develop their illness early in the puerperium whereas women who have marital problems are likely to develop the postpartum illness later. This theory was not explored in this study due to the small sample size. However, it is interesting to note that 76% (n=19) of the women in this sample developed their illness within the first month of delivery.

#### **4.1.5 Relationship between subjective and objective measures of mother-infant interaction.**

The final aim of this study was to explore whether there would be a correlation between self-report and observer measures of mother-infant interaction. There was no evidence to suggest that mothers' ratings of infant interaction was related to observers' ratings.

Most previous studies have found no association between objective and subjective measures of mother-infant interaction (Belsky & Rovine, 1990; Pederson & Moran, 1996; van Dam & van IJzendoorn, 1988) but this has been ascribed to bias, as the observers did not spend as much time with the mother and infant as the mothers did with their infants (Tarabulsy et al., 1997). In this study the mothers were observed every time they were with their infants on the Baby Unit, giving the nurses ample opportunities to observe how the mothers interacted and thus limiting the bias described in previous studies. No association was found between the Mother-Infant Self-Rating Scale (MISRS) and the BMIS, which supports the theory, that mothers and observers did not rate the interactions along a similar dimension.

This lack of similarities in ratings have a number of possible explanations. Firstly, mothers' inability to objectively and reliably use self-report measures to report on their infant interaction is not related to attachment style. Mothers who have insecure attachment styles do not differ from women with a secure attachment style on self-report measures, although observers are able to distinguish which dyads are securely attached and which are not (Cohn, Silver, Cowan, Cowan, & Pearson, 1991; Kobak & Sreery, 1988). The insecure mothers' inability to objectively report on the relationship that they have with their infant is probably due to the pattern of denial of negative affect that is characteristic of insecure attachment styles. Conversely, women who demonstrate very positive parenting behaviour and who have a secure attachment style, tend to report guilt and concern

in relations to their children (Crandell, Fitzgerald, & Whipple, 1997). This is perhaps even more so for women who develop a postnatal mental illness because they feel that they are inadequate as a parent. Thus, women with insecure attachment styles are positively biased, where as women with a secure attachment style are negatively biased and their self-report measures of parenting abilities or interaction are no different from one another.

It is also possible that there was no association between the MISRS and the BMIS because the women and the observers were not following the same instructions. The mothers were asked to tick a box on each of the sub-scales, which they felt closely described how they had been feeling about their infants in the past week. The observers' ratings were based on the poorest level of interaction that had been observed during the previous week and that had lasted for most of the day. These two methods of completing the scales are clearly quite different and may have biased the result. The mothers may also have been reluctant to report negative feelings about their infant or problems in the interaction because they fear the implications this might have (e.g., their child being taken into care). Finally, it is possible that the mothers were not well enough to complete the self-report measure objectively as they had only been on the Unit for two weeks. However, in order to make a valid comparison with the BMIS, both measures had to be completed for the same week. Some women were already beginning to go on home leave after the second week of admission and, as completion of the BMIS requires the mother to be present for a

significant part of the week, it was not possible to obtain measures for the full sample after the second week of admission. However, one must conclude that the MISRS can not be used as a substitute for the BMIS.

## **4.2 Theoretical and Therapeutic Implications**

### **4.2.1 Theoretical implications**

Overall it appears that the women's endorsement style with their own mothers played a significant role in many of the hypotheses under investigation. Although none of the hypotheses in relation to attachment style, mother-infant interaction, and adult relationships were fully supported it still appears that many of the mothers had an insecure attachment style in the relationship with their mother. It is not possible to conclude that these women developed their postpartum disorder as a result of an insecure attachment relationship with their own mother. However, insecure attachment styles have often been linked to the development of psychopathology (e.g., Livesley, Jackson, & Schroeder, 1992; Parker, Tupling, & Brown, 1979; West & Keller, 1994; West, Sheldon, & Reiffer, 1987). Throughout life an individual relies on the internal working model of the attachment relationship to guide how that person interacts in other relationships (e.g., Bowlby, 1980; Bretherton, 1985) and because individuals with insecure attachment styles do not believe that they can rely on other people at times of stress, they are more likely to develop psychopathology (Bowlby, 1988). The relationship a new mother forges with her infant is especially reliant upon the internal working model that she developed from interactions with her own caregiver. As childbirth and the role of becoming a mother is an extremely stressful event for most women, this is even more so for women with insecure attachment styles because of

their negative expectations of themselves and others.

Although no significant difference was found between attachment style, diagnosis, and mother-infant interaction, a post-hoc test showed that mothers who were considered to experience problems in their infant interaction due to an impairment in their mothering abilities were significantly more likely to have an insecure attachment style in the relationship with their own mother. Thus, although the BMIS did not reveal any differences in interaction between mothers and their attachment style, it may have been a reflection of the instrument used. The impact of puerperal mental illness on the emotional and physical well being of the infant is severe. Depressed mothers and their offspring have consistently been found to have higher rates of insecure attachment styles than dyads where the mother is not depressed. Furthermore, neither duration nor severity of depression appears to be related to attachment status in offsprings of depressed mothers (Hoffman & Drotar, 1991; Murray, 1992). This suggests that women experiencing depression in the early postpartum period may continue to have difficulties in their relationship with their infant, despite the remission of symptoms. This finding and the finding that attachment status appears to be transmitted from generation to generation (e.g. Fonagy, et al., 1991) further suggests that it may not have been the depression per se that caused the mother-infant dyad to have an insecure attachment relationship, but rather that the mother had an insecure attachment relationship with her own caregiver and this was replicated in the way that she herself interacted with her infant. From this it follows that

all women who have an insecure attachment relationship with their own caregiver may develop a postpartum mental illness and are likely to have infants with an insecure attachment style which is not related to the mother's diagnosis.

#### **4.2.2 Therapeutic implications**

The aim of joint admission of mother and baby to a Mother and Baby Unit is an attempt to preserve and facilitate the relationship between the mother and child. The rationale behind joint admissions can be traced back to the work of Bowlby who demonstrated dramatic short-term effects following the separation of a child from its parent, for example, if the child was admitted to hospital or to a residential nursery (Bowlby, 1969). These findings of permanent sequelae following separation in early childhood caused considerable concern and led directly to increased attention to the needs of the child. However, the main focus has been on the physical separation itself, despite evidence from attachment theory that psychological availability of the mother is of equal importance when considering the optimum for a developing child. For example, Ainsworth et al. (1978) reported that the parent's ability to respond adequately and promptly to the signals of the child is an important determinant of infant attachment.

Women who are admitted to Mother and Baby Units in Britain are usually treated with conventional pharmacological treatments and/or electroconvulsion therapy (ETC). However, none of the Units have reported the

use of specific therapies for improving the mother-infant relationship, although the nursery nurses play an invaluable role in educating the mothers about baby care on a practical level. When using pharmacological therapies the prognosis for the mother in the short to medium term is excellent (Ruggeri, Dall'Agnola, Agostini, & Bisoffi, 1994). Nevertheless there is a high risk of recurrence of the disorder following a subsequent delivery (e.g., Schöpf et al., 1984) as well as an estimated life expectancy of relapse in about 30% of cases (Brockington, et al., 1982). Psychological intervention studies have shown that mother-infant psychotherapy not only improves the relationship between mother and child but also improves the mother's mood (e.g. Cranmer, et al, 1990; Trad, 1995). As yet there are no longitudinal studies evaluating the effectiveness of psychological intervention with women with postpartum mental illness. However, if the aetiology is linked to insecure attachment styles then some form of psychotherapy, focusing on interpersonal relationships, could prove to be an effective prophylaxis and may also have long term benefits, not only the woman but also her children, and the intergenerational transmission of insecure attachment may be broken.

The quality of attachment to mother during infancy has been widely shown to influence socio-emotional (Sroufe, 1983; Sroufe & Rutter, 1984) and cognitive (Main, 1973; Matas, Arend & Sroufe, 1978) development of toddlers and kindergarten children. Research has also suggested possible links between insecure attachment in infancy and subsequent behavioural problems (e.g., Crowell & Feldman, 1988). Insecurely attached children,

have been found to be less competent in their relationships with peers and adults, more fearful of strangers, more prone to behavioural problems, including social withdrawal and anxiety, and more dependent on adults (Arend, Gove, & Sroufe, 1979; Blehar, Lieberman, & Ainsworth, 1977; Londerville & Main, 1981; Matas et al., 1978; Pastor, 1981; Sroufe, Fox, & Pancake, 1983; Waters, Wippman, & Sroufe, 1979) than those who are securely attached. Finally, insecure attachment has been linked to aggressive behaviour among pre-schoolers and school-age children. Thus, any attempt at changing an insecure attachment relationship between a mother and child may not only benefit the mother but will also have a significant impact on the child's future.

The postpartum period may be a good time to initiate therapeutic intervention with mothers who are referred to a Mother and Baby Unit. They are, by necessity, already involved in an environment concerned with physical and emotional health. Many mothers are referred to Units that are not close to their home due to the relative dearth of Units in the country. However, therapeutic intervention could be initiated at the Unit, or at least be organised from within the Unit, allowing psychotherapy to be initiated as soon as the mother is discharged. At present, most of the women on the Mother and Baby Unit at Springfield Hospital are discharged with follow-up appointments with either their local psychiatrist or their GP. Most mothers are referred to other agencies to have their medication monitored, but very few mothers are referred for specific psychological issues when they are discharged. Some of the mothers who returned the questionnaire had

disclosed information regarding marital problems, previous childhood sexual abuse, and other personal information that was not requested as part of the ASI. Although this is only anecdotal information it may indicate that some of the mother who were discharged had experienced further personal trauma following discharge, possibly because of interpersonal problems, which had not been adequately dealt with by the follow-up agency, either because the agency (GP or psychiatrist) had not provided psychotherapy or because the woman had chosen not to accept psychotherapy when it was offered. If all women referred to a Mother-Baby Unit postpartumly are offered psychotherapy as part of the discharge plan then this may prevent some women from experiencing further trauma.

## **4.3 Methodological Critique**

### **4.3.1 Design**

The major limitation to this study was the small sample size. This was in part caused by the procedure in which discharged mothers were recruited. The attrition rate was far higher than expected and this could have been caused by a number of different factors. Firstly, the Ethics Committee would only grant permission for the study to be carried out if the mothers were first contacted to ask their permission for the ASI to be sent to them. If the mothers returned the permission slip (in the stamped addressed envelope provided) they were then sent the ASI. There would have been attrition at both of these stages. It is possible that more mothers would have agreed to take part in the questionnaire if they had only been sent the ASI. Obviously the committee's recommendation for this procedure was made in the mothers' best interests. Receiving a questionnaire out of the blue from the Mother and Baby Unit could have caused distress for some of the mothers, either because they did not want to be reminded about their experience or because they would find the content of the questionnaire offensive. However, none of the mothers who were contacted with the initial letter and none of the women who requested the questionnaire complained about being contacted or about the content of the questionnaire. Only one woman (out of 90 contacted) wrote back to specifically say that she did not wish to take part in the study. Thus, the attrition rate may have been reduced if the mothers did not first have to

grant permission for the questionnaire to be sent to them. However, this limitation to the study was thought necessary by the Ethics Committee and could not be challenged.

A further limitation of the study was the exclusion of a selected control group. Ideally two control groups should have been part of the present study – one comprising of women with previous mental health problems who did not relapse following childbirth, and a group of women with no previous or present history of mental illness who had recently delivered a child. The addition of these groups may have clarified whether women who develop postpartum mental illnesses were less likely to have secure attachment styles compared to women who do not develop a mental illness following delivery, and whether insecure attachment styles were associated with postpartum mental illnesses or mental health problems in general. Unfortunately time constraints and resources did not allow for these control groups to be used as part of this study.

Another limitation of the design was to use both prospective and retrospective data. Some women had been discharged from the Unit for over two years at the time of completion of the ASI, whereas other women completed the questionnaire whilst at the Unit. It is not possible to establish whether this difference has influenced the result in any way. However, due to the number of mothers admitted to the Unit over a specific time period it was necessary to use a method that would optimise the number of participants in the study. A number of considerations were

taken into account before combining the two groups of women, which added validity to the study. The rationale for combining the two groups of patients were as follows:

I) To control for possible mood bias, the in-patients were not asked to complete the ASI until their mental health had improved significantly. However, other research had found that mood does not affect the perception of relationships with others (Gerslma, et al., 1993). The completion of the ASI therefore should not have been different for women who were currently in-patients and those who had been discharged from the Unit.

II) Attachment styles, especially in maternal relationships, have been found to remain relatively stable over time (e.g., Bakermans-Kranenburg & van IJzendoorn, 1993), suggesting that a time delay should not bias how a person rates the ASI.

III) The two groups of women did not differ significantly on demographic and clinical variables. This provided the final rationale for combining the two samples of participants despite some being in-patients and some having been discharged for a period of time.

Finally, it could be argued that the sample was selective or biased and did not represent the general population of women who develop mental health problems following childbirth, as most women who develop postnatal depression are either undetected or treated in the community. Only women with severe forms of postpartum illnesses are admitted to a Mother-Baby Unit. However, although this study was concerned with

attachment issues in women with identified postpartum mental illnesses it was also concerned with the therapeutic provision for women who are admitted to the Mother and Baby Unit at Springfield Hospital.

#### **4.3.2 Participants**

As mentioned earlier, a serious limitation to this study was the relatively small sample size. This limitation was caused by a number of different factors, one of which is discussed in section 4.3.1. The Mother-Baby Unit only has beds for eight mothers at any one time. The average length of time that a woman stays on the Unit is eight weeks (unpublished Audit study). Because some of the measures employed in this study were only used on this particular Unit it was not possible to use mothers from other units as participants. Thus, the number of mothers staying on a unit at any one time is comparatively small and the turn over is not fast. This limits the number of participants since the study was time limited and confined to one Mother and Baby Unit.

A further limitation was the selection criteria for the study. Mothers whose infants were on a formal supervision register or had been taken into care were not contacted. Neither were mothers who had been discharged into a resource centre for assessment of her mothering skills. Many of these mothers had severe mental health problems and the exclusion of these women probably reduced the likelihood of finding a significant result in many of the hypotheses under investigation. For example, these mothers

would probably have scored highly on the BMIS and most probably would have been suffering from schizophrenia. However, although the exclusion reduced the possibility of finding a significant difference on some of the hypotheses being explored, it also ensured that any result that was found was not caused by any particular diagnostic sub-group biasing the whole outcome (e.g., there being a difference between diagnostic category and mother-infant interaction).

### **4.3.3 Measures**

#### *A. Marcé Check-List*

Although this measure is invaluable in gathering clinical and demographic data as part of a standardised method, the questions regarding satisfaction in close relationships were possibly lacking in validity because the patient easily biased them. For example, some mothers may have felt uncomfortable admitting that their marital relationship was poor, so may have replied that there were no problems in the marital relationship. Conversely, a depressed woman who had recently had an argument with her husband may say that their relationship was poor despite the fact that the couple may have been functioning at a satisfactory level. It would probably have been more valid to use a standardised measure such as the Social Problems Questionnaire (Corney & Clare, 1985). However, as many of the women had been discharged for a considerable length of time it would only reflect their current functioning, and not how they were

functioning when they were admitted to the Mother and Baby Unit. It would therefore have been difficult to assess any marital problems at the time they were admitted to hospital.

### *B. Bethlem Mother-Infant Interaction Scale (BMIS)*

This measure was chosen as an instrument for assessing mother-infant interaction because it had been found to be a reliable and valid measure in previous research (Kumar & Hipwell, 1996). It had also been completed for all the mothers who participated in the study as part of an ongoing Audit project. Unfortunately it did not appear to be sensitive enough to assess subtleties such as whether a mother was consistent in the way that she interacted with her infants. Similarly, the observers may have considered some mothers to be interacting at a satisfactory level because they were used to observing women with severely disturbed behaviour. What they would perceive to be normal behaviour may be very different to how a mother without (current) mental health problems would interact with her infant.

Only the BMIS from the second week of admission was used in order to compare the measure at a similar time point for all the women in the study. If the women had been assessed at a later time in their admission period when their mental health was stable the BMIS may have been a truer reflection of the women interacted with their infants. However, for reasons already discussed in a different section this was not a possibility. Similarly,

if the observers were biased in the way they defined normal behaviour the measure would still not be a true reflection, even if it were used towards the end of the admission period.

### *C. Mother-Infant Self-Rating Scale (MISRS)*

This measure was developed to mirror the BMIS as a self-rating questionnaire. One rationale behind the development was that if mothers could adequately assess their own mother-infant behaviour then the BMIS would not have to be completed each week and assessments could be obtained even when the mother was on extended home leave. Although the mothers did not appear to be rating their interaction according to the same parameters as the observers (in accordance with attachment theory) this may have been caused by the instructions that the mothers were given about the completion. Mothers were asked to rate how they generally interacted whereas the observers rated the mother-infant interaction on the worst period of interaction during the week that lasted for most of one day. One can only speculate that with adequate training and different instructions, the mothers might have been able to assess their interaction correctly. However, according to attachment theory, mothers who have securely attached children tend to negatively evaluate their own parenting skills whereas mothers with insecurely attached infants tend to overestimate their parenting skills. It is doubtful whether training will eliminate these biases. Furthermore, if the observers are also biased in the manner that they complete the BMIS it is unlikely that the two

measures will ever correlate.

#### *D. Global Rating Scale of Mother-Infant Interaction*

This scale was developed as part of this study in an attempt to identify whether any problems observed in mother-infant interaction were due to the mother's mental health or to an impairment in the mother's mothering abilities. The hypothesis based on this measure failed to be significant. However, as already discussed in section 4.1.3, this may have been due to the hypothesis being explored rather than the measure itself. Validity and reliability of the measure has not been tested and so it can not be considered to be a standardised measure. However, high inter-rater reliability was obtained and it proved a useful instrument in the absence of a similar instrument.

#### *E. Attachment Style Inventory (ASI)*

The ASI was used to assess attachment style and level of security in relationships. Overall, it was probably an appropriate measure to use due to the constraints on time and resources in this study. However, there were a number of limitations associated with this scale. Firstly, the ASI was rather lengthy which may have discouraged some women from taking part in the study. For example, 12 mothers requested a questionnaire but never returned it. All the women who were contacted to take part in the study through mail had young children. It is possible that having received

the questionnaire and finding it too lengthy to complete, it may constrain their already busy schedule.

A further limitation related to the parts of the questionnaire regarding how the women felt in the relationship with their mother and father respectively. If the participant had had no contact with the parent for more than a year they were asked not to complete this section. A number of subjects did not complete one or both of these parts of the questionnaire for unknown reasons. If the parent was still alive then it would be of potential interest to attachment research to know the reason for the lack of contact. As attachment style is relatively stable having reached adulthood it may still have been valid to ask the person how they used to feel in the relationship with a parent despite their absence (through death or circumstances)..

Finally, modifications had to be made to obtain ethical permission for the study. The Committee felt that some mothers may be offended if they were asked how they normally felt in sexual relationships possibly implying that they had engaged in more than one sexual relationship. As a result, each statement was changed to refer to singular relationships. Although this is a relatively minor amendment it may have influenced the validity and reliability of the measure.

#### **4.4 Directions for Further Research**

In light of the previous discussion, the following suggestions for further research can be made:

- 1) The present study used the ASI to assess attachment style and global security. Although the instrument has been found to be both reliable and valid in assessing attachment related issues in the clinical and normal population no norms are as yet available. The most commonly used instrument is the Adult Attachment Interview (AAI). Although it is a time consuming instrument to use, it does have the major advantage that population norms are available. Findings from this study suggest that the endorsement style in a woman's relationship with her own mother was the most predictive measure of a variety of hypotheses. As the AAI mainly assesses a person's attachment style to their primary caregiver (most often the person's mother) it may be a more valid instrument to use in this particular type of research.
  
- 2) Although past research has demonstrated that attachment status remains relatively stable over time, even if the person is assessed during a period of depression (e.g., Gerlsma et al., 1993), it is not certain whether this is also true during periods of other mental illnesses. The possible trait and state effects of mental illness on attachment style should be investigated in future studies.

- 3) The women used in this study were all suffering from disorders so severe that they warranted hospital admission. Most mothers who develop postnatal depression are managed in the community and it would be interesting to explore the role of attachment in such disorders. Many Health Visitors use the Edinburgh Postnatal Depression Scale to identify mothers who become depressed following childbirth. Research evidence has suggested that it is reliable and valid as a screening instrument (Cox, Holden, & Sagovsky, 1987). Thus, it may be relatively easy to identify larger numbers of women with postnatal depression in the community compared to the number of women admitted to hospital.
- 4) Very little is known about puerperal psychosis, attachment, and mother-infant interaction. This is mainly due to the small number of women who develop this disorder. However, as more Mother-Baby Units are developing around the country it may be possible to combine the data from various Units in the same way as the Marcé check-list is completed for all the mothers that enter the different units.
- 5) The therapeutic implications of the findings merits further research, particularly in the light of the many different types of intervention that have been tried and tested over the past years. Standardised psychotherapeutic trials could be carried out more efficiently if the various Mother and Baby Units around the country co-operated and conformed to similar routines.

## 4.5 Summary

The results of this study provide some limited empirical validation of the role of attachment in women who develop severe postpartum disorders. The findings suggest that the mothers were less secure than a healthy control sample and mothers whose global scores were not pro-rated also scored significantly higher on the avoidant global scale, which is associated with insecurity. These mothers were also significantly more likely to endorse an insecure attachment style in the relationship with their own mother. Although this did not fully support the hypothesis that the mothers were significantly more likely to have insecure attachment styles when compared to a healthy control sample, it nevertheless suggests that many of the women were lacking overall security.

The study attempted to explore if attachment style was associated with mother-infant interaction, relationship satisfaction, and marital status. Many of these hypotheses failed to be supported although this may have been due to the measures employed rather than the hypotheses examined. It was, however, found that the style that the women endorsed regarding the relationship with their own mother was predictive across a number of hypotheses (women who endorsed an insecure attachment style with their own mother were significantly more likely to have problems in mother-infant interaction due to an impairment in their mothering abilities, and more likely to perceive their relationship with significant others as poor). Insecure attachment style may therefore have a role to play in the

onset of postpartum disorders. This would have significant treatment implications as the most commonly used form of therapy is purely pharmacological at present. However, due to the small sample size, further research is needed to define the role of attachment in the onset of postpartum disorders.

The study also found that there is no similarity between the mothers' and observers' perception of the mother-infant interaction. This is in accordance with attachment theory, although this may have been influenced by the measures used.

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# Appendix 1

St George's  
Healthcare

St. George's Healthcare NHS Trust  
St. George's Hospital  
Blackshaw Road, London SW17 0QT  
Telephone: 0181-672 1255  
Fax: 0181-672 5304

Our Ref: JC/jlr/98.33.2

27 April 1998

Dr H Jakobsen  
Sub-Dept. of Clinical Health Psychology  
University College London  
Gower Street  
London WC1E 6BT

Dear Dr Jakobsen,

Mother-Infant interaction and the Role of Attachment in the onset of Postnatal Mental Illness - 98.33.2

The Local Research Ethics Committee of 22 April, considered your application for the above named study and in principle were happy for the project to go ahead. However, before giving final approval members asked that two issues are addressed.

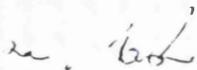
(1) How was the "attachment style inventory (sexual relationships)" instrument developed or validated. Of particular importance, was it validated in women with "stable" relationships. Some of the questions proposed clearly indicated that the woman had, or might be having, numerous relationships.

(2) Do you have a register of the mother's who have been discharged from the unit in the last five years giving permission to be contacted in the way posed in the study? The sudden arrival of questionnaires on sexuality could offend some people or could jeopardise the relationship between the woman and her new partner.

I look forward to receiving your comments on the above points.

With best wishes,

Yours sincerely



Dr Joe Collier  
Vice-Chair/Clinical Secretary  
Local Research Ethics Committee

Our Ref: IAS/js/98.33.2

21 October 1998

St. George's Healthcare NHS Trust  
St. George's Hospital  
Blackshaw Road, London SW17 0QT  
Telephone: 0181-672 1255  
Fax: 0181-672 5304

Ms. Hanne Jakobsen  
Clinical Psychologist in Training  
Sub-Dept. of Clinical Health Psychology  
University College London  
Gower Street  
London WC1E 6BT

Dear Ms. Jakobsen,

**Re: Mother-Infant Attachment and the Role of Attachment in the Onset of Postnatal  
Illness - 98.33.2**

Thank you for your letter of 28 September 1998. The new questionnaire is now satisfactory and I am therefore now happy to take Chair's action and give approval for this study to proceed.

Yours sincerely



Canon Ian Ainsworth-Smith  
**Chairman**  
**Local Research Ethics Committee**

## Appendix 2



DEPARTMENT OF GENERAL  
PSYCHIATRY

Chairman: Professor J Hubert Lacey

**St. George's Hospital  
Medical School**

UNIVERSITY OF LONDON

Senior Lecturer: Dr R R Jacobson  
Lecturer: Dr J G Bolton  
Research Fellow: Dr J Q Scobie

JENNER WING  
CRANMER TERRACE  
LONDON SW17 0RE

Direct Line 0181 725 5505  
Secretary: 0181 725 5509  
Fax: 0181 725 2929

### VOLUNTEER INFORMATION SHEET

Dear Participant,

I am training to be a Clinical Psychologist at University College, London. As part of this course I have to carry out a research project. Therefore, I am inviting you to participate in this study which is investigating the relationship between mother-baby interaction, core beliefs about relationships and mental health problems.

I am looking at the pattern between how women relate to their parents, partner and friends and if that influence how they interact with their baby. As you may remember, you were asked to complete two questionnaires each week while you were staying at the Mother-Baby Unit at Springfield Hospital.

To complete the research project I need you to fill in one more questionnaire.

The questionnaire will include various questions about how you are get on with your parents, friends and sexual partner. The information from this study will enable the Mother-Baby Unit to provide a better service for mothers suffering from mental health problems following childbirth.

If you choose to take part, and you are under no obligation to do so, please tick the 'Yes' slip and return it to me in the SAE provided, *as soon as possible*. All the information you supply will be treated as confidential and will not be released without your permission.

If you have any questions about the research, or if you are undecided in any way, please contact me and ask me anything you like that will help you to decide.

I look forward to hearing from you in the near future and I thank you in advance for your co-operation.

Yours sincerely

Hanne Jakobsen  
Clinical Psychologist in Training

Dr R Jacobson  
Consultant Psychiatrist

---

Yes, I would like to have the questionnaire send to me. I understand that I am under no obligation to take part in the study even when I have received the questionnaire.

Signed \_\_\_\_\_ Date \_\_\_\_\_

**Name (block letters)**

---

## Appendix 3.



DEPARTMENT OF GENERAL  
PSYCHIATRY

Chairman: Professor J Hubert Lacey

**St. George's Hospital  
Medical School**

UNIVERSITY OF LONDON

Senior Lecturer: Dr R R Jacobson  
Lecturer: Dr J G Bolton  
Research Fellow: Dr J Q Scobie

JENNER WING  
CRANMER TERRACE  
LONDON SW17 0RE

Direct Line 0181 725 5505  
Secretary: 0181 725 5509  
Fax: 0181 725 2929

### VOLUNTEER INFORMATION SHEET

Dear Participant,

I am training to be a Clinical Psychologist at University College, London. As part of this course I have to carry out a research project. Therefore, I am inviting you to participate in this study which is investigating the relationship between mother-baby interaction, core beliefs about relationships and mental health problems.

I am looking at the pattern between how women relate to their parents, partner and friends and if that influence how they interact with their baby. As you may remember, you were asked to complete two questionnaires each week while you were staying at the Mother-Baby Unit at Springfield Hospital. To complete the research project I need you to fill in one more questionnaire. The information from this study will enable the Mother-Baby Unit to provide a better service for mothers suffering from mental health problems following childbirth.

If you choose to take part, and you are under no obligation to do so, please complete the consent form and questionnaire enclosed and return them to me in the self-addressed envelope provided, *as soon as possible*. All the information you supply will be treated as confidential and will not be released without your permission.

If you have any questions about the research, or if you are undecided in any way, please contact me and ask me anything you like that will help you to decide.

I look forward to hearing from you in the near future and I thank you in advance for your co-operation.

Yours sincerely

Hanne Jakobsen  
Clinical Psychologist in Training

Dr R Jacobson  
Consultant Psychiatrist

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Merton, Sutton & Wandsworth Health Authority Research Committee.

## Appendix 4



### DEPARTMENT OF GENERAL PSYCHIATRY

Chairman: Professor J Hubert Lacey

## St. George's Hospital Medical School

UNIVERSITY OF LONDON

Senior Lecturer: Dr R R Jacobson  
Lecturer: Dr J G Bolton  
Research Fellow: Dr J Q Scobie

JENNER WING  
CRANMER TERRACE  
LONDON SW17 0RE

Direct Line      0181 725 5505  
Secretary:      0181 725 5509  
Fax:                0181 725 2929

### VOLUNTEER INFORMATION SHEET

Dear Participant,

I am training to be a Clinical Psychologist at University College, London. As part of this course I have to carry out a research project. Therefore, I am inviting you to participate in this study which is investigating the relationship between mother-baby interaction, core beliefs about relationships and mental health problems.

I am looking at the pattern between how women relate to their parents, partner and friends and if that influence how they interact with their baby. To complete the research project I need you to fill in a questionnaire. The information from this study will enable the Mother-Baby Unit to provide a better service for mothers suffering from a mental health problems following childbirth.

You do not have to take part in the study if you do not wish to. If you decide to take part, you may withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect your care and management in any way. If you choose to take part then please complete the consent form and questionnaire. All the information you supply will be treated as confidential and will not be released without your permission.

If you have any questions about the research, or if you are undecided in any way, please ask me anything you like that will help you to decide.

I thank you in advance for your co-operation.

Yours sincerely

Hanne Jakobsen  
Clinical Psychologist in Training

Dr R Jacobson  
Consultant Psychiatrist

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Merton, Sutton & Wandsworth Health Authority Research Committee

# Appendix 5



DEPARTMENT OF GENERAL  
PSYCHIATRY

Chairman: Professor J Hubert Lacey

**St. George's Hospital  
Medical School**

UNIVERSITY OF LONDON

Senior Lecturer: Dr R R Jacobson  
Lecturer: Dr J G Bolton  
Research Fellow: Dr J Q Scobie

JENNER WING  
CRANMER TERRACE  
LONDON SW17 0RE

Direct Line 0181 725 5505  
Secretary: 0181 725 5509  
Fax: 0181 725 2929

## CONSENT FORM

Mother-Infant Interaction and The Role of Attachment in the Onset of Postnatal Mental Illness

**Investigators:** Hanne Jakobsen / Dr R Jacobson

Please complete the following:

Delete as necessary

- |   |          |
|---|----------|
| 1) Have you read the information sheet?   | YES / NO |
| 2) Have you had an opportunity to ask questions and discuss this study?   | YES / NO |
| 3) Have you received satisfactory answers to all your questions?  | YES / NO |
| 4) Do you understand that you are free to withdraw from this study at any time and without giving a reason for withdrawing? | YES / NO |
| 5) Do you agree to take part in the study?  | YES / NO |

Signed \_\_\_\_\_

Date \_\_\_\_\_

**Name (block letters)**

Investigator

\_\_\_\_\_  
All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Merton, Sutton & Wandsworth Health Authority Research Committee

## Appendix 6

### MARCÉ CLINICAL CHECKLIST

Please complete on all joint mother-baby admissions.

- Sections 1 - 6 should be completed on admission.
- Sections 7 - 10 should be completed on discharge.

Please complete all items.

The following items will not form part of the database but could be used to re-trace the subject's casenotes if needed.

Subject:   Initials           .....  
              Address           .....  
                                  .....  
                                  .....  
              Date of birth   .....  
              Hospital No.   .....

Completed forms should be sent to Professor L. Appleby, University Department of Psychiatry, Withington Hospital, West Didsbury, Manchester M20 8LR.

# MARCÉ CLINICAL CHECKLIST

## PART 1

Subject/Unit number - (For base unit use only)

### 1 REFERRAL

1.1 Date of admission

1.2 Source of referral

1 Extra - regional      2 Regional

3 Local district/ Principal purchasing district

1.3 Terms of referral

1 Existing contract      2 Extra contractual referral

1.4 Referral Agency

1 GP      2 Social Services

3 Obstetrician      4 Psychiatrist

5 Other (please specify).....

1.5 Timing (referral, not admission)

1 Antenatal      2 Postnatal

1.6 Is this a re-admission? (No = 0 Yes = 1)

(I.e. admission within the first postnatal year, following previous postnatal discharge from the same unit)

Please answer all questions. If the answer to any question is "Don't know" enter 9

2 BABY

2.1 Sex Male =1 Female =2

2.2 Age on admission (weeks)

2.3 Date of birth

3 DEMOGRAPHIC/MARITAL

3.1 Age of subject

3.2 Social class

(based on partner's current or most recent occupation -if no partner, then based on subject)

1 Professional, managerial (A,B)

2 Skilled manual (C1,C2)

3 Semi-skilled, un-skilled (D,E)

4 Unclassified (student/armed forces)

5 Never employed

3.3 Race

1 Black African

2 Black Caribbean

3 Indian/ Pakistani/Bangladeshi

4 Chinese

5 White

6 Other (please specify) .....

3.4 Marital Status

1 Married/Cohabiting

2 Divorced/Separated

3 Single

4 Widowed

Please answer all questions. If the answer to any question is "Don't know" enter 9

**3.5 Quality of relationship**

0 No partner    1 Predominantly good    2 Predominantly poor

**3.6 Quality of other supportive relationships (parents/friends)**

0 None    1 Predominantly good    2 Predominantly poor

**3.7 Psychiatric illness in partner**

0 None    1 Illness requiring treatment by GP  
2 Illness requiring out-patient psychiatric treatment    3 Illness requiring psychiatric admission

**4 PSYCHIATRIC HISTORY (RDC)**

**4.1 Previous primary diagnosis (previous episode, most recent diagnosis)**

- 01 Schizophrenia and other delusional disorders
- 02 Bipolar affective disorders
- 03 Depressive illness
- 04 Anxiety /phobia/ panic disorder
- 05 Eating disorder
- 06 Obsessive compulsive disorder
- 07 Alcohol dependence
- 08 Substance dependence
- 09 Personality disorder
- 10 Learning disability
- 11 Other (please specify).....
- 99 Not known

**4.2 Previous postpartum illness**

0 None    1 Illness requiring treatment by GP  
2 Illness requiring out-patient psychiatric treatment    3 Illness requiring psychiatric admission

Please answer all questions. If the answer to any question is "Don't know" enter 9

4.3 Psychiatric illness in 1st degree relatives (up to 2 diagnoses)

Code as 4.1. (If none, enter 00)

4.4 Were psychotropic drugs taken during pregnancy?

No=0 Yes=1

4.5 If yes, which drug

	No=0 Yes=1
Oral neuroleptics	
Depot neuroleptics	
Tricyclic antidepressant	
SSRI antidepressant	
Lithium	
Benzodiazapines	
Carbamazepine	
Other (please specify).....	

4.6 If yes, when were these drugs taken

No=0 Yes=1

First trimester

Second trimester

Third trimester

Please answer all questions. If the answer to any question is "Don't know" enter 9

5 **OBSTETRIC DATA**

No =0 Yes =1  
(Unless otherwise stated)

5.1 **History**

Previous termination

Previous miscarriage

Previous stillbirth/neonatal death

Number of live children

5.2 **Obstetric complications (this pregnancy)**

Admission during pregnancy

Forceps delivery

Caesarean section

Other (please specify).....

5.3 **Baby's health (this delivery)**

Prematurity (less than 36 wks gestation)

Low birth weight (less than 2.5 kg )

In - patient treatment during 1st month

Other neonatal complications (specify).....

*Please answer all questions. If the answer to any question is "Don't know" enter 9*

**5.4 Mother's health (since delivery)**

No =0, Yes =1

In-patient treatment ( non psychiatric )

Out-patient treatment (non psychiatric)

Treatment by GP (non-psychiatric)

**5.5 Breast feeding**

Number of weeks (00= did not start)

**6 CURRENT ILLNESS**

**6.1 Timing of onset**

No. of weeks postnatally (00 = Antenatal, 01 = onset during 1st postnatal week etc.)

**6.2 Timing of admission**

Week of admission (00 = Antenatal, 01 = during 1st postnatal week etc.)

**6.3 Primary purpose of admission**

- 1 Acute illness, first episode
- 2 Relapse of acute illness
- 3 Relapse of chronic illness
- 4 Assessment of maternal competence only
- 5 Assessment of maternal competence plus 1,2 or 3
- 6 Other (please specify).....

**Thank you for completing this section. Please keep this form until the patient's discharge and then complete sections 7 - 10.**

*Please answer all questions. If the answer to any question is "Don't know" enter 9*

7 **PART 2** COMPLETE ON DISCHARGE

7.1 Nature of illness

	Absent = 0 Present = 1
Depressed mood	
Hypomanic mood	
Delusions	
Obsessions	
Hallucinations	
Disorder of thought form	
Behavioural disturbances (e.g. odd behaviour, aggression other than self harm or harm to child)	
Agitation	
Retardation	
Confusion/perplexity	
Fluctuating/changing symptoms	

7.2 Primary diagnosis

- 01 Schizophrenia and other delusional disorders
- 02 Bipolar affective disorders
- 03 Depressive illness
- 04 Anxiety /phobia / panic disorder
- 05 Eating disorder
- 06 Obsessive compulsive disorder
- 07 Alcohol dependence
- 08 Substance dependence
- 09 Personality disorder
- 10 Learning disability
- 11 Other (please specify).....
- 99 Not known



Please answer all questions. If the answer to any question is "Don't know" enter 9

7.3 Secondary diagnosis (code as 7.1)

7.4 Legal status ( at any time during admission)

1= Informal

2= Section 2

3 = Section 3

4 = Section 4

5 = Section 5

Other =9 (Specify).....

(If more than one section, indicate section of longest duration

7.5 Physical treatments

	(No =0, Yes =1)
Oral neuroleptic	
Depot neuroleptics	
Tricyclic antidepressant	
SSRI antidepressant	
Lithium	
Benzodiazapine	
Carbamazepine	
ECT	
Other (specify).....	

7.6 Did subject breast feed during drug treatment

No = 0 Yes = 1

Please answer all questions. If the answer to any question is "Don't know" enter 9

**8**    SELF HARM

**8.1**    **Thoughts/actions during this admission**

1 No thoughts / actions                      2 Thoughts only

3 Non-fatal action                              4 Suicide

**8.2**    **Timing of non-fatal self harm**

No. of weeks postnatally (00 = Antenatal, 01 = onset during 1st postnatal week etc. ,  
88 = Not Applicable)

**8.3**    **Timing of suicide**

Week of admission (00 = Antenatal, 01 = onset during 1st postnatal week etc. ,  
88 = Not Applicable)

**9**    HARM TO CHILD

**9.1**    **Thoughts / actions**

1 No thoughts/actions                      2 Thoughts only

3 Non-fatal action                              4 Infanticide

**9.2**    **Timing of non-fatal injury**

No. of weeks postnatally (00 = Antenatal, 01 = onset during 1st postnatal week etc. )  
88 = Not Applicable)

**9.3**    **Timing of infanticide**

Week of admission (00 = Antenatal, 01 = onset during 1st postnatal week etc.)  
88 = Not Applicable)

*Please answer all questions. If the answer to any question is "Don't know" enter 9*

10 DISCHARGE

10.1 Date of discharge

10.2 Duration of admission (complete weeks)

10.3 Clinical outcome

1 Symptom free

2 Considerably improved, symptoms persist

3 Slightly improved, symptoms persist

4 No change or worse

10.4 Medication on discharge

	(No =0, Yes =1)
Oral neuroleptic	
Depot neuroleptic	
Tricyclic antidepressant	
SSRI antidepressant	
Lithium	
Benzodiazepine	
Carbamazepine	
Other (please specify).....	

10.5 Medical follow-up

0 None

1 Non specialist psychiatrist

2 MBU psychiatrist

3 General Practitioner

4 Other ( please specify ).....

Please answer all questions. If the answer to any question is "Don't know" enter 9

**10.6 Non medical follow up**

No=0, Yes=1

Community psychiatric nurse

Psychiatric social worker

Other counsellor/ therapist

Voluntary sector support

**10.7 Status of baby at discharge**

1 Discharged with mother, no formal supervision

2 Discharged with mother, on "at risk" register

3 Discharged with mother, with social service supervision  
( protection or care order)

4 Voluntary foster care

5 Statutory care/adopted.

**10.8 Maternal skills**

No=0, Yes=1

Significant practical problems in baby care

Significant problems of emotional response

Risk of significant harm to child

**10.9 Living situation (mother) on discharge**

- 1 Alone with or without children
- 2 With husband/partner
- 3 With parents
- 4 In hostel
- 5 In mother and baby home
- 6 Discharged to in patient psychiatric ward
- 7 Other (please specify).....

**10.10 Delay in discharge after clinical recovery  
(enter number of weeks)**

**10.11 Reasons for delay**

No =0 Yes =1

1 Housing problems

2 Poor support

3 Statutory/legal problems over child care

4 Other (please specify)

**THANK YOU FOR COMPLETING THIS FORM, PLEASE RETURN TO PROFESSOR LOUIS APPLEBY AT THE ADDRESS SHOWN ON THE FRONT SHEET.**

*Please answer all questions. If the answer to any question is "Don't know" enter 9*

## Appendix 7

### BETHLEHEM MOTHER - INFANT - INTERACTION SCALE

#### INSTRUCTIONS

Rate your overall impression of mother-infant interactions over the past week. Where there is variability rate the most severe disturbance and comment on variability.

Please ring the appropriate number for each sub-scale A-G.

Comments: Where possible please describe in your own words the nature of the problem to amplify the ratings in each sub-scale.

Name of Mother.....

Name of Infant.....

Date of Completion.....

Raters.....

#### Summary Scores

A	Eye Contact	
B	Physical Contact	
C	Vocal Contact	
D	Mood	
E	General Routine	
F	Risk to Baby	
A-F	Total Score	
G	Baby's Condition	

## EYE CONTACT

- 0 Mother generally seeks and maintains eye contact with baby in an appropriate way. Her regard and expression are responsive to baby's state (e.g. smiling, crying etc.).
- 1 As above (0) but there are short breaks when mother may look away or seem not to focus on baby.
- 2 As above (1) but breaks are longer and mother seems to initiate eye contact less often, giving the impression that there are times when she avoids looking at the baby, finds it uncomfortable to hold gaze or is too distractible to do so.
- 3 As above (2) but very little eye contact with baby.
- 4 N A. Separated most of the time.
- 

### Comments:

---

## PHYSICAL CONTACT

- 0 Mother generally holds and supports baby in relaxed and efficient manner. Seeks and maintains physical contact with sensitive awareness of baby's state (e.g. alert, playful, drowsy, asleep).
- 1 As above (0) but occasionally seems "out of tune" with baby - e.g. picks up too often or too little. Contact may appear mechanical or brusque.
- 2 As above (1) but mother is more persistently and obviously insensitive to baby's state. Can nevertheless hold baby "successfully" for a few minutes at a time.
- 3 As above (2) but unable to hold baby for more than a few moments without disturbing him/her.
- 4 N A. Separated most of the time.
- 

### Comments:

---

## VOCAL CONTACT

- 0 Mother generally initiates and maintains dialogue and the rate, tone, volume and content are appropriate and responsive to baby's state (e.g. laughing, babbling, crying).
  - 1 As above (0) but minor or brief breaks in dialogue through lack of, or through inappropriate responses by mother.
  - 2 As above (1) but breaks are longer and more obvious in quality. At such times she is clearly unable to sustain "conversation" with the baby but at other times she does manage with some success.
  - 3 Clearly out of harmony with baby almost all the time. Vocal output is lacking or excessive or so inappropriate in rate, tone, volume or content that there is very little sustained dialogue between the two.
  - 4 N A. Separated most of the time.
- 

### Comments:

---

## MOOD

- 0 Generally comfortable, relaxed, caring, warm and sensitive to baby's mood and state. Able to tolerate baby's distress or irritability.
  - 1 As above (0) but punctuated by brief periods when affective responses to baby are inappropriate or lacking. Nevertheless sensitive to baby much of the time.
  - 2 As above (1) but mother's mood dominates the interaction with the baby. Some of the time, however, she is able to respond appropriately - e.g. successfully soothing baby or maintaining play.
  - 3 Mostly out of harmony with baby. Mother's mood is not responsive to baby for more than a few moments at a time.
  - 4 N A. Separated most of the time.
- 

### Comments:

---

## GENERAL ROUTINE

- 0 Well organised in relation to looking after baby - e.g. feeds, nappies generally prepared in good time. Unflustered by unexpected minor problems. Copes independently.
- 1 As above (0) but occasionally lapses which result in staff reminding or prompting mother. No serious difficulties.
- 2 As above (1) but lapses are more frequent and severe, so that staff often have to intervene and help.
- 3 Very disorganised. Requires considerable intervention and help from staff every day.
- 4 N A. Separated most of the time.
- 

### **Comments:**

## PHYSICAL RISK TO BABY

- 0 Generally safe - no perceived risk to baby.
  - 1 Sometimes careless or neglectful but quickly corrects or responds to risk.
  - 2 Unintentionally careless, rough or neglectful: thus puts baby in potentially dangerous situations without awareness of risk.
  - 3 Threatens or definitely fears that she will harm the baby.
  - 4 Actual harm caused intentionally or unintentionally, or separated most of the time.
- 

### If there is a score of 2 or more on the RISK SCALE please describe in detail:

a - the nature of any incidents and indicate whether through neglect or intention

b - if no actual incident, what did mother say to suggest risk

c - relevant aspects of mother's mental state - e.g. suicidal, manic, delusions incorporating baby

## **BABY'S CONTRIBUTION TO INTERACTION**

- 0 Healthy, alert, happy and responsive baby.
  - 1 Occasionally baby seems "difficult" or there is some other health problem which interferes with relationship to a small extent.
  - 2 As above (1) but baby is "difficult" or there is some other health problem for most of the time.
  - 3 Clearly "difficult" or in poor health all the time.
  - 4 N A. Separated most of the time.
- 

**If baby is rated 1 or above please indicate what the problem is in as much detail as possible.**

# Appendix 8

\_\_\_\_\_ to be completed by MOTHERS \_\_\_\_\_

mother's name ..... baby's name .....

## MOTHER-INFANT SELF-RATING SCALE

We would like you to answer a few questions about your baby in order to help you and your baby by adjusting the service on the ward to your needs. Please read through the questions carefully and then place a tick in the box below the reply which comes closest to how your feelings about your baby have been in the past week.

1) How much do you and your baby like looking and staring at each other?

Very much indeed	Quite a lot	Not very much	Hardly at all	Not at all

2) How much do you and your baby like touching and cuddling each other?

Very much indeed	Quite a lot	Not very much	Hardly at all	Not at all

3) How much does your baby react to you talking to him/her?

Very much indeed	Quite a lot	Not very much	Hardly at all	Not at all

4) How easy is it to read or understand your baby's changing moods?

Very much indeed	Quite a lot	Not very much	Hardly at all	Not at all

5) Generally, how easy is the baby to handle and to get into a routine with?

Very much indeed	Quite a lot	Not very much	Hardly at all	Not at all

6) How likely is your baby to come to harm?

Very much indeed	Quite a lot	Not very much	Hardly at all	Not at all

## Appendix 9

### Global Rating Scale for Mother-Infant Interaction

1. There did not appear to be any problems with the mother-infant interaction. The mother interacted with her infant in an appropriate and sensitive manner throughout the admission period (would be rated 0 on the BMIS).

2. In the first few weeks of the admission period there appeared to be problems in the interaction between mother and infant. The mother was not always sensitive to her child's needs (e.g., rough handling, rushed feeding, broken dialogue between mother and infant). However, this was caused mainly by the mother's mental state and once she became more stable there were no concerns about the mother-infant interaction.

3. There were concerns about the mother-infant interaction throughout most of the admission period. The mother's mental state did not improve quickly and this interfered with her mothering ability. However, towards the end of the admission period the mother interacted well with her baby.

4. There were concerns about the mother-infant interaction throughout the admission period. The mother's mental state did not improve and there were still concerns about her mothering abilities upon discharged (e.g., the infant was taken into foster care, was on child protection register, or the mother went to a resource home).

5. There were slight concerns about the mother-infant interaction in the beginning of the admission period. This was not a reflection of the mother's mental state but rather because she was reluctant to engage with her infant. The quality of the mother-infant interaction could also have been poor due to the mother being inexperienced. However, after a few weeks the mother improved in her abilities and there were no concerns for the rest of the admission period.

6. There were concerns about the mother-infant interaction throughout most of the admission period either because the mother was reluctant to engage with her infant or because she found the mothering role difficult to grow accustomed to. However, before she was discharged she improved significantly and there were not concerns about the mother-infant interaction.

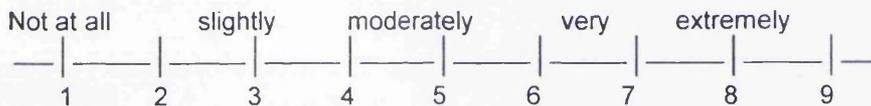
7. There were concerns about the mother-infant interaction throughout the admission period. The mother did not engage with her infant or her abilities did not improve despite appropriate instructions from nursing staff. There were serious concerns about her mothering abilities when she was discharged (e.g., the infant was taken into foster care, was on child protection register, or the mother went to a resource home).

# Appendix 10

## Attachment Style Inventory (friendships)

Below are two scales which describe different styles of attachment in relationships. For the purpose of this questionnaire, you should think of relationships as including any type of friendship, but not sexual relationships. Try to imagine your most recent general style of being attached to others in friendships, recognising that of course there are some differences in the quality of every friendship.

Begin by reading the first four paragraphs. Then, choose a number from one to nine in order to rate how characteristic each style is of your recent style of attachment in friendships, according to the scale below. After this, place a check mark next to the one style that best describe your attachment in friendships, even though none may be completely appropriate.



Best Description  
(check one only)

Rating

I tend to avoid close friendships because they can lead to disappointment or to getting hurt. I prefer to keep more to myself and not to get too closely involved with others.

\_\_\_\_\_

I tend to form a very close friendships. I value my dependence on another person and I like to feel very close in relationships.

\_\_\_\_\_

I tend to form friendships in which I am often angry. I find myself easily feeling irritated and sometimes distrustful toward my friends.

\_\_\_\_\_

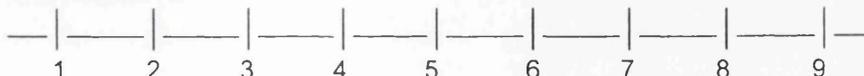
I tend to often feel angered in friendships, but I also want to be dependent on and close to the other person. It seems that I alternate between wanting to be close and feeling irritated and uncomfortable if I get too close to others.

\_\_\_\_\_

The scale below refers to the way you feel and think when forming friendships. At each end are opposite descriptions. With the number 5 representing an equal mixture of the two descriptions circle the number from one to nine for the point on the scale which represents your experience best.

I do worry about forming friendships I am often anxious about them, and they Do not necessarily happen easily. Even when they seems to be going well, I still feel uncertain about how they will work out.

I do not worry about forming relationships. I am not very anxious about them, and they happen easily. I feel confident they will work out.



## Attachment Style Inventory (Sexual relationships)

Below are two scales which describe different styles of attachment in relationships. For the purpose of this questionnaire, you should think of relationships as including only intimate relationships, not non-sexual friendships. Try to imagine your most recent general style of being attached to another person in an intimate relationship.

Begin by reading the first four paragraphs. Then, choose a number from one to nine in order to rate how characteristic each style is of your recent style of attachment in a sexual relationship, according to the scale below. After this, place a check mark next to the one style that best describe your attachment in an intimate sexual relationship, even though none may be completely appropriate.



Best Description  
(check one only)

Rating

I tend to avoid intimacy in a sexual relationship because it can lead to disappointment or to getting hurt. I prefer to keep more to myself and not to get sexually involved with another person.

\_\_\_\_\_

I tend to form a very intimate sexual relationship. I value my dependence on another person and I like to feel very close in a sexual relationship.

\_\_\_\_\_

I tend to form an intimate sexual relationship in which I am often angry. I find myself easily irritated and Sometimes distrustful in a sexual relationship.

\_\_\_\_\_

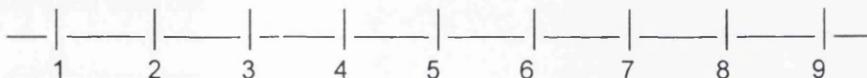
I tend to often feel angered in an intimate sexual relationship, but I also want to be dependent on and close to the other person. It seems that I alternate between wanting to be close and feeling irritated and uncomfortable if I get too close to others.

\_\_\_\_\_

The scale below refers to the way you feel and think when forming an intimate sexual relationship. At each end are opposite descriptions. With the number 5 representing an equal mixture of the two descriptions circle the number from one to nine for the point on the scale which represents your experience best.

I do worry about forming an intimate Sexual relationship. I am often anxious about it, and it does not necessarily happen easily. Even when it seems to be going well, I still feel uncertain about how it will work out.

I do not worry about forming an intimate sexual relationship. I am not very anxious about it, and it happens easily. I feel confident it will work out.



## Attachment Style Inventory (mother)

Below are two scales which describe different styles of attachment in relationships. For the purpose of this questionnaire, you should think of your relationship with your mother. Try to imagine your most recent general style of being attached to your mother. (Note: If your mother is deceased, or you have had no contact with her during the past year, do not complete this questionnaire – go on to the next page.)

Begin by reading the first four paragraphs. Then, choose a number from one to nine in order to rate how characteristic each style is of your recent style of attachment to your mother, according to the scale below. After this, place a check mark next to the one style that best describe your attachment to your mother, even though none may be completely appropriate.



Best Description  
(check one only)

Rating

I tend to avoid a close relationship with my mother because it can lead to disappointment or to getting hurt. I prefer to keep more to myself and not get too closely involved with her.

\_\_\_\_\_

I tend to form a very close relationship with my mother. I value my dependence on her and I like to feel very close in my relationship with her.

\_\_\_\_\_

I tend to have a relationship with my mother in which I am often angry. I find myself easily feeling irritated and sometimes distrustful in my relationship with her.

\_\_\_\_\_

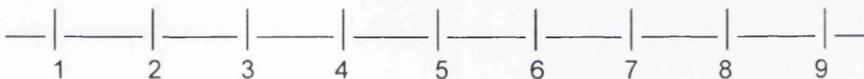
I tend to often feel angered in my relationship with my mother, but I also want to be dependent on and close to her. It seems that I alternate between wanting to be close and feeling irritated and uncomfortable if I get too close to her.

\_\_\_\_\_

The scale below refers to the way you feel and think about your relationship with your mother. At each end are opposite descriptions. With the number 5 representing an equal mixture of the two descriptions circle the number from one to nine for the point on the scale which represents your experience best.

I do worry about my relationship with my mother. I am often anxious about it, and it not necessarily happen easily. Even when it seems to be going well, I still feel uncertain About how it will work out

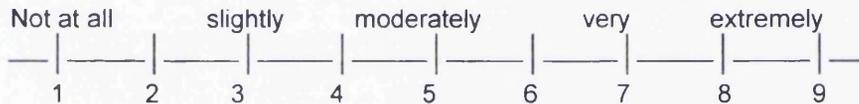
I do not worry about my relationship with my mother. I am not very does anxious about it, and it happens easily.



## Attachment Style Inventory (father)

Below are two scales which describe different styles of attachment in relationships. For the purpose of this questionnaire, you should think of your relationship with your father. Try to imagine your most recent general style of being attached to your father. (Note: If your father is deceased, or you have had no contact with him during the past year, do not complete this questionnaire – go on to the next page.)

Begin by reading the first four paragraphs. Then, choose a number from one to nine in order to rate how characteristic each style is of your recent style of attachment to your father, according to the scale below. After this, place a check mark next to the one style that best describe your attachment to your father, even though none may be completely appropriate.



Best Description  
(check one only)

Rating

I tend to avoid a close relationship with my father because it can lead to disappointment or to getting hurt. I prefer to keep more to myself and not get too closely involved with him.

\_\_\_\_\_

I tend to form a very close relationship with my father. I value my dependence on him and I like to feel very close in my relationship with him.

\_\_\_\_\_

I tend to have a relationship with my father in which I am often angry. I find myself easily feeling irritated and sometimes distrustful in my relationship with him.

\_\_\_\_\_

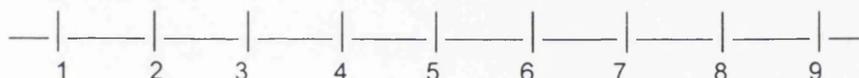
I tend to often feel angered in my relationship with my father, but I also want to be dependent on and close to him. It seems that I alternate between wanting to be close and feeling irritated and uncomfortable if I get too close to him.

\_\_\_\_\_

The scale below refers to the way you feel and think about your relationship with your father. At each end are opposite descriptions. With the number 5 representing an equal mixture of the two descriptions circle the number from one to nine for the point on the scale which represents your experience best.

I do worry about my relationship with my father. I am often anxious about it, and it does not necessarily happen easily. Even when it seems to be going well, I still feel uncertain about how it will work out.

I do not worry about my relationship with my father. I am not very anxious about it, and it happens easily.



# Appendix 11

Subject: Re: ASI  
Date: Mon, 14 Sep 1998 15:30:00 -0400 (EDT)  
From: Michael Sperling <sperling@alpha.fdu.edu>  
To: HANNE JAKOBSEN <xil34@dial.pipex.com>

Dear Hanne,

I have no problem with your modifying the frame of the sexual relationships question on the ASI. The measure was constructed with the intent that it could be modified in its reference relationships. The only major implication I imagine your modification would have is making the sexual relations attachment style more focused on a single relation, rather than a subject's aggregate construction of all sexual attachments. You can work this limitation in your analysis and interpretation of your findings.

I hope your study is approved now without further complications.

Michael Sperling

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