

The Assessment of Relational Risk in Early Parent-Infant Relationships

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DECLARATION

I, Michelle Sleed, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

A handwritten signature in black ink, appearing to read "Michelle Sleed".

ABSTRACT

This thesis provided an in-depth methodological study of the assessment of risk in early parent-infant relationships via caregivers' representations of their infant and their relationship with them. Three approaches to the assessment of relational risk were examined in detail: parent-report questionnaires, parental Reflective Functioning (RF), and a newly developed coding system for assessing risk in parents' representations of their relationship with their infant: the Assessment of Representational Risk (ARR). The validity and reliability of these measures were investigated in high- and low-risk parent-infant samples in relation to socio-demographic factors, parental psychopathology, adult attachment, and parent-infant interactions. Parent-report methods were found to be problematic for the assessment of parent-infant relationships in clinical samples. Mothers' ratings of their infants were strongly related to their own level of distress and unrelated to observer or clinician ratings of infant interactive behaviour. The Reflective Functioning and ARR coding systems, both of which are applied to parents' narratives about their relationship with their babies in semi-structured interviews, provided meaningful, reliable and valid tools for assessing the quality of the parent-infant relationship in various ways. The ARR identified three typologies of parental representations of the parent-infant relationship that may impinge on the parent-infant relationship: Hostile, Helpless and Narcissistic. These representations modified the prediction of later parent-infant interaction from parental reflective functioning and adult attachment style. The Assessment of Representational Risk is an easily accessible new tool for parent-infant assessments that provided a useful adjunct to the RF coding system. The methodological, theoretical and clinical implications of the findings were discussed.

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CONTRIBUTIONS

This dissertation has drawn upon data from four separate study samples. For each, my contribution to the research is detailed below:

1) Clinical sample of mothers and babies in Sweden (Chapter 2)

This sample was drawn from a randomized controlled trial of psychoanalytic parent-infant treatment conducted by Bjorn Salomonsson in Stockholm. Although I was not involved in the collection or coding of data, I was jointly involved, with Dr Salomonsson, in the analysis of the data used in this thesis. As a result of this collaboration, we co-authored a paper which has been published in a peer reviewed journal (details in Publications section below).

2) Clinical sample of mothers and babies in London (Chapters 3-6)

This sample was drawn from another randomized controlled trial of Parent Infant Psychotherapy for mothers with mental health problems and their infants. I was employed as the primary researcher for this study and was involved in all aspects of setting up and carrying out the research. I interviewed the majority of the participants, set up and managed the databases, and trained and coordinated other researchers and interns who assisted with the transcribing and blind coding of the data.

3) Normative sample of mothers and babies in London (Chapters 3-6)

This sample was recruited specifically for the research in this dissertation. I was the principal investigator and was responsible for all aspects of setting up and carrying out the research. I trained and supervised several other researchers who assisted with the recruitment, assessments, and data management and coding for this project.

4) Sample of mothers and babies in UK prisons (Chapters 3-6)

I was a member of the research team who carried out this cluster randomized controlled trial of a parenting intervention provided in prison Mother Baby Units. My role was primarily to code the PDI and video data, assist in the preparation of databases and analyses of the data, and to assist in the preparation of resulting research papers. I am co-author on one journal article and first author on a second as a result of this (see Publications section below).

Ethical approval was granted for all of the above studies (Appendix 4).

PUBLICATIONS

Salomonson, B. & Sleed, M. (2010). The ASQ:SE: A validation study of a mother-report questionnaire on a clinical mother-infant sample. *Infant Mental Health Journal, 31*(4), 412-431.

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CHAPTER 1: A REVIEW OF METHODS FOR ASSESSING THE QUALITY OF EARLY PARENT-INFANT RELATIONSHIPS

1.1. Introduction

Early relational experiences during infancy have for many decades been acknowledged as important predictors of later development. Recent advances in neuroscience and genetic research have elucidated the great extent to which very early relationships between infants and their caregivers can shape the neurobiological and psychological development of the individual, and across generations (Bokhorst et al., 2003; Lyons-Ruth & Jacobvitz, 2008; Schore, 1994, 2001b, 2002; Siegel, 2001; Strathearn, Fonagy, Amico, & Montague, 2009). Infancy is a period marked by rapid brain growth (Dobbing & Sands, 1973). Importantly, it is also a period when the neurological pathways that become established, through myelination and selective dendritic and synaptic pruning, are highly dependent on the infant's social environment (Johnson, 2001). Behavioural genetic research has also uncovered the importance of early environmental factors for the phenotypic expression of biological genotypes (Geary, 2006; Rutter, Kim-Cohen, & Maughan, 2006; Rutter, Moffitt, & Caspi, 2006). The primary context for these earliest social experiences is the parent-infant relationship.

The central organizing principle that links the psychological and biological developments during the first year of life is that of regulation. Attachment theory provides a framework for understanding how the infant's instinctive need for protection and the caregiver's reciprocal behavioural system for providing this protection is centred around the regulation of the infant's primary states of arousal (Mikulincer, Shaver, & Pereg, 2003). Similarly,

neuroscientists have purported that the regulation of emotional states is key to the adaptive function of the developing infant brain (Schore, 1994, 2001a).

This chapter will provide a review of the theory of attachment, which is probably the most comprehensive theoretical framework for understanding the infant's earliest experiences with their caregivers and how these drive later development across the lifespan and across generations. This will be followed by a review of the methods and measures which have been used in the assessment of early parent-infant relationships, particularly with respect to the assessment of risk factors which may be important in the understanding of relational trauma and developmental psychopathology.

1.1.1. ATTACHMENT THEORY AND PARENT-INFANT RELATIONSHIPS

Attachment theory provides an integrated framework through which parent-child environments and developmental processes can be understood. The attachment relationship between parent and child is thought to provide a template for the child's current and later social and emotional functioning (Bowlby, 1958; Bretherton & Munholland, 2008). This relationship is believed to be essential in laying the foundation on which self-understanding and understanding of the social world – as well as the patterns or systems that will structure the individual's behavior during interpersonal situations – are later constructed (Fonagy, 2004; Fonagy & Target, 1997). Furthermore, the quality of the attachment relationship that parents had during their own early experiences with their caregivers is thought to be a crucial factor in determining the quality of the parenting environment they provide to their own children (Ammaniti, Speranza, & Candelori, 1996; Bretherton, 1990a; Steele & Steele, 1994). Attachment theorists have developed techniques that have been used by clinicians and researchers to examine the subtle nuances of parent-child relationships, to classify the various parenting styles exhibited in these relationships, and to study the effect of these various styles in facilitating or inhibiting a young child's emotional development.

The pioneer of attachment theory, John Bowlby (1958), posited that human infants have developed an adaptive system of parent-directed behaviours that elicit the adult's care and protection. The direct effect of this system, of course, is to improve the infant's immediate chances of physical survival. However, for the most part, the selective exhibition of such behaviours towards a recognised and consistent caregiver also acts as the basis for the attachment relationship between parent and child, and this relationship provides further emotional and intellectual advantages. Bowlby posited a reciprocal caregiving behavioural system as a complement to this system in the child: an organised system of goal-corrected behaviours which function to provide protection, care and comfort for the child (Bowlby, 1969; George & Solomon, 2008a; Solomon & George, 2006). According to attachment theory, infants will form an attachment to a caregiver when they receive some form of regular contact and care from that individual, and it is the child's level of confidence in the availability of the caregiver, and the quality of the care they receive, that will determine the organization of the infant's attachment system.

1.1.2. MEASURING ATTACHMENT BEHAVIOUR

The Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978) has become the gold standard by which the organization of the infant's attachment to their caregiver is assessed. The procedure involves a series of separations and reunions between the infant and caregiver, at times in the presence of an unknown adult, the "stranger". These separations are designed to induce mild levels of fear in the infant, such that the infant's attachment system becomes activated. Trained observers study the infant's behaviour during these separations and then use an assessment protocol to classify the infants' attachment patterns based on their observations.

Three patterns of attachment that infants exhibit towards their caregivers, particularly at the reunion stages of the procedure, were initially observed and described (Ainsworth, et al., 1978). The first category, termed *secure*, is characterised by protesting at separation, and proximity-seeking and a reduction of negative affect upon reunion with the caregiver.

Secure children typically play freely and will engage with the stranger when their caregiver is in the room, but show distress in the absence of their caregiver. Upon the caregiver's return, they seek comfort, are easily and quickly soothed and are soon able to resume exploration and play. *Insecure-avoidant* infants typically show no signs of distress during separation and do not seek proximity to the caregiver following reunion. Their overall level of play and exploration is relatively low throughout the assessment. *Insecure-ambivalent* infants are distressed when the caregiver leaves the room but upon reunion they demonstrate ambivalence, showing anger and a reluctance to warm to the caregiver and return to play.

Later, in a review of a large number of cases, Main and Solomon (Main & Solomon, 1986, 1990) noted a group of infants whose behaviour did not seem to fall into any of the originally identified behavioural categories. This led them to posit a fourth category of *disorganised* attachment. In these cases the infants displayed a perplexing array of often contradictory and inexplicable behaviours such as proximity seeking followed by avoidance or freezing, avoidance coupled with expressions of strong distress; undirected, misdirected, incomplete or interrupted movements or expressions; asymmetrical movements; mistimed movements; anomalous postures; freezing; stilling; and slowed movement.

A modified version of the Strange Situation and a number of projective measures for assessing older children's attachment representations have been developed (Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1988; Cassidy & Marvin, 1992; George & Solomon, 1990/1996/2000; Green, 2000; Hodges, 1992; Hodges, Hillman, & Steele, 2007; Kaplan, 1987; Slough & Greenberg, 1990). All of these methods of assessment are based on the attachment prototypes described above. Although an individual's attachment-related behaviour will change as s/he develops over time, regardless of his or her attachment style, the goal of that behaviour always remains the same : the provision of protection, care, and comfort on the part of the caregiver and the elicitation of these behaviours from the

attachment figure with the goal of achieving a sense of safety on the part of the child (George & Solomon, 2008a).

1.1.3. INTERNAL WORKING MODELS OF ATTACHMENT

In humans, the evolutionary purpose of the attachment relationship is more than merely to secure protection for vulnerable infants: this relationship also provides a medium for the transmission of essential skills, cultural knowledge and values from one generation to the next (Ainsworth, Bell, & Stayton, 1974; Bowlby, 1969; Gergely, 2002; Greenberg, 1999; Waters, Crowell, Elliott, Corcoran, & Treboux, 2002). According to attachment theorists, the bond between an infant and his or her caregiver plays an important role in facilitating the infant's early psychological, social, emotional, and personality development, and the experience of this early bond will continue to exert an important influence on an individual's development, not only in the immediate subsequent stages of childhood but across the lifespan. Indeed, research has shown that a great deal of stability exists in the organization of attachment in an individual from infancy through to adulthood (Main, Hesse, & Kaplan, 2005; Sroufe, 2005). Bowlby argued that the early attachment relationship provides the infant with an important framework for understanding him- or her-self and others, and provides a template for subsequent interpersonal relationships (Bowlby, 1973). According to Bowlby, the mental representations that individuals develop of themselves and others- termed "internal working models" and consisting of systems of beliefs, expectations, thoughts, memories, and emotions- are first formed during infancy and are shaped by caregiver responses to the infant's behaviours. The internal working models impact on the individual's perceptions of events and behaviours in interpersonal interactions. They enable the individual to understand and predict social encounters. Although the early experiences of an infant with their caregiver form the original basis for these mental representations, they are flexible and can change in response to new experiences; in fact, an individual's internal working models will continue to develop into adulthood and across the lifespan. They play an important part in determining an

individual's understanding of and behaviour in other close relationship with peers, romantic partners, and their own children (Bretherton & Munholland, 2008).

Internal working models can be thought of as schematic representations of interpersonal relationship expectations. If attachment in early infancy has an impact on later social, emotional and interpersonal functioning, it is likely that the mediation is via relationship expectations. Internal working models of attachment are thought to account for the continuity in attachment behaviours throughout development and for the influence that early attachment organization appears to have on adult functioning.

1.1.4. LONGITUDINAL STUDIES OF EARLY ATTACHMENT PATTERNS

Several longitudinal studies of attachment have elucidated some of the outcomes of infant attachment security, insecurity and disorganization in later childhood and adulthood (Bosquet & Egeland, 2006; Carlson, 1998; Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2008; Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006; Lyons-Ruth, Alpern, & Repacholi, 1993; Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006; Lyons-Ruth, Easterbrooks, Davidson Cibelli, & Bronfman, 1995; Sroufe, 2005; Sroufe, Egeland, Carlson, & Collins, 2005; Warren, Huston, Egeland, & Sroufe, 1997).

Secure attachment in infancy has been consistently associated with positive psychological and behavioural outcomes in later years. In the Minnesota Study of Risk & Adaptation from Birth to Adulthood (Bosquet & Egeland, 2006; Sroufe, 2005; Sroufe, et al., 2005; Warren, et al., 1997), children were recruited in infancy with their families and followed up to age 28. This study demonstrated that early secure attachment was found to be significantly associated with emotional health, self-esteem, a sense of agency, self-confidence, positive affect, ego resiliency and social competence in childhood and adolescence. Secure attachment style in infancy has also been shown to be a protective factor against later psychopathology (Belsky & Fearon, 2002; Greenberg, 1999). For example, Dallaire and Weinraub found that attachment security at 15 months may protect

children from developing symptoms of anxiety under conditions of high family stress during the preschool years (Dallaire & Weinraub, 2007). Although many individuals with histories of insecure attachment do not go on to develop serious behaviour problems or psychiatric disturbance later on in life, insecure infant attachment has been shown to be one risk factor for the development of such problems (Sroufe, 2005), and some studies have reported that insecure-avoidant infants are the most vulnerable – relative to infants with all other attachment classifications – to the development of behavioural difficulties and impairments in social competence when exposed to negative contextual and environmental influences (Belsky & Fearon, 2002). In the Minnesota longitudinal study, infants with resistant attachment patterns were found to be significantly more likely than infants with secure or avoidant attachments to be diagnosed with anxiety disorders as adolescents, even when controlling for differences in temperament (Bosquet & Egeland, 2006; Sroufe, 2005; Sroufe, et al., 2005; Warren, et al., 1997). Children in secure attachment relationships have been found to be better at emotional self-regulation than those with insecure relationships (Thompson & Meyer, 2007). Finally, the following positive outcomes have been shown to be consistently associated with secure infant attachment in a series of studies: more positive social relationships, more positive self-concepts, enhanced emotional understanding and social cognition, conscience development, and, possibly even improved memory (see Thompson, 2008 for a review).

Infant disorganised attachment – indicated in the Strange Situation by bizarre infant behaviour during reunions with the caregiver, and characterized by controlling and sometimes pseudo-parenting types of behaviour during middle childhood – has arguably generated the greatest clinical interest compared to other categories of attachment style. Most attachment theorists understand disorganised attachment to be the result of a child's experiences of seeking comfort and reassurance from the very person responsible for causing the fear that activated the attachment system in the first place (Hesse & Main, 2000). It is hardly surprising that the long term outcomes of the disorganised classification have identified this group as most at risk. A number of investigators have found

disorganised attachment to be strongly predictive of later psychopathology. For example, one study (Carlson, 1998) found that disorganised infants, in comparison to those not classified as disorganised, exhibited significantly more behaviour problems, internalising problems, dissociation and general psychopathology throughout their development up to age 19. Other longitudinal research has confirmed that early disorganised attachment is associated with an increased risk of later psychopathology relative to non-disorganised attachments (Dutra, et al., 2008; Dutra & Lyons-Ruth, 2005; Kobak, et al., 2006; Lyons-Ruth, et al., 2006; MacDonald et al., 2008; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; Sroufe, 2005; Sroufe, et al., 2005).

1.2. Assessing the quality of parent-infant relationships

The assessment of the quality of early parent-infant relationships is a crucial area of investigation for a number of reasons. Firstly, sensitive assessment tools are needed for the advancement of our theoretical understanding of early attachment experiences and developmental psychopathology. Secondly, these tools can be, and currently are, applied in clinical settings in a number of ways, such as in preventative screening for problems which may warrant referrals to clinical interventions, for informing in-depth parenting assessments for family courts, in helping clinicians to inform their formulations and techniques in working with parents and babies, and in the evaluation of treatment outcomes for parent-infant interventions.

Attachment Theory has, since its inception, been informed by observations of attachment behaviours between children and their caregivers. For instance, much of Bowlby's early work involved the extensive study of institutionalised children (Bowlby, 1951) and Ainsworth carried out in-depth studies of mothers and infants in Uganda and the US (Ainsworth, 1963; Ainsworth, et al., 1978). Later on, internal working models of attachment, or attachment representations, became a rich source of information about the continuity of effects from early attachment experiences (Main & Goldwyn, 1984; Main & Hesse, 1997). Thus, early parent-infant relationships have typically been examined from these two perspectives: the observation of behavioural interactions and the assessment of mental representations. The following section will provide a review of some of the methods used for assessing the quality of the parent-infant relationship and how disruptions in these relationships may be detected and understood. Both behavioural and representational methods will be reviewed, as will the empirical and theoretical overlaps between these.

1.3. Parent-infant Interactions

One way to understand and assess the ways in which disruptions in the parent-infant relationship can develop and be maintained is through observations of parent-infant interactive behaviour. Numerous methods have been developed to delineate particular parental behaviours which can promote healthy social and emotional development in infancy. Other systems have focused on the behaviours associated with a breakdown of a protective caregiving environment. The last quarter of a century has seen a rapid growth of research into the behavioural aspects that shape the quality of parent-infant relationships. This has led to a plethora of different studies examining the quality of interactions.

1.3.1. MEASURES OF PARENT-INFANT INTERACTIONS USED IN INDIVIDUAL STUDIES

Table 1.1 provides an overview of several studies which have looked at and provided some rating of parent-infant interactions. All of these studies have some variation in the way in which the interactions are structured and coded, the constructs considered to be of importance, and the level of detail they go into. One such rating system was used to assess parent-infant interactions in a number of structured and unstructured tasks (Johnson & Breckenridge, 1981). Each minute of the interaction is coded for the level of parental affectionateness (9-point scale), praise, criticism, control, reasoning and verbal encouragement (all 5-point scales). The coding system used by Crnic and colleagues entailed rating both parent and child on five-point scales for gratification, responsiveness and affective tone during free play and vocal elicitation interactions (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). As factor and reliability analyses demonstrated that these ratings were strongly related, they used the sum scores for an overall rating of the quality of the parent and child contributions to the interaction. In the same way, the ratings of parental behaviour used by Butcher and colleagues (1993) and Miller and colleagues (2002) provide qualitative ratings on Likert-type scales for the level and intensity of a number of factors. The approach used by Wadsby, Sydsjo and colleagues is slightly

different (Sydsjö, Wadsby, & Göran-Sveddin, 2001; Wadsby, Sydsjö, & Göran-Sveddin, 2001). They used a visual analogue scale to rate a number of very global constructs relating to the parent's interactive behaviour such as responsibility for taking care of the child and confidence in contact with the child. At a more microanalytic level, Guzell and Venon-Feagans (Guzell & Vernon-Feagans, 2004) rated every 15 seconds of triadic free play interactions for a number of parental behaviours on three-point scales. These discrete behaviours at each time point comprise final composite scores for parental directive behaviour and sensitive behaviour.

Table 1.1. Summary of measures of parent-infant interactive behaviour used in individual studies

Author/s	Description of measures
Johnson, Kahn, & Davila, 1981	<p>Ratings (5-point scale for all, apart from affectionateness, which is rated on a 9-point scale)</p> <p>Parent: Affectionateness, Praise, Criticism, Control, Reasoning, Verbal Encouragement</p> <p>Child: Child's Verbal Responsiveness</p>
Crnic, et al., 1983	<p>Ratings of both mother and infant (5-point scales)</p> <p>Parent and child: Gratification from interaction (none or averts to long periods of enjoyment, happiness), responsiveness (out of sync, intrusiveness/avoidance to no intrusions, reciprocity/attention), and affective tone (very angry/negative to very happy/smiling)</p>
Butcher, et al., 1993	<p>Ratings (5-point scales)</p> <p>Parent: tempo, quality of handling, involvement, frequency of vocalization, frequency of positive emotional expressions, timing, non-directiveness, non-interference, and responsiveness</p> <p>Child: frequency of looking at the mother, responsiveness, intensity and amount of positive and negative emotional expressions</p>
Baumwell, Tamis-LeMonda, & Bornstein, 1997	<p>Frequency count of the following behaviours, dependent on child behavioural cues:</p> <p>Parent: maternal responsiveness, joint topic focus, focus, prohibition/restriction, and focus shift</p>
Wadsby, et al., 2001	<p>Ratings on visual analogue scale</p> <p>Parent: time devoted to the child, responsibility for caretaking of the child, confidence in contact with the child, body contact, verbal contact and eye contact with the child, comforting the child when it cried, annoyance when the child cried, global assessment of the interaction between the mother and the child, and assessment of mother's future ability to take care of her child</p>
Miller, et al., 2002	<p>Ratings on a 4-point global score</p> <p>Parent: sensitivity, intrusiveness, positive affect, anxiety, and rejection/anger</p>
Guzell & Vernon-Feagans, 2004	<p>Every 15 second segment (of 15 minutes) rated for frequency and intensity on 3-point scale</p> <p>Parent: directive behaviour (adult centred and lack of attentiveness to the child's interests), sensitive behaviour (verbal or nonverbal positive affect, encouragement, interest, or empathy toward the child).</p>

As is clear from the review of the studies presented in Table 1.1, there is a fair degree of consistency in the dimensions considered to be relevant by many researchers. However, there is variability in terms of the level of analysis that researchers choose to focus on. This is mostly in terms of the psychometric approach that is taken, with behavioural frequency counts on the one end of the spectrum and Likert-type rating scales at the other. There is also variability in the particular approach they take to behavioural sampling (15 second interactions, to global ratings over a certain length of time). Since none of these coding systems described in Table 1.1 have been used in studies outside of the laboratories in which they were developed, we are not able to comment on the reliability or validity of the measures in detecting risk within the interactions. There are, however, several coding systems which have been more widely used and validated, many of which are summarized in Table 1.2.

1.3.2. VALIDATED MEASURES OF PARENT-INFANT INTERACTION

Probably the most well-known and widely used construct in the assessment of parent-infant interactions is that of maternal sensitivity. The construct was first introduced by Mary Ainsworth (Ainsworth, 1976; Ainsworth, Bell, & Stayton, 1971; Ainsworth, et al., 1974) and emerged out of her seminal investigation, known as the Baltimore Study (Ainsworth, et al., 1978). She and her colleagues followed 26 middle class American families from the time the baby was born until they reached 12 months of age. This involved monthly home visits for several hours at a time and they made in-depth naturalistic observations of caregiver and infant behaviour. As Ainsworth had already begun to identify ways of determining the quality of the child's attachment to the parent (Ainsworth & Wittig, 1969), the aim of this study was to identify the maternal behaviours that are facilitative of secure base behaviour and attachment security. They found four dimensions of maternal behaviour to be linked with attachment security: sensitivity, acceptance, cooperation and accessibility. Of these, sensitivity was deemed to be the most important. Maternal sensitivity is conceptualised as a mother's accuracy in perceiving and interpreting her infant's cues and her ability to react in a timely and appropriate manner. The concept can be seen as covering

four distinct components of maternal behaviour: attention to infant cues, the correct interpretation of those cues, the prompt response to the cues, and the appropriateness of the responses.

As can be seen from the idiosyncratic and widely used measures of parent-infant interactions described in Tables 1.1 and 1.2, maternal sensitivity or elements of the concept, such as responsiveness, are recurrent themes throughout the majority of measures. A major shortcoming of the original sensitivity scale is that it yields only a single global rating, allowing for varying interpretations of the concept across laboratories. In addition, no formal training or reliability procedures were put in place for coding sensitivity. The result has been that a large number of researchers have been using their own interpretations of what sensitivity actually is, and have used multiple contexts to elicit those behaviours that they deem relevant. The term has often been used quite loosely to describe optimal parental behaviours. For example, the coding system used by (Guzell & Vernon-Feagans, 2004) yields a rating for “sensitive behaviour”. This is a composite score for ratings on verbal and nonverbal positive affect, encouragement, interest and empathy towards the child. Although these features of the interaction are most likely to be linked with Ainsworth’s original concept of sensitivity, they are not integral to her definition.

Some more recent assessment tools, such as the Emotional Availability Scales (EAS; Biringen, Robinson, & Emde, 1993, 2000; Biringen, Robinson, & Emde, 2008) and the Care-Index (Crittenden, 2001) have retained the idea of maternal sensitivity as the central construct but have provided more detailed manuals and training procedures. In these coding systems, the sensitivity rating remains very global and is rated alongside a small number of other parental variables considered to be of importance (structuring, non-hostility and non-intrusiveness on the EAS, controlling and unresponsive behaviour on the Care-Index).

Other coding systems have taken a more detailed approach to the concept of sensitivity. For example, the Coding Interactive Behaviour Scale (CIB; Feldman, 1998) and the Parent-

Child Relational Assessment (PCERA; Clark, 1985) rate parent, child and dyadic interactive behaviours on a large number of discrete variables. Both of these coding systems result in a composite subscale of “maternal sensitivity” comprised of summed scores for a diverse array of behaviours. For the PCERA, the subscale for “intrusiveness, insensitivity and inconsistency” is comprised of some directly associated variables, such as “insensitive /unresponsive to child’s cues”. However, some other distinct constructs, such as “quality and amount of physical contact: negative” and “amount of verbalization” are also included in the subscale, and the decision to include these is based on exploratory factor analyses (Clark, 1999). In the same way, the CIB “sensitivity” subscale is comprised of some variables directly associated with Ainsworth’s concept of sensitivity, such as “acknowledgement of infant’s signals” as well as some more loosely associated positive parental behaviours, such as “affectionate touch” and “positive affect”. The good internal consistency of these scales confirms the decision to combine these variables (e.g. Feldman & Eidelman, 2003; Feldman, Eidelman, Sirota, & Weller, 2002; Feldman, Greenbaum, Mayes, & Erlich, 1997; Feldman, Masalha, & Nadam, 2001; Feldman, Weller, Sirota, & Eidelman, 2003).

The Nursing Child Teaching and Feeding Scales (NCATS/NCAFS; Barnard, 1978) also result in a composite subscale of “sensitivity to cues”. In this coding system each of the component variables of sensitivity are rated on a binary scale (observed/ not observed) rather than a wider scale incorporating both frequency and intensity of behaviours during the interaction. This is a very different approach to the single global ratings of overall sensitivity. In general, the binary rating used in the NCATS/NCAFS and other coding systems (Bernstein, Percansky, & Hans, 1987; Hans, Bernstein, & Percansky, 1991) does not allow scope for detecting small inconsistencies within the interaction. A mother that is moderately sensitive may at times interpret her baby’s cues and respond appropriately, but at other times may not; a mother that smiles once or twice in the interaction is qualitatively different from a mother who demonstrates positive affect throughout the interaction.

It seems that almost all measures of parent-infant interactive behaviour identify sensitivity as a key construct. There is some variation across measures in terms of what is focused on when assessing sensitivity. There is no indication, however, that these variations are material to understanding the nature of interactive behaviour. An appropriate understanding of and responsiveness to the infant's behaviour is a key dimension to individual difference in the quality of parent-child relationships. Clearly, this raises the question of a) whether the absence of sensitivity could be considered traumatic, or b) whether its presence provides any kind of protection against traumatic experience that impinges on the parent-infant relationship.

In addition to sensitivity, there are many other features of parent-infant interactions that are common to coding systems. De Wolff and van IJzendoorn (1997) carried out a comprehensive survey of 55 constructs of parenting behaviour used by experts in attachment research. They identified nine conceptually homogenous groups of concepts:

- (1) Sensitivity: the ability to perceive the infant's signals accurately and to respond to these signals promptly and appropriately.
- (2) Contiguity of Response (also referred to as responsiveness): the promptness and frequency of response to the infant's signals (rather than a qualitative assessment of the type of response as detected by sensitivity).
- (3) Physical Contact: both the quantity and quality of physical touch.
- (4) Cooperation: presence or absence of intrusive or interfering maternal behaviour.
- (5) Synchrony: the extent to which interaction appears to be reciprocal, mutually rewarding and well-timed.
- (6) Mutuality: mutual positive exchanges, joint attention, modulation of the baby's arousal, and parental responsiveness to infant cues. It also refers to the infant's expression of positive affect, non-avoidance, active maintenance of the interaction, and eye contact.
- (7) Emotional Support: the mother's attentiveness and availability to the child and her support given. It involves making the child feel comfortable and secure and being involved and attentive to the child and joint tasks.
- (8) Positive Attitude: This construct includes the mother's expression of positive and negative affect to the baby, and the degree to which mother and infant engage in reciprocal interactions.
- (9) Stimulation: parental actions and behaviours directed towards the baby.

Table 1.2 provides a rough guide of the extent to which currently available measures tap into these nine constructs. In addition to sensitivity, the most commonly measured features of the interactions are the affective quality of the interaction (positive affect or lack thereof), cooperation, and the extent to which the parent provides emotional support for the child during the interaction.

Table 1.2. Summary of validated measures of parent-infant interactive behaviour

Measure	Author/s	Scales/ subscales	Sensitivity	Contiguity of Response	Physical Contact	Cooperation	Synchrony	Mutuality	Emotional Support	Positive Attitude	Stimulation
Sensitivity Scale	Ainsworth et al., 1976	Maternal sensitivity (single 9-point rating scale)									
Nursing Child Assessment Teaching/Feeding Scale (NCATS & NCAFS)	Barnard, 1978 Sumner and Spietz, 1995	73 items on the teaching scale, and 76 items on the feeding scale, scored on binary scale Parent: sensitivity to cues, response to child's distress, social-emotional growth fostering, cognitive growth fostering Child: clarity of cues, responsiveness to caregiver									
Parent-Child Early Relational Assessment (PCERA)	Clark, 1985	65 variables (scored on 5-point scales) form following composite subscales: Parent: Positive Affective Involvement and Verbalization; Negative Affect and Behaviour; Intrusiveness, Insensitivity, and Inconsistency Child: Positive Affect and Social Communicative Skills; Quality of Play, Interest, and Attentional Skills; Dysregulation and Irritability Dyad: Mutual Enjoyment and Reciprocity; Disorganization and Tension									

Table 1.2 continued. Summary of validated measures of parent-infant interactive behaviour

Measure	Author/s	Scales/ subscales	Sensitivity	Contiguity of Response	Physical Contact	Cooperation	Synchrony	Mutuality	Emotional Support	Positive Attitude	Stimulation
Parent/Caregiver Involvement Scale (PCIS)	Farran, Kasari, Comfort, & Jay, 1986	11 scales (each scored on 5-point rating) Parent: physical and verbal interaction, responsiveness, play, teaching, control of activities, directives-demands, relationship, positive and negative statements, and goal setting. Overall ratings: availability, acceptance, atmosphere, enjoyment, and learning environment									
Maternal Behavior Rating Scale (MBRS)	Mahoney, Powell, & Finger, 1986	12 items (rated on 5-point scale) form the following subscales: Parent: responsiveness, affect, achievement, and directiveness									
Parent-Infant Observation Guide (PIOG)	Bernstein, Percansky & Hans, 1987; Hans, Bernstein & Percansky, 1991	Items scored on binary scale (observed/ not observed): Parent: sensitive responsiveness to child's needs, sensitivity to child's interests, affection for infant, helping child to learn Child: expression of needs, use of parent's help, interest in parent, affection for parent									

Table 1.2 continued. Summary of validated measures of parent-infant interactive behaviour

Measure	Author/s	Scales/ subscales	Sensitivity	Contiguity of Response	Physical Contact	Cooperation	Synchrony	Mutuality	Emotional Support	Positive Attitude	Stimulation
Mannheim Rating System for Mother-Infant Interaction	Esser, Scheven, Petrova, Laucht, & Schmidt, 1990	Variables coded per minute of interaction: Parent: emotion, physical affect, vocalization, verbal restrictions, congruency, variability, contingency, stimulation Child: emotion, vocalization, looking, reactivity (contingency) and readiness to interact									
Emotional Availability Scales	Biringen et al., 1993; Biringen, 2000; 2008	Parent: Sensitivity, structuring, non-intrusiveness, non-hostility Child: Involvement, responsiveness									
Mellow Parenting Coding System	Puckering, Rogers, Mills, Cox, & Mattsson-Graff, 1994	Parent: autonomy, positive affect, negative affect, link-child follow, facilitate before caretake (coded as number of sequences during an interaction situation, mean score used). Warmth, sensitivity and effective control (overall ratings on a five-point scale)									
Communications Violations Rating Scale	True, 1994	Ratings (5-point scales) Parent: Cooperation, withdrawal, overriding infant negativity, frightened or frightening behaviour Child: Directness of signalling, avoidance, resistance, disorganization									

Table 1.2 continued. Summary of validated measures of parent-infant interactive behaviour

Measure	Author/s	Scales/ subscales	Sensitivity	Contiguity of Response	Physical Contact	Cooperation	Synchrony	Mutuality	Emotional Support	Positive Attitude	Stimulation
The Parent-Infant Relationship Global Assessment Scale (PIRGAS)	Zero-to-Three, 2005	Global score on a 90-point scale. Three components of the relationship are assessed: behavioural quality of the interaction, affective tone, and psychological involvement									
Maternal Behavior Q-set (MBQS)	Pederson et al., 1990	90-item Q-sort based on home observations Parent: Sensitivity Child: Security									
Global Rating Scale for Mother-Infant Interaction	Murray, Fiori-Cowley, Hooper, & Cooper, 1996	25 bipolar scales (scored on 5-point ratings) Parent: Interactive behaviour, intrusiveness or remoteness, affect Child: Interactive behaviour, inertness or fretfulness Dyad: smooth and easy/difficult, fun/serious, mutually satisfying/unsatisfying, much engagement/no engagement and excited engagement/quiet engagement.									

Table 1.2 continued. Summary of validated measures of parent-infant interactive behaviour

Measure	Author/s	Scales/ subscales	Sensitivity	Contiguity of Response	Physical Contact	Cooperation	Synchrony	Mutuality	Emotional Support	Positive Attitude	Stimulation
Coding Interactive Behavior (CIB)	Feldman, 1998	42 variables (scored on 5-point scales) form following composite subscales: Parent: sensitivity, intrusiveness, parent limit-setting (for children > 12 months) Child: social involvement, negative emotionality, child compliance (for children > 12 months) Dyad: dyadic reciprocity, dyadic negative states									
The Feeding Scale	Chattoor et al., 1997	46 behaviours (scored on 4-point scale) rated on feeding sessions. Subscales: Parent: Maternal non-contingency Dyad: Dyadic reciprocity, dyadic conflict, talk and distraction, struggle for control									
Child Adult Relationship Index (CARE-Index)	Crittenden, 2001	Parent: sensitive, controlling, unresponsive Child: cooperative, difficult, compulsive and passive									
Microanalysis of parent-infant toy-play	Feldman, 2002	Relative time proportions of each behaviour coded on the following scales: Parent: gaze, affect, toy presentation Child: gaze, affect, toy attention									

Considering all of the studies and measures listed in Tables 1.1 and 1.2 together, there appears to be considerable agreement concerning the key dimensions of parent-infant interaction that might be relevant in understanding both potentially traumatogenic aspects of parenting and individual differences in dyads' reactions to extreme stress. We will now turn to studies that have evaluated the predictive validity of these instruments.

1.3.3. WHAT DO MOST MEASURES OF PARENT-INFANT INTERACTIONS TELL US?

Given the strong tradition of behavioural observation of parent-infant relationships from an attachment theory perspective, it is unsurprising that infant attachment security has often been the gold standard against which such measures have been validated. Indeed, early research demonstrated good associations between caregiver behaviour and infant attachment security (e.g. Ainsworth, et al., 1971, 1974; Cantero & Cerezo, 2001; Isabella, 1993; Swanson, 1998; Teti, Nakagawa, Das, & Wirth, 1991). Following on from the conceptual grouping of parental behaviour constructs by de Wolff and van IJzendoorn (1997) described above, the authors found that maternal sensitivity was moderately good at predicting infant attachment security but so were the other clusters of behaviours. It therefore seems that maternal sensitivity as well as a number of other aspects of parenting behaviour may be linked with infant attachment security.

Some of the validated coding systems described in Table 1.2 have been shown to distinguish between normative and high risk samples. For example, the Care-Index is able to discriminate between mothers with and without psychiatric disorder (Hughes, 1993), and between irritable and non-irritable infants and the subsequent link with maternal depression (Ayissi & Hubin-Gayte, 2006). The criterion validity of the PCERA has been established through a number of studies comparing different populations, such as drug-using parents versus non-drug using controls (Bisson, Jenkins, Alexander, & Bannister, 1997), parents of non-organic failure to thrive children compared to parents of children with adequate growth

(Gabriel, Hopson, Haskins, & Powell, 1996), and mothers with psychiatric diagnoses versus those without (Clark, 1983; Edhborg, Lundh, Seimyr, & Widstrom, 2001).

Not all measures listed in Table 1.2 have performed equally well in studies evaluating the validity of the instruments. The parenting behaviours rated on the NCATS have been shown to have a moderate association with the Bayley Scales of Infant Development, preschool language, and the child's IQ (Sumner & Spietz, 1995). However, one study (Johnson & Lobo, 2001) found that the NCATS scores did not differ for mothers with and without HIV infection, despite the fact that the mothers with a diagnosis of HIV had more symptoms of depression. Another study showed the NCATS to be related to maternal education and knowledge, but not depression and self-efficacy, indicating that it does not tap into affective quality of interactions (Gross, Conrad, Fogg, Willis, & Garvey, 1993). This raises the question of its suitability for populations where psychopathology is the main risk factor.

It is clear that the multitude of measures of parent-infant interactive behaviour vary in terms of the aspects of parent-infant interaction that they tap, and therefore their sensitivity to different aspects of risk. The next section will outline how these measures fare in providing us with information about how aspects of the relationship may mediate or moderate environmental risk.

1.3.4. PARENT-INFANT INTERACTIONS AND ATTACHMENT DISORGANISATION

A large number of measures of parent-infant interactive behaviour, and particularly those focused on the concept of maternal sensitivity, have been developed with middle-class, low-risk samples. They are mostly comprised of behavioural correlates of normative relationships between parents and infants which facilitate secure attachment and healthy infant social development. However, in a meta-analytic review, de Wolff & van IJzendoorn, (1997) found that the link between maternal behaviour and infant attachment is less robust in clinical and lower class samples. In fact, more recent studies which have been

carried out in higher risk samples have not found a strong association between maternal sensitivity and infant attachment (True, Pisani, & Oumar, 2001; M. J. Ward & Carlson, 1995; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000).

Although maternal insensitivity shows some association with attachment insecurity, especially in low risk samples, this may not be a sufficient indicator of risk in and of itself. The discovery of the disorganised attachment classification (Main & Solomon, 1986) has enabled researchers to identify a group of infants most at risk. The high prevalence of disorganised attachment in maltreated children has highlighted the limitations of the original secure-insecure classification system; many of these children were forced into a secure classification before the disorganised category was identified (Carlson, Cicchetti, Barnett, & Braunwald, 1989). Disorganised attachment has been found to be strongly predictive of later psychopathology (Berry, Barrowclough, & Wearden, 2007; Carlson, 1998; Kobak, et al., 2006; Lyons-Ruth & Jacobvitz, 2008; Sroufe, et al., 2005), far more so than the secure and two insecure attachment strategies originally defined by Ainsworth and colleagues. A recent meta-analysis was carried out to examine the association between attachment and maltreatment (Bodinetz, 2008). The analysis included 12 published studies that had reported associations between maltreatment and objective measures of attachment. All studies that were selected included a maltreated group (N=402) and a comparison group (N=450). Overall the odds ratio of a maltreated child being classified as having an insecure attachment was found to be 7.49 ($p < .001$). This indicates that maltreated children are at a significantly greater risk of insecure attachment compared to their non-maltreated peers. Looking more closely at the different attachment classifications, this study found that maltreated children were not significantly more likely to be classified as insecure-ambivalent (odds ratio = 1.49; $p = .063$). However, they were twice as likely to be classified as insecure-avoidant (odds ratio = 1.99; $p < .001$), and notably seven times more likely to be classified as disorganised (odds ratio = 6.87; $p < .001$) than non-maltreated children. The identification and better understanding of children with disorganised attachments and their caregiving contexts is thus of the greatest clinical importance.

Given the powerful claim by attachment researchers that maternal sensitivity and infant security of attachment are inextricably linked, we would expect that sensitivity would also be highly predictive of attachment disorganization in the Strange Situation. Ziv and colleagues (2000) showed that maternal sensitivity on the Emotional Availability Scales could only discriminate between secure and insecure-ambivalent infant classifications, but not avoidant and disorganized infants. Given that it is exactly these two attachment classifications that predict later externalizing problems (Munson, McMahon, & Spieker, 2001) and that are more likely associated with child maltreatment (Bodinetz, 2008), this is a major shortcoming in the assessment process. In a study of predominately economically disadvantaged adolescent mothers, Ward and Carlson (1995) found no association between attachment security and maternal sensitivity. Similarly, True, Pisani and Oumar (2001) carried out a study of mothers and infants with a high prevalence of disorganized infant attachment. They found that maternal sensitivity was not significantly related to infant attachment security. A meta-analysis focusing on the correlates of disorganized attachment demonstrated a very small effect size relating attachment disorganization and maternal sensitivity (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Taken together, these findings have demonstrated the need for picking out other aspects of caregiver behaviour which identify the most extreme levels of relational risk within the parent-infant relationship.

1.3.5. ASSESSING FEATURES OF PARENT-INFANT INTERACTIONS ASSOCIATED WITH DISORGANISATION

Given the association between trauma and disorganized attachments in infancy, it is essential that we identify aspects of the parent-child relationship that are characteristic of infants who are more likely to manifest this attachment pattern. As the disorganized attachment strategy appears to be independent of temperamental or constitutional elements related to the child (Carlson, 1998; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999), attention has been drawn to how this might emerge out of the parent-child

relationship. Two methods for rating parent-infant interactions for such behaviours are outlined in Table 1.3.

Table 1.3. Summary of measures of parental behaviour associated with disorganized attachment

Coding System	Authors	Description
The Frightened/Frightening (FR) coding system	Main & Hesse, 2005	Single 9-point rating based on the following categories of parental behaviour: frightening/ threatening, frightened, dissociated, timid/deferential (role reverting), sexualised, and disorganized/ disoriented
The Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE)	Bronfman et al., 1999	Single rating on 7-point scale based on the following categories of parental behaviour: Parent: affective communication errors, role-confusion, disorganized/ disoriented behaviours, negative-intrusive behaviour, and withdrawal

Main and Hesse (1990) have posited the idea that there is a second generation effect whereby past trauma or loss experienced by the parent, when unresolved, leads to particular anomalous behaviours toward the infant that places the infant in a paradoxical attachment position. The basic premise is that the unresolved loss or trauma experienced by the parent emerges at times as an alteration of normal consciousness, resulting in behaviours that can be either frightening to the child, or that indicate that the parent is frightened. As the attachment figure is also normally the source of comfort for the child during times of heightened arousal, the parent becomes at the same time the source of fear and the source of regulation of that fear. It is within this double bind system that the child is not able to form an organised attachment strategy. These frightening or frightened behaviours (termed FR behaviours) form the basis of a coding system to identify such relational processes (Main & Hesse, 1992).

Studies have consistently shown that maternal FR behaviours are predictive of infant disorganization (Schuengel, Bakermans-Kranenburg, van IJzendoorn, & Blom, 1999; True, et al., 2001), particularly the dissociative and threatening subscales (Abrams, Rifkin, & Hesse, 2006). In one study, True et al. (2001) measured both FR behaviour and maternal sensitivity on Ainsworth's rating scale. They found no significant association between these two aspects of maternal behaviour, indicating the independence of these measures. In

addition, FR behaviour was a better predictor than maternal sensitivity of infant attachment classification, although the contribution of both measures to explain the variance was very small.

The Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Bronfman, Parsons, & Lyons-Ruth, 1999) is theoretically and functionally related to Main & Hesse's FR coding system. However, the work of Lyons-Ruth and colleagues builds on from the idea of frightened/frightening maternal behaviours and posits that there is a broader range of behavioural correlates that can also link with infant disorganization. The AMBIANCE includes all of the FR behaviours on the Main and Hesse coding system as well as additional behaviours relating to two further hypotheses about the precedents of disorganization (Lyons-Ruth, 2002; Lyons-Ruth & Jacobovitz, 1999). Firstly, it is proposed that parents may display contradictory or competing caregiving strategies, in the same way that the disorganized behaviours of the infant are often contradictory in nature. These behaviours are termed affective communication errors and can be seen as incongruent physical and verbal behaviours, missed cues, or inappropriate responses to infant cues. Secondly, they posited that it is not only overtly frightening behaviours that are of importance, but also the parent's overall ability to regulate infant arousal under stressful conditions, the breakdown of which can be seen as a "failure to repair" for the infant. Thus, parental withdrawal or role-reversing behaviours would also serve to inhibit the parent from being able to adequately regulate and respond to the infant's fearful arousal and attachment behaviours. The AMBIANCE has, like the FR scale, been shown in several studies to be significantly related to disorganized attachment in infants and could be significantly predicted by maternal unresolved classifications of attachment (Goldberg, Benoit, Blokland, & Madigan, 2003; Grienberger, Kelly & Slade, 2005; Lyons-Ruth & Jacobovitz, 1999; Madigan, Moran, & Pederson, 2006).

It appears that the two streams of research into the behavioural aspects of parent-infant interactions can contribute a great deal to our understanding and assessment of the

relationship: (1) positive maternal behaviours (falling within the sensitivity domain) which facilitate secure attachments, and (2) breakdowns in the caregiver-child interactions which are indicative of potential disorganized attachment and high levels of risk.

The question is why it is not sensitivity but the particular behaviours outlined above that are considered causative of disorganized attachment. Even though sensitivity does not predict attachment disorganization, paradoxically, sensitivity-based interventions have been shown to reduce attachment disorganization (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2005). In this meta-analysis, the authors also tested whether interventions that reported improvements in sensitivity were more effective at reducing attachment disorganization, but found no significant contrast. So it seems that using sensitivity-based therapeutic approaches rather than yielding measured improvements in maternal sensitivity are linked with moving children from disorganized to an organized attachment strategy. None of the interventions included in this analysis focused on influencing parents' frightened or frightening behaviour toward their children. Taken together, these findings might suggest that the behaviours detected by the FR and AMBIANCE coding systems may be correlates rather than causes of a traumatogenic environment. One way of interpreting this pattern of findings is that the FR/AMBIANCE-type behaviours may be indicators of the temporal variability of sensitivity. It is possible that it is difficult to pick up sensitivity variability within the relationship during relatively brief laboratory observations. It is also possible that the behaviours that emerge and that are coded in AMBIANCE and FR are indicators, or correlates, of that kind of variability. For example, a moment of "dissociation" (frightened behaviour) may not be traumatogenic in itself, but indicates that that caregiver may be capable of behaving differently at other times. It signals that in circumstances other than during laboratory observations, she might break off completely from the infant. Similarly, the failure to repair, as is coded on the withdrawing component of the AMBIANCE, may be particularly significant in caregiver-infant couples where the requirement for repairing is quite common because of maternal insensitivity. Whilst it has become common-place to argue that disorganized attachment is independent of sensitivity,

it might be that these are only independent during laboratory observations. Still lacking in the disorganised attachment literature are extensive periods of naturalistic observation, as Ainsworth originally carried out when developing the concept of sensitivity. We are possibly idealising of our laboratory observations because of the convenience for research and the evident inconvenience of naturalistic studies. But we should be careful not to reify the results of laboratory observations.

I will now turn to the second major framework from which we can assess the quality of the parent-child relationship.

1.4. Parental Representations and Relational Risk

Parental mental representations- also thought of as “internal working models”- have been highlighted as an important feature of the parent-infant relationship for many decades. These mental representations can be seen in a number of important facets relevant to the early parent-infant relationship, for example the mother’s view of the baby, of herself as a mother, and of their relationships with other significant attachment figures in her past and present.

1.4.1. ADULT ATTACHMENT REPRESENTATIONS

1.4.1.1. The Adult Attachment Interview

Many of the first detailed studies of the nature and content of maternal representations have focused on parents’ attachment experiences with their own caregiver/s. The Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) is a semi-structured interview aimed at assessing an adult’s current state of mind with regard to their childhood relationship with their caregiver/s. The interview requires adults to provide attachment-

related memories from their early childhood and to evaluate these from their current perspective. The original AAI coding system developed by Mary Main and colleagues (Main & Goldwyn, 1993) is based on the quality and coherence of the discourse and the way in which memories are described and reflected upon, rather than the content of the narratives per se. This is important to our understanding of relational trauma as it is not an individual's actual experiences in the family of origin which determine his or her parenting ability (e.g. whether or not there was abuse) but the quality of thinking about such experiences (e.g. having come to terms with the abuse).

The AAI classifies individuals into three major adult attachment categories which parallel the infant classifications (denoted in parentheses): autonomous (secure), characterized by a coherent narrative; dismissing (insecure-avoidant), characterized by sparse narratives, sometimes explicitly denigrating of attachment; or preoccupied (insecure-ambivalent), characterized by angry and blaming descriptions of the relationships. More relevant to the current discussion, individuals may also have an additional classification of *unresolved/disorganised* in relation to loss or trauma. In describing such experiences, these individuals show lapses in monitoring of reasoning and discourse, demonstrating a lack of resolution to such traumas. This adult classification can be seen as the parallel to the infant disorganised category. Hesse and Main (Hesse & Main, 2006) have proposed that individuals who have unresolved experiences of loss or trauma (such as abuse) may become overwhelmed by thinking about the trauma itself or by fragmented memories of the experience. This results in a sudden shift or alteration in the quality of the discourse when such frightening and/or overwhelming feelings are elicited. These slippages are usually brief and isolated, generally occurring in the presence of an otherwise organised interview (Hesse & Main, 1999). It is exactly these altered states of consciousness which are thought to drive the FR behaviours described above (Main & Hesse, 1990, 1992). In the case of the AAI, it is the memories of past trauma or loss which activates these altered states of consciousness. In coding for FR behaviours, it is the child's attachment signals which activate these feelings in the parent and the consequent behaviours. Studies have shown that there is a clear association between

mothers' unresolved attachment status on the AAI and FR behaviour towards their infants (Abrams, et al., 2006; Jacobvitz, Leon, & Hazen, 2006; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999).

A meta-analysis of more than 200 studies that used the AAI on a total of more than 10,000 individuals has been carried out (Bakermans-Kranenburg & van IJzendoorn, 2009). This study has confirmed the validity of the AAI, showing that it renders classifications that are largely independent of gender, language, and country of origin, and that it is able to discriminate between different clinical groups. Notwithstanding the very different measurement approaches in the AAI and the Strange Situation, studies have demonstrated a remarkable continuity between early attachment classification using the Strange Situation Procedure and classification of attachment in young adulthood using the AAI. In the absence of major life events, secure attachment behaviour observed in infancy translates to coherent adult verbal responses in as many as 80% of cases (Hamilton, 2000; Sroufe, 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield, Whaley, & Egeland, 2004). Thus, the AAI can retrospectively provide a measure of the quality of attachment relationships an adult is likely to have experienced in childhood.

The development of the AAI has led researchers to investigate the link between parental attachment status on the AAI and parental behavioural sensitivity towards infants. A large number of studies have found an association between autonomous AAI classifications and optimal parental behaviours. Specifically, mothers classified as autonomous have been found to be more responsive, sensitive, warm, attuned, perceptive, and willing to provide help and support to their infants and toddlers than non-autonomous parents (Adam, Gunnar, & Tanakar, 2004; Crowell & Feldman, 1988; DeOliveira, Moran, & Pederson, 2005; Grossman, Fremmer-Bombik, Rudolph, & Grossman, 1988; Macfie, McElwain, Houts, & Cox, 2005; Ward & Carlson, 1995). Some advances have been made in our understanding of the parenting environment in relation to both adult and child attachment. It has been shown that parental secure-autonomous attachment representations and subsequent

sensitive and responsive behaviour towards the child is important for the child's development of a secure attachment. Conversely, insecure and particularly unresolved attachment representations, in conjunction with insensitive and/or frightened, frightening, dissociated, withdrawn, or role reversed behaviour, are likely to lead to less optimal and possibly disorganized attachments in the child. Despite these theoretical advances, the transmission gap cannot be fully explained in terms of observed parental behaviour and adult attachment representations.

A meta-analysis found that unresolved loss or trauma was related to child disorganized attachment with an effect size of 0.65 ($r = .31$) (van IJzendoorn, et al., 1999). Although this effect size is significant, there were still 47% of disorganized infants whose mothers were not classified as unresolved. One possible reason for the mismatch between some adult and child dyads is that the adult participant needs to disclose an experience of loss or abuse in their past in order for them to be classified as unresolved. This has been criticized as being too narrow a window for capturing the full extent of a parent's attachment-related state of mind. In addition, it does not provide an explanation of how a child classified as disorganized could later on be classified as unresolved on the AAI if they do not directly experience a traumatic event or loss. This has been termed the "transmission block" (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005; Lyons-Ruth, Melnick, Atwood, & Yellin, 2003). Hughes and colleagues (Hughes, Turton, Mcgauley, & Fonagy, 2006) prospectively followed mothers who had experienced a traumatic loss (miscarriage of a baby) through pregnancy and the first years of the child's life. This study confirmed the association between unresolved status in relation to the miscarriage or other trauma and disorganization of the infant. However, they also reported indications of factors that moderated the impact of disorganization. Specifically, they found that unresolved mothers whose children were not classified as disorganized reported significantly higher levels of depression and of intrusive thoughts during pregnancy, and showed higher levels of intrusive thoughts when the infant was one year old than unresolved mothers of disorganized infants. An explanation provided by the authors for this somewhat surprising finding is maternal

depression and suffering of painful and unwanted intrusive thoughts may protect the mother from the dissociated state of mind that leads to infant disorganization.

1.4.1.2. Hostile/ Helpless States of Mind

Lyons-Ruth and colleagues (Atwood, 1995; Lyons-Ruth, et al., 2005; Lyons-Ruth, Melnick, et al., 2003) have developed a different approach to coding the AAI to identify “*Hostile-Helpless*” (H/H) states of mind. This coding system is particularly interesting in thinking about relational trauma as it was informed by descriptions of defensive processes seen in clinical populations with chronic trauma and it “makes more explicit the connections between features of AAI discourse and clinical presentations secondary to relational trauma.” (Lyons-Ruth, et al., 2005; p.7). In response to the argument described above that parents of disorganized children may not be classified as unresolved in relation to a particular loss or abuse, this rating system is applied to the whole interview, regardless of whether or not the interviewee discloses loss or trauma. It focuses on the extreme forms of segregated mental systems that have been noted in the trauma and psychopathology literature as “dissociation” and “splitting.” The hostile subtype is characterized by descriptions of at least one attachment figures in globally negative terms. In many cases the interviewee appears to have identified with the devalued attachment figure. These narratives also reveal tendencies to block out feelings of vulnerability through the use of dark humour. The Helpless subtype is characterized by pervasive feelings of helplessness and fearfulness. In these descriptions, interviewees may also appear to have identified with a victimized attachment figure. The hostile and helpless states of mind can each be seen in their pure form, but this is not expected as they are considered to be related features of the same H/H internal working model of relationships. For this reason, the interviews are given an overall scaled score for H/H state of mind, on a nine-point rating scale. In addition, six individual frequency codes are used to inform the qualitative rating and classification: *global devaluation of a caregiver, identification with a hostile caregiver, recurrent references to fearful affect, sense of self as bad, laughter at pain, and ruptured attachments.*

The H/H coding system has been shown to be able to distinguish between dysthymic and borderline patients (Lyons-Ruth, Melnick, Patrick, & Hobson, 2007; Melnick & Patrick, 2003). It has also been shown to be independent from the Main and Goldwyn (1998) classifications, including the unresolved category (Lyons-Ruth, et al., 2005). In this study, the H/H states of mind accounted for more variance in infant disorganization than unresolved states of mind. Further, H/H states of mind were significantly related to disrupted maternal behaviour towards the infant measured on the AMBIANCE. A mediational analysis demonstrated that maternal disrupted behaviour partially mediated the link between H/H states of mind and infant attachment, although due to the small sample size this study needs replication. Another study reported that H/H states of mind are related to the severity of childhood trauma (Lyons-Ruth, Yellin, Melnick, & Atwood, 2003), indicating the utility of such a measure in understanding the impact of relational trauma.

The strength of this approach is undoubtedly in linking a particular pattern of representing past attachment relationships to behavioural indicators of parent-infant interaction, as seen in the AMBIANCE scale. Lyons-Ruth and colleagues offer a compelling theory of attachment disorganization in terms of a hostile or helpless stance inducing particularly maladaptive sets of thoughts and feelings in relation to child-rearing, which may in turn trigger the indicator behaviours discussed above. The pattern of derogation and identification with the aggressor places the mother in a paradoxical role in relation to child-rearing. In devaluing a caregiver, she devalues herself as caregiver. In identifying with a hostile carer, she latches her own sense of self-worth to that of a person who did not hold her in high regard. Both these scenarios leave her feeling worthless, specifically in her role as a caregiver and possibly in relation to a particular child. The H/H measure is particularly helpful in linking disorganized attachment in the infant to the mother's trauma history. It makes sense that those with high H/H scores should necessarily also be coded as unresolved on the AAI. It is less obvious, however, why those who are unresolved do not necessarily score higher on the H/H. It is possible but unparsimonious to assume two independent pathways from traumatized parent to disorganized attachment in the child, all

the more so because the pathway (FR/ AMBIANCE) and the end-point in infancy (disorganised attachment) may be the same.

1.4.2. PARENT-CHILD ATTACHMENT REPRESENTATIONS

A major shortcoming of the AAI as a predictor of infant attachment is that the same mother can have a disorganised relationship with one child but not another. In fact, there is also evidence that monozygotic and dizygotic twins can have different attachment classifications with the same mother (Bokhorst, et al., 2003; Fearon et al., 2006). These findings indicate that there is a relationship-specific effect in the development of disorganised attachment. Taken together, it is clear that parents' current state of mind with respect to attachment during their own childhood provides a significant but not complete picture of the risk in their current relationship with a child. While the AAI is able to highlight increased potential risk within a current parent-child relationship, it does not speak to the mechanism that can cause twins to have disparate attachment classifications.

Recently, researchers have moved on to develop methods for the assessment of parents' representations of their current relationship with a particular child. This shift from adult attachment to parent-child relationships enables more direct investigations into the nature and effects of parental representations in a current and developing relationship. What we expect to complete the transmission gap and link infant attachment, behavioural observations of parents, and the parent's narrative about their own childhood, is the working model that the parent uses in relation to the particular child.

1.4.2.1. Interviews tapping parental representations

A number of semi-structured interviews designed to capture maternal representations in relation to a specific parent-child relationship have been developed. The *Parent Attachment Interview* (PAI; Bretherton, Biringen, Ridgeway, Maslin, & Sherman, 1989), the *Working Model of the Child Interview* (WMCI; Zeanah & Benoit, 1995; Zeanah, Benoit, & Barton, 1986) and the *Parent Development Interview* (PDI; PDI-R; Aber, Slade, Berger, Bresgi, & Kaplan, 1985; Slade, Aber, Bresgi, Berger, & Kaplan, 2004) all tap into parents' autobiographical narratives about their child and relationship with him or her. For

example, the PDI provides insight into the parents' understanding of their child's behaviour, thoughts, and feelings, and asks them to provide concrete examples of charged interpersonal moments. This allows for a thorough examination of the parent's understanding of her child's and her own internal experiences at times of heightened affective arousal. The interview also taps into both the parent's and child's general affective states in relation to their relationship, for example "What gives you the most joy in being a parent?" and "Does your child ever feel rejected?" As with the WMCI, the PDI aims to assess internal working models of attachment in relation to a particular child. Hence, both of these interviews have some overlap with questions on the AAI, for example by asking interviewees to choose five adjectives to describe the relationship. The PDI also includes some AAI-type questions which ask about the parent's own childhood experiences of being parented, but goes on to ask directly how these have affected their current relationship with their child.

A slightly different approach to the assessment of parental representations have been used by Oppenheim and Koren-Karie (Oppenheim & Koren-Karie, 2002; Oppenheim, Koren-Karie, & Sagi, 2001). During this assessment, mothers view video segments of their interactions with their children and are subsequently interviewed regarding their children's and their own thoughts and feelings during the segments. This method allows for the moment-to-moment representational experiences and perceptions of the relationship to be examined. This, however, comes at the expense of understanding more generalized working models about the relationship which may not be elicited in a single observation of an interactional sequence.

1.4.2.2. Coding of parent-child relationship representations

Maternal representations on the PAI have been coded on the Sensitivity/Insight Scale (Biringen & Bretherton, 1988). This coding system was developed on the basis of attachment theory, and assesses the mother's overall sensitivity and on a global 9-point

scale. Maternal representational Sensitivity/Insight has been found to be related to infant attachment security in a normative sample (Bretherton, et al., 1989). However, a more recent study found no association between Sensitivity/Insight measured when infants were 39 months old and observed maternal behavioural sensitivity on the Emotional Availability Scales measured when the infants were 18, 24 and 39 months old (Biringen, Matheny, Bretherton, Renouf, & Sherman, 2000).

The PDI has been adapted for use in multiple contexts and coded in several different ways for affective and behavioural perceptions (Aber, Belsky, Slade, & Crnic, 1999; Slade, Belsky, Aber, & Phelps, 1999). However, the authors now advocate the coding of the PDI for parental reflective functioning (see below) as the preferred method of analysis.

Several parent-child representational coding systems yield classifications that parallel the infant attachment classifications in the Strange Situation and adult attachment classifications on the AAI. The WMCI interviews are rated on a number of rating scales relating to the quality of descriptions and affective tone. The narratives are assigned to one of three categories based on these ratings. *Balanced* representations are characterized by maternal emotional warmth, acceptance and sensitivity in response to infant needs. *Disengaged* representations are characterized by the caregiver's emotional distance from the infant. These parents' descriptions tend to minimise the affective components of their relationship with their infant. *Distorted* representations are characterized by descriptions of the infant or relationship which appear incoherent, confused, contradictory, or bizarre. The distortions may be seen as inconsistencies in the narratives. Parents in this category may seem confused and overwhelmed by their infants' needs. There may be descriptions of the infant or relationship which appear role reversed.

Studies have shown significant stability in mothers' WMCI classifications from pregnancy to 12 months postpartum (Benoit, Parker, & Zeanah, 1997; Huth-Bocks, Levendosky, Bogat, & von Eye, 2004). WMCI classifications have been found to distinguish infant

clinical status (Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997); mothers of infants with clinical problems had representations of their infants that were significantly more likely to be classified as distorted or disengaged. In addition, the severity of maternal PTSD has been shown to be significantly associated with non-balanced mental representations within a traumatized sample (Schechter et al., 2005). Studies have shown significant concurrent and predictive concordance between WMCI and infant attachment classifications (Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994; Benoit, Parker, et al., 1997). Specifically, balanced mothers were more likely to have secure infants, disengaged mothers were more likely to have avoidant infants and distorted mothers were more likely to have resistant infants. None of the categories of the WMCI correspond specifically to the disorganized-disoriented category of the Strange Situation Paradigm or to the unresolved category of the AAI. One study reported no associations between infant disorganized attachment and any of the WMCI classifications (Cox, Hopkins, & Hans, 2000).

An adapted version of the PDI used by George and Solomon, the Caregiving Interview, has been developed with an associated coding system (George & Solomon, 2008b). The system draws heavily upon Bowlby's (1969) behavioural systems approach to attachment and particularly on caregiver defensive processes in relation to attachment representations. The scale involves rating the interviews on four defensive processes scales, each one being a 7-point scale. Caregivers are also classified into one of the defensive processing categories, based on the ratings of each scale and the category which is rated the highest. These categories parallel the infant attachment classifications (in parentheses): *flexible integration* (secure), *deactivation* (insecure-avoidant), *cognitive disconnection* (insecure-ambivalent), and *segregated systems* (disorganized). The scales are derived from theory and research and comprise the main defensive positions associated with caregiving and attachment. The first three of these scales match theoretically with the WMCI classifications. The fourth category, *segregated systems*, is interesting as it is one of the few operationalizations of the specific sorts of representations associated with trauma and high levels of relational risk.

The *segregated systems* scale was originally termed the “helplessness scale” (George & Solomon, 1996, 1999), but this has since been extended. It is derived from the representational model of the same name proposed by Bowlby (1980) and it refers to an extreme and brittle defensive stance. It is linked with what Solomon and George have described as “assaults to the attachment system” (Solomon & George, 1999), such as loss, separation, maltreatment, or threats of these. These thoughts and feelings are organised into a self-contained system which is completely segregated from consciousness. Situations which activate the caregiving system can potentially unlock memories and experiences from the parent's segregated caregiving representation or her segregated attachment system. When individuals are not able to regulate or deactivate these memories and feelings, the parent becomes helpless and out of control. This quality of segregated systems is called flooding. The representations of mothers who are rated as “flooded” often talk about their relationship as being out of control. These mothers may describe power struggles between themselves and their child, and there may be an element of helplessness in their caregiving role with the child. The content of their narratives may contain elements of frightening situations or descriptions of fear in themselves and/ or their child. The quality of narrative is flooded and the emotions are seen to be overwhelming. Mothers may also demonstrate a complete abdication from their caregiving role (George & Solomon, 2008a).

The second subtype of the segregated system is called constriction. This is seen as a tight blocking off so that caregiving experience and affect do not enter conscious awareness. In these cases, the individual becomes constricted and frozen. Narratives coded on the “constricted” domain may demonstrate role reversal between parent and child, or may be “merged” so that there is difficulty in seeing the child and parent as separate. The relationship may be glorified to an extreme degree, and the child may be described as having special or amazing talents, or as having a great deal of power. There may be signs that the mother becomes completely constricted or even dissociated during the interview. As the exclusionary processes associated with segregated systems are fragile and at risk of breaking down, constriction often gives way to flooding so that both forms of segregated

systems processing may be seen operating together. There are many elements of the Segregated Systems that appear to overlap with the Hostile/Helpless coding system for the AAI (see above).

Research by the authors of the coding system has confirmed their hypotheses regarding the relation between the mother's caregiving system and child attachment. Ratings of mothers' representations on the caregiving interview have been found to be positively correlated with concurrent child security in infancy and at 6 years of age (George & Solomon, 1989, 1996; Solomon & George, 1999). They have also found theoretically meaningful associations between caregiver representation ratings with mothers' interactions with the child at age 6, including support of the child's competence and academic achievement, self-regulation and maternal anxiety (George & Solomon, 1989). The authors have also shown that mothers' helplessness (segregated systems) on the caregiving interview predicts concurrent child disorganization at age six (George & Solomon, 2008a; Solomon & George, 2006).

1.4.3. PARENTAL REFLECTIVE FUNCTIONING

Three programmes of work by Elizabeth Meins, David Oppenheim and Arietta Slade have attempted to link the parent's attachment history to parent-child interaction via the parent's capacity to represent the child accurately as an intentional being (Grienenberger, Kelly, & Slade, 2005; Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002; Meins & Fernyhough, 1999; Meins, Fernyhough, Fradley, & Tuckey, 2001; Meins et al., 2003; Meins et al., 2002; Oppenheim, Goldsmith, & Koren-Karie, 2004; Oppenheim & Koren-Karie, 2002; Oppenheim, et al., 2001; Slade, 2005; Slade, Bernbach, Grienenberger, Levy, & Locker, 2004; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005). Although there are slight differences in the language these researchers have used, "mind-mindedness" (MMM; Meins, 1997), "insightfulness" (Oppenheim & Koren-Karie, 2002), and "mentalisation" or "reflective function" (RF; Slade, 2005) all refer to the caregiver's capacity to hold the child's mind in mind. A recent review (Sharp & Fonagy, 2008) outlines

the different constructs and operationalizations of parental mentalising and they argue that these apparently diverse constructs may tap into the same underlying neurobiological socio-cognitive system.

A recent study by Trapolini, Ungerer and McMahon (2008) examined the role of the various features of maternal representations in the association between chronic depression and behavioural sensitivity. Interestingly, the only representational variable that was associated with both depression and sensitivity was the mother's ability to take the child's perspective. Perspective-taking was also found to mediate and moderate the association between depression and sensitivity. These findings lend new support to the importance of the related concepts of reflective functioning, maternal insightfulness, and mind-mindedness.

Elizabeth Meins has shown that the caregiver's reflection of the child's behaviour, both offline (viewing a video) and online (during free play) predicted attachment security, theory of mind and stream of consciousness performance years after the original observations (Meins & Fernyhough, 1999; Meins, et al., 2001; Meins, et al., 2003; Meins, et al., 2002). These findings suggest that the reflectiveness of the caregiver's narrative may be a stable indicator of maternal attitudes which enhance the development of the child's sense of psychological mindedness. In Oppenheim's work, an offline measure relating to playful interaction is coded and the extent of insight into the child's mind, as assessed by independent judges, was found to be more predictive of infant attachment than global sensitivity (Koren-Karie, et al., 2002). Across these two studies, both offline and online maternal mentalising capacity gives the researcher a handle on the child's unfolding development and behaviour.

A programme of work undertaken by Arietta Slade and her colleagues at City University in New York has successfully linked parental attachment history, parenting behaviour, and the caregiver's focus on the child as an intentional being. They take an autobiographical

memory rather than a behavioural sampling approach by asking parents to reflect on their experience with a particular child in the PDI. The narratives are coded on an adaptation of the Reflective Functioning coding system which was originally developed by Fonagy, Steele, Steele, & Target (1997) for use on the AAI (Slade, Bernbach, et al., 2004). They report a strong association between infant attachment and the quality of the parent's reflective functioning (Grienberger, Kelly, & Slade, 2005; Slade, et al., 2005). In this measure, the parent invariably reports a range of interaction experiences and the measure of mentalising emerges as an aggregate across multiple interaction episodes. High scores on this measure indicate a greater degree of awareness of the characteristic mental function of the infant as well as a better grasp of the sophisticated interplay between the mother's own mental states and their image of the child's subjective experience. A recent study examined the link between maternal reflective functioning , maternal mind-minded comments made during interactions, and maternal behaviour (Rosenblum, McDonough, Sameroff, & Muzik, 2008). Although RF and maternal mind-minded comments were related, it was RF that was more predictive of maternal behaviour, over and above the effect of mind-minded comments. This perhaps indicates that a broad autobiographical interview approach is a better predictor of the quality of relationship.

Notably, parental mentalisation has been found to identify infant disorganization using the reflective functioning measure (Grienberger, et al., 2005; Slade, et al., 2005). Parents of infants with disorganized attachment scored a standard deviation below those whose infants were securely attached. Further, they were able to show that those with high AMBIANCE scores (less optimal parental behaviour) had lower reflective function and that this statistically accounted for the difference in RF between disorganized and organized infant attachment groups. We might argue that the AMBIANCE measures the mother's responsiveness to the intentions that the infant's communication conveys. Atypical behaviours may occur when the mother experiences gross failures in grasping the infant's intentionality. It is these episodes that are particularly traumatogenic for the infant. The mothers' narratives highlight the limited appreciation that she has for the mind of that

particular infant and, in extreme cases, depict the infant as having no thoughts, feelings or wishes.

1.5. Linking Parental Behaviour and Representations

In this review of the methods for understanding risk and potentially traumatogenic features of the parent infant relationship, several pertinent behavioural and representational correlates stand out. If we use infant attachment disorganization as an indicator of potential threat to the quality of relationship, we can draw out those features of parental behaviour and representation that have been shown to relate to these relationships. The frightened/frightening behaviours of the FR scale, as well as the additional withdrawing, role reversed and disrupted affective communications outlined by the AMBIANCE appear to be especially pertinent. However, more intensive and lengthy home observations may very well reinforce Ainsworth's early claims that maternal sensitivity plays a vital protective function in the relationship, and may be limited in disorganized relationships which tend to be variable and unpredictable. Research into the intergenerational transmission of attachment difficulties has resulted in interesting methodological tools and theoretical developments for understanding relational trauma. The work of Main and Hesse and Lyons-Ruth and her colleagues have linked parental working models about their own childhood attachment relationships with both parental behaviour and next generation attachment. Momentary lapses in discourse or reasoning when talking about loss or trauma, hostile and denigrating descriptions of caregivers, and talking of states of helplessness and vulnerability are some of the themes from this area of work. These have also been shown to relate to the maternal behaviours described above, and both modalities may be linked with dissociative states and identification with hostile caregivers. Some interesting new developments, such as George and Solomon's description of the segregated systems in the caregiver attachment representation have translated many of these themes from the adult attachment literature to understanding particular parent-child relationships. Once again, the themes of hostility, helplessness, dissociative processes and role-reversal dominate this work. A final and slightly more distinct stream of work has looked into parental mentalising capacities, and has examined how breakdowns in this core function can

impinge on the parent-child relationship. I will now examine the behavioural indices of risk in light of this theory of the parental reflective function.

It is likely that the same control mechanism is responsible for the inhibitory regulation of certain aspects of maternal behaviour with the infant as those manifested in the mother's organization in her narrative about the infant. It might be argued that a common brain mechanism subserves both tasks. For example, the paracingulate cortex might provide input for the organization of both social interactions and person-centred autobiographical narratives (Frith & Wolpert, 2004; Gallagher et al., 2000; Gallagher, Jack, Roepstorff, & Frith, 2002; Grezes, Frith, & Passingham, 2004; Spreng, Mar, & Kim, 2009; Walter et al., 2004). Alternatively, a recent neuroimaging study (Strathearn, et al., 2009) has demonstrated the insula of insecurely attached mothers is more strongly activated in observing negative affect on their infants' face than mothers secure in their attachment, who showed more prefrontal activation. The insula is a part of the brain which has in other studies been linked not just with the experience of negative affect, but also autobiographical memory (Fink et al., 1996; Montague & Lohrenz, 2007). These patterns of findings are consistent with the suggestion that insecure mothers with low RF are more likely to resonate with negative affect in their infants, which retrieves memories of negatively charged emotions from their own history. By contrast, the prefrontal activation of secure mothers suggests that they may be able to reflect on their child's negative affect and actively explore the potential causes of the child's unhappy reaction. This stance of open, respectful inquiring may involve the mother's awareness of her own mental state in her understanding of her infant, but stops short of the point where her immersion in her own history might obscure a genuine awareness of her child as an independent being. The insecure mothers may tend to actually feel rather than think about the child's negative emotional state. The awareness of the infant's subjectivity may serve to reduce the frequency of behaviours that might undermine the infants' natural progression towards evolving a sense of him- or herself as an independent mental entity. Secure mother-infant attachment may be an indicator of a parental state of mind towards the child that could have

a facilitative developmental effect. Secure attachment evidences the absence of parental behaviours that might have undermined the normal emergence of the infant's sense of self. Severe neglect or the presence of behaviours that suggest the absence of a parent thinking about a child undermines the coherence of the child's self-development.

In summary, the body of work presented in this review has highlighted the key behavioural and representational correlates of problematic parent-infant relationships. Although there are a number of existing measures for assessing the quality of relationship between babies and their parents, research that examines the overlap between these different measures and the effects of sociodemographic and psychiatric risk factors is still sparse. The following series of studies aims to address this gap by looking at various measures of parental representations and behaviours in samples of varying risk.

CHAPTER 2: PARENT-REPORTS OF INFANT SOCIAL AND EMOTIONAL FUNCTIONING IN HIGH-RISK POPULATIONS

2.1. Introduction

This study examines the validity of parent-reported infant social-emotional functioning in a clinical population. Infant functioning is widely considered to be embedded within and dependent upon the quality of the parent-infant relationship (Maldonado-Durán et al., 2003; Winnicott, 1960). The identification of early disturbances in infant social and emotional development should therefore provide a useful indicator of the quality of relationship the baby has with his or her primary caregivers. As parent-report questionnaires are far less resource-intensive than the behavioural and representational measures of parent-infant relational functioning reviewed in the previous chapter, they may provide an excellent alternative method of assessing the quality of early relationships.

2.1.1. INFANT SOCIAL-EMOTIONAL FUNCTIONING

Social and emotional development in early infancy is widely recognised as crucial for all aspects of functioning throughout the lifespan (Sroufe, 1996). This insight has highlighted the need for methods of detecting potential problems or disruptions in infant social and emotional functioning from an early age. One relatively recent measure, the Ages and Stages: Social-Emotional (ASQ:SE; Squires, Bricker, Heo & Twombly, 2003), is a brief parent-report questionnaire designed to identify young children and infants in need of further evaluation for social and emotional problems. The current study examines this instrument in comparison to observer ratings of parent and infant social and emotional interactive behaviour in a sample of clinically referred mothers and their infants.

Social and emotional development begins and evolves within the infant's primary caregiving relationships. The infant's ability to relate to and understand the social world develops within the close and continuous interactions between parent and infant. The child will ultimately learn the skills of self-regulation through the caregiver's ability to regulate their affective states and levels of arousal from a very early age (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004; Sroufe, 1996). This has essential repercussions on the developing child's ability to regulate his or her behaviour (Sorce, Emde, Campos, & Klinnert, 1985) and affective states (Gergely & Watson, 1996). Furthermore, infant brain development is experience-dependent and the very early caregiving relationship has a direct impact on brain organisation, particularly the emotion processing limbic system (Greenough, Black, & Wallace, 1987; Schore, 2001b).

Several factors can have a deleterious effect on early infant social and emotional development. Social risk factors include infant prematurity or illness, genetic risk factors, living in inadequate or inappropriately stimulating environments, and early disruptions in the parent-child relationship and the adequacy of parental care (Mayes & Lewis, 2012; Repetti, Taylor, & Seeman, 2002). Parental mental illness also poses a risk for infant attachment and social and emotional development (Field, Diego, & Hernandez-Reif, 2006; Grace & Sansom, 2003; Martins & Gaffan, 2000; Murray & Cooper, 2003; Murray, et al., 1996; Teti, Gelfand, & Isabella, 1995). Research has shown that children with depressed mothers are more likely to have significant intellectual deficits at 4 years of age, but only when maternal depression occurred in the first year of the child's life (Cogill, Caplan, Alexandra, Robson, & Kumar, 1986). These findings highlight the importance of very early experiences and the need to, where possible, detect risk and intervene at the earliest time possible (Fonagy, 1998). Field and colleagues (1988) demonstrated the complex interaction between depressed mothers and their babies. These infants' "depressed style of interacting generalized from interactions with their mothers to those of non-depressed adults" (p.1575).

This finding underlines the importance of understanding the infant's social and emotional functioning within an interactive context.

Disruptions in infant social and emotional functioning can occur from very early on and the early identification of these problems is crucial for enabling effective intervention to be provided (Briggs-Gowan, et al., 2004; Glascoe, 1997, 2000; Squires, Bricker, Heo, & Twombly, 2001).

2.1.2. PARENT-REPORT QUESTIONNAIRES FOR THE ASSESSMENT OF INFANT SOCIAL-EMOTIONAL FUNCTIONING

Many authors recommend the use of parent-reports as a cost-effective and accurate method of screening and assessing infant functioning (Briggs-Gowan, et al., 2004; Glascoe, 2000; Glascoe & Dworkin, 1995; Knobloch, Stevens, Malone, Ellison, & Risemberg, 1979; Squires, et al., 2001). Until recently, there have been few brief, simple and user-friendly methods for assessing infant social and emotional functioning. One of the first instruments was the Infant-Toddler Social Emotional Assessment (ITSEA; (Carter, Briggs-Gowan, Jones, & Little, 2003). It is a comprehensive 169 item adult-report questionnaire that taps into four broad domains of functioning and three indices of rare but clinically significant behaviours. It has acceptable internal consistency and test-retest reliability and concurrent validity with other well established parent-report checklists (Briggs-Gowan & Carter, 1998; Briggs-Gowan, Carter, Skuban, & Horwitz, 2001; Carter, et al., 2003; Carter, Little, Briggs-Gowan, & Kogan, 1999).

One study has compared parents' responses on the ITSEA with laboratory observations of 12-month old infants' behaviour (Carter, et al., 1999). The researchers found some small to moderate correlations between some ITSEA subscales and laboratory-observed ratings of infant behaviour and attachment classifications. In addition, they found that self-reported maternal depression positively correlated with some signs of infant dysfunction on the ITSEA. In contrast, none of their observer-rated measures of infant affect regulation,

coping and mastery correlated with maternal depression. However, this study was carried out with a very low-risk sample and the range and severity of maternal depression may have been too small to capture any real effects.

A shorter version of the ITSEA, called the Brief Infant Toddler Social and Emotional Assessment (BITSEA) is a screening instrument for identifying social-emotional/behavioural problems and delays in 12- to 36-month-olds (Briggs-Gowan & Carter, 2002). It has been shown to have acceptable psychometric properties (Briggs-Gowan, et al., 2004). The criterion measures used for assessing its validity included independent observer ratings of the child's behaviour at home. In a normative sample of mothers and babies, the researchers found significant correlations between parents' reports on the BITSEA and the observer ratings (between .22 and .36). Research is currently underway to assess the utility of the BITSEA in more high risk populations (Briggs-Gowan, et al., 2004).

A recent study has examined the validity of depressed mothers' ratings of infant behaviour (Lee, Hans, & Thullen, 2006). This study compared young depressed mothers' sensitive responsiveness to their newborn infants, as rated by trained observers, with infants' disruptive behaviour on the BITSEA at 12 months. Mothers with high levels of depression were rated as being less sensitive when interacting with their newborns. In addition, for these mothers, the level of sensitive responsiveness was related to their reports of infant social and emotional functioning on the BITSEA at 12 months. However, the same association was not found for mothers with low levels of depression. The authors conclude that either: 1) maternal unresponsiveness and maternal depression led to infant behaviours that are part of an early emerging trajectory of problem behaviour, or 2) mothers who are depressed and who provide insensitive responsiveness to their infants are also likely to perceive their baby's behaviour as problematic. These conclusions are in line with studies demonstrating the complex, mutually influential interactions between depressed mothers and their babies (Field, et al., 2006; Field et al., 1988; Tronick & Reck, 2009).

The current study investigated parent reports of infant social and emotional functioning with the Ages & Stages Questionnaires: Social- Emotional (ASQ:SE; Squires, Bricker, Heo, & Twombly, 2002). This questionnaire has been developed as a screening tool for children aged between 3 months and 5 years. It has been validated on clinical and non-clinical populations. It should be noted that criterion measures against which it was validated were also based on parents' reports of child functioning and not on observer ratings of child functioning. The ASQ:SE is a screening instrument and is currently recommended and being used for such purposes (Gilkerson & Kopel, 2005; Lyman, Njoroge, & Willis, 2007). However, it has also been used as an outcome measure for evaluation purposes in at least two early intervention initiatives in the US (Perry, 2005; Richardson & Graf, 2006).

2.1.3. PARENT-REPORT VERSUS OBSERVER RATINGS OF CHILD FUNCTIONING

There has been considerable criticism of the validity of parent-report instruments (Bates, 1980; Bates & Bayles, 1984; Sameroff, Seifer, & Elias, 1982; Seifer, Sameroff, Barrett, & Krafchuk, 1994; Vaughn, Taraldson, Crichton, & Egeland, 1981). For example, Sameroff and colleagues (1982) demonstrated that mothers' reports of infant temperament were related to the mothers' social status, level of anxiety and mental health status. Variables relating to the mother were more predictive of their ratings of infant temperament than independent observations of infant behaviour. This remained the case even after controlling for infant characteristics. They concluded that individual differences in mothers, rather than infant differences, may contribute to ratings of infant temperament. Similar results were found by Vaughn and colleagues (1981) in their study of parent reports on the Carey Infant Temperament Questionnaire. They found that mothers' psychological factors influence both their perceptions of infant temperament and their own behaviour in interactions with the baby. In contrast, these maternal factors were minimally related to infant behaviour, and infant behaviour was unrelated to maternal reports of infant temperament.

Maternal psychopathology, particularly depression and anxiety, has been reported to bias the validity of parental reports of child behaviour and/or functioning (Breslau, Davis, & Prabucki, 1988; Briggs-Gowan, Carter, & Schwab-Stone, 1996; Estroff et al., 1984). One study (T. Field, Morrow, & Adlestein, 1993) compared parent and observer ratings of the same videotaped interaction. Maternal depression affected mothers' ratings of the interactions between themselves and their infants. Mothers classified as "depressed" on the Beck Depression Inventory were more likely than non-depressed mothers to rate their infants' behaviours more negatively than independent observer ratings.

These reported biases in mother's perceptions of infant behaviour and temperament are important to understand as they do impact upon later infant development (Seifer, 2000). Maternal characteristics and attributions as measured prenatally influence their reports of infant temperament after the child is born (Mebert, 1989; Vaughn, Bradley, Joffe, & Braglow, 1987; Zeanah, Keener, Stewart, & Anders, 1985). One study (Pauli-Pott, Mertesacker, Bade, Haverkock, & Beckmann, 2003) demonstrated that parental perceptions of infant temperament based on questionnaire responses were predictive of observed infant temperament at later assessments, despite low concurrent correlations between the reported and observed ratings at each time point. Thus, parents' reports of difficulties in their infants' behaviour may be predictive of later problems and parental attributions of temperament may actually shape children's personality development.

On the other hand, some researchers have argued that more recent studies have shown some convergence between parent-report and observed measures of infant temperament, particularly as both methods of assessment have improved (Richters, 1992; Rothbart & Hwang, 2002). They point out that the brief observations of independent raters are not necessarily a good standard against which to measure the validity of parents' reports, which are based in a different context.

2.1.4. THE CURRENT STUDY

Apart from the few studies validating the ITSEA and BITSEA, there are still few studies using both parent-report and observed measures of infant social and emotional functioning. Also, these studies have been carried out with infants older than a year of age. There is little information about the comparability of parent-report and observer ratings of behaviour in very young infants. It is possible that the parents' perceptions of infant social and emotional functioning are subject to the same effect as has been found in other studies: that parental perceptions actually shape later infant behaviour (Pauli-Pott, et al., 2003). If this is the case, more research is needed to look at parents' reports when infants are still very young, i.e. less than one year of age.

In addition, studies validating parent-reports of infant social and emotional functioning have mostly been carried out in normative, low-risk samples. Given the reported effects of maternal psychopathology and socioeconomic status on the validity of parent reports (Sameroff, et al., 1982; Vaughn, et al., 1981), it is important that validity studies also be carried out in clinical and high risk populations.

The ASQ:SE is relatively new and the first easily administered instrument to screen for social and emotional problems in infants under a year of age. In the current climate which advocates early screening for all young babies, it is vital that we understand better what such cost-effective methods actually measure in high-risk populations. This study aims to enhance our understanding of the validity of parent-report questionnaires of infant functioning.

2.2. Methods

2.2.1. SAMPLE

The sample was recruited from the Mother-Infant Psychoanalysis Project in Stockholm (MIPPS) in which mother-infant dyads were randomized to mother-infant psychoanalysis or to treatment as usual at Child Health Care Centres (Salomonsson, 2010). Inclusion criteria were: 1) that the mother had expressed need for psychological help with her infant or for herself in her role as a mother, 2) the family was living in the Stockholm area, 3) the mother had sufficient mastery of Swedish to take part in psychotherapeutic treatment, and 4) the infant was under 18 months of age. Exclusion criteria were psychosis or the abuse of alcohol or drugs to an extent precluding cooperation.

The dyads were recruited from advertisements on parental sites on the internet (64%), from Child Health Care Centres cooperating with the MIPPS (24%) and from an information sheet at the delivery ward of the Karolinska University Hospital (12%). The mothers were invited to the project if they were experiencing difficulties with their babies or with themselves as mothers to an infant. Interviews took place October 2005 – January 2008.

Ninety mother-infant dyads met the inclusion criteria and chose to take part. After the interviews, four dyads dropped out of the study without completing the questionnaires. In 16 cases, the interaction videos were uncodeable because the child was asleep. This study reports results for the remaining 68 mothers and infants. The mothers' mean age was 33.0 years (SD 4.0) and the fathers' was 34.4 years (5.3). The mothers had a mean of 1.3 (0.6) children. The babies were aged between 1 and 16 months, and their mean age was 5.6 months (3.3). Their mean birth-weight was 3500 g (550), and delivery had taken place, on average, in pregnancy week 39.8 (1.6). The girls constituted 55% of the sample.

All apart from four mothers lived with the child's father. Sixty-seven percent of the mothers had an educational qualification above A-level (i.e. more than thirteen years of school education). Twenty-four percent had an A-level qualification, while 9% had a lower educational level or were still studying. The educational level of the sample is somewhat higher than average for Stockholm mothers of the same age, the corresponding numbers being 53, 35, and 12% (figures for 2005 from the Stockholm City website, <http://www.stockholm.se/-/English/Statistics/>). This difference probably reflects the design, which captured the attention of distressed mothers having some interest in mother-infant relations.

2.2.2. METHOD OF DATA COLLECTION

Following referral, a researcher met with the mothers and babies, and gained informed consent for their participation. In-depth interviews of 90 minutes took place with the mothers, their babies being present. The interview was semi-structured and adapted to the themes brought up by the mother. It consistently covered 20 specified items on how she experienced pregnancy, delivery, nursing, family relations and her own psychological state, as well as symptoms in the baby and their emotional contact. The interviewer also observed and recorded the baby's behaviour and contact with the mother. The mothers and infants were video-recorded interacting with each other. The mothers were instructed "to be together with your child as you normally would". This recording lasted ten minutes in the interviewer's absence. Finally, mothers were asked to complete four self-report questionnaires at home.

2.2.3. MEASURES

The instruments were observer-ratings of mother-infant interactions, interviewer-ratings of the quality of the mother-infant relationships, and mother-report questionnaires relating to their psychological states and infant functioning.

2.2.3.1. Observer-based Assessments of Parent-Infant Interaction

The Emotional Availability Scales, third edition (EAS; Biringen, Robinson, & Emde, 1998) was used to assess mother-baby interactions on a video-taped sequence. It is comprised of four maternal subscales: Sensitivity, Structuring, Non-intrusiveness, and Non-hostility, and two infant subscales: Responsiveness and Involvement. Sensitivity refers to how the mother reads and responds to the infant's signals, including her affect, awareness of timing, variety and creativity in play, and flexibility in negotiating conflict situation (Biringen, Robinson, et al., 2000). Structuring refers to how the parent structures the child's play by taking care to follow the child's lead, and sets limits for appropriate child behaviour and/or misbehaviour. Non-intrusiveness refers to an absence of overdirectiveness, overstimulation, interference towards the child, the mother thus respecting his autonomy. Non-hostility, finally, refers to absence of overt and covert hostile behaviour and attitudes towards the child. A child's responsiveness refers to their eagerness or willingness to engage with the parent following a suggestion or bid for exchange, and in displaying clear signs of pleasure in interaction. Finally, child involvement assesses the degree to which the child attends to and engages the parent in play. Inter-rater reliability for the EAS is reported to be high after training, with correlations around .80 (Biringen, Robinson, et al., 2000; Wiefel et al., 2005).

The subscales' ranges differ between 1 – 5 and 1 – 9. The subscales were standardized to adjust for the different ranges, and the means of the four maternal subscales and the two infant subscales were calculated. These two composite scales, "EAS Mother mean" and "EAS Infant mean", each ranged from 0 to 1. The average EAS Mother mean was .76 (.11) and the average EAS Infant mean was .63 (SD .19), implying a 76% and 63% level of optimal maternal and infant interactive contributions, respectively.

Two independent and blind raters who were trained to reliable standards on the measure carried out the coding of the interactions on the EAS. Regular seminars were held to keep rating quality at a high level and to minimize rater drift. To test inter-rater reliability, the interactions for 31 dyads (46% of the sample) were assessed by both raters. For the

maternal subscales Sensitivity, Structuring, Non-intrusiveness, and Non-hostility, Cronbach's α was .74, .71, .84, and .67, respectively. For the infant subscales Responsiveness and Involvement it was .78 and .77, respectively. We used the rater means on each subscale for calculations.

2.2.3.2. Clinical Assessments of the Mother-Baby Relationship

The Parent-Infant Global Assessment Scale (PIR-GAS; Zero-to-Three, 2005, Appendix 2.1) was used to assess the parent-infant relationship. It is an instrument that "measures overall relationship functioning, without regard to whether relationship impairments arise from the infant, the caregiver, or the unique fit between the two" (Boris, Zeanah, Larrieu, Scheeringa, & Heller, 1998), p. 296). On the basis of three components, behavioural interactive quality, affective tone and psychological involvement, a global judgement is made on a scale 0 – 99, ranging from "documented maltreatment" to "well-adapted".

In the diagnostic system DC 0-3:R, it is also possible to assess infant pathology via an Axis I diagnosis. However, many Axis 1 entities, such as sleep and feeding disorders (Zero-to-Three, 2005), are too stringent to be applicable to infants as young as in this sample. Therefore, the PIR-GAS was deemed to be the most appropriate instrument for a clinical diagnosis of infant mental health. The rating incorporates key features of social and emotional functioning such as feeding, sleep, affect regulation, and social responsiveness.

After a lengthy interview, PIR-GAS ratings were made by the research interviewer, who is an experienced child and infant psychoanalyst and psychiatrist. For inter-rater reliability assessments, an independent psychologist with extensive experience in infant clinical work and PIR-GAS ratings met for regular seminars with the primary rater to view and discuss video-recordings of the entire interviews and the free-play dyadic interactions. Inter-rater reliability was computed for 20 interviews and the Cronbach's α -coefficient was .90. In the statistical analyses, the means of the two ratings for those dyads assessed by two raters were used. The mean of the PIR-GAS ratings was 69 (SD 12), implying relationship ratings of "significantly perturbed". This reflects the clinical nature of the sample.

2.2.3.3. Maternal Depression

The Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987; Appendix 2.2) was used to rate maternal depression. This questionnaire is widely used internationally, including at Swedish Well Baby Clinics. It has been validated with Swedish samples (Edhborg, Lundh, Seimyr, & Widström, 2003; Rubertsson, Waldenström, Wickberg, Rådestad, & Hildingsson, 2005), as well as samples from many other countries (Adouard, Glangeaud-Freudenthal, & Golse, 2005; Areias, Kumar, Barros, & Figueiredo, 1996; Carpiniello, Pariante, Serri, Costa, & Carta, 1997; Garcia-Esteve, Ascaso, Ojuel, & Navarro, 2003; Guedeney & Fermanian, 1998; Murray & Carothers, 1990). The EPDS consists of 10 items with 3-point scales, the total score ranging from 0 to 30.

The EPDS has been shown to have good sensitivity (.86 to .96) and specificity (.78 to .81) in detecting major depression compared to diagnoses through standardized psychiatric interviews (Cox et al., 1996; Murray & Carothers, 1990). Both studies used EPDS cutoff scores 12/13. Internal consistency has also been shown to be satisfactory, with a standardized α -coefficient of .87 (Cox et al., 1996).

For the current study the mean EPDS score was 11.7 (4.7) and the median value was 12. This is twice as high as Swedish population means reported in other studies (Seimyr, Edhborg, Lundh, & Sjögren, 2004; Wickberg & Hwang, 1996). Half of the mothers in this sample were at or above the cutoff score at which point, according to its constructor, one should “confirm whether or not clinical depression is present” (Cox et al., 1987, p. 785).

2.2.3.4. Maternal Psychopathology

The Symptom Check List-90 (SCL-90; Derogatis, 1977) was used for assessing general maternal psychopathology. The Swedish translation was used for this study (Fridell, Cesarec, Johansson, & Malling-Andersen, 2002). This widely used instrument taps the individual's present psychological complaints rather than any specific psychiatric disorder (Fridell, Cesarec, Johansson, & Thorsen, 2002). The SCL-90 has been used for evaluating

the effects of group therapy of post-partum depression (Hofecker-Fallahpour et al., 2003), and for studying the validity of the EPDS (Brouwers, van Baar, & Pop, 2001).

As Fridell and colleagues (2002) have argued, the homogeneity of all SCL-90 items is high, actually making one comprehensive scale out of all items. Similarly, intercorrelations between the 9 subscales originally devised by Derogatis are also high. Consequently, the General Severity Index (GSI) was used in the following analyses, rather than individual subscales. The mean GSI for the sample of this study was .93 (SD .59), twice as high as that reported for a normative Swedish sample in the same age range (Fridell et al., 2002).

2.2.3.5. Parenting Stress

Since parental stress is known to influence child development (Essex et al., 2006; Faught, Bierl, Barton, & Kemp, 2007; Mäntymäa, Puura, Luoma, Salmelin, & Tamminen, 2006; Pelchat, Bisson, Bois, & Saucier, 2003), the Swedish Parental Stress Questionnaire (SPSQ; (Östberg, Hagekull, & Wettergren, 1997) was used to assess levels of maternal stress. The SPSQ is a Swedish version of the Parenting Stress Index (PSI; Abidin, 1990; Appendix 2.4). Their differences lie mainly in that the PSI Child and Attachment subscales have been omitted in the SPSQ. Östberg and colleagues (1997) have reported good internal consistency (.87 to .90) and test – retest reliability ($r = .89$). The SPSQ consists of thirty-five items on five point scales, and the total mean scores were used in the analyses for this study. In the current sample, the mean values were 2.92 (0.56).

2.3. Results

2.3.1. DESCRIPTIVE STATISTICS FOR THE ASQ:SE

Mean scores for each child ranged from 0.00 to 5.23. The mean value was 1.94 (SD 1.2), and the median was 1.82. Kurtosis and skewness of the distribution were within the acceptable range, their ratios with corresponding standard errors being less than 2. There were no outliers.

2.3.2. COMPARING THE ASQ:SE WITH OTHER INSTRUMENTS

An initial analysis revealed significant correlations between observer-rated mother-infant interaction and interviewer-rated relationship, i.e. the EAS and the PIR-GAS. The ASQ:SE, however, did not correlate significantly with these instruments but only with the other questionnaires. See table 2.1.

Table 2.1. Correlations of questionnaire ASQ:SE scores, clinical ratings of dyadic relationship, and observer ratings of interaction

	EAS Mother	EAS Infant	PIR-GAS	EPDS	SCL-90 GSI	SPSQ
ASQ:SE	-.061	-0.91	-.225	.286 [*]	.366 ^{**}	.502 ^{**}
EAS Mother		.645 ^{**}	.400 ^{**}	.134	.060	.145
EAS Infant			.257 [*]	-.228	-.163	.249 [*]
PIR-GAS				.316 ^b	-.184	.285 [*]
EPDS					.716 ^{**}	.632 ^{**}
SCL-90 GSI						.617 ^{**}

*Correlation significant at the 0.05 level (2-tailed) **Correlation significant at the 0.01 level (2-tailed)

The ASQ:SE was developed for children from 3 months upwards, and 16 out of 68 babies in this sample were younger. However, the mean ASQ:SE scores were the same for infants above and below 3 months. The effects of child age on the correlation matrix were also examined. The correlations remained essentially the same when partialling out the effects of child age, whether measured as number of months or when dichotomized into infants above and below 3 months of age.

In order to further our understanding of the variables that could predict ASQ:SE scores, a multiple regression analysis was carried out. The ASQ:SE total score was the dependent variable and all other instrument scores and child age were entered as independent variables. With a backwards stepwise procedure, all variables except SPSQ were excluded ($F = 22.237$, $p < .001$, $\beta = .502$). This model accounted for 24 % of the variance in ASQ:SE scores.

To investigate inter-instrument associations further, a principal components analysis with oblique rotation was carried out of all instrument scores. A two-component solution with eigenvalues above 1 accounted for 65% of the total variance. The first component loaded strongly on the questionnaire scores, the second on interaction ratings. See table 2.2.

Table 2.2. Factor loadings following principal components analysis, with oblique rotation, of questionnaire scores, clinical ratings of dyadic relationship, and external ratings of interaction

	Component 1	Component 2
ASQ:SE	.640	
EPDS	.823	
SCL:90 GSI	.872	
SPSQ	.842	
EAS Mother		.935
EAS Infant		.845
PIR-GAS		.549

In summary, in this clinical sample, parent-reports on the ASQ:SE did not significantly correlate with external ratings of dyadic interactions and relationships. In addition, ASQ:SE ratings were only predicted by the mothers' concurrent reports of parenting stress but not by any other measured variable. The ASQ:SE and the other parent-report questionnaires of maternal stress and psychological distress formed one principal component with high factor loadings. A second component was comprised of external ratings of dyadic interaction and relationship quality.

2.4. Discussion

There were two broad aims of this study. The first was to investigate mothers' reports of infant social and emotional functioning on the ASQ:SE in relation to external ratings of dyadic relationships (PIR-GAS) and interactions (EAS). It was expected that infant social and emotional functioning, as reported by the infant's mother, should be strongly related to clinician and researcher assessments of infant behaviour as observed within the infant's interactions with his or her mother. Secondly, this study examined mothers' reports of infant social and emotional functioning in relation to self-reported maternal stress and psychological distress (EPDS, SCL-90, SPSQ). It has been well-documented that parental mental health and stress has an impact on infant social and emotional well-being (Feldman, Eidelman, & Rotenberg, 2004; Murray, et al., 1996; Stanley, Murray, & Stein, 2004). It was therefore expected that there would also be some association between maternal psychopathology and ASQ:SE scores, but these associations would be less strong than those between observer and parent-reports of actual infant interactive functioning.

In terms of the first aim, significant correlations between ratings of interaction and relationship and mother-reports on infant social and emotional functioning were expected, but this hypothesis was rejected. This may point to some problems with the validity of this measure in clinical populations. It might be argued that the ASQ:SE was not designed to measure the same constructs as the EAS or the PIR-GAS, and that these would not constitute appropriate validation criteria. However, the rationale for measuring infant social and emotional functioning is to identify infants potentially in need of clinical intervention. Since clinical need is also revealed by disturbances in dyadic interactions and relationships, it would be expected that there should be substantial overlap between the three instruments. Also, infant mental health and adaptive functioning is now widely accepted to be inextricably embedded within and greatly dependent upon the baby's primary relationships (Heffron, 2000; Lieberman, 2004; Lyons-Ruth & Zeanah, 1993; Winnicott, 1960).

Disruptions in infant social and emotional functioning, such as problems with feeding, social relatedness, and affect regulation, would be expected to impinge on the baby's responsiveness to the mother and involvement with her. In parallel, this would be expected to affect the quality of their clinically assessed relationship. The association between the EAS and PIR-GAS and clinical need in infancy has been supported by previous studies. One study found associations between the need for psychotherapeutic treatment based on clinical assessments and EAS scores assessed by independent raters (Wiefel, et al., 2005). Similarly, another study demonstrated that low PIR-GAS scores were related to clinical symptomatology in infancy, and that they predicted adverse mother-infant interaction and child internalising symptomatology (Aoki, Zeanah, Heller, & Bakshi, 2002). In a clinical sample, Thomas and Guskin (Thomas & Guskin, 2001) found the PIR-GAS to correlate with Axis I diagnoses on the DC 0-3 (Zero-to-Three, 2005), and with externalizing and internalising symptoms on the Child Behavior Check List (Achenbach, 2000).

The findings of this study are contrary to two other studies which have found links between parent-reported infant social-emotional functioning on the ITSEA and BITSEA and observed parent-infant interaction (Briggs-Gowan, et al., 2004; Carter, et al., 1999). However, both of these studies were carried out with low-risk, non-clinical populations. Another study (Lee et al., 2006) found that mothers who were depressed and insensitively responsive to their infants were potentially at risk of reporting their infants' behaviour as problematic on the BITSEA. Taken together, these findings may indicate differential parent report results when parental psychological distress is high.

The second aim of this study was to investigate associations between mothers' reports on infant social and emotional functioning with mother-reported psychological distress. Several studies point to the close relationship between mother-infant interaction and maternal depression (Field, et al., 1988; Field et al., 2007; Tronick & Reck, 2009). Many of these have mapped out how infants of depressed mothers tend to exhibit behaviours indicative of social and emotional problems. The findings of this study, which

demonstrated close associations between all the questionnaires, could be taken to confirm the effects of maternal psychological distress on infant functioning. Alternatively, the inter-questionnaire associations might be explained by a methodological bias. Thus, a similar response pattern across several questionnaires may not automatically reflect the same degree of disturbance on each construct measured, but rather a bias in the way that the mothers responded to self-report questionnaires. The exploratory factor analysis of all instruments used in this study revealed two latent factors in the measurement of parent and infant functioning. All mother-report questionnaires, including the ASQ:SE, loaded onto the first factor, while both external ratings of parent-infant relational functioning loaded onto the second. This finding lends further support to the suggestion that there is likely to be some bias in the parents' responses to questionnaires, whether they pertain to themselves or their baby. Thus, the ASQ:SE scores cannot be taken to solely reflect infant social and emotional functioning and, at least in clinical populations, a component reflecting maternal psychological distress seems to be included in the mother's response pattern. This finding is in line with the research into infant temperament which has demonstrated similar maternal response biases, particularly in high-risk or clinical samples (Pauli-Pott, et al., 2003; Sameroff, et al., 1982; Seifer, Sameroff, Dickstein, Schiller, & Hayden, 2004; Seifer, et al., 1994; Vaughn, et al., 1981; Zeanah, et al., 1985).

With our growing insight into the importance of infancy for the individual's future development and mental health, and with increased emphasis on the detection and treatment of parent-infant relational disturbances, there follows a need for valid and reliable instruments to detect dyads at risk. In this clinical sample, the ASQ:SE was strongly related to other questionnaires on maternal psychological distress and stress but not with external ratings that included the baby's state. One interpretation might be that the ASQ:SE functions as an alarm signal of the mother's psychological state rather than as an instrument specifically measuring infant need. This could be taken as an argument that any of the questionnaires would capture dyads in need of help. However, we know too little to understand which questionnaire captures which kind of mother-infant relational

disturbance. The ASQ:SE and other similar parent-report instruments need further investigation. This is especially important for clinical and at-risk samples. Furthermore, the lack of concurrence between clinician/observer concerns for infant relational functioning and mothers' reported concerns indicates that parent-report questionnaires may not be the most sensitive at detecting all problematic dyads. While those mothers who are suffering from high levels of depression, anxiety and stress appear likely to also report concern for their infant's development, there may be some parents who idealise their infant and minimise any concern about their emotional and social development, despite observably high levels of disruption in the parent-infant relationship. Thus, for these parents and infants, close observation and clinical assessments by experienced professionals may be the only means of assessing risk.

2.4.1. LIMITATIONS AND FURTHER STUDIES

There are some limitations in the sample used for this study. The mothers' levels of social adversity were relatively low, and their educational levels were somewhat higher than the Stockholm population of a similar age. In addition, the high levels of clinical need on external ratings and questionnaire scores might be seen as a limitation as it reduces the variability in the measures used. However, this was indeed the focus of this study, i.e. to investigate how mother-report questionnaires fare in a clinical sample. Replication studies on samples with high levels of social adversity as well as comparisons with low-risk, non-clinical samples are needed to fully understand the impact of maternal social and psychological risk factors on parent-report measures.

A further limitation is that about a quarter of the sample in this study consisted of infants younger than three months. As the ASQ:SE is only advocated for infants aged three months or older, this may have contributed towards the poor validity findings. However, the results were the same when babies below three months of age were excluded from the analyses.

Further research should look at how ASQ:SE-ratings of infants in differently aged samples compare with observed measures.

2.5. Summary and conclusions

Screening instruments are currently advocated for detecting early indicators of dysfunction in the baby. The idea behind such recommendations is that screening instruments could detect mothers and infants at risk and help them to treatment. It is important that these instruments are simple to use, and as sensitive and specific as possible. The screening instrument that was investigated in this study, the ASQ:SE, is indeed simple to use and comprehensible. However, in a clinical sample, it was found to be strongly associated with self-reported maternal psychological distress rather than with clinically assessed mother-infant relationship and externally rated interaction. Therefore, for clinical samples, the discriminant validity of parent-reports of infant functioning is questionable as they may be more likely to measure maternal distress than infant functioning in and of itself.

Furthermore, such measures may not be sensitive to all forms of risk to the infant's social and emotional development. Some disruptions to the parent-infant relationship may not be associated with maternal distress, and parent reports may fail to detect real threats to the infant's later development. Thus, parent-report questionnaires are not likely to be good substitutes for the more resource-intensive assessment methods which examine interactive behaviour and parent's narratives (as reviewed in Chapter 1). Some of these other methods of assessment will be further investigated in the series of studies that follow.

CHAPTER 3: REFLECTIVE FUNCTIONING ON THE PARENT DEVELOPMENT INTERVIEW: VALIDITY AND RELIABILITY IN RELATION TO SOCIO-DEMOGRAPHIC FACTORS

3.1. Introduction

Mentalisation or Reflective Functioning (RF) refers to the process of understanding of how mental states such as feelings, beliefs, desires, intentions, hopes, and knowledge, mediate how individuals perceive their own behaviour and that of others (Fonagy, Gergely, Jurist, & Target, 2002; Fonagy, Steele, Steele, Moran, & Higgitt, 1991; Fonagy, Target, Steele, & Steele, 1998; Sharp & Fonagy, 2008). In other words, it is the ability to understand the self and others as intentional agents. It is conceptually connected with the Theory of Mind concept (Harris, 1989; Leslie, 1987; Wellman, 1990), which describes the ability to attribute mental and cognitive states to other people, even if they are different to our own. The ability to read and interpret behaviours in light of the mental processes that underlie them forms a normal part of human self and socio-emotional development. Understanding one's own subjective experiences in terms of mental processes allows for a deep and broad understanding of one's self in relation to affective states and it forms the vital structures necessary for affect regulation (Slade, 2005). Reflective functioning also forms an important part of all human relationships. It allows individuals to make sense of and to anticipate others' actions. Therefore, the process and purpose of mentalisation is both intra- and interpersonal.

Reflective functioning plays a crucial role in the parent-infant relationship. Firstly, a parent's ability to consider the mental states of her infant and to think reflectively about how her own mental states and behaviours impact upon her infant are linked with her ability to regulate her child's affective states. This lies at the heart of sensitive caregiving

(Slade, 2005). Secondly, it is through the re-presentation of the infant's internal states by the mother that the child is able to develop an understanding of his own and others' minds, i.e. for him/her to ultimately develop the ability to mentalise him- or herself (Fonagy & Target, 1997). This capacity is thought to be essential for the facilitation of a range of developmental and socio-emotional processes. Not only that, the failure to develop the capacity to mentalise has been linked with a number of psychopathological outcomes (Fonagy, 2003b).

Fonagy and colleagues have developed a system for quantifying a person's RF capacity based on their responses to questions on the Adult Attachment Interview (Fonagy, et al., 1998). The Adult Attachment Interview (George, et al., 1985) is a semi-structured interview that asks adults to talk about their childhood relationships with their parents/caregivers. An addendum to the original RF coding system has been developed for use with narratives on the Parent Development Interview (Slade, Bernbach, et al., 2004). The Parent Development Interview (PDI; Slade, Aber, et al., 2004) is a semi-structured interview that taps into parents' representations of themselves as parents, what their child is like, and their relationships with their child. It elicits similar narratives to the AAI in that it explores emotionally charged attachment relationships. However, while the AAI taps into adults' relatively stable representations of past relationships, the PDI asks about current relationships that are dynamic and developing.

3.1.1. THE VALIDITY AND RELIABILITY OF THE PDI RF CODING SYSTEM

While some evidence for the validity of the RF rating on the AAI has been established (Fonagy, et al., 1998), relatively little is as yet known about the validity of RF as measured on the PDI, especially in relation to the socioeconomic status and demographic backgrounds of the families. The research that has been carried out with the PDI RF coding system has either looked at RF in relation to maternal and infant attachment status (Slade, et al., 2005), maternal behaviour (Grienenberger, et al., 2005; Schechter et al., 2008),

improvements in maternal attributions (Schechter et al., 2006), maternal psychopathology (Schechter, 2003; Schechter, et al., 2005), or as a treatment outcome (Suchman et al., 2010; Suchman, Decoste, McMahon, Rounsville, & Mayes, 2011; Suchman, Legow, Decoste, & Castiglioni, 2008). These studies have, to a certain extent, demonstrated the concurrent and predictive validity of the measure of RF on the PDI and its sensitivity to treatment change. However, since no research into the discriminant validity has as yet been carried out, there is the risk that these findings could be explained by other confounding factors. Most of the research that has been carried out with the PDI RF coding system has focused on high risk families who may be experiencing relatively high levels of social deprivation. It is therefore possible that maternal RF might be confounded by socio-economic stressors that the family is experiencing.

Another potential confounding variable is the age of the infant. When using the PDI with parents of infants aged less than a year old, it may be more difficult for the parent to reflect on the feelings, desires and intentions of the child. It is questionable whether one could expect a mother of a two-month old infant to be able to adopt an intentional stance towards her child as well as a mother of an 11-month old baby or a three-year old child could. In fact, the author of the interview schedule, Arietta Slade, has cautioned against the use of the interview with parents of very young infants (personal communication, February 21, 2009). Theoretically, the mother's capacity to mentalise within the very early months of her infant's life are probably the most crucial for the infant's social and emotional development (Fonagy, Gergely, & Target, 2007; Sharp & Fonagy, 2008). It is therefore important to establish the validity of the coding system for use with parents of very young infants. A further question is whether measures of RF based on verbal narratives elicited by semi-structured interviews such as the AAI and PDI would actually be measuring the person's ability to articulate themselves coherently and logically rather than their capacity to understand mental states of self and other. In other words, is the RF coding system measuring some aspect of intelligence rather than the ability to mentalise?

The aims of the current study were to examine the distributions of PDI RF ratings in normative and high-risk samples and to assess the discriminant and criterion validity of the coding system in relation to a number of demographic and socioeconomic factors.

3.2. Method

3.2.1. PARTICIPANTS

The sample for this study was drawn from three separate studies: a clinical study of mothers with mental health problems with young infants (clinical group), a non-clinical community sample of mothers with young infants (normative group), and a study of mothers and infants staying on Mother Baby Units in prisons (prison group). The clinical and prison samples were drawn from randomized controlled trials of intervention effectiveness. The normative group was recruited as a non-clinical comparison group for this study. Only baseline pre-intervention data was used for the purposes of this study.

3.2.1.1. Sample 1: Clinical group

Participants were participating in a Randomised Control Trial (RCT) examining the outcomes of Parent-Infant Psychotherapy and Treatment as Usual for mothers with mental health problems and their infants. These participants were recruited from inner city areas with high levels of social exclusion and deprivation. Mothers were identified by their psychiatrist, health visitor, midwife, GP, or another professional as requiring additional emotional support. Families were eligible for inclusion for the therapeutic trial if, a) mothers met probable psychiatric caseness criteria based on the General Health Questionnaire (Goldberg, 1978), b) the infant was less than 12 months of age, and c) mothers met at least one of the following further indicators of social exclusion: low income household; long-term unemployment (longer than 2 years); living in temporary or overcrowded accommodation; single or unpartnered; chronic physical illness or disability; early childhood history of foster or institutional care; social isolation associated with recent

relocation; less than 20 years of age; or previous diagnosis of non-psychotic psychiatric illness. Mothers were excluded from the sample if they were non-English speaking; had a current diagnosis of psychosis, or had substance abuse disorders/chronic drug dependence or an IQ of below 70.

Families initially agreed for the referring professional to pass on their contact details to the research team. A researcher then contacted the mother and, if she was still interested in participating in the study, arranged an initial appointment. Participants gave informed consent at the first appointment, after having time to read the information sheet and ask questions (see Appendix 5 for information sheet and consent form).

3.2.1.2. Sample 2: Non-clinically referred community sample

Participants were recruited from mother and baby groups and children's centres in inner-city areas where there were comparable levels of social exclusion and deprivation to that of the clinical group. However, this sample of mothers had not been identified by a professional as having mental health problems and they were not referred to the study. This study had the same exclusion criteria that were applied to the clinical sample above.

Researchers gave information to mothers whose infants were under 12 months of age attending the children's centres, and participation was on a voluntary basis. Families who were potentially interested in taking part gave their contact details to the researcher. These mothers were then contacted by telephone, and if they agreed, an appointment was made. They gave informed consent at the first appointment, after having time to read the information sheet and ask questions. A small financial incentive was offered as part of the invitation to participate (see Appendix 5 for information sheet and consent form)

3.2.1.3.

Sample 3: Prison group

Participants in this group were mothers and babies who were participating in a cluster randomized controlled trial evaluating the outcomes of the New Beginnings intervention in Mother and Baby Units (MBU) in UK prisons. Mother-baby dyads currently on Mother Baby Units in the participating prisons were eligible to take part in the project. Potential participants were excluded if they were not sufficiently fluent in English to be able to take part in the research or were not due to stay on the unit for the follow-up interviews. Before the evaluation took place on any unit, the researcher (and, in intervention sites, the course facilitator) met with unit staff who were involved in the project.

Intervention Group: Participants were recruited from three MBUs running the New Beginnings course. Mothers first learnt about the evaluation process when they received an information sheet one to two days before the research psychologist arrived on the unit. Members of staff on the unit talked to the mothers about the information sheet and informed them when the researcher would be coming. The research psychologist then visited the MBU one week before the start of the course to give an introductory talk about the research to those mothers identified as being eligible and willing to participate in the course. After this introduction, the researcher then arranged to see each mother separately. During this meeting the researcher read aloud the information sheet and consent form with the mother and answered any questions she may have had. It was made clear to each participant that they were free to leave the research at any time and doing so would have no implications for their involvement on the course or their sentence.

Control Group: Participants were recruited from the four MBUs not running the New Beginnings course. The research psychologist contacted these MBUs on a regular basis to ascertain the number of eligible women on the unit and to arrange visits to meet with these women to explain the research as above and, if they agreed to take part, to administer the measures. The parents and infants in the control group were matched, as far as possible, with the intervention group for mother's age, child's age and gender.

See Appendix 5 for information sheet and consent forms.

3.2.1.4. Description of the sample

The demographic characteristics of the three subsamples are summarized in Table 1. The mothers in the study were aged between 18 and 50 years old, with most of them being in their late 20's or early 30's. The target infants were from newborn to 2 years of age, averaging about 5 months old. There were almost equal numbers of male and female infants, and more than half of them were the mothers' only children. The mothers in the full sample were representative of a very broad range of educational and ethnic backgrounds. The three groups differed significantly in terms maternal age, $F(2,337) = 37, p < .001$, child age, $F(2,336) = 12.9, p < .001$, child gender, $X^2(2, N = 323) = 8.2, p = .017$, ethnicity, $X^2(8, N = 323) = 33.7, p < .001$, and maternal education, $X^2(6, N = 323) = 139.0, p < .001$. Post hoc tests revealed that mothers in the prison sample were younger and less educated, and there were more female babies and more families of black ethnicity in the prison sample than in the other two groups. The babies in the normative group were significantly older than those in the clinical or prison samples.

Maternal nonverbal IQ was estimated in the clinical and normative samples using the TONI-3. Mothers in the normative group demonstrated a significantly higher nonverbal IQ than those in the clinical group, $t(160) = -2.99, p = .003$.

There were no differences between the three groups in terms of the number of other children the mother had, $X^2(10, N = 323) = 16.0, p = .100, \text{NS}$.

Table 3.1. Description of sample

	Clinical n = 121	Normative n = 57	Prison n = 163	Total N = 341
Mother age in years:				
Mean (SD)	31 (6)	33 (5)	27 (6)	30 (6)
Range	19-42	21-50	18-42	18-50
Child age in months:				
Mean (SD)	4.1 (3.1)	7.2 (2.6)	4.6 (4.5)	4.9 (3.9)
Range	0.5-12.3	0.9-12.6	0.1-23.6	0.1-23.6
Child gender: N (%)				
Female	53 (44%)	29 (51%)	99 (61%)	180 (53%)
Male	68 (56%)	28 (49%)	64 (39%)	159 (47%)
No. other children: N (%)				
None (first time mothers)	75 (62%)	42 (75%)	84 (53%)	201 (60%)
One	28 (23%)	10 (18%)	39 (25%)	77 (23%)
Two	14 (12%)	3 (5%)	19 (12%)	36 (11%)
Three or more	4 (3%)	1 (2%)	17 (11%)	22 (6%)
Mother ethnicity: N (%)				
White	74 (61%)	42 (74%)	89 (55%)	205 (60%)
Black	17 (14%)	2 (4%)	52 (32%)	71 (21%)
Asian	14 (12%)	6 (11%)	10 (6%)	30 (9%)
Mixed	8 (7%)	5 (9%)	11 (7%)	24 (7%)
Other	8 (7%)	2 (4%)	1 (0.5%)	11 (3%)
Mothers' education				
None	6 (5%)	1 (2%)	63 (41%)	70 (21%)
Basic (high school equivalent)	48 (40%)	10 (18%)	42 (28%)	100 (30%)
Further (vocational training)	14 (12%)	5 (9%)	38 (25%)	57 (17%)
Higher (degree or higher)	53 (44%)	41 (72%)	9 (6%)	103 (31%)
Estimated Nonverbal IQ				
Mean (SD)	105 (3)	111 (11)	Not measured	107 (12)
Range	72-140	83-145		72-145

3.2.1.5. Social exclusion criteria

The clinical and normative study designs stipulated that each family in the study met at least one of a list of nine social exclusion indicators. These are listed in Table 2.

Table 3.2. Social Exclusion Criteria

	Clinical N=121	Normative N=57	Total N=178
Social Exclusion Criteria: N (%)			
Eligible for income support	61 (50%)	10 (18%)	47 (27%)
Long term unemployed	41 (34%)	6 (11%)	47 (27%)
In temporary/overcrowded accommodation	38 (31%)	9 (16%)	47 (27%)
Mother is single or unpartnered	42 (35%)	3 (5%)	45 (25%)
Mother has chronic illness or disability	21 (17%)	12 (21%)	33 (19%)
Mother has history of foster or institutional care	3 (3%)	0	3 (2%)
Socially isolated (recent relocation)	46 (38%)	14 (25%)	60 (34%)
Mother under 20 years of age	2 (2%)	0	2 (1%)
Mother has previous psychiatric diagnosis	80 (66%)	10 (18%)	90 (51%)

On the whole, the families in the clinical group were more likely to meet more of the social exclusion criteria than those in the normative group. More specifically, the mothers in the clinical group were more likely to be on income support ($\chi^2 (1, N = 174) = 16.9, p < .001$), unemployed for more than two years ($\chi^2 (1, N = 174) = 10.5, p = .001$), living in temporary or overcrowded accommodation ($\chi^2 (1, N = 174) = 4.6, p = .032$), single ($\chi^2 (1, N = 174) = 17.4, p < .001$), or to have had a previous psychiatric diagnosis ($\chi^2 (1, N = 174) = 35.7, p < .001$). The two groups did not differ in terms of maternal physical illness or disability, maternal foster or institutional care, social isolation, or mothers being under 20 years of age.

3.2.2. MEASURES

In addition to family demographic details, the following measures were used:

3.2.2.1. PDI (Slade, Aber, Bresgi, Berger, & Kaplan, 2004)

The Parent Development Interview is a semi-structured clinical interview which taps into parents' representations of themselves as parents, of their child, and of the relationship between them. The parent is asked about a current and specific relationship with one child. The interview includes asking the parents to give a number of adjectives to describe her child, herself as a mother, and their relationship, and to give examples for these. Other questions include asking about specific emotional experiences that the parent might have felt, such as joy, pain, guilt and anger. The parent is also asked to consider the child's feelings in a number of ways. Another set of questions relate to the parent's thoughts and feelings about separations from her child, as well as considering how the child might feel during separations. There are also several questions about how the parent feels she has been impacted as a parent by her experiences with her own caregivers.

The interviews were transcribed verbatim and coded with the Reflective Functioning coding system which has been specifically adapted for this interview (Slade, Bernbach, Grienberger, Levy, & Locker, 2004). The questions in the PDI are designated as either permit or demand questions. The demand questions are those which specifically push the parent to mentalise, i.e. to describe what they, their child, or both of them may have thought or felt. Each of these questions is coded for the level of parental RF. The permit questions provide useful insights into the parental representations, and the parent may very well demonstrate their capacity (or difficulty) to mentalise in response to these questions. The coder will therefore take the whole interview into account, as well as the scores for each of the demand questions, in deciding upon an overall RF score (see Appendix 2.3 for coding sheet and list of demand questions). The Reflective Functioning scale has a potential range of -1 (negative or bizarre RF) to 9 (marked RF). Scores between 4 and 6 are considered moderate, scores of 3 or below are considered low, and scores of 7 or above are considered high (Fonagy, Target, Steele, & Steele, 1998; Slade, Bernbach et al., 2004). This score range applies to the demand questions as well as the overall score.

3.2.2.2. Test of Non-verbal Intelligence (TONI-III; Brown, Sherbenou, & Johnsen, 1997)

The clinical and normative groups were assessed with the TONI-III. This test is a language-free measure of cognitive ability that is robust and highly predictive of general intellectual functioning. It is an intelligence test that is unaffected by cultural differences. The measure has been shown to have good reliability and validity (Atlas, 2001; Banks & Franzen, 2010; L. Brown, Sherbenou, & Johnsen, 1997). Mothers were shown a series of patterns and asked to identify the missing image in the sequence from a multiple choice set of answers. The raw total scores were converted to standardized estimates of nonverbal intelligence based on large population norms. These scores are standardized with a mean of 100 and a standard deviation of 15.

3.3. Results

3.3.1. EXAMINING THE DISTRIBUTION OF THE RF RATINGS

The details of the RF scores for each demand question and the overall interview are presented in Table 3.3. The mean RF scores for all three sub-samples were, for most of the demand questions, moderate to low. More details of the distribution and range of RF scores for each demand question are presented in Appendix 1 (Table A1). In many cases the full range of potential scores was not used. In other words, no parent scored at the lowest (-1) or highest (9) level for some questions.

Table 3.3. Reflective Functioning Scores for each demand question of the PDI

	Clinical n = 118	Normative n = 56	Prison n = 149	Total N = 323
Clicked:				
Mean (SD)	3.9 (1.5)	4.6 (1.7)	3.8 (1.4)	4.0 (1.5)
Not clicked:				
Mean (SD)	4.3 (1.7)	4.9 (1.6)	2.8 (2.0)	3.7 (2.0)
Relationship affecting personality : Mean (SD)	3.3 (1.5)	4.1 (1.4)	3.0 (1.5)	3.3 (1.5)
Joy:				
Mean (SD)	3.0 (1.3)	3.3 (1.3)	2.7 (1.3)	2.9 (1.3)
Pain or difficulty:				
Mean (SD)	3.2 (1.4)	3.7 (1.3)	2.9 (1.5)	3.1 (1.4)
Having child changed you:				
Mean (SD)	3.3 (1.4)	3.2 (1.4)	2.9 (1.5)	3.1 (1.4)
Angry:				
Mean (SD)	4.4 (1.6)	4.3 (2.0)	3.0 (2.0)	3.9 (2.0)
Guilty:				
Mean (SD)	4.1 (1.8)	4.3 (1.9)	3.4 (1.9)	3.8 (1.9)
Needy:				
Mean (SD)	3.9 (1.6)	3.9 (1.8)	Not asked	3.9 (1.4)
Child upset:				
Mean (SD)	4.3 (1.6)	5.0 (1.5)	3.6 (1.7)	4.1 (1.7)
Rejected:				
Mean (SD)	2.8 (1.8)	3.6 (2.0)	2.1 (1.6)	2.6 (1.8)
Parents:				
Mean (SD)	4.8 (1.9)	5.4 (2.0)	3.6 (1.8)	4.4 (2.0)
Child's feelings about separation: Mean (SD)	3.1 (1.4)	3.6 (1.6)	3.1 (1.5)	3.2 (1.5)
Mother's feelings about separation: Mean (SD)	3.6 (1.4)	4.0 (1.4)	3.5 (1.3)	3.6 (1.4)
Losing:				
Mean (SD)	2.6 (1.6)	2.8 (1.8)	Not asked	2.7 (1.7)
Overall RF Score:				
Mean (SD)	4.1 (1.4)	4.6 (1.4)	3.4 (1.4)	3.8 (1.5)

Tests of normality showed that the RF scores for each demand question in each of the subsamples were non-normally distributed (Kolmogorov-Smirnov test, $p < .005$). The only exceptions were the “guilty” and “angry” questions, for which the distribution of scores in the normative sample was normal. Examinations were made of the histograms and Normal Q-Q plots for each demand question in each of the subsamples. These revealed that the prison sample had more skewed distributions than the two community samples. This was particularly the case with negatively framed questions (“not clicked”, “angry” and “rejected”), as the mothers in the prison sample were highly likely to respond with a disavowal of such emotional states, and would therefore score very low. This may lead to a floor effect when using the coding system to measure change over time.

3.3.2. INTER-RATER RELIABILITY

The PDIs in the full sample were coded by seven coders. Each coder was trained by a recognised trainer in coding RF on the PDI (the author). As part of the accreditation process, each rater coded a reliability set of ten interviews and each coder attained a good reliability score with the author of the interview and coding system, Arietta Slade (ICC $> .750$).

A subset of 17 PDI interviews was double coded by the RF raters who contributed to this data set. The intraclass correlation co-efficient for the overall RF score was high (ICC = .865).

3.3.3. ASSOCIATION BETWEEN SCORES FOR DEMAND QUESTIONS AND OVERALL RF SCORE

The correlations between the RF scores for each demand question and the overall RF scores are presented in Table 3.4. All correlations were highly significant ($p < .001$). The question which was mostly strongly associated with the overall score is the “parent” question. The least strongly associated demand question was “losing”, but this was not asked in the prison

sample due to the potentially upsetting meaning it may have for mothers who were going to be separated from their babies.

Table 3.4. Correlations between PDI demand question RF scores and overall RF score

	Pearson's correlation with Overall RF score
Clicked	.681**
Not clicked	.655**
Relationship affecting personality	.660**
Joy	.553**
Pain or difficulty	.634**
Having child changed you	.634**
Angry	.667**
Guilty	.651**
Needy	.604**
Child upset	.699**
Rejected	.513**
Parents	.749**
Child's feelings about separation	.570**
Mother's feelings about separation	.563**
Losing	.386**

** All correlations are significant at the $p < .001$ level (2-tailed)

3.3.4. INTERNAL CONSISTENCY

The internal consistency of the 15 demand questions was examined. The Cronbach's alpha was high, ($\alpha = .900$), and remained relatively stable if any of the items were removed. If the overall RF score was included in the scale, the Cronbach's alpha increased further ($\alpha = .914$).

3.3.5. ASSOCIATIONS BETWEEN MATERNAL RF AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

The correlations between the overall RF scores and a number of socio-demographic variables are presented in Table 3.5. RF ratings were not significantly correlated with the gender of the child. The age of the mothers was not related to RF scores in each of the subsamples, but when the whole sample was examined, older mothers tended to have higher RF ratings. Infant age was not correlated with RF scores in the clinical or normative samples, but in the prison samples, parents of older infants tended to have slightly higher RF scores. The variability of infant ages in this sub-sample was much greater, with infants ranging between 2 weeks and 2 years old. To examine the threshold at which maternal RF is potentially confounded by infant age, a number of dummy variables of infant age cut-off points were created. Taking into account the full sample, the overall RF rating for parents of infants younger than 2 months was significantly lower than those whose infants were more than 2 months old, $t(318) = -2.317, p = .021, d = -.285$. This difference was not significant if a cut-off of any other age between 3 and 12 months was used to differentiate.

Interestingly, in the clinical sample, first time mothers were more likely to be more reflective than those with other children. This association was not significant for the other two subsamples.

Data on social exclusion indicators and estimated maternal nonverbal IQ were only collected in the clinical and normative samples and only data from these samples is presented below. The correlation between maternal RF and nonverbal IQ was only significant in the clinical sample and the pooled sample. This may indicate that nonverbal IQ levels at lower levels were more likely to confound the measure of RF (since the mean nonverbal IQ scores were significantly lower for the clinical group than the normative group). Dummy variables of IQ levels above and below a range of cutoff scores were used to determine if the association between RF and IQ only pertained to particular levels of IQ. The TONI-III is standardized to have a mean of 100 and a standard deviation of 15. The different cutoff points examined were: one SD below the mean of the test (85), the test

mean (100), the actual mean of this sample (107), and one SD above the mean of the test (115). The level of overall RF was significantly lower for those mothers whose nonverbal IQ levels were below 85 than those with higher nonverbal IQ levels, $t(156) = 2.247, p = .026, d = .739$. Equally, mothers with a nonverbal IQ below the test mean of 100 had significantly lower levels of RF than those with higher IQ levels, $t(156) = 3.200, p = .002, d = .617$. However, overall RF levels were no longer significantly different when comparing mothers with nonverbal IQ levels above or below the sample mean (107), or when higher cutoff IQ scores were used.

In both groups, long-term maternal unemployment was significantly correlated with RF. The only other indicator of social exclusion that was related to maternal RF was if the family was eligible for income support, and this was only the case in the clinical group. When a partial correlation was carried out between RF and income support eligibility, controlling for long-term unemployment, this correlation was no longer significant ($r = -.147, \text{NS}$). In other words, long-term unemployment is the social exclusion factor most strongly related to RF and it is this which mostly explains the apparent link between income support eligibility and RF.

Table 3.5. Correlation between overall RF score and socio-demographic variables

	Clinical n = 118	Normative n = 56	Prison n = 149	Total N = 323
Child gender	.014	-.013	-.064	.017
Mother age	.126	.099	.087	.218***
Child age	-.140	.058	.233**	.141*
First time mother	.394***	.231	-.105	.174**
Eligible for income support	-.244**	-.167		-.268***
Long term unemployed	-.322***	-.327*		-.349***
Temporary/overcrowded accommodation	.011	-.026		-.030
Mother single or unpartnered	-.176	-.089		-.206**
Maternal chronic illness or disability	-.053	.170		.031
Maternal history of foster institutional care	-.085	n/a		-.086
Socially isolated (recent relocation)	.030	-.008		-.010
Mother under 20 years of age	-.006	n/a		-.019
Mother has previous psychiatric diagnosis	.004	.123		-.054
Nonverbal IQ	.351**	.165		.323***

* Correlation is significant at the 0.050 level (2-tailed)

** Correlation is significant at the 0.010 level (2-tailed)

*** Correlation is significant at the 0.001 level (2-tailed)

Stepwise linear regression analyses were carried out to investigate which socio-demographic factors were predictive of maternal RF (Table 3.6). A first model (Model 1) of variance in overall maternal RF was estimated based on all data which was available for all three groups. A second model (Model 2) was estimated using only data from the clinical and normative groups, for which more information was available.

Table 3.6. Regression equations of demographic predictors of maternal RF

Predictor variables	Beta (SE)	β	T	p
Model 1				
(total sample, N=323)				
Constant	2.09 (.39)		5.36	< .001
Mother's age	.061 (.01)	.252	4.64	< .001
Number of other children the mother has	-.396 (.08)	-.260	-4.84	< .001
Child's age	.044 (.02)	.117	.117	.029
Model 2				
(clinical and normative samples, N = 174)				
Constant	2.32 (.89)		2.61	.010
Number of other children the mother has	-.596 (.14)	-.329	-4.39	< .001
Maternal non-verbal IQ	.022 (.01)	.200	2.74	.007
Long-term unemployment	-.548 (.23)	-.175	-2.37	.019

In Model 1, the four predictor variables entered into the stepwise linear regression model were: mother and child age, child gender and the number of children that the mother had. In the final model, all of the predictors apart from child gender were significant. This model could account for just over 10% of the variance in RF ($R^2 = .13$, $F(3, 314) = 15.31$, $p < .001$).

In Model 2, the ten predictor variables entered into the stepwise regression were: mother and child age, the number of children that the mother had, maternal non-verbal IQ, and dummy variables for long-term unemployment, single parent households, temporary or overcrowded accommodation, maternal chronic illness or disability, previous maternal psychiatric diagnosis and social isolation. In the final model, accounting for about a quarter of the variance in RF ($R^2 = .27$, $F(3, 155) = 18.37$, $p < .001$), the predictors were number of other children the mother had, non-verbal IQ, and maternal long-term unemployment.

3.3.6. CRITERION VALIDITY OF MATERNAL RF ON THE PDI

In order to examine whether or not the RF scale differentiated between mothers and babies in the three different groups, a one-way analysis of variance was carried out. As expected, mothers in the three groups did have significantly different overall RF scores ($F(2,319) =$

18.461, $p < .001$). A post hoc Tukey HSD test revealed that the overall RF scores were different for all three groups. Mothers in the prison sample had RF scores significantly lower than those in the clinical ($p < .000$, $d = 0.237$) and normative ($p < .000$, $d = -0.884$) groups, and mothers in the clinical group had RF scores lower than those in the normative group ($p < .037$, $d = -0.412$).

3.4. Discussion

3.4.1. DISTRIBUTION OF THE PDI RF CODING SYSTEM

The distribution of RF scores tended to be non-normally distributed for the full sample in this study. This was particularly the case with the most high-risk cohort, the mothers in prison. These findings mean that researchers should take care to examine the distribution of scores in their own samples before using statistical tests which assume a normal distribution, particularly in higher risk samples. For many of the demand questions and for the overall RF scores, the full range of scores was not used. In other words, despite having a relatively heterogeneous sample, no parents were rated overall as anti-mentalising or having bizarre or hostile representations (scoring -1), or as being markedly reflective (scoring 9). However, the non-clinical population in this study was drawn from inner city sites with relatively high levels of social deprivation. If a more representative “normal” population had been used, the higher end of the rating scale would perhaps have been more likely to be applied. Equally, the mothers in the most high-risk sample, those in prison, had been granted permission by a multidisciplinary board to remain on the mother-baby units with their infants after a rigorous risk assessment. Had we sampled mothers who were deemed to be of great risk to their babies, such as those whose children were on the Child Protection Register or families going through child care proceedings, we would perhaps have tapped into the more extreme lower end of the scale.

3.4.2. INTER-RATER RELIABILITY AND INTERNAL CONSISTENCY OF THE RF CODING SYSTEM

Two assessments of reliability were carried out in this study, measures of inter-rater reliability and internal consistency. The inter-rater reliability of the coding system was high, both on the training set and as a measure of inter-rater reliability for the current study. The internal consistency of RF ratings for all of the demand questions was very high. The correlations between scores for each of the demand questions with the overall RF score were also high. This means that one can confidently use the overall score as a single indicator of the parent's mentalising capacity, as is suggested by the author of the coding system (Slade, Bernbach, et al., 2004). Interestingly, the one demand question in the PDI which is not specific to the parent-child relationship, the question about the mother's childhood experiences with her caregivers, is the one that correlates most strongly with the overall RF rating. It may be that the raters weigh the mother's answer to this question very heavily when assigning an overall score, or that the question is particularly good at evoking a sense of her capacity to mentalise about attachment relationships in general.

3.4.3. DISCRIMINANT VALIDITY OF RF ON THE PDI

This study identified a number of variables which could potentially confound the measure of maternal RF on the PDI. The correlation and regression analyses indicated that the discriminant validity of the measure may be jeopardised by the mother's level of nonverbal intelligence, history of unemployment, the number of children she has, and to a lesser extent, her own and her child's age.

Firstly, the link between maternal intelligence and RF ratings is unsurprising. Previous research of RF on the Adult Attachment Interview has demonstrated similar levels of correspondence between IQ and RF (r values between .27 and .33; compared with .32 in this study) (Fonagy, Steele, Steele, & Target, 1997). The association was most pronounced in the clinical sample and not significant in the non-clinical group. This study also showed that the RF scores were significantly lower for mothers with below average levels of

nonverbal IQ than mothers with higher levels of IQ. This indicates that there is some covariance between IQ and RF at the lower levels of IQ, but that some mothers with above average nonverbal intelligence can have low or high levels of RF.

The extent to which we consider IQ to be a confounding variable is arguable. We would certainly expect that measures of non-verbal IQ and RF would be tapping different constructs, but it is possible that the metacognitive process of mentalisation does, to a moderate extent, require some capacity for abstract reasoning and problem solving, which is what the nonverbal IQ assessment is measuring (Brown, et al., 1997). Research has shown an association between attachment security and IQ (van IJzendoorn & van Vliet-Visser, 1988), indicating that there are links between early attachment security and later intellectual functioning. Parental reflective functioning has also been associated with both adult and infant attachment security (Slade, et al., 2005), and it is possible that adult attachment security mediates or moderates this association between IQ and RF. One of the exclusion criteria for our clinical and normative samples was if the mother had severe learning difficulties, so we are not able to assess the appropriateness of the PDI RF system for this population. However, given the moderate association between RF and IQ at the lower end of the nonverbal IQ spectrum, this measure should be used with caution with parents with severe learning difficulties. In such cases, behavioural observations may provide a more accurate assessment of the quality of parenting. This is particularly the case if the parent is also experiencing mental health difficulties as the association between IQ and RF was most prominent in the clinical sample.

The second potential threat to the discriminant validity of the PDI RF measure is parental long-term unemployment. Mothers who had been unemployed for more than two years had significantly lower levels of RF than those who had been in employment. Once again, there is a question of whether this is a confounding variable or one which we would expect to covary with RF. Mentalisation is considered to be an important component to effective social relationships as it makes other people's behaviour predictable and understandable (Fonagy,

et al., 2002). It is also a crucial element to effective self-regulation within the social environment. For example, if I *suspect* that my colleague's temper outburst might be because she is *feeling overwhelmed* with an impending deadline, I may not react with as much *anger* as I might have if I did not *understand* the reason for her behaviour (mentalising words in italics). The capacity to be offered employment and to remain within a working environment almost always requires effective social skills. Thus, it is unsurprising that those mothers who had particularly low levels of RF were also more likely to be unemployed. We might therefore consider this as evidence of the concurrent validity of the coding system.

An interesting finding was that first time mothers tended to have higher levels of RF than those with other children. This is contrary to what might be expected- that experience of parenting leads to a better capacity to understand and consider a baby's thoughts and feelings. However, particularly in the clinical sample, having other children was associated with a poorer capacity to mentalise. There may be a number of explanations for this. Firstly, the inexperienced first time mother might feel that she needs to work harder to make sense of their child's experience and the interview elicits more of the mentalising process at work than it does with a more experienced mother. Another explanation for the finding might be that a mother's decision to have more children reflects her inability to be properly mindful of her older child/children's experience. Thus, having more children actually relates to the mother being less able to consider the internal world of her already born child, and to think about her own thoughts and feelings in that relationship. A decision to have more children may also reflect a fantasy of a child with whom the mother feels she will be able to make sense of her parenting experience. Thus, the unborn child is an idealisation which the mother creates to compensate for her sense of alienation from both herself as mother and the children she has. Thus, this does not necessarily invalidate the measure of RF on the PDI.

There were small associations between PDI RF scores and both the mother's and child's age. Older mothers tended to have higher levels of RF, and mothers of older infants tended to have higher levels of RF. These associations were no longer significant when other factors such as maternal IQ or long-term unemployment were taken into account. Along with the number of children a mother has, maternal and child ages only account for about 10% of the variance in RF, so these variables only have a minimal confounding influence on RF. The author of the PDI RF coding system suggests that it may be problematic to use the PDI with parents of very young babies because many parents find it difficult to think of their child's internal experience in particularly differentiated ways when the child is very young (Arietta Slade, personal communication, 2009). In this study, different cut-off ages of the infants were examined to determine if there is a particular period of early infancy when the measure is more likely to be confounded by the age of the child. This analysis showed that the RF scores were significantly lower for mothers of infants 2 months or younger than mothers of older infants. This difference was not maintained when higher infant ages were used to differentiate RF scores. Thus, the coding system may not be an appropriate measure to be used with parents of infants younger than two months, but it appears to be robust for parents of infants older than this. The psychoanalytic literature supports this finding. According to early parent-infant theorists, in the weeks just before and after the birth of a baby, mothers enter into a state of "primary maternal preoccupation" (Winnicott, 1956), or the "motherhood constellation" (Stern, 1995). This is a particular state of mind characterized by the mother's preoccupation with caring for her baby, who she at first represents as somewhat undifferentiated from her own self. Using her own experiences as a baby, the mother becomes very much identified with her infant and becomes acutely aware of what he or she may be feeling. During this very early phase of the parent-infant relationship, it is likely that the mother's capacity to differentiate her own mental states from those of her baby is more difficult. What may be seen as a lack of mentalising about the infant as an individual person may actually be the mother's adaptive identification with her baby which is a necessary precursor to her later capacity to make sense of her baby's internal world in a more differentiated way. It is also likely that the

potent need for a mother to understand and regulate her newborn infant's physical states, such as hunger, tiredness and pain, takes precedence in her representation of the relationship in the early postnatal period. These concrete themes may dominate her narrative, seemingly at the expense of more internal mental state references (although she may still have an emerging model of the infant's mind in her mind). This may continue until the baby has established more regulated eating and sleeping patterns and is better able to communicate these physical needs in a differentiated manner, enabling the mother to shift her focus to the representation of mental states.

Research has shown that infants start to attribute goals and intentionality from about 7 months onwards (Csibra, 2008; Kovács, Téglás, & Endress, 2010). This level of intentionality and representation makes the interplay between the parent's and infant's minds more complex and therefore makes reflective functioning more apparent in parents of older infants. However, the current study demonstrated that parents of very young infants (from 2 months onwards) are still able to consider and attempt to work out what their infant may be thinking or feeling, and to consider their own thoughts and feelings within the relationship. Parental reflective functioning is about both the cognitive and affective mental processes in both the parent and the child. It is not about knowing what your child thinks, but considering what your child may be thinking or feeling. Even very young infants have affective experiences which need to be thought about by the parent, represented in her mind, and re-presented back. It is in fact in the early months of development that this mentalisation process is most important for the infant's developing sense of self and capacity for self-regulation (Fonagy et al., 2002).

3.4.4. CRITERION VALIDITY OF RF ON THE PDI

The criterion validity of the coding system was examined through the extent to which it could differentiate between the different levels of risk to the parent-infant relationship. It was hypothesised that the parent-infant dyads in the normative group would be the lowest risk and these mothers would therefore have higher levels of RF than the two high-risk

groups. As maternal mental health problems have been shown in many studies to be related to difficulties within the parent-infant relationship and subsequent infant development (Lyons-Ruth, Connell, & Grunebaum, 1990; Murray, 1992; Rutter, 2005; Sroufe, 2005), the mothers in the clinical group were expected to have lower levels of RF than the mothers in the normative group. Women in prison represent a particularly high-risk group. The prevalence of mental health problems, histories of violence and abuse, substance misuse, and broken attachment relationships for mothers in mother-baby units in prisons are high (Baradon, Fonagy, Bland, Lenard, & Sleed, 2008; Birmingham, Coulson, Mullee, Kamal, & Gregoire, 2006; Black, Payne, Lansdown, & Gregoire, 2004; Byrne & Howells, 2002; Gregoire, Dolan, Birmingham, Mullee, & Coulson, 2010; Sleed, Baradon, & Fonagy, 2013). As all of these factors are considered risks to the evolving parent-infant relationship and to the capacity to mentalise, it was expected that these mothers would have the most difficulty in being able to mentalise about their own and their infant's mental states. These hypotheses were supported by this study which showed that the mothers in prison had the lowest levels of RF, mothers with mental health problems had the second lowest levels, and the mothers in the normative group had the highest levels.

3.5. Summary and conclusions

This study has provided the first analysis of a large number of PDIs which have been coded for maternal RF and it has contributed to our understanding of the psychometric properties of the coding system. On the whole, the PDI RF coding system demonstrated good internal consistency, inter-rater reliability, concurrent validity with some variables which are theoretically linked with the concept of mentalisation, and criterion validity in terms of discriminating between groups of different levels of risk. The findings of this study also highlight some caveats that should be considered when using the coding system. Specifically, ratings of maternal RF may be confounded when the parents have an infant less than two months of age, or if they have below average levels of nonverbal IQ. These

findings suggest that the interview and coding system may not be suitable for parents of newborn infants or those with learning difficulties. Furthermore, researchers using the coding system with high-risk samples should be attentive to the distribution of RF scores as these may be non-normally distributed and may not meet the assumptions of normality which apply to a number of statistical tests.

In summary, the PDI RF coding system is a valid and reliable measure which can be applied to interviews with parents from diverse backgrounds. There are some groups for whom the measure may be less suitable, but for most groups of parents the psychometric properties of the measure are adequate.

CHAPTER 4: MATERNAL REFLECTIVE FUNCTIONING, MATERNAL MENTAL HEALTH AND ADULT ATTACHMENT

4.1. Introduction

The inability to adequately think about and describe thoughts and emotions in both oneself and others has been associated with a number of personality characteristics, psychiatric conditions, and insecure attachment styles. A large number of studies and theoretical papers have made links between mentalisation/theory of mind (or limitations thereof) and mental health difficulties in adults, adolescents and children. There are, however, very few studies which have focused on how parental mental health relates to the capacity to mentalise specifically within the parent-child relationship. This is important for a number of reasons: 1) we know that parental mentalisation is important for the quality of the attachment relationship and developmental outcomes for the child (Slade, 2005); 2) some forms of parental psychopathology may be associated with mentalising difficulties, and the combination of mental health and mentalisation difficulties may indicate more risk within the parent-infant relationship than either factor alone; 3) the capacity to mentalise may not be affected by some forms of parental psychopathology and this capacity may buffer any potential deleterious effects that the parental mental illness may have on the child; 4) certain combinations of comorbid psychopathology may impact on the parent's capacity to mentalise and there may be some patterns that are more predictive of risk within the parent-infant relationship than others; and 5) variability in parental mentalising capacity may be almost completely explained by parents' self-reports of their psychological functioning and adult attachment relationships, making resource-intensive interview methods of assessing mentalisation unnecessary.

4.1.1. MENTALISATION AND PSYCHOPATHOLOGY

There is growing knowledge-base in the adult psychiatric literature about the links between mentalisation and certain psychiatric conditions. Some of these findings, organised by domain of psychopathology, are summarized below.

4.1.1.1. Depression

One might expect that major depression would be associated with mentalisation difficulties. Firstly, major losses of significant others and insecure attachment may precipitate depressive symptoms (Anisman, 1984; Sund & Wichstrøm, 2002), and these factors have also been linked with limitations in the capacity to mentalise (Bouchard, Target, Lecours, Fonagy, & Tremblay, 2008; Fonagy, Steele, Moran, Steele, & Higgitt, 1991; Fonagy, Steele, Steele, & Holder, 1997). Certainly, many mothers in the clinical sample in this study presented with a great deal of depressive symptomatology combined with traumatic attachment histories. Secondly, functional neuroimaging studies have reported abnormal ventral limbic and paralimbic activity in individuals with depression, and these brain areas have also been implicated in the mediation of mentalisation and social relatedness (Choi-Kain & Gunderson, 2008; Hartmann, 2009; Price & Drevets). Research into the role of mentalisation in affective disorders is still relatively new and findings are inconsistent. Some studies have shown impaired theory of mind performance in individuals experiencing major depression (Uekermann et al., 2008; Wang, Wang, Chen, Zhu, & Wang, 2008) and bipolar disorder (Kerr, Dunbar, & Bentall, 2003; Montag et al.), and theory of mind deficits have been shown to increase the risk of relapse in patients with major depression (Inoue, Yamada, & Kanba, 2006). These studies have used theory of mind tasks as an indicator of mentalising capacity. In contrast, a recent study did not find significant differences between depressed patients and non-depressed controls when overall mentalising capacity was measured with the RF scale applied to the AAI (Taubner, Kessler, Buchheim, Kachele, & Staun, 2011). However, this study did show that RF was lower for depressed individuals on questions specifically relating to loss. This suggests that the picture may be more complex when considering mentalising capacity within the attachment relationship system and as

elicited in attachment-related narratives rather than as a socio-cognitive task. Despite the preponderance of research into the effects of maternal depression on infant development, no studies have looked specifically at how maternal depression relates to parental mentalising capacity and how these both contribute to the quality of the parent-infant relationship. Given that women in the early postnatal period are three times more likely to experience depressive symptoms than those who have not recently had a baby (Cox, Murray, & Chapman, 1993), the impact of depression on the mother's capacity to mentalise about her young baby is an important field of exploration.

4.1.1.2. Anxiety Disorders

There is surprisingly little research into the interplay between mentalisation and anxiety-related disorders. One clinical case study has pointed to the possibility that phobias may be linked with a breakdown of mentalising capacity (Bodin, 1996), but the limited research that has been done does not corroborate this suggestion. In a pilot study, the AAI was administered to a group of patients with phobic disorder and coded for their level of RF. Their scores were in the average range, suggesting their general capacity to mentalise is not necessarily impaired compared to the general population (Rudden, Milrod, Target, Ackerman, & Graf, 2006). What is not clear is whether or not the capacity to mentalise is momentarily impaired during moments of heightened anxiety and this is not picked up by the AAI which asks about relatively stable representations of past relationships. Inconsistency in mentalisation may be a notable risk factor for the parent-infant relationship as it is during those moments of heightened arousal that the infant is most in need of a parent who can reflect on their thoughts and feelings (Fonagy, et al., 2002). This study measured parental anxiety and RF specifically in relation to the current parent-infant relationship, and in so doing it provides some insight into the relationship between anxiety disorders and the parent's capacity to mentalise during currently experienced moments of heightened attachment arousal which are crucial for the infant.

4.1.1.3. Borderline Personality Disorder

The adult psychiatric condition most often linked with lapses in mentalising capacity is Borderline Personality Disorder (BPD). This has mostly been driven by the work of Fonagy and colleagues, who have developed an elaborate developmental theory about the role of early attachment relationships, how these are governed by the parent's capacity to mentalise, how they provide the context for the child to develop their own capacity to mentalise, and how failures in this process are the seeds of maladaptation that may lead to later psychopathology, particularly in relation to the development of BPD (Bateman & Fonagy, 2001, 2003; Chiesa & Fonagy, 2000; Fonagy, 1999a, 1999b, 2000, 2003a; Fonagy, et al., 2002; Fonagy, Leigh, et al., 1995; Fonagy et al., 1996; Fonagy & Target, 2000, 2003; Fonagy, Target, & Gergely, 2000; Fonagy, Target, Gergely, Allen, & Bateman, 2003; Fonagy et al., 1997; Levinson & Fonagy, 2004). This work has been largely underpinned by the highly effective treatment of patients with BPD using a Mentalisation Based Treatment (MBT) approach, a therapeutic model which specifically aims to enhance the patient's capacity to consider their own and others' thoughts and feelings (Allen & Fonagy, 2006; Bateman & Fonagy, 2003, 2004a, 2004b, 2006; Chiesa & Fonagy, 2003; Chiesa, Fonagy, & Holmes, 2003, 2006; Fonagy & Bateman, 2006).

This theoretical model (Fonagy & Luyten, 2009), which links attachment relationships with adult psychopathology and child development, is the most elaborate in helping us to understand how and why parental mentalisation is so important in the child's psychosocial development. The link between inadequate parental mentalisation and the later development of borderline traits in the child has been clearly presented in the theoretical literature, but the direct link between how parents who have borderline traits are able to mentalise when thinking about their own child and how this influences the quality of relationship and outcomes for the child remains relatively unexamined.

4.1.1.4. Somatisation

The association between psychosomatic symptoms and “alexithymic” characteristics was first noted in the 1970s (Sifneos, 1973) and has subsequently been well-established (Taylor, Bagby, & Parker, 1997). Alexithymia has been described as a constriction in emotional functioning and difficulty finding appropriate words to describe emotions in oneself and others (Sifneos, 1977). There is an obvious overlap between this description of alexithymia and the concept of mentalisation. A functional MRI study found that alexithymia was associated with decreased activity in brain areas involved in mentalising functions, including the medial prefrontal cortex (Moriguchi et al., 2006). More recent research using theory of mind paradigms has shown that patients with somatoform disorders have more difficulty in theory of mind tasks (Subic-Wrana, Beutel, Knebel, & Lane, 2010). Although theory of mind is not synonymous with mentalisation, the ability to mentalise would, in part, depend on the ability to attribute mental states to oneself and others.

The aetiology of mentalisation difficulties shares much with that of somatoform disorders in that both have often been associated with early relational trauma (Fonagy & Bateman, 2008; Spitzer, Barnow, Gau, Freyberger, & Joergen Grabe, 2008; Waldinger, Schulz, Barsky, & Ahern, 2006). The capacity to mentalise is considered to develop within early relationships through the caregiver’s capacity to re-present to the infant their emotional states in an accurate and contingent manner (Gergely & Unoka, 2008). When this process fails through the caregiver’s misattributions of intent or emotional state of the infant, or through their failure to respond altogether, the child is not able to accurately symbolize their self states, or to understand clearly those of others. This unsymbolised affect and sense of self is what is thought to lead to their own inability to mentalise, and the defensive use of somatisation may be a way of coping with such negative affective states. Inadequate early attachment experiences are likely to hinder the individual’s developmental shift from a teleological mode of functioning (understanding the world in terms of purely physical actions) to a mentalising, intentional mode of functioning (understanding the world in terms of people’s mental states underlying their behaviour) (Gergely, 2003). From a teleological

framework, the dysregulation of negative affect can only be understood in terms of concrete, physical states, leading to somatisation as the only way to symbolize and regulate those affective states.

4.1.1.5. Psychoticism/Paranoia

A large body of research has demonstrated that individuals experiencing psychotic symptoms and disorders are likely to have difficulties with mentalising (see (Brune, 2005) for a review). A meta-analysis found a very large effect size of theory of mind deficits in individuals with schizophrenia and the authors suggest that mentalising impairment represents a possible trait marker of schizophrenia (Sprong, Schothorst, Vos, Hox, & Van Engeland, 2007). Abnormal psychological processes associated with many of the symptoms of schizophrenia have been linked with underlying neurobiological systems which are also associated with the capacity to mentalise (Frith, 1992). Furthermore, mentalisation-based therapy has recently been recognized as useful for the treatment of patients with psychotic-spectrum disorders (Brent, 2009).

Paranoid and psychotic symptoms and how they relate to mentalisation can be understood from a psychoanalytic perspective. Disturbances in the capacity to make sense of reality, as is seen in psychotic states of mind, are more likely to emerge from distorted mentalising (e.g. “she is thinking bad things about me”) rather than concrete nonmentalising (e.g. “she is bad/ I am bad”). It is likely that individuals experiencing psychotic or paranoid symptoms would be functioning in the psychic equivalence mode (internal reality *is* external reality) or pretend mode (mental world entirely decoupled from external reality) of functioning. These modes of functioning are seen in early childhood and the integration of them is a normal developmental process which eventually enables the child to move on to the stage of mentalisation. Once the mentalisation stage is reached, inner and outer realities are understood to be associated but also different, and they are no longer equated or dissociated from each other (Target & Fonagy, 1996). According Target and Fonagy (1996), the integration of the psychic equivalence and pretend modes of functioning is

facilitated by the representation and reflection of the child's mental states in playful interactions with caregivers or older children. Failures in this process may result in inadequate integration so that the individual switches to these premature modes of functioning at times. This may result in paranoid delusions, hallucinations, and other symptoms of psychotic states of mind. A deeper understanding of the role of mentalisation in the attachment relationship may, in part, provide some insight into the aetiology and intergenerational transmission of some of the more severe forms of psychopathology, such as psychosis.

4.1.1.6. Obsessive-Compulsive Disorder

There is limited evidence that only high level mentalising capacities are affected in patients with Obsessive Compulsive Disorder (OCD). A recent study found no differences between OCD patients and controls on most basic theory of mind tasks. Although no data are available in relation to mentalising and OCD, there are some studies looking at theory of mind in OCD patients. Patients only performed worse on the “double bluff” task, but this could be explained impaired memory capacities that were associated with the disorder (Sayin, Oral, Utku, Baysak, & Candansayar, 2010). Obsessive Compulsive Personality Disorder (OCPD) has been associated with mentalising impairments (Dimaggio et al., 2011). However, comorbidity between OCPD and OCD is low (Baer et al., 1990) so similar mentalising impairments would not necessarily be present in patients with OCD and no comorbid personality disorder.

4.1.1.7. Comorbidity

The descriptions of different psychiatric conditions and their associations with mentalisation above are given separately for clarity sake. It should be emphasized that these are not mutually exclusive categories and the overlaps between them are likely to be greater than the differences, particularly in considering the role of mentalisation. For example, a meta-analysis found a high level of comorbidity between Somatization Disorders and most

Axis II Personality Disorders, including BPD (Bornstein & Gold, 2008). Similarly, some psychotic symptoms, such as paranoid ideation and depersonalization, are prevalent in a large number of BPD patients (Nishizono-Maher et al., 1993; Zanarini, Gunderson, & Frankenburg, 1990). All of these diagnoses have been linked with mentalisation deficits, and it is likely that common developmental sequelae underpin them. From a developmental psychopathology perspective, one might conceive that it is the absence of an adequate representation of one's self states in the early attachment relationship that leads to: 1) an inadequate understanding of one's own and other's minds (mentalising difficulties); 2) adopting a teleological stance and the defensive use of somatisation as a defense against heightened unsymbolized affective arousal (somatization); 3) an acting out against an "alien self" which develops in such poorly mentalised early relationships (self-harm seen in borderline patients); and 4) moments of dissociation or paranoid ideation (psychotic symptoms) as one functions within the pretend mode or mode of psychic equivalence.

4.1.2. THE CURRENT STUDY

If, as has been proposed in the mentalisation literature summarized here, some of the developmental precursors of psychopathology have roots in individuals' early attachment relationships, then research is sorely needed to further our understanding of how parents with mental health difficulties are able to provide a mentalising stance towards their own children. Although there are implicit theoretical links between parental psychopathology and mentalisation in parent-infant relationships, the direct interplay between these has not been studied in any great detail. It is the missing piece of the puzzle in understanding intergenerational developmental psychopathology, attachment, and the role of parental mentalisation. The current study provides some of the first data in addressing this gap.

Standardized questionnaires were used to assess parental mental health along a number of dimensions, rather than psychiatric diagnostic categorization. Thus, the manner in which

different domains of psychological functioning cluster around the capacity for parental mentalisation could be ascertained.

In addition to maternal psychopathology, this study also explored the role of self-reported maternal adult attachment and how it relates to parental RF. The RF coding system was originally developed and applied to the Adult Attachment Interview (Fonagy, et al., 1998). A parent's capacity to mentalise when talking about their childhood attachment relationships during the AAI is predictive of their children's attachment security and parental RF measured directly by the PDI (Fonagy, Steele, Moran, et al., 1991). However, the relevance of generic and current adult attachment relationships, rather than past childhood relationships, has not been assessed. Current adult attachment strategies may mediate or moderate the link between parental psychological well-being and capacity to mentalise in the parent-infant attachment relationship. This hypothesis is explored in the current study.

4.2. Method

4.2.1. PARTICIPANTS

The sample for the current study included the clinical and normative groups as described in Chapter 3. The prison sample was not included as these mothers did not complete most of the mental health and attachment-related questionnaires. Some questionnaires (BPI and ECR-R) were introduced later on in the data collection process for the clinical sample, so data are available for fewer cases for these measures. Some mothers did not complete all questionnaires or did not answer a large number of items on individual questionnaires, so the sample sizes vary for each measure (see Table 4.1 below for sample sizes for each measure).

4.2.2. MEASURES

The mothers in the study were interviewed by a researcher and they completed a set of standardised questionnaires.

4.2.2.1. Parent Development Interview (PDI; Slade, Aber, et al., 2004)

The Parent Development Interview (as described in Chapter 3) was administered and coded for the level of maternal Reflective Functioning (RF) (Slade, Bernbach, et al., 2004). As the previous chapter concluded that the internal consistency of RF scores for all demand questions was very high, and that the correlations between the demand questions and overall score were high, the overall RF score was used here as a reliable measure of maternal RF.

4.2.2.2. Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977)

The CES-D (Appendix 2.5) was developed by the Center for Epidemiologic Studies at the National Institute of Mental Health specifically to meet the need for a brief measure of depressive symptoms suitable for use in community surveys. The CES-D consists of 20 items that were selected from other depressions scales, including the BDI, the SADS and the MMPI. Six major symptom areas were identified, and several items from each of the above scales were selected to identify each category. The areas include depressed mood, guilt/worthlessness, helplessness/ hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance. Each item is rated on a scale from 0 to 3 in terms of frequency of occurrence during the past week. The total score may range from 0 to 60, with a score of 16 or more indicating impairment. The reliability of the CES-D has been tested on clinical and normative populations (Radloff, 1977; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). Results of these investigations indicated that the scale has high internal consistency reliability, acceptable test-retest stability, and good construct validity.

4.2.2.3. Pearlin Mastery Scale (Pearlin & Schooler, 1978)

This seven-item scale (Appendix 2.6) asks participants to respond to the extent that they feel some control over their life's chances, as opposed to feeling ruled by fate. Responses indicating agreement to disagreement are based on a seven point scale. Higher scores indicate a higher sense of mastery. Mastery scores were negatively correlated with depression scores and positively correlated with self-esteem scores (Pearlin, Menaghan, Lieberman, & Mullan, 1981). Pearlin and Schooler (1978) report .44 test-retest correlations, and (L.S. Sadler, 1997) reported alpha reliability coefficients of .76 to .77 with an urban African American sample of adolescent and adult women.

4.2.2.4. Brief Symptom Inventory (BSI; Derogatis, 1975)

The BSI (Appendix 2.7) is a widely used self-report measure of psychopathology. This 53 item measure provides an indicator of current overall psychological symptomatology across multiple domains experienced during the preceding 2 weeks. It yields a Global Severity Index (GSI) score, and scores for the following domains: somatisation, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, and psychoticism. The BSI has been shown to be a reliable (coefficient alpha for GSI = .90) and a valid measure of current global psychological distress (Boulet & Boss, 1991).

4.2.2.5. Borderline Personality Inventory (BPI; Leichsenring, 1999)

The BPI is a 53-item true/false self-report questionnaire which taps into borderline personality features (Appendix 2.8). It is based on Kernberg's concept of borderline personality organization and is strongly associated with DSM-III criteria of BPD. It has been shown to have satisfactory internal consistency, retest reliability, and good sensitivity and specificity (Leichsenring, 1999). It can be used as a screening instrument for BPD but also for dimensional research of borderline features based on domains of Identity Diffusion, Primitive Defenses, Impaired Reality Testing and Fear of Fusion. These domains were

created based on the results of factor analytic studies and have been shown to have re-test reliability, good internal consistency, specificity and sensitivity (Leichsenring, 1999). Within the 53-item measure, the 20 most discriminatory items can be used to form a cut-off score (cut-20) likely to confer a diagnosis of BPD according to the DSM-III-R (Leichsenring, 1999). This is based purely on discriminatory power, therefore not relating to a distinct theoretical construct. The measure's author found that at a score ≥ 10 , specificity was 90% of those with no diagnosis, 86% psychotic diagnosis, and sensitivity 85-89% with a borderline diagnosis. Leichsenring (1999) concludes that this yields results which are sufficiently discriminant to use the BPI as a self-report diagnostic tool. As this questionnaire was not used in the early stages of the research with the clinical sample, data are only available for 113 of the 178 clinical cases.

4.2.2.6. Parenting Stress Index- short form (PSI-SF; Abidin, 1995)

The PSI-SF (Appendix 2.4) is a 36-item questionnaire that measures stress level experienced within the parenting role. Rated on a five-point scale, the measure contains three subscales pertaining to parenting stress. The Difficult Child (DC) subscale assesses the degree to which parents are bothered by behavioural characteristics of their children that make them difficult to manage. The Parent-Child Dysfunctional Interaction (P-CDI) subscale focuses on the degree to which parents are satisfied with their children's abilities to meet their expectations. The Parental Distress (PD) subscale determines the distress parents feel as a function of personal factors directly related to parenting. The measure also yields an overall parental stress score. The PSI-SF subscales have demonstrated concurrent validity with the full-length PSI (Abidin, 1995). The measure has been shown to have good internal consistency and concurrent and predictive validity (Haskett, Ahern, Ward, & Allaire, 2006; Reitman, Currier, & Stickle, 2002)

4.2.2.7. Experience in Close Relationships Scale-Revised (ECR-R; Fraley, Waller, & Brennan, 2000)

The ECR-R (Appendix 2.9) is a 36-item questionnaire which was used to assess mothers' attachment style. The ECR-R is comprised of a selection of items from a large scale factor analysis of many different attachment style questionnaires. Each item is rated on a 7-point scale. The questionnaire captures attachment style along two dimensions (anxiety and avoidance) in respect to close interpersonal relationships. As some mothers in the study will not have current romantic partners, the general or "global" version was used. This measure has demonstrated good stability and internal consistency (Fraley, et al., 2000; Sibley & Liu, 2004). Adult attachment has been conceptualized as falling within four categories which are organised by the two dimensions of avoidance and anxiety (Bartholomew & Horowitz, 1991): secure, dismissive, preoccupied and fearful (see fig. 4.1). Mothers were classified on the four dimensions based on whether they scored above or below the population means for attachment avoidance and anxiety. Mothers who scored low on avoidance and anxiety were classified as secure, those scoring high on avoidance and low on anxiety were classified as dismissing, those with high anxiety and low avoidance were classified as preoccupied, and those with high avoidance and high anxiety were classified as fearful. Although the conceptualization of adult attachment on a dimensional rather than categorical basis is advocated (Fraley & Waller, 1998), both continuous and categorical variables were included in the current analyses.

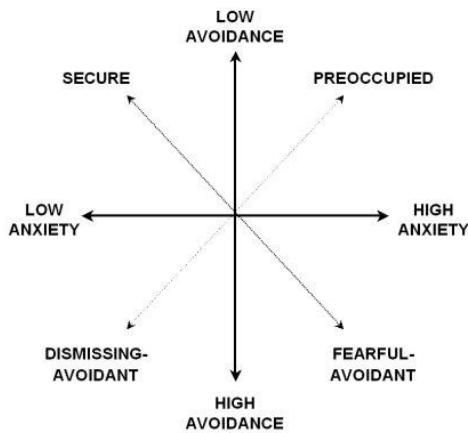


Figure 4.1. Categorization of adult attachment along two dimensions of anxiety and avoidance

Table 4.1. Number of cases who completed each measure

Measure	Clinical group	Normative group	Total
	N	n	n
CES-D	106	57	163
Pearlin Mastery Scale	102	57	159
BSI	102	57	159
BPI	58	55	113
PSI	102	56	158
ECR-R	59	53	112

4.3. Results

4.3.1. RF AND MATERNAL MENTAL HEALTH

The mean scores for the measures of maternal mental health are presented in Table 4.2, and the correlations between maternal RF and all measures of maternal mental health measures are presented in Table 4.3. As expected, the mothers in the clinical sample reported significantly greater levels of psychological distress than those in the normative sample. The only exception was Impaired Reality Testing on the BPI, with both groups scoring very low on this subscale.

For the pooled clinical and non-clinical samples, some measures of maternal mental health were significantly correlated with maternal RF. These were depression, as measured by the CES-D, and Somatization, Depression, Phobic Anxiety, Paranoid Ideation and Psychoticism, as measured by the BSI. Although significant, the correlation coefficients were modest (in all cases $r < .200$).

For the clinical sample alone, maternal RF was not significantly correlated with any of the measures of maternal mental health. For the non-clinical sample, only one measure, probable caseness for borderline personality disorder (BPD) as measured by the BPI, was significantly positively associated with maternal RF. In other words, the mothers who were likely to meet the criteria for BPD characteristics demonstrated a better capacity to mentalise during the PDI. However, there were only two mothers who scored over the BPD cut-20 threshold so this finding should be interpreted with a great deal of caution, particularly since the same association was not found in the larger pooled sample or in the clinical sample alone.

Interestingly, the correlations between RF and most of the BPI subscales were negative for the clinical sample, as expected, but positive for non-clinical samples. To enable

comparisons, Fisher's *Z* transformations of the RF and BPI subscale correlation coefficients were used to compare the correlations for the two independent samples (Steiger, 1980). The clinical and non-clinical samples had significantly different correlations between RF and the Impaired Reality Testing subscale of the BPI, $p = .020$. Correlations between RF and other subscales of the BPI did not differ significantly for the two samples. The mean Impaired Reality Testing scores were not different for the two groups, only the way in which they correlated with RF.

Table 4.2. Summary scores for measures of parental mental health (see Appendix 1, Table A.2. for full details)

Measure	Clinical	Normative	Diff- erence between groups (p)	Total
CES-D: Mean (SD)	26.6 (12.1)	11.9 (8.5)	.000	21.5 (13.0)
Pearlin Mastery Scale: Mean (SD)	29.2 (7.4)	37.0 (8.8)	.000	32.0 (8.7)
BSI: Mean (SD)	N = 101	N = 58		N = 159
Somatization	49.7 (10.9)	42.9 (7.8)	.000	47.2 (10.4)
Obsession-Compulsion	51.7 (9.8)	44.7 (9.0)	.000	49.2 (10.1)
Interpersonal Sensitivity	48.8 (9.4)	40.2 (8.1)	.000	45.7 (9.9)
Depression	46.5 (8.7)	36.2 (6.0)	.000	42.7 (9.3)
Anxiety	43.9 (8.7)	35.7 (6.9)	.000	40.9 (9.0)
Hostility	49.6 (9.4)	43.8 (7.1)	.000	47.5 (9.1)
Phobic anxiety	50.8 (10.6)	42.9 (6.1)	.000	47.9 (9.9)
Paranoid ideation	50.7 (9.7)	43.5 (8.1)	.000	48.1 (9.8)
Psychoticism	48.8 (9.7)	38.8 (6.9)	.000	45.2 (10.0)
General Severity Index	47.9 (11.1)	35.7 (9.3)	.000	43.5 (12.0)
BPI:	N = 58	N = 55		N = 113
Identity Diffusion: Mean (SD)	2.7 (2.1)	1.5 (1.9)	.004	2.1 (2.1)
Primitive Defenses: Mean (SD)	2.9 (2.4)	1.2 (2.0)	.000	2.1 (2.3)
Impaired Reality Testing: Mean (SD)	.34 (.78)	.13 (.43)	.325	.24 (.64)
Fear of Fusion: Mean (SD)	2.2 (1.7)	.87 (1.4)	.000	1.5 (1.7)
Cut-20 Score: Mean (SD)	5.2 (3.7)	2.6 (3.3)	.000	3.9 (3.7)
PSI-SF Total stress: Mean (SD)	86.6 (19.5)	69.7 (19.9)	.000	80.6 (21.2)

Table 4.3. Correlations between overall RF and measures of parental mental health (see Appendix 1, Table A.3. for full version)

Measure	Clinical	Normative	Total
CES-D	-.122	-.035	-.177* (p=.025)
Pearlin Mastery Scale	.122	-.127	.096
BSI: Somatization	-.180	-.104	-.201* (p=.012)
Obsession-Compulsion	.039	-.051	.048
Interpersonal Sensitivity	-.035	-.001	-.090
Depression	-.103	-.094	-.170* (p=.033)
Anxiety	-.079	-.091	-.145
Hostility	-.020	-.128	-.099
Phobic anxiety	-.130	-.051	-.163* (p=.042)
Paranoid ideation	-.136	-.046	-.160* (p=.046)
Psychoticism	-.111	-.162	-.186* (p=.020)
General Severity Index	-.074	-.070	-.072
BPI: Cut-20 Score	-.119	.063	-.091
Cut-20 caseness	-.142	.268* (p=.050)	-.035
PSI-SF: Total Stress	-.004	-.061	-.092

* Significant at the .05 level (2-tailed)

4.3.2. RF AND MATERNAL ATTACHMENT

The scores for maternal attachment anxiety and attachment avoidance, as well as the proportion of mothers falling within each classification category, are presented in Table 4.4. The correlations between the attachment scores/classifications and maternal RF are presented in Table 4.5. The mean scores for the non-clinical sample were not significantly different to the population norms, indicating that this group is an appropriate normative comparison group in terms of maternal attachment difficulties. For this normative sub-sample, neither of the indicators of maternal attachment difficulty were associated with

maternal RF. Similarly, none of the classification categories were significantly associated with RF for this group.

The mothers in the clinical group reported significantly higher levels of both attachment avoidance and attachment anxiety relative to the population norms and normative group. This finding validates the referral to parent-infant psychological services. These mothers were clearly experiencing difficulties in forming close emotional relationships and were therefore at high risk of perpetuating these maladaptive attachment strategies in their relationships with their babies. For these mothers, attachment anxiety was significantly positively correlated to maternal RF. In other words, the more attachment anxiety these mothers reported, the higher their levels of RF were likely to be. A dismissive classification for the clinical group was significantly associated with lower levels of RF. There was also a small association between the fearful classification and maternal RF ($p = .057$).

Table 4.4. Maternal attachment scores

	Clinical group (N = 59)	Normative group (N = 53)	Difference between groups (p)	Female population norms ^a	Total sample (N = 112)
Attachment Avoidance:	3.90	2.98	<.001	2.95	3.46
Mean (SD)	(1.03)	(.89)		(1.91)	(1.07)
Attachment Anxiety:	4.39	3.55	<.001	3.64	3.99
Mean (SD)	(1.17)	(1.23)		(1.33)	(1.27)
Secure: N (%)	1 (2%)	21 (39%)	<.001		22 (20%)
Dismissive: N (%)	15 (26%)	8 (15%)	.148		23 (21%)
Preoccupied: N (%)	8 (14%)	8 (15%)	.877		16 (14%)
Fearful: N (%)	34 (59%)	17 (32%)	.004		51 (56%)

^a From a sample of over 22000 female participants who completed the questionnaire online (Fraley, 2010)

Table 4.5. Correlations between overall RF and maternal attachment

	Clinical (N = 57)	Normative (N = 53)	Total (N = 110)
Attachment Avoidance	-.107	-.188	-.193* (p=.043)
Attachment Anxiety	.298* (p=.023)	.053	.118
Classifications:			
Secure	.172	.098	.193
Dismissive	-.271* (p=.041)	-.216	-.257**(p=.007)
Preoccupied	-.084	.112	.020
Fearful	.253 (p=.057)	-.024	.084

* Significant at the .05 level (2-tailed)

** Significant at the .01 level (2-tailed)

4.3.3. MATERNAL MENTAL HEALTH AND ATTACHMENT PREDICTORS OF MATERNAL RF

Linear regression analyses were used to build models of predicting maternal RF levels based on maternal mental health and attachment characteristics. These results are presented in Table 4.6.

In the first step, only the measures of maternal mental health were examined as possible predictors of maternal RF. All variables which showed some correspondence with RF were included in a stepwise linear regression (CES-D, BSI Somatization, BSI Depression, BSI Phobic Anxiety, BSI Paranoid Ideation, BSI Psychoticism, and BPI Cut-20 scores and caseness). The squared values of each measure were also examined as possible predictors, in case there were important nonlinear relationships between any of these and RF. For the combined sample, the best model included only one predictor variable, “Somatization” as measured by the BSI. This model (Model 1 in Table 4.6) accounted for 4% of the variance in maternal RF ($\text{adj } R^2 = .039$, $F(1, 110) = 7.29$, $p = .008$). Greater reported levels of Somatization were associated with lower levels of RF.

Although depression on the CES-D and the Depression, Phobic Anxiety, Paranoid Ideation and Psychoticism subscales of the BSI were correlated with maternal RF, these were not significant predictors when Somatization was included in the model.

In the next step, the measures of maternal attachment were examined in relation to maternal RF. Attachment anxiety and avoidance, as measured by the ECR, were both significant predictors of maternal RF (Model 2 in Table 4.6). The model accounted for 7% of the variance in maternal RF ($\text{adj } R^2 = .068$, $F(2, 109) = 4.99$, $p = .008$). The squared value of attachment anxiety was a better predictor than the standard score, indicating a nonlinear relationship. The scatterplot of attachment anxiety and maternal RF indicated that RF levels were highest when the mother reported moderate levels of attachment anxiety. Very low and very high levels of attachment anxiety were more likely to be associated with low levels of parental mentalisation.

To test for interaction effects, the interaction score of attachment avoidance and attachment anxiety, as well as the individual scores for each dimension were entered into a regression model. Although each of the dimensions were significant predictors of RF, the interaction term was not significant.

The dummy variables indicating 4-way attachment classification were also examined. The only dimension that predicted RF was the “dismissive” category, characterized by high avoidance and low anxiety. This model accounted for 6% of the variance in RF ($\text{adj } R^2 = .057$, $F(1, 109) = 7.606$, $p = .009$). Model 2 (Table 6), which included the continuous attachment anxiety and avoidance scores, was a slighter better explanatory model for maternal RF than this categorical variable.

In the final step, the measures of maternal mental health and attachment were considered together in predicting maternal RF. Both ECR subscales and all mental health measures which showed some potential relationship with RF (CES-D, BSI Somatization, BSI Depression, BSI Phobic Anxiety, BSI Paranoid Ideation, BSI Psychoticism, and BPI Cut-20 scores and caseness) were included into a stepwise linear regression. The squared values of each of the measures were also included in case there were nonlinear associations with RF. The final model (Model 3 in Table 4.6) accounted for 13% of the variance in maternal RF, and included Somatization and Paranoid Ideation, as measured by the BSI, and attachment anxiety, as measured by the ECR ($\text{adj } R^2 = .133$, $F(3, 107) = 6.58$, $p < .001$). The squared values for all three predictor variables fitted the model best, indicating that the relationship between these variables and RF is nonlinear.

Table 4.6. Regression equations of maternal mental health and attachment predictors of maternal RF

Predictor variables	B (SE)	B	t	p
Model 1 (adjusted $R^2 = .039$)				
Constant	4.98 (.27)		13.61	.000
BSI Somatization (squared)	-.28 (.11)	-.212	-2.58	.008
Model 2 (adjusted $R^2 = .068$)				
Constant	5.08 (.46)		11.14	.000
ECR Attachment avoidance	-.386 (.14)	-.287	-2.85	.005
ECR Attachment anxiety (squared)	.034 (.01)	.239	2.37	.019
Model 3 (adjusted $R^2 = .133$)				
Constant	5.29 (.39)		13.05	.000
BSI Somatization (squared)	-.320 (.15)	-.225	-2.09	.039
ECR Attachment anxiety (squared)	.050 (.02)	.354	3.37	.001
BSI Paranoid Ideation (squared)	-.316 (.13)	-.275	-2.37	.019

4.3.4. EXAMINING POTENTIAL INTERACTION EFFECTS

Further analyses were carried out to determine if there were any interaction (moderation) effects between maternal mental health and attachment characteristics when predicting maternal RF. All continuous variables which showed some association to maternal RF were converted to centred scores by subtracting the mean for the measure from each individual score. This reduces the effect of multicollinearity, facilitates comparisons between the different variables and can assist in the proper interpretation of the results (Aiken & West, 1991).

4.3.4.1. BPD Traits

The correlations between BPD traits as measured by the BPI and RF showed interesting differences between the clinical and non-clinical groups. For the mothers in the clinical group, the relationship between maternal RF and borderline traits was negative, as would be expected from the empirical and theoretical links between BPD and lapses in mentalisation. The failure to develop adequate mentalisation skills in attachment relationships and the development of BPD traits are thought to stem from similar maladaptive developmental processes and attachment experiences (Fonagy & Bateman, 2008). In the normative group, however, the correlations between some borderline traits and maternal RF were positive. In other words, for the non-clinical group, higher levels of mentalising were associated with greater levels of borderline traits. This raises some interesting questions about the link between mentalisation and the “normal” range of borderline traits.

To test the possibility that the association between borderline traits and RF was moderated by clinical referral, the interaction terms between each of the BPI subscales and clinical referral (dummy variable) were computed. These interaction terms, along with the main effects of clinical referral and corresponding BPI subscale score, were entered into hierarchical linear regression models. None of these models were very good at predicting levels of maternal RF and the interaction terms were not significant. As some mothers in the normative group met the clinical cutoff criteria on the CES-D for significant levels of depression, the CES-D clinical caseness was examined as a better predictor (alongside BPD features) of maternal RF than clinical referral. Once again, interaction terms between the BPI subscales and CES-D caseness (dummy variable) and CES-D score (continuous variable) were computed. The BPI subscales, CES-D caseness/scores, and their respective interaction terms, were entered into linear regression models. Once again, these interactions did not prove useful in predicting levels of maternal RF.

4.3.4.2. Attachment avoidance and anxiety

The interactions between attachment avoidance and anxiety on the ECR and other pertinent measures of psychopathology which were associated with maternal RF (depression, BPD traits, somatisation, paranoid ideation and psychotism) were investigated. The interactions between the attachment and psychopathology measures and the measure scores alone were entered into regression analyses. None of the interactions were significant and the main effects of attachment avoidance and attachment anxiety were better predictors of maternal RF than the interactions between attachment and mental health characteristics. This suggests that mental health did not moderate the associations between adult attachment and maternal mentalisation.

4.4. Discussion

This study was one of the first to examine the impact of maternal psychopathology and attachment characteristics on maternal reflective functioning. Although there were some small associations which will be discussed in more detail below, a key finding of this study is that maternal RF as measured on the PDI is relatively independent of parent self-reported psychopathology and adult attachment characteristics. The correlations between RF and most of the self-report measures were relatively low. The analysis of maternal mental health and adult attachment factors which might predict RF resulted in models which could only account for, at best, about one seventh of the variance in RF. This finding is somewhat surprising given the strong theoretical and empirical links between adult psychopathology, attachment and mentalising, as described earlier. RF on the PDI is a measure which is specific to the parent-infant relationship. Although several studies have found significant associations between psychopathology and mentalisation measured by the AAI (Bouchard, et al., 2008; Fischer-Kern et al., 2010; Levy et al., 2006; Rudden, et al., 2006; A. Ward et al., 2001), this does not necessarily translate to psychopathology affecting the mother's capacity to mentalise in relation to her child. It appears that some types of psychological distress do not necessarily impinge on the mother's capacity to treat her child as a psychological agent. The mother's capacity to mentalise may in some cases act as a protective factor for the child when maternal psychopathology is present.

There are some measurement issues which should be considered in understanding these findings. Attachment research has made use of relatively laborious interview methods for the assessment of both attachment and RF. The Adult Attachment Interview was borne out of the need for assessing adults' *states of mind* or *representations* in relation to attachment. This involves picking up on a number of implicit, non-conscious discursive processes such as coherence and lapses in monitoring of reasoning (Main & Goldwyn, 1995). A questionnaire-based methodology would be inadequate for assessing such psychodynamic processes. The PDI has been developed in the same tradition as the AAI, in that it aims to

assess *mental representations* and the dynamic states of mind that are elicited when thinking and talking about attachment relationships (Slade, 2005). We would therefore expect that parental RF as measured by the PDI should in fact provide some unique variance to understanding risk and resilience within the parent-infant attachment relationship other than that which can be explained by self-report and adult-specific measures. If we had found that parental self-reported psychopathology and attachment style (in relation to other adult close relationships) was able to explain most of the variance in maternal RF, lengthy and resource-heavy interview methods such as the PDI would be redundant. This study, therefore, provides further evidence for the discriminant validity of the PDI RF measure.

4.4.1. MATERNAL PSYCHOPATHOLOGY AND RF

Although the prediction of maternal RF by maternal psychopathology factors was small, there were some significant and non-significant associations which are worthy of discussion. The specific domains of mental health which were significantly associated with RF were depression, somatization, phobic anxiety, paranoid ideation, and psychotism.

Continuous measures of maternal depression were found to have a small but significant association with maternal mentalisation difficulties. This was true for both the CES-D and the depression subscale of the BSI. However, meeting the threshold for clinically significant levels of depressive symptoms was not significantly related to low levels of RF. These findings are consistent with previous studies, some of which have shown links between theory of mind and depression (Uekermann, et al., 2008), and others which have found no differences in overall RF levels between depressed and non-depressed individuals (Taubner, et al., 2011). In this study, the effect of maternal depression on RF was no longer significant when other indicators, most notably maternal attachment and somatization, were assessed simultaneously. It is likely that, at least in the case of attachment-related mentalisation, other factors such as trauma in the mother's own attachment history, can lead to both depression and mentalisation difficulties but that depression which is

independent of early relational trauma does not necessarily impinge on a mother's capacity to mentalise. The heterogeneity of the sample in this study means that some but not all of the depressed mothers also had traumatic or difficult attachment histories. Further research using both the AAI and PDI with depressed mothers would shed more light on this hypothesis.

The most powerful maternal mental health predictor of maternal RF was somatization. Given that less than one fifth of the mothers in the sample had a diagnosis of any chronic psychical health problem, the somatization measure is unlikely to be confounded by a high prevalence of physical illness or disability. When somatization was included in the model predicting maternal RF, no other measures of maternal mental illness apart from paranoid ideation could account for any more variance in RF. A number of studies have linked the breakdown in mentalisation with somatizing symptoms (Moriguchi, et al., 2006; Subic-Wrana, et al., 2010). Somatization may be indicative of an individual's tendency to take a teleological, rather than intentional, mentalising stance to understanding the social world and internal self states (Gergely, 2003). If the individual is unable to mentalise in relation to their own heightened affective states, the defensive use of somatization may be the only outlet for such experiences. This study is the first to make links between parental somatizing symptoms and the capacity to mentalise in relation to the parent-infant relationships. The complex and demanding experiences of early parenthood are probably very likely to elicit somatic symptoms in parents who are not able to consider their infant's internal states of mind. In other words, these parents are likely to be using a defensive coping strategy of somatization to compensate for their difficulty in mentalising. For example, a mother who experiences somatic symptoms might say "it's not my baby's crying that is the problem, it is my severe headaches", whereas a highly reflective mother would be willing to accept, talk about, and reflect upon her negative feelings about motherhood by saying, "My baby's crying is hard for me because I don't always know why she cries. I sometimes feel cross and frustrated when she cries and this makes me feel bad".

Generalised anxiety was not significantly associated with maternal RF, but there was a significant negative correlation between phobic anxiety and RF. Phobic anxiety refers to disproportionate and irrational fear responses to specific events, places or people rather than the more consistent feelings of nervousness or tension that are picked up by the measure of generalised anxiety. The phobic anxiety subscale of the BSI picks up on what is also termed “phobic anxiety depersonalization syndrome” (Derogatis, 1975; Roth, 1959). It is possibly these states of depersonalization that occur during phobic episodes that provide the bridge to understanding symptoms of anxiety and lapses of mentalisation.

Depersonalization refers to feelings of being detached from one's body or mental processes and usually a feeling of being an outside observer of one's life. Such symptoms are commonly found in individuals with a limited capacity to mentalise (Liotti & Gumley, 2009). There are also some clear overlaps between the concepts of depersonalization and the identity diffusion components of borderline personality organization (Kernberg, 1967). These may all share a similar aetiology in the mother's own attachment history. It appears that symptoms of anxiety alone may not be linked with a breakdown in a mother's capacity to consider her own and her infant's mental states, but rather that a tendency to have phobic, possibly dissociative, reactions to certain stressors is indicative of lapses in mentalisation. The PDI is designed to trigger the caregiving system by asking parents to think about positive but also negative, painful, or difficult experiences. It is possible that talking about these events is sufficient to trigger fearful affect and thus a breakdown of mentalisation capacity in some mothers. This combination of risk factors may be particularly potent for the infant. Frightened affect from the caregiver, particularly when the infant's attachment needs are greatest, may lead to a disorganization of the attachment system (Hesse & Main, 2006). If such fear reactions are paired with a breakdown of the capacity to mentalise about how the infant (or mother herself) might be feeling, the mother would be less likely to be able to provide regulation for her own or her infant's distress under such circumstances. This would further exacerbate the disorganization of the infant's attachment system.

As predicted from the adult psychiatric literature, psychoticism and paranoid ideation were, at least to a small extent, predictive of a breakdown in a mother's capacity for mentalisation about her infant (Brent, 2009; Brune, 2005; Frith, 1992; K. H. Lee, Farrow, Spence, & Woodruff, 2004; Liotti & Gumley, 2009; Sprong, et al., 2007). The recruitment of the clinical sample in this study explicitly excluded mothers who were currently psychotic as the treatment arm of the trial was contraindicated for floridly psychotic individuals. Thus, the prevalence of psychotic symptoms and disorders was much lower than it would have been in a more representative perinatal psychiatric sample and it is possible that the effect is underestimated in this study. Despite this, the sample did include some mothers who endorsed some of the psychosis and paranoia-related items, and these mothers tended to have lower levels of RF when talking about their relationships with their infants. Further research which explicitly examines parental mentalisation in mothers with psychotic disorders is needed to examine true extent of this finding, particularly given the relatively high risk of psychotic episodes in the postnatal period (Kendell, Chalmers, & Platz, 1987).

For the combined clinical and non-clinical samples, maternal RF was relatively unrelated to several aspects of maternal mental health, namely parenting stress, maternal sense of mastery, interpersonal sensitivity, obsession-compulsion, hostility, general psychological functioning (as measured by the general severity index of the BSI), and borderline personality traits. Most of these findings are consistent with our expectations and indicative of the discriminant validity of the measure of maternal RF. For example, research has shown that mentalisation is not necessarily impaired in patients with OCD symptoms (Sayin, et al., 2010).

The finding that BPD traits, as measured by the BPI, were not very well correlated with RF in the overall sample was unexpected. The relationship between RF and BPD traits was in the opposite direction for the clinical and non-clinical samples. Clinically referred mothers showing some signs of BPD traits tended to have a poorer capacity to mentalise, but non-clinically referred mothers with self-reported BPD traits tended to have higher levels of RF.

It is possible that the opposite directionality of the association cancelled out the prediction of RF that might be present for each group of mothers, but the sample sizes for each cohort alone were too small to facilitate separate analyses for each group. Clinical and non-clinical mothers did not differ on the degree of “Impaired Reality Testing” as assessed by the BPI, but they did have significantly different correlations with maternal RF from each other - negative for the clinical mothers and positive for the non-clinical group. This finding may indicate that the measure is picking up on different processes for the two groups. Items on this subscale include questions such as “I have the feeling that other people have injected their thoughts into my mind”. It is possible that mothers with high levels of RF might interpret such questions differently from those who truly would be classified as experiencing BPD symptoms. For example, they might interpret the question less superficially (e.g. “other people’s thoughts influence how I think, therefore it is almost as if they inject their thoughts into my mind”) and paradoxically scoring high on the Impaired Reality Testing scale. Highly reflective mothers might be more aware of thinking irrationally, as we all do at times, giving them high RF scores and an apparently poor capacity for reality testing.

The BPI is comprised of 53 items which are scored as either true or false. Such binary scoring may limit the variability that the measure is able to capture. Also, the study explicitly excluded mothers who were currently dependent on drugs or alcohol and this may have curtailed the number of mothers with BPD from entering the study. Further research which makes use of clinical diagnoses of BPD is needed to clarify the findings of this study.

4.4.2. MATERNAL ADULT ATTACHMENT AND RF

The mothers’ attachment style in current adult relationships was examined in relation to maternal RF. It appears that mothers’ attachment strategies within other close relationships do parallel their attachment representations of the parent-infant relationship to some extent, although there is a great deal of unique variance in parental RF which is not explained by adult attachment style. Overall, mothers who reported high levels of attachment avoidance

and who were classified as dismissing in their close adult relationships tended to have lower levels of RF. This finding is unsurprising as idealised or dismissive representations would be likely to lack many references to emotions, would be canned and superficial, or disavowing of attachment needs. These are all the hallmarks of PDI transcripts which would score very low for RF (Slade, 2005). For the clinical sample, it was attachment anxiety which was most strongly related to RF and this association was non-linear. Mothers in the clinical sample who had very low levels of attachment anxiety (probably those mothers whose caregiving systems were underactivated by the infant's attachment needs, or who withdrew following frightening overactivation of the caregiving system) and very high levels of attachment anxiety (those whose caregiving systems were hyperactivated and dysregulated by the child's attachment needs) tended to have low levels of RF. In line with this finding, the dismissive and fearful classifications of adult attachment in the clinical sample were the most strongly associated with low RF. Interestingly, BPD is associated with fearful attachment which involves high levels of anxiety but also high levels of avoidance (Critchfield, Levy, Clarkin, & Kernberg, 2008), and it is possible that this measure of attachment style is better at picking up borderline traits and low parental mentalisation in this sample than the BPI. Both attachment anxiety and avoidance were significant predictors of maternal RF, but when maternal psychopathology measures (somatization and paranoid ideation) were included in the model, it was only attachment anxiety which contributed to the variance in RF. Other studies using the ECR measure of adult attachment have similarly found that moderate levels of attachment anxiety are associated with a better capacity to mentalise (Wilson, 2011). It is likely that this study is picking up on lapses in parental mentalisation in the more extreme avoidant and disorganised attachment parent-infant relationships rather than those which are likely to be anxious-resistant. Further research which also examines infant attachment is necessary to complete the picture that is emerging.

4.4.3. LIMITATIONS

There are some limitations to the current study. Firstly, we were not able to address the links between maternal psychopathology and maternal RF in the intergenerational transmission of attachment. As previously discussed, the ECR-R measures maternal attachment in relation to current adult attachment relationships, not the mother's attachment experiences with her caregivers. Had we used the AAI, we would have been able to determine whether or not maternal psychopathology mediated or moderated the association between the mother's childhood attachment history and her capacity to mentalise directly in relation to her infant. Maternal experiences of early loss or attachment trauma may provide the link between maternal psychopathology and mentalisation within the parent-infant relationship. Secondly, current psychosis and current dependence on drugs or alcohol were exclusion criteria for the recruitment of the sample. This may have resulted in a limited numbers of participants in the sample who were experiencing certain types of mental health problems (e.g. schizophrenia, some types of personality disorder, puerperal psychosis), possibly underestimating the effects of these forms of psychopathology on parental RF. Further research with more inclusive clinical populations is necessary. Finally, some questionnaires (particularly the BPI) and ECR-R) were only completed by a subsample of participants, resulting in limited predictive power and inferences that can be drawn from these results.

4.5. Summary and conclusions

This study is one of the first to address the important question of how maternal psychopathology and adult attachment relate to a mother's capacity to mentalise within her relationship with her infant. There were some small associations between mothers' mental health and attachment characteristics and their capacity to mentalise, but the RF measure appears to be picking up on a great deal more unique variability in how mothers are able to consider their own and their infants' thoughts and feelings within the relationship. Thus,

parent-report questionnaire measures would not provide adequate substitutes for the lengthy and resource-intensive PDI and RF coding systems in understanding the parent-infant relationship and maternal mentalisation.

Overall, maternal attachment avoidance in adult relationships was moderately associated with low levels of parental RF. Clinically-referred mothers who reported very low or very high levels of attachment anxiety and who were classified as dismissing or fearful in other close relationships were likely to have lower levels of RF in relation to their infant.

General psychological wellbeing and parenting stress of the mothers did not influence their capacity to mentalise, indicating that only some specific domains of psychopathology are concurrent with lapses in parental mentalisation and not general psychological distress. The domains of psychopathology which did relate to maternal RF were depression, somatization, phobic anxiety, paranoid ideation and psychotism. Of these, somatization and paranoid ideation were the best predictors of parental mentalisation difficulty. Mothers who used more teleological and physical models of thinking about their own affective states (somatizing) were more likely to be very concrete, teleological and non-mentalising in relation to their infants. Mothers who exhibited paranoid feelings, probably associated with psychic equivalence modes of thinking and fearful arousal, were also poor at mentalising in relation to their infant, but probably through more distorted representations. BPD traits as measured by the BPI were not generally very well associated with maternal RF, but there may be some measurement problems with the BPI as it was associated with RF in opposite ways for the clinical and non-clinical groups. The link between RF and other measures which are often linked with BPD (fearful attachment, somatization, phobic anxiety associated with depersonalization, paranoid ideation) indicate that there may be some links which were not picked up by the BPI.

Further research is needed with a more representative perinatal psychiatric sample which does not exclude those with psychotic or substance misuse difficulties. However, this study provides some of the first data on maternal psychopathology and parental mentalisation.

CHAPTER 5: THE EFFECTS OF MATERNAL REFLECTIVE FUNCTIONING AND DEPRESSION ON THE QUALITY OF PARENT-INFANT INTERACTIONS

5.1. Introduction

The quality of observed interactions between mothers and their babies has become one of the key variables of interest in attachment research. These observations provide a window through which we might view and make sense of the child's lived experiences of his early relationships with his primary caregivers. Attachment researchers have recognized the value of parent-infant behavioural observations in predicting a number of important outcomes for the child. Mothers' sensitivity to their babies' communications was one of the first behavioural correlates to be identified as crucial to the development of attachment security (Ainsworth, et al., 1978; Grossmann, Grossmann, Spangler, Suess, & Unzner, 1985; Pederson, et al., 1990). Further research has started to recognize a broader range of maternal (De Wolff & van IJzendoorn, 1997) and infant (Biringen, et al., 2008; Crittenden, 2001) behaviours that are predictive of attachment security. Other studies have identified some behavioural correlates that are specific to the development of disorganized attachment relationships (Abrams, et al., 2006; Hesse & Main, 2006; Lyons-Ruth, Bronfman, & Parsons, 1999). Attachment insecurity and particularly attachment disorganization have been consistently associated with a wide range of maladaptive outcomes for the child, throughout their development and into future generations (Carlson, 1998; Sroufe, 2005; Sroufe, et al., 2005). Thus, there are a number of risk and resilience indicators that can be

measured through careful observations of parent-infant interactions and that point to potentially deleterious or positive developmental outcomes. These behavioural coding systems provide a useful tool in the assessment of dyadic functioning.

There are a number of antecedent variables which are thought to drive particular behavioural interactions and we are learning more about the myriad risk factors which might impinge on the way mothers and babies interact with each other. These include the mothers' own attachment experiences (Strathearn, et al., 2009; van IJzendoorn, 1995) and the degree of current social and personal adversity that the mothers are experiencing (Murray, et al., 1996). The literature points to two potential mediating variables that may influence the way in which these risk factors lead to maladaptive parent-infant interactions: maternal depression and maternal reflective functioning.

5.1.1. MATERNAL DEPRESSION AND PARENT-INFANT INTERACTIONS

Many studies have shown that maternal depression is associated with impingements on the quality of behavioural interactions between mothers and their young babies (Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986; Field, 1995; Lyons-Ruth, Zoll, Connell, & Grunebaum, 1986; Tronick & Reck, 2009). A meta-analysis reported that this effect is moderate to large (Beck, 1995). Maternal depression has been found to moderate the association between mothers' representations of their childhood attachment experiences and the quality of interaction they have with their babies (Adam, et al., 2004). Thus, the onset of depressive symptoms may play a key role in whether adult attachment representations are transmitted in the next generation parent-infant relationship.

The deleterious effects of maternal depression on the quality of parent-infant interaction have been most well documented in samples where other stress factors such as infant prematurity (Korja et al., 2008), comorbid maternal psychopathology (Carter, Garrity-Rokous, Chazan-Cohen, Little, & Briggs-Gowan, 2001) and social adversity (Murray, et al., 1996) were present, and when the depressive symptoms were chronic rather than transient (Campbell, Cohn, & Meyers, 1995). Findings from studies of low-risk samples have shown weaker effects. For example, two studies have reported that mothers who had experienced depression but not high levels of social adversity were slightly more intrusive in their interactions with their infants, but there were otherwise very few interactive differences between these mothers and non-depressed controls (Cornish, McMahon, & Ungerer, 2008; Rosenblum, et al., 2008). The social and interpersonal context of the family may therefore either buffer or amplify the effects of maternal depression on parent-infant behaviour. However, the research findings are not entirely conclusive with regards to this. One study found no effect of maternal depression on ratings of maternal sensitivity, despite being carried out with a sample experiencing a number of indicators of psychosocial risk such as poverty, alcohol or drug abuse, lack of social support, teenage parenting and maternal psychic disorder (Sidor, Kunz, Schweyer, Eickhorst, & Cierpka, 2011). The authors suggest that this may be because the prevalence and severity of depression was not very high for this sample, despite the complex social adversity they were experiencing. It may be that the severity of maternal depression needs to reach a certain threshold before the sociodemographic factors interact with the depressive symptoms to impinge on the parent-infant relationship. It is also possible that the effects of maternal depression on the parent-infant relationship are diluted in certain groups of families who have been and are exposed to a multitude of social risk factors and possibly more complex maternal psychopathology, such as personality disorders. This study investigates the effects of maternal depression on

parent-infant interactions in two different high risk samples: one where maternal depression and social exclusion were the most prevalent difficulties (community sample), and another where many of the dyads had experienced much more complex childhood and social issues, but the prevalence of maternal depressive symptoms was not as high (prison sample).

The specific manner in which depressed mothers have been observed in their interactions with their babies has been described as disengaged, affectively flat, insensitive, unresponsive, non-contingent, negative and intrusive (Campbell, et al., 1995; Cohn & Tronick, 1983; Lyons-Ruth, et al., 1986; Stanley, et al., 2004). It has been suggested that mothers with depression are not homogenous in their interactive behaviour with their infants and there are at least two behavioural responses to depression: interactive disengagement/ withdrawal and intrusiveness (Tronick & Reck, 2009). The current study uses both global and detailed ratings of parent-infant interactions to test the broad effects of maternal depression on parent-infant interactions as well as the more specific ways in which maternal depression may relate to interactive behaviour.

5.1.2. MATERNAL REFLECTIVE FUNCTIONING AND PARENT-INFANT INTERACTIONS

The concept and measurement of parental reflective functioning has been developed more recently and research findings about how this capacity influences the quality of parent-infant interactions are only just coming to the fore. There are converging streams of research on this topic that employ the RF coding system or other conceptually related indicators of the mother's capacity to take a mentalising stance in relation to her child (Sharp & Fonagy, 2008), such as Maternal Mind-Mindedness (MMM; Meins, et al., 2003) and the Insightfulness Assessment (IA; Oppenheim & Koren-Karie, 2002).

Maternal sensitivity requires that the mother is able to accurately interpret the infant's communications and respond accordingly (Lohaus, Keller, Ball, Voelker, & Elben, 2004). The capacity to make sense of the infant's communications in terms of their internal mental states, i.e. reflective functioning, is therefore likely to be integral to sensitivity. This is evidenced by empirical links between the two measures (Rosenblum, et al., 2008). One study (Grienberger, et al., 2005) demonstrated that poorer levels of maternal reflective functioning measured on the PDI were also strongly associated with disrupted maternal behaviour measured by the Atypical Maternal Behavioural Instrument for Assessment and Classification (AMBIANCE; Bronfman, et al., 1999), a coding system for picking up on maternal behaviours that have been strongly associated with the development of disorganized attachment relationships. Furthermore, maternal behaviour mediated the impact of maternal reflective functioning upon infant attachment. This finding has been replicated in studies which used MMM as an index of maternal mentalising capacity. MMM is associated with the quality of observed emotional availability between mother and infant (Lok & McMahon, 2006) and is predictive of infant attachment security (Meins, et al., 2001). As with RF, this association between MMM and attachment security is also mediated by maternal behaviour (Laranjo, Bernier, & Meins, 2008). Mothers' positive insightfulness, measured by the IA, refers to the mothers' capacity to see things from the child's point of view in a complex and open manner (Oppenheim & Koren-Karie, 2002), thus having a great deal of overlap with the construct of mentalisation. This capacity has also been linked with maternal behavioural sensitivity (Koren-Karie, et al., 2002) and infant attachment security (Koren-Karie, et al., 2002; Oppenheim, et al., 2001).

The literature therefore highlights maternal mentalising as a crucial component to the quality of behavioural interactions between mothers and babies and the subsequent effects on the child's attachment security. However, most of these studies have been carried out with relatively low-risk samples. Research into the role of maternal mentalisation in the context of social adversity, severe maternal depression and other background risk factors is sorely needed.

5.1.3. COMBINED EFFECTS OF MATERNAL DEPRESSION AND MATERNAL REFLECTIVE FUNCTIONING ON THE QUALITY OF PARENT-INFANT RELATIONSHIP

The independent effects of both depression and mentalising difficulties on the quality of the parent-infant relationship are relatively well documented. There are, however, also some indications that these risk factors might interact with each other in their combined impact on maternal and infant behaviour.

Maternal insightfulness on the IA has been shown to be poor in mothers with a diagnosis of depression compared to non-depressed mothers (Quitmann, Kriston, Romer, & Ramsauer, 2012). In one study of a relatively low-risk non-clinical sample, maternal depression and RF were only marginally correlated with each other (Rosenblum, et al., 2008). However, when comparing those with clinically significant levels of depression and those not scoring above the threshold, the association with RF was much stronger. This study demonstrated that maternal RF was predictive of the quality of parent-infant interaction over and above the effects of maternal education and depression.

One study investigated the mediation/moderation effects of maternal representations and depression on parent-infant interactions (Trapolini, et al., 2008). Depressed and non-

depressed mothers were interviewed on the PDI and the narratives were coded with a detailed coding system for a number of different representational processes and emotional constructs (Pianta et al., 1995). Interestingly, only one aspect of the parents' representations was associated with maternal depression and behavioural sensitivity: "Perspective Taking". The study revealed that maternal perspective taking mediated the association between chronic depression and behavioural sensitivity. There was also a moderation effect whereby poor perspective taking had a negative impact on sensitivity for chronically depressed mothers, but not for non-depressed mothers. In this study "perspective taking" refers to the mother's differentiation from her child and her capacity to see things from her child's perspective. The conceptual overlaps between this measure and that of RF are clear. However, RF is a broader construct than that implied by "perspective taking". It requires the mother to be able to consider her own mental states in the relationship with her child, as well as taking her child's perspective. This is important when considering the combined effects of maternal mentalisation and maternal depression on the relationship; the mother's capacity to think about how her experience of depression might impact her as a mother as well as her baby is crucial. Thus, research into the combined effects of RF and depression on parent-infant behaviour is still needed.

5.1.4. THE CURRENT STUDY

The current chapter explores the relationship between maternal mentalisation, depression and parent-infant interactive behaviour in two different high risk samples. Firstly, the exact behavioural correlates of maternal depression and lapses in maternal RF were investigated to determine if there were any overlaps or differences in how these two risk factors impinge

on mother-infant behaviour. Secondly, more global ratings of the quality of parent-infant relationship were used to test a series of hypotheses. These were:

1. Higher levels of maternal RF predict better quality parent-infant interactions.
2. Maternal depression predicts poorer quality parent-infant interactions.

If the above hypotheses were supported, two alternative causal models for the associations between RF, depression and interactive behaviour were hypothesised:

3. Maternal RF mediates and/or moderates the relationship between maternal depression and the quality of parent-infant interaction (as depicted in Figure 5.1).
4. Maternal depression mediates and/or moderates the relationship between maternal RF and the quality of parent-infant interaction (as depicted in Figure 5.2).

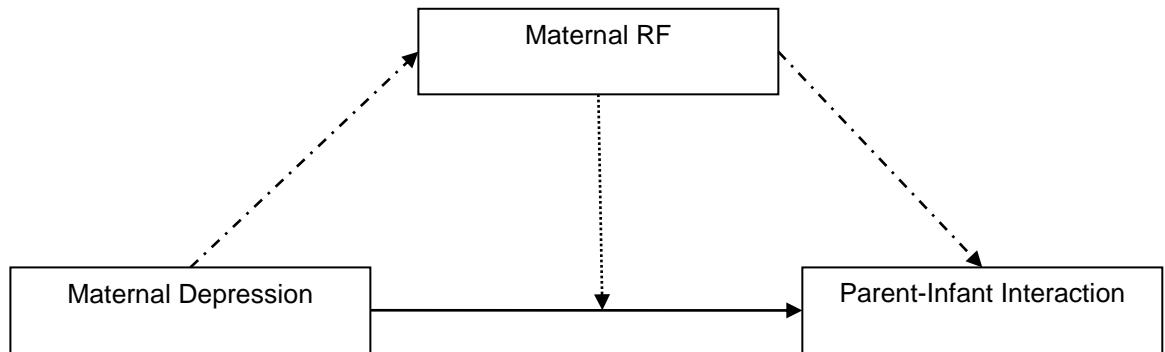


Figure 5.1. Hypothesised mediation/moderation model 1 to explain the links between maternal depression, RF and parent-infant interaction. Maternal RF mediates/moderates the association between maternal depression and the quality of parent-infant interaction

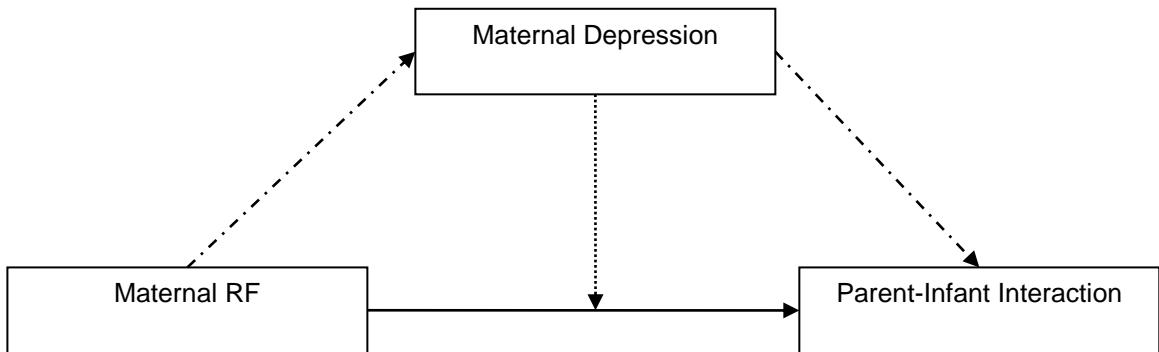


Figure 5.2. Hypothesised mediation model 2 to explain the links between maternal depression, RF and parent-infant interaction. Maternal depression mediates/moderates the association between maternal RF and the quality of parent-infant interaction

5.2. Method

5.2.1. PARTICIPANTS

The study was carried out separately for two samples. The first, the community sample, was comprised of mothers from the normative and clinical studies described in Chapter 3. The second, the prison sample, was comprised of mothers and babies living in prison MBUs, as described in Chapter 3. The rationale for treating these samples separately was that both groups are likely to present with a number of attachment-related difficulties, but these may manifest in different ways and there may therefore be different clinical implications for understanding the risk factors in each population. The recruitment procedures and inclusion and exclusion criteria for these samples are described in Chapter

3. Only the mothers who consented to the video-recorded interaction were included in the current analysis as this was the primary variable of interest, thus the sample sizes differ from those in Chapter 3. Table 5.1 presents a description of the demographic characteristics of the samples.

5.2.2. PROCEDURE

The community sample mothers were interviewed by a researcher, either in their own homes or local clinic or children's centre from where they were recruited. The mothers in prison were interviewed in a private room in the prison Mother-Baby Unit. The assessment included an in-depth interview with the mothers and they were asked to complete a set of standardized questionnaires. The mothers were then instructed to "interact with your baby as you usually would" and the researcher video-recorded 10 minutes of free-play interaction between mother and baby.

Table 5.1. Description of samples

	Community Sample N = 144	Prison Sample N = 118	Community vs Prison Samples
Mother age in years:			
Mean (SD)	32.0 (5.3)	26.7 (5.9)	$t (260) = 7.49$
Range	19.1 – 43.7	17.8 – 41.6	$p < .001$
Child age in months:			
Mean (SD)	5.2 (3.3)	4.8 (4.6)	$t (207) = .844$
Range	0.5 – 12.6	0.13 – 23.6	$p = .399$
Child gender: N (%)			
Female	68 (47%)	70 (59%)	$\chi^2 (1) = 3.81$
Male	76 (53%)	48 (41%)	$p = .051$
Number of other children: N (%)			
First time mothers	99 (69%)	68 (58%)	$\chi^2 (1) = 3.17$
More than one child	45 (31%)	50 (42%)	$p = .075$
Mother ethnicity: N (%)			
White	93 (65%)	62 (53%)	$\chi^2 (4) = 27.31$
Black	15 (10%)	42 (36%)	$p < .001$
Asian	17 (12%)	6 (5%)	
Mixed	13 (9%)	7 (6%)	
Other	6 (4%)	1 (1%)	
Mothers' education			
None	4 (3%)	45 (38%)	$\chi^2 (3) = 99.43$
Basic (high school equivalent)	46 (32%)	34 (29%)	$p < .001$
Further (vocational training)	16 (11%)	29 (25%)	
Higher (degree or higher)	78 (54%)	6 (5%)	
Missing	0	4 (3%)	

5.2.3. MEASURES

5.2.3.1. The Parent Development Interview (PDI; (Slade, Aber, et al., 2004), as described in Chapter 3, was administered and coded for the level of maternal Reflective Functioning (RF; Slade, Bernbach, et al., 2004). As a previous chapter concluded that the internal consistency of RF scores for all demand questions was very high, and that the correlations between the demand questions and overall score were high, the overall RF score was used here as a reliable measure of maternal RF. The overall score has a potential range of -1 to 9.

5.2.3.2. The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) was developed by the Center for Epidemiologic Studies at the National Institutes of Mental Health in the US specifically to meet the need for a brief measure of depressive symptoms suitable for use in community surveys. The CES-D consists of 20 items that were selected from other depressions scales, including the BDI, the SADS and the MMPI. Each item is rated on a scale from 0 to 3 in terms of frequency of occurrence during the past week. The total score may range from 0 to 60, with a score of 16 or more indicating impairment. The reliability of the CES-D has been tested on clinic populations (Radloff, 1977) and on probability samples of US households (Radloff, 1977; Weissman, et al., 1977). Results of these investigations indicated that the scale has high internal consistency reliability, acceptable test-retest stability, and good construct validity in both clinical and community samples. The good psychometric properties of the CES-D have been verified in other more recent studies (Clark, Mahoney, Clark, & Eriksen, 2002; Devins et al., 1988).

The quality of the interactions between parents and infants were assessed by two coding systems:

5.2.3.3. Coding Interactive Behavior (CIB; Feldman, 1998) rating scales

were used to code the video-recorded parent-infant interactions. The CIB scales are comprised of 45 discrete items which are rated on a 5-point scale for the frequency and intensity with which the behaviour is observed (22 items relating to parental behaviour, 16 items relating to the child's behaviour, and 5 items relating to the quality of dyadic interaction as a whole). The CIB has shown variations and sensitivity to risk factors, such as maternal cocaine use (Mayes et al., 1997), delivery pain (Ferber & Feldman, 2005), and infant prematurity (Keren, Feldman, Eidelman, Sirota, & Lester, 2003), as well as resilience factors such as marital satisfaction and father involvement (Feldman, 2000) and the effects of breast milk (Feldman & Eidelman, 2003). The CIB has demonstrated sensitivity to change in studies of Kangaroo Care (Feldman, et al., 2003) and massage therapy (Ferber et al., 2005) for preterm infants. This measure was selected as it provides very detailed descriptions of behaviour and affect. It could thus provide a broader depth of information about how the variables under investigation relate to parent-infant behaviour than some other more global scales.

The authors suggest that the scales are aggregated into eight subscales based on the theoretical links between items. However, for this dataset the internal consistency for most of the recommended subscales was moderate to poor. Thus, a principal components factor analysis with varimax rotation was carried out to summarise the coding scales. Some items were only applicable for certain limited age groups and these were excluded. Other items appeared to be independent of other items in the scales and were ambiguous in nature (for example, "parent forcing" refers to the level and intensity of

physical stimulation of the infant's body by the parent; high scores may reflect positive but stimulating interactions or negatively intrusive physical interactions). These items were also excluded so that the face validity of the measure was retained. The solution resulted in three factors which accounted for two-thirds of the variance. The three-factor solution was used as the basis for the computation of three alternative subscales which resulted in greatly improved internal consistencies.

- 1) Dyadic attunement: The items in this subscale reflect an overall mutuality between parent and infant. The factor relates to an interaction where the parent is sensitive, non-intrusive, consistent and supportive. There is no tension or constriction and the interaction is reciprocal and well adapted to the affective state of each partner. It is comprised of 11 items, with a potential range of 11-55 (Cronbach's $\alpha = .923$).
- 2) Parental positive engagement: This subscale relates to interactions where the parent looks at and talks to her baby positively, does not appear depressed, and is enthusiastic in engaging with her baby. It is comprised of 5 items, with a potential range of 5-25 (Cronbach's $\alpha = .882$).
- 3) Child involvement: This subscale incorporates most of the items relating to the infants' behaviour. High scores reflect infants who are clearly positively involved in the interaction through gaze, vocalization and initiation of mutual contact. It is comprised of 6 items, with a potential range of 6-30 (Cronbach's $\alpha = .845$).

5.2.3.4. The Emotional Availability Scales (EA; Biringen, et al., 1993;

Biringen, et al., 1998; Biringen, Robinson, et al., 2000) were used to assess the video-recorded dyadic interaction for the emotional availability of the parent to child and child to the parent. Emotional availability refers to a person's ability to express their emotions and to perceive and respond to the emotional needs and goals of another (Emde, 1980). The scales are comprised of four parental dimensions (sensitivity, structuring, non-intrusiveness and non-hostility) and two infant dimensions (responsiveness and involvement). Each of the six dimensions is rated on 9-, 7-, or 5-point Likert type scales.

The EAS has been shown to have good concurrent validity with infant attachment classifications: high levels of sensitivity correlate with secure attachment classifications (Koren-Karie, et al., 2002; Swanson, 1998; Ziv, et al., 2000) and early secure attachments predicting greater emotional availability over time (Easterbrooks, Biesecker, & Lyons-Ruth, 2000). Concurrent validity has also been established between EA ratings and maternal representations and insightfulness of the child (Biringen, Matheny, et al., 2000; Koren-Karie, et al., 2002; Rethazi, 1998), other molecular codings of maternal and infant behaviour (Carter, Little, & Garrity-Rokous, 1998), maternal attachment classifications on the Adult Attachment Interview (Biringen, Brown, Donaldson, Krcmarik, & Lovas, 2000; Oyen, Landy, & Hilburn-Cobb, 2000), and infant emotion regulation (Little & Carter, 2005). One study demonstrated considerable stability in EA ratings from 6 to 12, to 20 months of age (Ziv, Gini, Guttman, & Sagi, 1997). After training, inter-rater reliability is generally quite high, with correlations averaging around .80 (Biringen, Robinson, et al., 2000). A factor analysis of the EA subscales revealed a single latent factor for the overall quality of the interaction. This finding is in line with other studies

which have also demonstrated a single latent factor (Wain, 2010; Wiefel, et al., 2005). An EA Summary score (EAS) was thus calculated by summing the scores for the six scales.

The CIB provided very detailed descriptions of each partner's behavioural and affective contribution to the interaction, while the EA provided a far more global rating of the overall interactive quality. The CIB was used to provide some insight into the exact behavioural components that are influenced by maternal RF and depression, while the EA provided a more general indicator of mutuality. Having more than one measure of the quality of parent-infant interaction also enabled a way of checking whether any findings were robust, despite the coding instrument being used.

The mean scores on each of these measures for the two groups are presented in Table 5.2.

Table 5.2. RF, Depression and Parent-Infant Interaction scores for the two samples

	Community Sample N = 144	Prison Sample N = 118	Comparison of Community and Prison Samples
PDI RF			
Mean (sd)	4.25 (1.41)	3.44 (1.44)	p < .001
CES-D			
Mean (sd)	21.72 (13.03)	15.18 (8.93)	p < .001
Clinically significant levels of depression: N (%)	82 (61%)	52 (45%)	p = .014
Emotional Availability			
Summary score: Mean (sd)	26.76 (5.98)	23.27 (7.82)	p = .012
Coding Interactive Behavior			
Dyadic Attunement: Mean (sd)	44.45 (6.82)	39.49 (8.80)	p < .001
Parent Positive Engagement: Mean (sd)	20.63 (3.64)	19.82 (3.25)	p = .059
Child Involvement: Mean (sd)	18.48 (4.63)	16.58 (5.10)	p = .002

5.3. Results

5.3.1. ASSOCIATIONS BETWEEN RF, DEPRESSION AND THE QUALITY OF PARENT-INFANT INTERACTION

The first set of analyses focused on the ways in which maternal RF and depression related to very detailed aspects of the behavioural interactions. Table 5.3 presents the Pearson's correlation coefficients for the RF and CES-D scores with the individual items and subscales of the CIB. Results are presented separately for the community and prison samples and very different patterns of associations were found for the two samples. For the community mothers and babies, lower levels of maternal RF were likely to manifest in interactions characterized by more intrusiveness and anger and less eye contact from the mother. These dyads also demonstrated less affective adaptation to regulate each other. For the prison sample, poorer maternal RF was associated with a slightly more withdrawn style of parental interaction. These mothers were less likely to smile, look at and talk to their babies with enthusiasm than those who demonstrated a better capacity to mentalise. For this sample, lower levels of maternal RF also manifested in the babies' eye contact with their mothers and general alertness during the interaction. However, these effects of RF on infant behaviour were no longer significant when controlling for infant age.

Maternal depression was associated with many aspects of interactive behaviour in the community sample, including maternal intrusiveness, depressed mood and lack of enthusiasm, infant gaze, and most indicators of the general sense of comfort, mutuality and give-and-take between the dyad as a whole. In contrast, the severity of maternal depression in the prison sample was only evidenced by a lack of maternal enthusiasm and infant initiation.

Table 5.3. Pearson's correlations between RF, Depression scores and CIB items and subscales for the community and prison samples

CIB item	Community Sample		Prison Sample	
	RF (n = 143)	CES-D (n=135)	RF (n = 108)	CES-D (n= 115)
Parent overriding/intrusiveness	-.322**	.181*	.120	.038
Parent negative affect/anger	-.232**	-.053	-.102	.052
Parent hostility	-.064	.126	-.016	.073
Parent appropriate range of affect	.046	-.134	.155	-.022
Parent consistency of style	.095	-.035	-.017	-.009
Parent supportive presence	.212*	-.269**	.180	.034
Dyadic reciprocity	.134	-.188*	.119	.110
Dyadic adaptation-regulation	.249**	-.166	.092	.059
Dyadic fluency	.133	-.197*	.108	.116
Dyadic constriction	-.083	.277**	-.065	-.033
Dyadic tension	-.161	.246**	-.063	-.054
Dyadic Attunement Subscale	.203*	-.243**	.081	.027
Parent gaze/ joint attention	.200**	-.075	.269**	.023
Parent positive affect	.068	-.089	.199**	-.005
Parent depressed mood	-.064	.288**	-.100	-.021
Parent vocal appropriateness/ clarity	.072	-.134	.195*	.015
Parent enthusiasm	.063	-.171*	.326**	.210*
Parent Positive Engagement Subscale	.103	-.187*	.278**	.071
Child gaze	.161	-.305**	.235*	.022
Child positive affect	-.006	-.154	.154	.084
Child alert	-.009	-.159	.220*	.083
Child fatigue	-.070	.115	-.159	-.021
Child vocalization	.066	-.168	.066	.031
Child initiation	.152	-.123	.143	.226*
Child Involvement Subscale	.097	-.237**	.215*	.098

* Significant at the .05 level (2-tailed)

** Significant at the .001 level (2-tailed)

5.3.2. COMMUNITY SAMPLE: PATH ANALYSIS OF THE RELATIONSHIP BETWEEN MATERNAL RF, DEPRESSION AND PARENT-INFANT INTERACTION

The zero order correlation coefficients between RF, CES-D, CIB and EA scores for the community sample are presented in Table 5.4. Maternal depression was related to maternal RF and all of the measures of the quality of parent-infant interaction. RF was associated with the global dyadic measures of the interaction (EA and CIB dyadic attunement) but not the individual parent or child contributions measured by the CIB. The EA summary score was significantly related to all of the CIB subscales, providing evidence for the concurrent validity of both measures.

Table 5.4. Correlations between Emotional Availability, CIB subscales, maternal Reflective Functioning, and CES-D scores for the Community Sample

	RF	EA Summary	CIB Dyadic Attunement	CIB Parent Engagement	CIB Child Involvement
CES-D	-.228**	-.328**	-.243**	-.187*	-.237**
RF		.194*	.203*	.103	.097
EA Summary			.624**	.499**	.477**
CIB dyadic attunement				.740**	.394**
CIB parent engagement					.427**

* Significant at the .05 level (2-tailed)

** Significant at the .001 level (2-tailed)

Regression analyses were carried out to test the hypotheses that the quality of parent-infant interaction was independently predicted by 1) greater levels of maternal RF and 2) lower levels of maternal depression. The EA summary score was used as a global indicator of the quality of parent-infant interaction which incorporates the contribution from both parent and infant. This measure was also more strongly correlated with the CES-D scores than both the CIB subscales. Both regression models were significant ($\text{adj } R^2 = .031, F(1, 141) = 5.49, p = .021$ and $\text{adj } R^2 = .101, F(1, 133) = 15.91, p < .001$ for RF and depression as independent variables respectively), thus confirming the first two hypotheses of this study. As these hypotheses were accepted, the two alternative causal models could be tested.

5.3.3. DOES MATERNAL RF MEDIATE OR MODERATE THE ASSOCIATION BETWEEN MATERNAL DEPRESSION AND PARENT-INFANT INTERACTION?

All of the conditions for testing the proposed mediation model were met (Baron & Kenny, 1986): maternal depression was a significant predictor of both RF and parent-infant interaction, and maternal RF was a significant predictor of parent-infant interaction. A mediation analysis was carried out using the PROCESS macro for SPSS, a computational tool for path analysis-based moderation and mediation analysis (Hayes, 2012). This computed confidence intervals from 1000 bootstrap samples. The results showed that the mediation model was not a good fit; the overall indirect effect of RF on the association between depression and EA was $-.013$ (95% CI: $-.041$; $.002$). The Sobel test confirmed that the mediation effect was not significant (*Sobel statistic* = -1.33 , $p = .182$).

Further analyses were carried out to determine whether maternal RF moderated the relationship between depression and EA. The variables were centred to reduce the effects of multicollinearity (Aiken & West, 1991) and the interaction term for depression and RF was computed. The main effects of maternal depression and maternal RF were entered into the equation, and the interaction between RF and depression was entered in the next step. The interaction score was nonsignificant ($t = .96$, $p = .399$), suggesting that maternal RF did not moderate the relationship between maternal depression and the quality of parent-infant interaction.

5.3.4. DOES MATERNAL DEPRESSION MEDIATE OR MODERATE THE ASSOCIATION BETWEEN MATERNAL RF AND PARENT-INFANT INTERACTION?

All of the conditions for testing the second proposed mediation model were met (Baron & Kenny, 1986): maternal RF was a significant predictor of both depression and parent-infant interaction, and maternal depression was a significant predictor of parent-infant interaction while controlling for RF.

Once again, the PROCESS macro was used to test the mediation model and compute the bootstrap confidence intervals. Results showed that the relationship between maternal RF and emotional availability was mediated by maternal depression. As Figure 5.3 illustrates, the standardized regression coefficient between RF and emotional availability decreased and was no longer significant when controlling for maternal depression. The Sobel test confirmed that the change in beta weights was significant (*Sobel statistic* = 2.12, $p = .034$). This model was statistically significant, $F(2,130) = 9.25, p < .001$) and the indirect effect of RF via maternal depression on EA was .272 (CI .079, .601).

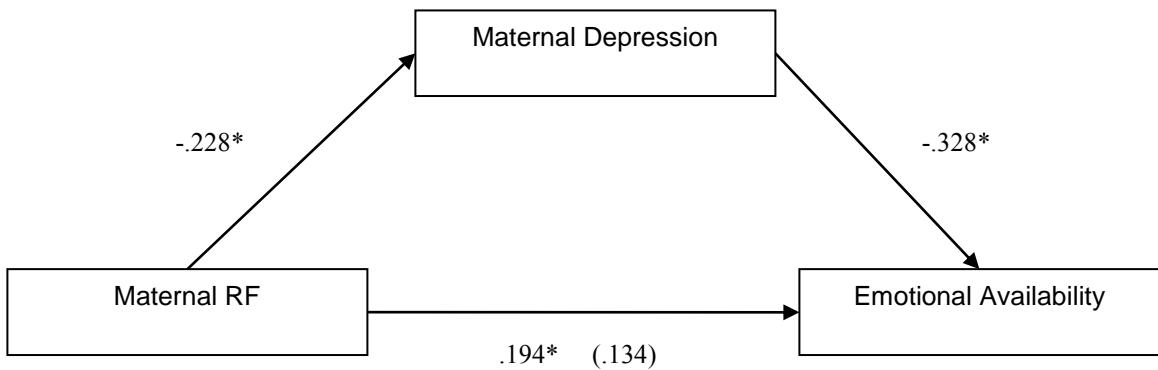


Figure 5.3. Standardised regression coefficients for the relationship between maternal RF and parent-infant interaction as mediated by maternal depression. The standardized regression coefficient of RF and emotional availability controlling for maternal depression is in parentheses.

* $p < .05$

To confirm the results of this mediation model, the CIB dyadic attunement scale was used instead of the Emotional Availability score. The mediation model held true with this different measure of the quality of dyadic interaction (*Sobel statistic* = 2.99, $p = .003$), confirming the robust finding. The results were also stable when child age was included as a covariate in the model.

There was no need to test for moderation effects in this model as the previous analysis demonstrated an insignificant effect of the interaction between depression and RF on EA.

5.3.5. PRISON SAMPLE: PATH ANALYSIS OF THE RELATIONSHIP BETWEEN MATERNAL RF, DEPRESSION AND PARENT-INFANT INTERACTION

As with the community sample, the zero order correlations between maternal RF, CES-D, EA and CIB scores were examined. As Table 5.5 shows, maternal RF was associated with most of the measures of parent-infant interaction. However, in contrast to the community sample, maternal depression did not relate to any of the measures of parent-infant interaction for the prison dyads. Thus, the conditions for testing the two hypothesized causal models were not met for this sample and could not be tested. In other words, maternal depression did not have any direct effect on parent-infant interaction and there were therefore no indirect effects of maternal RF on parent-infant interaction via maternal depression.

Table 5.5. Correlations between Emotional Availability, CIB subscales, maternal Reflective Functioning, and CES-D scores for the Prison Sample

	RF	EA	CIB Dyadic	CIB Parent	CIB Child
		Summary	Attunement	Engagement	Involvement
CES-D	.036	.125	.027	.071	.098
RF		.324**	.081	.278**	.215*
EA Summary			.264**	.399**	.640**
CIB dyadic attunement				.528**	.455**
CIB parent engagement					.475**

* Significant at the .05 level (2-tailed)

** Significant at the .001 level (2-tailed)

5.4. Discussion

This study aimed to assess the extent to which the severity of maternal depressive symptoms and difficulties in the mothers' capacity to mentalise relate to the quality of parent-infant interaction. This was assessed in two high-risk samples: an inner-city, relatively socially deprived group of mothers and infants, and a sample of mothers and infants in Mother-Baby Units in prison. Divergent patterns of results were found for the two samples and these are discussed separately.

5.4.1. MATERNAL DEPRESSION AND THE QUALITY OF PARENT-INFANT INTERACTION

For the community sample, the results of this study concur with many other previous studies that have shown that maternal depression is likely to impinge on the quality of maternal, infant and dyadic interactive behaviour in high-risk cohorts (Cohn, et al., 1986; Field, 1989). The broad ratings of the overall quality of the interaction on the EA and the composite subscales of CIB were significantly predicted by the severity of maternal depressive symptoms. The individual items of the CIB pointed to the more exact behavioural correlates of maternal depression for this group. Mothers who were depressed were more likely to be intrusive, but also affectively flat and unenthusiastic. This finding is concordant with studies which have shown that there is some heterogeneity in the way in which maternal depression influences interactive behaviour. There are at least two different profiles of depressed mothers: those who behave intrusively and others who become withdrawn and disengaged (Tronick & Reck, 2009). The babies of more depressed mothers were, in turn, more gaze avoidant, as demonstrated in other studies of infant behavioural responses to maternal depression (Field, 1992). The impact of depression was mostly seen in the way the dyad interacted as a pair, with higher levels of depression leading to interactions which were less reciprocal and fluent and more tense and constricted. This overall synchrony and mutuality between the mother and baby has been found to be important for the development of a secure attachment relationship (De Wolff & van

IJzendoorn, 1997) and this may underpin the association between maternal depression and an attachment insecurity (Lyons-Ruth, et al., 1990).

For the prison sample, maternal self-reported depression was not apparent in most aspects of the parent-infant interactive behaviour. Depression scores were not related to any of the more global, dyadic or subscale measures on the EA or CIB. The only observed behavioural indicators of the mothers' depressive symptoms were picked up by two CIB codes: lower levels of parental enthusiasm and greater child initiation. As with the community sample, depressed prison mothers were unsurprisingly less enthusiastic in their interaction. Infants of depressed mothers in this group were more likely to try to initiate mutual interactions with their mothers. This finding is consistent with the research by Field and colleagues (Field, et al., 2007) which showed that infants of depressed mothers were more active in reengaging contact with their mothers after separation in the Still Face Paradigm than those of non-depressed mothers. Thus, it appears that maternal depression does not necessarily lead to infant withdrawal. The heterogeneity in maternal behavioural responses to maternal depression is paralleled by differential responses by their infants (Tronick & Reck, 2009). Young babies whose mothers are depressed may adopt a greater repertoire of adaptive strategies to connect with their mothers who are somewhat unenthusiastic and withdrawn. Further research is needed to tease out whether there are changes over the course of early development in how infants of depressed mothers respond interactively. It may be that the observed increased initiation seen by some infants of depressed mothers is only present for a certain period of development. If the maternal withdrawal persists and the infant experiences a recurrent lack of maternal response to their bids for a mutual interaction, a more pervasive depressive stance and interactive disengagement may be observed later on in his development. Data from neurological studies support this hypothesis; children of depressed mothers show similar patterns of brain activity to those seen in depressed adults (Dawson et al., 1999), but this effect is more pervasive during the child's second and third year, the time when the brain systems that

generate the pattern of brain waves associated with depression are developing rapidly (Dawson & Ashman, 2000).

The differential results for the two groups can be explained in several ways. One possible explanation is that the mothers in the prison sample may have had more complex attachment histories and psychological and social issues that impinged on their way of interacting with their babies, whether they were depressed or not. This is evidenced by the fact that all aspects of the interactions were significantly less positive for this group of mothers and babies, despite a lower prevalence of depressive symptoms than the community group. Thus, the mechanisms by which limited RF translates to poorer quality interactions may be different for the prison sample. Unfortunately no other data were available for this sample to further investigate the role of other maternal attachment or psychopathology variables. Another explanation for the differences between the groups may lie with measurement issues. Two identical measures of the quality of interactive behaviour were used (CIB and EA) and both of these were strongly associated with depression in the community sample. It is therefore unlikely that both coding instruments were not sufficiently sensitive to detect the behavioural correlates of maternal depression in the prison sample. There was also a significant association between the behavioural ratings and the other externally rated measure, RF. This might point to a failure of the self-report method for assessing depression in the prison sample. The questionnaire may have been subject to social desirability bias for this sample. These mothers are subject to rigorous assessments by an admissions board to be granted a place on a prison Mother-Baby Unit (HM Prison Service, 2008). The high level of scrutiny and the constant risk assessments within the prison environment, paired with the reality of potential separation between some of the mothers and babies on the units, may discourage these mothers from admitting to any difficult emotional experiences for fear of losing custody of their baby. Studies of mothers and babies in UK prisons have used the PDI to capture the qualitative aspects of these mother's representations of their relationship with their baby (Baradon, et al., 2008; Sleed, et al., 2013). One of the most striking findings from these studies was the high level of

idealisation in the mothers' narratives. It may be that a similar reluctance to consider or report the more negative aspects of their functioning was present on the mother's reports of depressive symptoms. Another study of incarcerated mothers reported similar social desirability biases in self-reported stress levels (Goshin, 2010).

5.4.2. MATERNAL MENTALISATION AND PARENT-INFANT INTERACTION

For both the community and prison samples, lower levels of maternal RF were related to poorer quality interactions between the mothers and babies. This confirms the association between maternal mentalisation and interactive behaviour that has been reported in other studies (Grienberger, et al., 2005; Koren-Karie, et al., 2002; Rosenblum, et al., 2008).

For the community sample, the analysis of the individual codes of the CIB indicated that the discrete affects and behaviours associated with poorer RF were similar to those associated with maternal depression. This suggests that both depression and mentalisation difficulties manifest in similar ways at the behavioural level. Mothers with a poorer capacity to mentalise were seen to be intrusive and angry, but also gaze avoidant, demonstrating the same pattern of paradoxical behaviour of intrusion and withdrawal as the mothers with greater levels of depression, and as reported in other studies (Tronick & Reck, 2009). Contradictory signals towards the infant (a high level of engagement paired with simultaneous signals of disengagement), termed "affective communication errors", have been shown to be prevalent in mothers of infants with a disorganised attachment classification (Bronfman, et al., 1999; Lyons-Ruth, 2002; Madigan, Moran, et al., 2006). These behaviours have also been linked with poorer levels of maternal RF (Grienberger, et al., 2005). Thus, the contradictory and paradoxical approach and withdrawal at a behavioural level appears to be related to difficulties in the mother's capacity to consider her own and her infant's thoughts and feelings, and the combination of these two factors may place the infant at risk of developing a disorganised attachment relationship. The only dyadic code that was related to maternal RF was "adaptation-regulation". Thus, these dyads were less able to adapt to each other's affective arousal in a manner that was affectively

regulating, supporting the idea that maternal RF may be a crucial component to dyadic affect regulation (Gergely & Unoka, 2008).

For the prison sample, maternal RF was most evident on the observed level of positive engagement that the mothers demonstrated towards their babies. Mothers in this group who had difficulties in parental mentalisation were seen to be less enthusiastic, positive and talkative to their babies. Thus, maternal RF in this sample was more likely to be associated with maternal disengagement altogether. It is possible that this way of relating represents the more extreme maternal withdrawal seen in some disorganised attachment relationships and which is predictive of later borderline personality disorder (Lyons-Ruth & Jacobvitz, 2008). There were some links between maternal RF and infant engagement for this sample, but this appears to be an artefact of the extremely young age of the infants in this sample. As reported in Chapter 3, maternal RF is confounded by the age of the baby if measured when the infant is less than 2 months of age.

5.4.3. MECHANISMS LINKING MATERNAL RF, DEPRESSION AND PARENT-INFANT INTERACTION

The final aim of this study was to investigate the interplay between maternal RF and maternal depression in predicting the quality of the parent-infant interactions.

For the prison sample, maternal depression did not relate to the parent-infant interaction ratings. Thus, maternal RF predicted the quality of parent-infant interaction independently of the depressive symptoms experienced by these mothers. As previously discussed, these results may be confounded by social desirability bias which influenced the mothers' responses on the self-reported depression questionnaire, but not on the externally rated measures of RF and behavioural interaction. It is also possible that there are some other unmeasured features of maternal mental health which influence the relationship between parental mentalisation and interactive behaviour in this sample. For example, the prevalence of personality disorders (mostly antisocial personality disorder) amongst

mothers in prison Mother-Baby Units has been estimated to be around 35% (Birmingham, et al., 2006). This is in contrast to a prevalence rate in female community samples of around 3% (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006). There is evidence that mothers with personality disorders demonstrate less positive behavioural interactions with their infants (Crandell, Patrick, & Hobson, 2003; Hobson, Patrick, Crandell, Garcia-Perez, & Lee, 2005), and a number of studies and clinical papers have shown that the capacity to mentalise in attachment-related interviews can be severely impaired for individuals with personality disorder (Fonagy & Bateman, 2008; Fonagy & Luyten, 2009). Most of the prison mothers in this study demonstrated a great deal of impairment in their capacity to mentalise in relation to themselves as parents or in relation to the mind of their baby. Their observed interactions also tended to be less optimally rated than the other high-risk group of mothers in the study. Thus, they clearly present with a number of risk factors which may have deleterious consequences for their infants' social and emotional development. Further and more in-depth research which assesses maternal psychopathology through clinical interviews as well as other potential relational risk factors is sorely needed to improve our understanding of the patterns of risk for women in prison and their babies.

The community sample presented a different profile: maternal depression, RF and parent-infant behaviour were all associated with each other. Two alternative models were hypothesised: (1) that maternal RF modifies the association between maternal depression and parent-infant interaction, and (2) that maternal depression modifies the association between maternal RF and parent-infant interaction. The results showed that only the second of these hypotheses was supported; the severity of maternal depression mediates the link between a mother's capacity to mentalise and the quality of behavioural interaction with her infant.

The rejection of the first hypothesis indicates that the effect of maternal depression on the quality of interactive behaviour is direct and not modified by the mother's capacity for parental mentalisation. Thus, maternal depression represents a direct risk to the developing

parent-infant relationship. This suggests that interventions which focus on the alleviation of these symptoms, regardless of the mother's capacity for parental mentalisation, may be successful in mitigating any long-term effects on the infant.

The acceptance of the second hypothesis suggests that there is a direct relationship between maternal RF and observed dyadic behaviour, as well as an indirect effect of maternal depression and RF on behavioural interactions. There are several ways of understanding this indirect effect of depression and RF:

- 1) There is a causal relationship between maternal RF and depression.
- 2) There are early risk factors which precede the development of depression and a breakdown in the capacity to mentalise.
- 3) Current social risk factors mediate the relationship between maternal reflective functioning and depression.
- (4) There is a complex interplay of all of the above factors.

5.4.3.1. A causal relationship between maternal RF and depression

The inability to think about one's own and one's baby's internal thoughts and emotions may somehow predispose the mother to develop depressive symptoms in the postnatal period. The theory of mentalisation provides some support for this idea as the capacity for reflective functioning is considered to be an essential component of self affect regulation (Fonagy, et al., 2002). The ability to make sense of one's life experiences in a psychological way empowers the individual to have control over their emotional responses to the inevitable stresses of parenting a young baby. If the source of pain is considered to be external to the self, there is little sense of being able to do something about the difficult situation. For example, a mother who makes sense of her infant crying only in terms of the actual behaviour and not in terms of the child's underlying need for comfort, or in terms of his psychological experience of how she is responding to him, is more likely to feel a sense of exasperation and hopelessness. It is also likely that there is a feedback loop, whereby the

mother's inability to mentalise her infant's state of mind makes her less effective in regulating her infant, which precipitates a greater sense of hopelessness and depressive symptoms, which again renders her less effective in regulating her infant's negative states of arousal.

5.4.3.2. Factors which predispose the individual to difficulties in parental mentalisation and depression

It is highly likely that mentalisation impairments and postnatal depressive symptoms have some aetiological overlap. Adult depression has often been associated with both major losses of significant others and insecure attachment relationships in early childhood (Anisman, 1984; Sund & Wichstrøm, 2002). These factors have also been linked with limitations in the capacity to mentalise (Bouchard, et al., 2008; Fonagy, Steele, Moran, et al., 1991; Fonagy, Steele, Steele, & Holder, 1997). Recent functional neuroimaging studies have provided further evidence for these common risk factors. Abnormal ventral limbic and paralimbic activity has been identified in individuals with depression, and these brain areas have also been implicated in the mediation of mentalisation and social relatedness (Choi-Kain & Gunderson, 2008; Hartmann, 2009; Price & Drevets). It is likely that the source of these pathways common to both depression and mentalisation impairment is the mother's own childhood attachment experiences and the psychological and biological development of the stress response system. Research has shown clear links between childhood trauma and a sensitization of the neuroendocrine stress response system which mirrors the neuroendocrine features often associated with depression (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008). Hypothalamic–pituitary–adrenal (HPA) axis hyperactivation has been linked with childhood parental loss and maltreatment in postnatal women (Gonzalez, Jenkins, Steiner, & Fleming, 2009), adult depression (Pariante & Lightman, 2008) and a breakdown in the capacity to mentalise within attachment relationships (Gabbard, Miller, & Martinez, 2008). Recent advances in the study of early attachment experiences have highlighted the importance of secure attachment bonds for the formation of effective neurophysiological structures implicated in both adaptive stress responses and the capacity

for mentalisation (Hruby, Hasto, & Minarik, 2011). The transition to motherhood can be a highly stressful event that may precipitate depressive symptoms in many women, regardless of their own attachment experiences or related capacity for parental mentalisation (hence the rejection of our first causal hypothesis in this study). However, it is likely that there are some women whose own attachment and childhood experiences of being held in mind by another were inadequate, rendering them vulnerable to depression, unable to adequately mentalise about how they or their baby might be experiencing each other, and ultimately less able to provide the mutual and sensitive interactions with their baby that will foster the secure base experience for the child's own developing mentalizing and affect regulating capabilities (Fonagy & Target, 2005).

5.4.3.3. Additional factors linking lapses in maternal mentalisation and the onset of maternal depression

There may be some important variables which were not tested in our mediation model and these relate to the families' current social and interpersonal circumstances. The likelihood of developing depression in the postnatal period is greatly increased by the presence of social risk factors, such as poverty, unemployment, poor housing and single parenting (Cooper & Murray, 1997). The impact of maternal depression on the quality of parent-infant interaction has also been shown to be more pronounced in socially disadvantaged samples than in low-risk groups (Cohn, et al., 1986; Field, 1989; Murray, et al., 1996; Teti, et al., 1995). The published research into the links between mentalisation and social adversity is limited. However, I have reported in Chapter 3 that maternal RF was significantly associated with a number of key indicators of social risk. Mothers who were long-term unemployed, relying on income support and single parents tended to show more difficulty in mentalising. These correlational effects do not give a causal account of the relationship, but it is possible that an inability to consider one's own and others' mental states predisposes the individual to all sorts of interpersonal difficulties that impinge on their personal and professional social relationships. These factors, in turn, lay the context of adversity and stress which may precipitate the onset of maternal depression. Thus, maternal

reflective functioning may represent a social vulnerability factor which predisposes the mother to depressive symptoms (G. W. Brown & Harris, 1978).

5.4.3.4. An attachment-based social model for understanding risk in the parent-infant relationship

The acceptance of any one of the above explanations does not preclude accepting any of the others. In fact, all of the latent and measured variables I have described are theoretically and empirically linked with each other and the most likely explanation for the findings is that there is a complex interplay between all of these risk factors. This is presented in Figure 5.4.

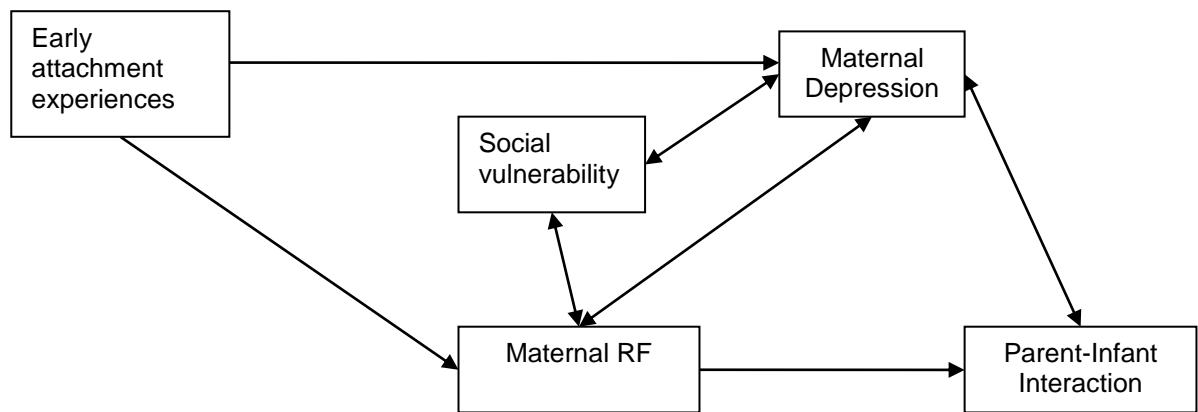


Figure 5.4. Proposed model of vulnerability for difficulties in the parent-infant relationship

In this model, mothers' childhood experiences of poor parental mentalising, loss of attachment figures or maltreatment are precursors to both the onset of depressive symptoms and a breakdown in parental reflective functioning in the next generation. Furthermore, poor reflective functioning and the presence of depression may impact on the mother's

capacity to build supportive social networks and employment prospects, leading to an inadequacy of material resources and social isolation. This social vulnerability may further exacerbate the mother's depressive symptoms and ability for interpersonal relatedness with her baby. Maternal depression directly impinges on the quality of parent-infant interaction. It is likely that there is a feedback loop whereby depression causes insensitivity and less positive interactions, but the experience of less positive moments with her baby may further exacerbate the mother's depressive symptoms. Maternal mentalising may impact on the quality of parent-infant interactions in three ways: 1) directly, as the mother is less able to accurately perceive and interpret the infant's inner states from his behaviour and respond sensitively; 2) indirectly as the difficulty in parental mentalisation causes difficulties in affect regulation, resulting in depression, resulting in withdrawn and intrusive interactive styles, and 3) indirectly by making the mother vulnerable to more social isolation and interpersonal stress, thereby increasing the chances of developing depression, which then impacts on the parent-infant interactions.

Further studies which include measures of the mother's early attachment experiences and current social circumstances are needed to test this model. Future studies are also needed to look at the next developmental phase of the pathway: outcomes for the child's attachment and for their ongoing social and emotional development. Research has shown that the quality of parent-infant interaction may mediate the effects of both maternal depression and reflective functioning on later child attachment, adjustment and psychopathology (Conger, Patterson, & Ge, 1995; Grienberger, et al., 2005; Johnson, Cohen, Kasen, Smailes, & Brook, 2001). Although we are learning more about how maternal reflective functioning is likely to engender attachment security in the child, probably via improved maternal sensitivity and interactional quality (Grienberger, et al., 2005), longitudinal studies have not as yet been carried out.

5.4.4. LIMITATIONS

There are some limitations to this study which should be taken into account. The first is that the samples were relatively heterogeneous. Although the prison and community samples were analysed separately, they each still contained a great deal of variation. The community group was a pooled sample of mothers and babies living in similar relatively socially deprived inner city areas, but two-thirds of the sample had been identified by professionals as requiring mental health services and the remaining dyads had not been clinically referred. The sample sizes were not sufficient to allow for the separate analysis of data from each of these subsamples, but it is possible that the results would have been different for each of them. Another potential limitation in the study design was related to the measures used. The prison study employed a very small number of measures and a large amount of the variance in the quality of parent-infant interaction remains unexplained in this sample. As discussed above, it is possible that there was a social desirability response bias on the self-report questionnaire and future research would most likely benefit from the addition of interview methods and clinical assessments of parental mental health in this sample.

5.5. Summary and conclusions

This study is one of the first to investigate the role of both maternal depression and reflective functioning in the early parent-infant relationship. Mothers and babies in prison were found to be a high-risk group as the mothers exhibited very low levels of parental mentalisation and they had relatively poor quality interactions with their babies. However, the link between these risk factors was not modified by maternal depression, suggesting that there might be other variables that play a part in how the parent-infant relationships unfold in this population. A great deal more research is needed to understand how interventions might be able to mitigate any maladaptive outcomes that may follow on from these early risk factors identified in this study.

In the high-risk sample of mothers and babies in the community, maternal depression, mentalisation and the quality of parent-infant interactions were all related to each other. Maternal depression had a direct impact on the way mothers and babies interacted with each other, marked particularly by maternal intrusion and withdrawal. This impact was not modified by the mothers' capacity for parental mentalisation. Maternal mentalisation was directly related to how the dyads interacted with each other, but this relationship was also partially mediated by the mothers' depressive symptoms. An attachment-based social model for understanding risk in the parent-infant relationship was proposed.

CHAPTER 6: THE ASSESSMENT OF REPRESENTATIONAL RISK (ARR): DEVELOPMENT AND PSYCHOMETRIC PROPERTIES OF A NEW TOOL FOR ASSESSING RISK IN THE PARENT-INFANT RELATIONSHIP

6.1. Introduction

There are few tools for the assessment of risk in parent-infant relationships which are both clinically relevant and accessible to front line professionals. The assessment of early relationships is, by the nature of the population, complex. Babies are not able to verbally speak for themselves and parent-reports have been found to be subject to extreme bias, especially in populations where parental psychopathology is prevalent (Durbin & Wilson, 2012; Salomonsson & Sleed, 2010; Seifer, et al., 2004). Thus, researchers and clinicians have primarily made use of observational, externally rated measures for the assessment of the quality of relationship between a parent and baby. Early attachment research focused heavily on the behaviours between mothers and infants (Ainsworth, 1963; Ainsworth, et al., 1978). More recent research has turned to the assessment of parental attachment representations. This burgeoning body of research has proved fruitful in the prediction of outcomes and in furthering our understanding of relational risk and resilience.

Parental mental representations, or “internal working models” of attachment relationships have been identified as key determinants of the quality of the parent-infant relationship and the child’s socio-emotional development (Bowlby, 1969; George & Solomon, 2008a). Parental representations refer to the parent’s thoughts, feelings and expectations about their child and themselves as caregivers. They are considered to be a mature transformation of the parent’s own attachment system (George & Solomon, 1996) and are thus the critical

components underlying the intergenerational transmission of attachment (Crawford & Benoit, 2009; Fonagy, 1994; Slade, et al., 2005). Attachment representations are also considered to be the underlying drivers of the caregiving behavioural system (Bretherton & Munholland, 2008).

The first detailed studies of the nature and content of maternal representations focused on parents' attachment experiences with their own caregiver/s, as measured by the Adult Attachment Interview (AAI; George, et al., 1985). This research provided valuable insights into how attachment representations translate into caregiving behaviour and child outcomes (see van IJzendoorn, 1995 for a meta-analysis). However, the shortcomings of this indirect assessment of parents' attachment representations and how they relate to the current parent-child relationship were soon recognized. For example, twins can have different attachment classifications with the same mother (Bokhorst, et al., 2003), demonstrating relationship-specific characteristics of each parent-child attachment relationship which would not be picked up by the AAI. Thus, attention has more recently shifted to the direct assessment of parents' representations of each specific relationship with a single child.

In keeping with the tradition of the AAI, direct parental representations are typically assessed through semi-structured interviews with the parents and the transcripts are coded on a number of coding systems (Biringen & Bretherton, 1988; George & Solomon, 2008b; Oppenheim & Koren-Karie, 2002; Slade, Aber, et al., 2004; Slade, Bernbach, et al., 2004; Zeanah, et al., 1986). Some of these coding systems, such as the Sensitivity/Insight Scale (Biringen & Bretherton, 1988) and the Working Model of the Child Interview (Zeanah, et al., 1986) were developed before the concept of attachment disorganisation was described in the literature. These measures have been linked with child attachment security and maternal sensitivity (Benoit, Parker, et al., 1997; Biringen, Matheny, et al., 2000; Zeanah, et al., 1994). However, maternal sensitivity, or the lack thereof, has been found to be a weak predictor of attachment disorganisation (van IJzendoorn, et al., 1999). These tools for

assessing parental representations are therefore unlikely to be sensitive to some of the more anomalous correlates of the most high risk (disorganised) attachment relationships.

Some more recent coding systems have included the assessment of parental representations that are likely to be linked with attachment disorganisation and have shown promising results in the prediction of risk (Crawford & Benoit, 2009; George & Solomon, 2008a; Oppenheim & Koren-Karie, 2002). However, these coding systems are complex and require extensive training and prior knowledge of attachment and developmental psychopathology. Thus, such instruments tend to be used by highly specialised attachment researchers and are seldom used by frontline practitioners who work with families in the perinatal period. The early identification of disruptions in parent-infant relationships has become a priority for the health services (National Institute for Health and Clinical Excellence, 2007), but tools for carrying out such assessments are relatively inaccessible to a broad range of professionals.

Another drawback for many of existing measures is that they categorise the parental representations into typologies, synonymous with attachment classifications. Although these discrete clusters of caregiving representations may be useful for experimental research, they do not necessarily provide the breadth of information needed to inform clinical assessments of risk and intervention strategies. The validity of adult attachment categories has been questioned, and several researchers now prefer to consider attachment-related behaviours and representations to fall along a continuum (Fraley & Spieker, 2003).

Some of the most promising recent research into parental representations has been in the assessment of the capacity for mentalisation, assessed by the Reflective Functioning coding system (Fonagy, et al., 1998; Slade, Bernbach, et al., 2004). This measure has been linked with a number of other indicators of risk in the parent-infant relationship, such as insecure/disorganised attachment and poor ratings of parent-infant interaction (Grienenberger, et al., 2005; Rosenblum, et al., 2008; Slade, et al., 2005). Although this

instrument provides a highly valuable insight into the parent's meta-cognitive capacity to engage with her child's mind, the coding system is unidimensional and it yields only a single overall score. Practitioners working with families with complex patterns of risk and resilience are in need of an instrument which can also examine the content of what parents think and feel about their infants and themselves as caregivers. The coding of two interview transcripts may yield the same overall score for RF, but they could be qualitatively very different and these dyads may require very different intervention strategies. This is particularly the case in high-risk cohorts where the parent's capacity for mentalisation is moderate to low in the vast majority of cases. This may manifest in bizarre, hostile or inappropriate attributions of mental states or through an absence, disavowal or defensive blocking off of the emotional world of the infant and/or themselves. The narratives may be starkly different from one another, a fact which is not evident from their RF scores alone.

The current study addresses the need for an accessible instrument which examines a number of indicators of risk in parents' representations of their relationship with their infants. A new coding system, the Assessment of Representational Risk (ARR), was developed as an additional screening instrument to be applied to the Parent Development Interview.

6.1.1. DEVELOPMENT OF THE ASSESSMENT OF REPRESENTATIONAL RISK (ARR) CODING SYSTEM

The first stage of the development of the ARR involved an extensive review of other measures. Constructs that have been shown to be particularly good at discriminating high risk parent-infant dyads from those less at risk for relational difficulty, particularly those that discriminated infants with a disorganised attachment classification from non-disorganised infants, were extracted. The measures included in this review could be applied to rating behavioural interactions as well as parents' representations. Many of the behavioural indicators of risk were thought to be likely to occur at a representational level as well.

The behavioural coding systems which were included in the review were the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Bronfman, et al., 1999), and the Frightened/Frightening coding system (FR; Main & Hesse, 2005). The measures of parental representations examined included the original PDI coding system (Slade, et al., 1999), the Parent Attachment Interview (PAI; Biringen, Matheny, et al., 2000), the Caregiving Interview (CI; George & Solomon, 2008b), the Working Model of the Child Interview (WMCI; Zeanah et al., 1993), the AAI coding system (Main & Goldwyn, 1991), the Hostile/Helpless coding of the AAI (HH; Lyons-Ruth, Bronfman, & Atwood, 1999), the Maternal Insightfulness Assessment (IA; Koren-Karie, et al., 2002; Oppenheim & Koren-Karie, 2002), and the adapted version of the AMBIANCE to be applied to parents' narratives (Crawford & Benoit, 2009).

From this examination of the existing measures, a list of the common correlates of relational risk, as indicated by the current theoretical and empirical findings, was made. This resulted in an initial list of 15 dimensions. A set of 15 PDI transcripts with a broad range of RF levels and clinical presentation was selected as a pilot sample for examining the face validity of the initial dimensions. A clinical doctoral student (Helen Wain) carried out this initial coding and had regular discussions with the author (MS) and their research supervisor (PF) (Wain, 2010). As the pilot sample of PDIs was examined for evidence of the theoretically derived dimensions, a coding manual which provided descriptions and examples of each dimension was developed.

Through the coding of the pilot sample, the identification of examples, and discussions with the team, the coding system was refined. The original set of 15 dimensions was reduced to 10 as several dimensions were conceptually overlapping. The descriptions of the dimensions and the coding instructions were clarified and elaborated. The final manual (Appendix 3) was used in the initial validation study and the current study.

6.1.2. DESCRIPTION OF THE ASSESSMENT OF REPRESENTATIONAL RISK CODING SYSTEM

The aim of this research was to develop a relatively brief and simple screening instrument. Thus, the ARR coding manual is a succinct coding system that is intended for use by a range of professionals with differing levels of knowledge of attachment theory and developmental psychopathology. It is comprised of 10 dimensions which are rated on 5 point Likert-type scales to capture the intensity and frequency with which each construct is present in the parents' narratives. Thus, weight is given to both how often and how extreme each dimension is observed. A parent may score very high on one dimension if they give only one or two extreme examples, or if they give less extreme examples but more frequently.

The ten dimensions and the theoretical underpinnings for why they are included are described below.

1. Hostile behaviour

Parental hostility, defined as physically harsh, rough, punitive and derogatory parental behaviour, has consistently been associated with poor long-term outcomes for children in a number of longitudinal studies (Cote, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Franz, McClelland, & Weinberger, 1991; Franz, McClelland, Weinberger, & Peterson, 1994; Sears, Maccoby, & Levin, 1957; Tremblay et al., 2004). This is perhaps the most obvious form of parenting risk, and it has inevitably become a discrete variable in most well-established systems for rating the quality of parent-infant behavioural interactions (Biringen, et al., 2008; Bronfman, et al., 1999; Feldman, 1998; Main & Hesse, 2005; Murray, et al., 1996). The types of behaviours that are incorporated into this dimension include verbal and physical punishment, rejection, mocking, teasing, and a blatant unwillingness to respond to the infant's needs. They may be overtly described, or there may be more subtle evidence within the interview itself (for example, laughing when describing infant distress).

Hostile parenting behaviour has been associated with infant attachment disorganisation (Abrams, et al., 2006; Goldberg, et al., 2003; Madigan et al., 2006; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; True, et al., 2001). The mechanism by which parental hostility leads the infant to develop a disorganised attachment strategy is thought to be fearful arousal without resolution. In evolutionary terms, early attachment relationships serve a protective function (Bowlby, 1982). The infant's attachment system is activated by perceived threats within the environment and at these times will seek comfort and protection from their attachment figure/s. When a parent behaves in a manner which is frightening to their infant (hostile behaviour), the child is in a paradoxical position of seeking comfort from the very source of the threat (Hesse & Main, 2006; Main & Hesse, 1990).

The National Institute for Health and Clinical Excellence lists a number of parent-child relational variables as possible indicators of maltreatment (National Institute for Health and Clinical Excellence, 2009). This is based on a review of high quality research and clinical evidence linking parental behaviour with child maltreatment. Unsurprisingly, many of the behaviours listed, such as harmful behaviour, harsh discipline, negativity, rejection and scapegoating, relate to the overall concept of parental hostility. Thus, these hostile behaviours at the more extreme level of the continuum are likely to be associated with a high degree of risk and concern for the safety of the infant.

2. Hostile Parental Experiences

Hostile parental behaviour is likely to be driven by negative experiences of parenthood and attributions towards the baby. Some parents may not provide evidence of hostile actions towards their infants during the interview. This may be due to a conscious or unconscious idealisation of the relationship (see below). However, there may be indicators of risk within the parents' representation of the parenting role or of their baby that indicates hostility. This

might include negative attributions of their infant's temperament, behaviour or intentions, or negative feelings concerning their parenting role and the impact of the baby on their life. Although representational and behavioural hostility are likely to share much of the same aetiology, this dimension is rated separately from hostile behaviour as it may be apparent without reference to related behaviours. It is considered a risk factor as it is likely that the infant will be exposed to and affected by these negative representations. For example, the attribution of negative intentions underlying normal infant needs and communications is likely to elicit inappropriate or distorted responses from the mother.

3. Fearful Affect

"Frightened", as well as "frightening" parental behaviour has been described as a correlate of disorganised attachment relationships (Bronfman, et al., 1999; Hesse & Main, 2006; Main & Hesse, 2005). Fearful affect in the parent is thought to be disruptive to the infant's attachment organization in the same way as overtly frightening behaviour is. The infant looks to the caregiver for signals of environmental danger. Fearful affect in the parent therefore activates the child's attachment system and need for protection. If the parent is not able to regulate her own fearful arousal, she will become both the source of fear in the infant as well as the person who the infant turns to in order to alleviate their own heightened arousal. Thus, the infant's attachment needs are exacerbated and the attachment system becomes disorganized (Abrams, et al., 2006; Dutra, et al., 2008; Hesse & Main, 2006; Madigan, Moran, et al., 2006; Main & Hesse, 1990). Parental fearful affect in the context of attachment relationships may stem from the parent's own attachment history. If they experienced similarly ineffective parenting, their developing capacity for self-regulation may have been compromised. Their baby's dependence and attachment communications may elicit feelings reminiscent of their own unregulated states of arousal that they experienced. Unresolved loss or trauma within the parent's attachment history may also result in unregulated states of fear in the parent, particularly in the caregiving context. Fearful arousal has also been linked with dissociative states in the parent, the

behavioural manifestations of which have been linked with attachment disorganisation in the infant (Lyons-Ruth, 2003).

4. Helplessness

Helplessness has been described by several theorists as a correlate of inadequate attachment relationships (George & Solomon, 2008a; Lyons-Ruth & Jacobvitz, 2008; Lyons-Ruth, et al., 2005). Feelings of helplessness may stem from the parent's own attachment history or they might evolve out of a cycle of repeatedly ineffective interactions between the parent and infant, whereby each partner's responses to each other do not result in any satisfaction of their respective attachment and caregiving needs (Goldberg, 1977). Thus, helpless states of mind in the parent may be indicative of non-optimal transactions within the parent-infant relationship. At more extreme levels, helplessness has been implicated in child maltreatment (Bugental, Blue, & Cruzcosa, 1989).

There is some evidence for the link between observed maternal helplessness-fearfulness and infant attachment disorganisation (Lyons-Ruth, Bronfman, & Parsons, 1999). However, most existing behavioural rating systems appear to be quite insensitive to detecting the potential relational risk for these dyads (Lyons-Ruth, Lyubchik, Wolfe, & Bronfman, 2002), possibly because these parents can be seen to be relatively sensitive at a global level. It is thus imperative that tools incorporate an explicit assessment of these more subtle elements of suboptimal caregiving qualities.

5. Emotional Distress

Emotional distress is a broad construct which reflects the parents' difficulty in affective self-regulation. It is likely to be a correlate of parental mood disorders, which have been widely acknowledged to impinge on the parent-infant relationship (Cohn, et al., 1986; Cornish, et al., 2008; Field, 1989; Korja, et al., 2008; Lyons-Ruth, Zoll, Connell, & Grunbaum, 1986b; Murray, et al., 1996; Paris, Bolton, & Weinberg, 2009). Indicators of this risk factor may be overtly present in the parent's narrative as descriptions of

interactions which were upsetting and where she felt overwhelmed, or the parent may become distressed during the interview itself. High scores on this dimension indicate that the parent's own emotional needs may impinge on her availability to regulate her infant's need for emotional regulation and positive and playful interactions. Furthermore, the caregiver distress may be in and of itself dysregulating for the infant.

6. Enmeshment

Enmeshment refers to the parent's difficulty in separating their own thoughts, needs, emotions or sense of self from those of their infant. At the more extreme end of the scale it may take the form of role reversal, whereby the parent looks to the child for support and protection. This process has been noted as a potential familial risk factor for many decades (Bowlby, 1977; Minuchin, 1974). Several attachment theorists have identified behavioural indicators of role reversal in the observation of parent-infant interaction and found these to be linked with infant disorganisation (Abrams, et al., 2006; Bronfman, et al., 1999; Hesse & Main, 2006). Other studies have found role reversal, also called "parentification" and "spousification", to be linked with parental substance misuse, mental illness, marital conflict, history of sexual abuse, sexually abusive behaviour, and later dissociation and unresolved/fearful attachment in the child (Alexander, 2003; Burnett, Jones, Blilwise, & Ross, 2006; Kelley et al., 2007). There is evidence that role reversed representations and behaviours are transmitted across generations (Macfie, Fitzpatrick, Rivas, & Cox, 2008; Macfie, McElwain, Houts, & Cox, 2005), so the effects can be far reaching.

In early parent-infant relationships, enmeshment may be particularly detrimental as this is the period of separation-individuation whereby the infant begins to form a sense of self as separate from their mother (Mahler, Pine, & Bergman, 1975). When the parent-infant relationship does not effectively facilitate this developmental process, the effects may be devastating. For example, parents who do not see their infants' needs and communications as separate from their own are not likely to offer adequate contingent marked mirroring of the infant's self states in their interactions (Gergely, 2007). The infant may internalise the

parent's states and these may become represented as a "false self" (Fonagy, et al., 2007; Winnicott, 1965). This may lead to later psychopathology, particularly borderline personality disorder which is characterized by an incohesive sense of self and an inability to maintain emotional boundaries between the self and other (Kernberg, 1967).

7. Incoherence

Some attachment scholars have placed an emphasis on the discursive quality of attachment-related narratives as a key indicator of the quality of the relationship. For example, Bretherton (1990) has suggested that open, fluent and coherent communication within and about attachment relationships is associated with security, while insecure relationships are associated with incoherence and dysfluent narratives. The importance of coherence in attachment-related narratives has been brought to the fore by the work of Mary Main and her colleagues (Hesse & Main, 2000; Main & Goldwyn, 1984, 1995, 1998; Vaughn et al., 2006). They have operationalized a very detailed description of "coherence of mind with respect to attachment" and "coherence of discourse" in the coding of the Adult Attachment Interview. This is based on four maxims of coherence and collaboration outlined by the linguistic philosopher, Grice: quality, quantity, relation and manner (Grice, 1975). In general, adults who are classified as secure tend to provide enough information which is sufficiently well organised to answer the interview questions and they do not get lost in the emotional details of the narrative. Parents who demonstrate this sort of discursive coherence are likely to have children who are classified as secure in the Strange Situation (Fonagy, Steele, et al., 1995). In contrast, incoherence has been associated with preoccupied classifications on the AAI (Main, Kaplan, & Cassidy, 1985). A more malevolent form of incoherence is when it is sporadically present when talking about attachment-related loss or trauma. A careful analysis of AAI transcripts from parents of children classified as disorganised revealed characteristic "lapses in the monitoring of discourse or of reasoning" when discussing attachment-related loss or trauma (Main & Goldwyn, 1990, 1995). For example, a person may be described as having died at several

different times, the interviewee may make an abrupt shift to eulogistic speech, or a dead person may be briefly discussed as if he or she were alive. Lapses of this kind are suggested to represent interference from normally dissociated memory systems (Hughes, Turton, Hopper, McGauley, & Fonagy, 2004; Liotti, 1999; Main, 1996).

8. Idealisation

The idealisation of object representations has been identified by several eminent psychoanalysts as a defense mechanism which comes into play in both normal development and, in extreme circumstances, at the root of certain types of psychopathology (Freud, 1914; Kernberg, 1975; Kohut, 1966, 1972). Idealisation is evident when a person attributes exaggeratedly positive qualities to the self or significant others. It is often associated with “splitting” and accompanied by the converse process of devaluation, whereby the self or object is considered as all bad (Freud, 1940). Otto Kernberg described the process of idealisation along a continuum of normal early development through to pathological forms (Kernberg, 1975). It is considered to be the combined process of denial of unwanted qualities of an object, and a projection of aspects of one’s own libido or omnipotence to the object. At the normal end of the spectrum, idealisation is the necessary precursor to mature love relationships. At the other extreme of the continuum, when the person has difficulty with object constancy, the process of idealisation may become more fragile and paired with devaluation so that others are viewed as either all good or all bad. This form of idealisation has been identified in narcissistic and borderline personality traits (Lerner & Van-Der Keshet, 1995).

Studies using the Adult Attachment Interview have revealed the idealisation of attachment objects as an important component of attachment insecurity. It is characteristic of a “dismissing” attachment style in the parent, which has been associated with attachment avoidance in the child (van IJzendoorn, 1995). Idealisation in parent’s narratives about their relationship with their child has been identified in high-risk populations (Baradon, et al., 2008). At extreme levels, idealisation may be indicative of the mental segregation, or

dissociation, of overwhelming affects or threatening self/other schemas linked with trauma (Bowlby, 1980; Lyons-Ruth, et al., 2005). This particular type of idealisation is thought to be associated with disorganisation of the attachment system and to stem from a process of splitting (Lyons-Ruth, et al., 2005). In contrast, the idealisation seen in dismissing/avoidant attachment relationships is considered to be a product of a deactivation of negative affects and is relatively stable in the narratives (George & Solomon, 2008a). Idealisation which stems from a process of splitting, or the defensive organization of “segregated systems” is unstable and the interviewee may oscillate very rapidly between idealisation and devaluation (George & Solomon, 2008a; Lyons-Ruth, et al., 2005). Thus, idealisation, whether in the more stable form evident in parents with a dismissing attachment style or the more unstable form associated with trauma and unresolved states of mind, is likely to be an indicator of inadequate parent-infant attachment relationships.

9. Mutual Enjoyment

This dimension reflects one of the two positively directed concepts in the ARR coding system. The rationale for including these items in a measure of risk is that they are considered to be protective factors which may ameliorate the effects of other indicators of risk in the parents’ representations. Mutual enjoyment refers to the reciprocity of pleasure that the parent and baby have from each other. The idea that mutual enjoyment would be a protective factor in the unfolding relationship between mother and baby is commonsensical. A parent who finds pleasure in positive interactions with her baby and from her baby’s pleasure is more likely to invest time focusing on her baby and eliciting pleasurable interactions. Most behavioural rating systems for assessing the quality of parent-infant interactions take into account the sense of affective mutuality between parent and baby as well as observed pleasure and enthusiasm that each partner demonstrates in the interaction (Barnard, 1978; Clark, 1999; Feldman, 1998; Ferber, et al., 2005; Murray, et al., 1996). Parents who are secure/ autonomous in their childhood attachment relationships are more likely reveal an experience of joy and pleasure in their relationship with their child, and are more likely to exhibit positive parenting behaviours towards their child (Slade, et al., 1999).

Thus, this dimension is likely to be indicative of a relationship where both parent and infant have frequent experiences of positive interactions with each other and which is likely to provide the foundation for the infant's communications to be observed and responded to.

10. Supportive Presence

Supportive presence refers to the parent's overall availability and sensitivity to the infant's communications and needs. The earliest in-depth studies of parent-infant attachment relationships involved lengthy home-based observations of mothers and babies in the first year of life (Ainsworth, 1973, 1976; Ainsworth, et al., 1971). These studies demonstrated that the most important parental correlate of infant attachment security was "maternal sensitivity": the capacity to recognize the infants' cues and respond to them in a contingent and appropriate manner (Belsky & Isabella, 1988; Isabella, 1993). The concept of maternal sensitivity has subsequently become the most widely used construct in the assessment of parent-infant relationships, at a behavioural (Ainsworth, et al., 1978; Biringen, et al., 2008; Crittenden, 2001) and representational level (Biringen & Bretherton, 1988; George & Solomon, 2008b; Oppenheim & Koren-Karie, 2002; Zeanah, et al., 1993). The "supportive presence" dimension encompasses the concept of sensitivity, but also refers to the general availability of the parent to the infant. It is therefore a global rating of indicators of "good enough" parenting (Winnicott, 1960). At the lowest end of the spectrum there may be indications that the parent is not providing the infant with sufficient food, sleep or basic care. This is likely to be indicative of the parent's abdication from the caregiving role and possibly neglect. Other more subtle indicators of the absence of a supportive presence would be that the parent does not attend to the infant's distress, places inappropriate expectations of independence on the infant, leaves the infant unattended for long periods, or uses other activities (such as television) in lieu of themselves to occupy their baby.

The parent's ability to sensitively respond to the infant's needs has been consistently linked with the formation of a secure attachment relationship (De Wolff & van IJzendoorn, 1997). Although the link between disorganised attachment relationships and parental sensitivity is

relatively weak (van IJzendoorn, et al., 1999), a general unavailability of the parent to the infant is likely to exacerbate other problematic aspects of the relationship that lead to the disorganisation of the attachment system.

6.1.3. HOSTILE-HELPLESS STATES OF MIND

Recent research has pointed to the likelihood of two distinct profiles of parenting that are associated with infant attachment disorganization. Lyons-Ruth and colleagues carried out extensive studies into the maternal behavioural correlates of infant attachment, and particularly infant disorganization (Lyons-Ruth, 2002; Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth & Jacobovitz, 1999; Lyons-Ruth, et al., 2005). These studies demonstrated substantial variation in maternal behaviour within the disorganised infant group. In fact, they found two subgroups of mothers of disorganised infants who differed more from each other than they did from mothers of infants who were not disorganised. The first subgroup of mothers tended to show higher rates of role reversed and negative intrusive behaviours towards their infants. Thus, these mothers displayed contradictory rejecting behaviours as well as behaviours which sought attention from the infant. They termed this group “hostile self-referential regarding attachment”. The second group, termed “Helpless/ fearful regarding attachment” demonstrated higher levels of withdrawal and fearful behaviour towards their infants. They were unlikely to be overtly intrusive or hostile in their interactions, and often appeared to be fragile and sweet. These mothers were not likely to take the initiative in approaching or greeting their infant, but they usually responded to their infants bids for contact after initially hesitating, moving away and attempting to deflect the infant’s need for contact.

The assessment of infant attachment status entails a primary coding of secure versus insecure and a secondary rating for disorganization (Main & Solomon, 1990; Solomon & George, 1999). Thus, there are two subgroups of infants within the disorganised category: those who demonstrate disorganised behaviours alongside the avoidant or resistant behaviours associated with attachment insecurity (D-insecure), and those who demonstrated

disorganised behaviours as well as behaviours associated with attachment security, such as proximity-seeking (D-secure). The research by Lyons-Ruth and colleagues demonstrated that these two infant disorganised profiles correspond to the two caregiving subgroups they identified: Hostile mothers were more likely to have infants classified as D-insecure, and Helpless/fearful mothers were more likely to have infants classified as D-secure (Lyons-Ruth, Bronfman, & Atwood, 1999).

By approximately age 6, children who were classified as disorganised are seen to have formed an organised attachment strategy around the apparent goal of controlling the interaction with the attachment figure (Main, et al., 1985; Solomon, George, & Dejong, 1995; Wartner, Grossman, Fremmer-Bombrik, & Suess, 1994). However, this can take two very different forms. Children who exhibit *controlling-punitive* behaviour are seen to use hostile, coercive or humiliating strategies to control their parent when the attachment system is activated. In contrast, another group of disorganised children, classified as *controlling-caregiving*, have been seen to direct or organise their parent's behaviour in a somewhat caregiving or role-reversed manner. It has been speculated that these differential patterns of controlling behaviour are likely to emerge from the two different patterns of disorganisation seen in early infancy, although there is currently insufficient longitudinal data to corroborate this hypothesis (Lyons-Ruth, et al., 2002).

Despite the converging evidence for two differential forms of attachment-related risk, the outcomes for both of these groups of parents and infants are poor. D-secure infants are just as likely as D-insecure children to develop a range of poor outcomes, such as aggressive behaviour towards peers, elevated cortisol secretion and controlling attachment behaviours towards parents (Lyons-Ruth, et al., 1993; Lyons-Ruth, Easterbrooks, & Cibelli, 1997; Spangler & Grossman, 1993; Wartner, et al., 1994). Assessment tools need to be sensitive to picking up both types of relational dysfunction. The hostile parenting profile is usually readily apparent in parent-infant interactions, but there are more subtle behaviours

associated with the helpless profile that many of the currently available tools are insensitive to identifying (Lyons-Ruth, et al., 2002).

The identification of these two patterns of infant disorganization and caregiving behaviour has led to speculation about how these relate to internal representations of attachment relationships. Lyons-Ruth (2002) has postulated that the two very different profiles are actually the extreme poles of a single hostile/helpless (H/H) representation. These pervasively unintegrated internal working models of attachment, based on the caregiver's own experiences of being parented, are thought to be the intergenerational driving force for the seemingly contradictory behaviour observed in parents of disorganized infants. A coding system for rating the extent of these H/H states of mind in relation to an adult's childhood experiences as measured by the AAI has been developed (Lyons-Ruth, Melnick, Atwood, & Yellin, 2003). However, the manifestation of such states of mind in the context of current parental representations remains as yet unexplored.

The current study furthers the research into Hostile/Helpless states of mind by examining whether the same patterns that have been noted in the adult attachment representation and the parent-infant behavioural studies are also present in parent's representations of their current relationship with their baby.

6.1.4. INITIAL VALIDATION OF THE ARR CODING SYSTEM

The initial psychometric properties of the ARR coding system have been examined in two studies (Sockett, 2011; Wain, 2010). Both of these studies made use of data from subsamples used in the current study: a sample of mothers and babies in prison, a clinically referred sample of mothers and infants and a normative sample of mothers and infants. Findings from these early studies demonstrated that the ARR coding system discriminates between high risk and low risk samples and that it is significantly associated with concurrent and later parent-infant interaction quality. The current study aims to ascertain whether the same findings are replicated in a larger sample. It also furthers the research

with this coding system by examining the factor structure based on theoretically derived hypotheses about parental representations and risk, and by looking at the value added to the prediction of relational risk than a measure of parental mentalisation alone.

6.1.5. AIMS OF THE CURRENT STUDY:

1. To examine the factor structure of the ARR.
2. To examine the criterion validity of the ARR coding with respect to how well it discriminates mothers and babies at risk of relational difficulties from low-risk dyads.
3. To examine the concurrent validity of the ARR in relation to other measures of parent-infant relational risk (maternal mentalisation and parent-infant interaction).
4. To examine the predictive validity of the ARR in relation to the quality of parent-infant interaction one year later.
5. To determine whether the new coding system was able to account for more variance in later dyadic functioning than RF alone.

6.2. Method

6.2.1. PARTICIPANTS

A total of 184 participants were drawn from three samples: a clinical group of mothers with mental health problems and their babies, a non-referred normative sample of mothers and babies living in similarly deprived inner city areas, and a sample of mothers and babies staying on Mother-Baby Units in prison. The recruitment procedures and inclusion and exclusion criteria for these samples are described in Chapter 3. Table 6.1 presents a description of the baseline demographic characteristics of the samples used in this study. The baseline data for all three samples were pooled ($N = 184$) for the development of the ARR, the assessment of its factor structure, and for examining the concurrent validity of the measure against measures of parent-infant interaction. The follow-up data from the pooled

clinical and normative samples ($N = 99$) were used to confirm the factor model derived from baseline data and to examine the predictive validity of the ARR coding system.

Table 6.1. Description of sample

	Clinical group n = 77	Normative group n = 54	Prison group n = 53	Total sample n = 184
Mother age in years:				
Mean (SD)	31.5 (5.9)	33.3 (4.4)	25.8 (6.0)	30.4 (6.3)
Range	19.1 – 41.8	21.3 – 43.7	17.8 – 41.5	17.8 – 43.7
Child age in months:				
Mean (SD)	3.4 (3.2)	7.2 (2.5)	5.4 (3.9)	5.3 (3.5)
Range	0.5 – 11.4	0.9 – 12.6	0.2 – 18.5	0.2 – 18.5
Child gender: N (%)				
Female	28 (36%)	26 (48%)	31 (59%)	85 (46%)
Male	49 (64%)	28 (52%)	22 (41%)	99 (54%)
No. of other children: N (%)				
First time mothers	48 (62%)	28 (52%)	33 (64%)	122 (67%)
More than one child	29 (38%)	26 (48%)	19 (36%)	61 (33%)
Mother ethnicity: N (%)				
White	46 (60%)	41 (76%)	28 (53%)	115 (63%)
Black	12 (16%)	0 (0%)	19 (36%)	31 (17%)
Asian	8 (10%)	6 (11%)	1 (2%)	15 (8%)
Mixed	4 (5%)	5 (9%)	5 (9%)	14 (8%)
Other	9 (9%)	2 (4%)	0 (0%)	9 (5%)
Mothers' education				
None	5 (7%)	0 (0%)	14 (28%)	19 (11%)
Basic (high school equivalent)	27 (35%)	8 (15%)	23 (46%)	58 (32%)
Further (vocational training)	10 (13%)	5 (9%)	9 (18%)	24 (13%)
Higher (degree or higher)	35 (46%)	41 (76%)	4 (8%)	80 (44%)

6.2.2. PROCEDURE

Mothers who consented to participating in the studies were interviewed by a researcher at baseline. The infants in the clinical and normative samples were under 12 months of age, and infants in the prison group were under 18 months of age at baseline. The mothers and babies in the clinical and normative samples were assessed again one year after baseline, in other words, when the infants were between 12 and 24 months of age. At each assessment, mothers were interviewed on the PDI, asked to complete a set of standardized questionnaires, and video-recorded interacting with their babies.

6.2.3. MEASURES

6.2.3.1. The Parent Development Interview (PDI)

The PDI (Slade, Aber, et al., 2004; as described in Chapter 3) was administered with all mothers at baseline and with the clinical and normative group mothers one year later. It was coded on both the Reflective Functioning (RF) and the Assessment of Representational Risk (ARR) coding systems.

RF: The overall RF scores (as described in Chapter 3) were used in the analyses of this study. The potential range was from -1 to 9.

ARR: The interviews were coded by four trained coders on the ARR coding system (Appendix 3). This is comprised of the following ten dimensions of risk and resilience: Hostility -behaviour, Hostility -experience, Fearful Affect, Helplessness, Emotional Distress, Enmeshment, Incoherence, Idealisation, Mutual Enjoyment, and Supportive Presence. Each dimension was rated on a five-point Likert scale for the intensity and frequency with which the dimension was found in the narratives. The coding of the interviews requires an extensive reading of the narratives, assigning ratings on a number of domains, and substantiating scores with sections of text. This process usually takes between one and two hours per transcript, approximately the same as the RF coding. The raters were

all blind to the sample from which the interview came. A set of 30 interviews from all three samples were coded by the three raters. The interrater reliability for all subscales was good, as indicated below.

Hostility -behaviour: ICC = .915

Hostility -experience: ICC = .816

Fearful Affect: ICC = .759

Helplessness: ICC = .718

Emotional Distress: ICC = .759

Enmeshment: ICC = .899

Incoherence: ICC = .899

Idealisation: ICC = .816

Mutual Enjoyment: ICC = .843

Supportive Presence: ICC = .823

6.2.3.2. The Center for Epidemiological Studies Depression Scale (CES-D)

The CES-D (Radloff, 1977), as described in Chapter 4, was used to measure maternal depression.

6.2.3.3. The Borderline Personality Inventory (BPI)

The BPI (Leichsenring, 1999), as described in Chapter 4, was used to assess borderline personality features in the mothers. The cut-20 score was used in the current analyses.

6.2.3.4. The Experience in Close Relationships Scale-Revised (ECR-R)

The ECR-R (Fraley, et al., 2000), as described in Chapter 4, was used to assess mothers' adult attachment style along two dimensions (anxiety and avoidance) with respect to close interpersonal relationships.

6.2.3.5. Coding Interactive Behavior (CIB) Scales

The CIB (Feldman, 1998) rating scales were used to examine the quality of video-recorded parent-infant interaction. The measure, as described in Chapter 5, has three subscales: Dyadic attunement, Parental positive engagement and Child involvement.

6.2.3.6. The Emotional Availability Scales (EA)

The EA scales (Biringen, et al., 1993; Biringen, et al., 1998; Biringen, Robinson, et al., 2000), as described in Chapter 5, were used as a second measure of the quality of parent-infant interaction. A summary score of all subscales was used as an overall measure of Emotional Availability observed in the interaction.

6.3. Results

6.3.1. FACTOR STRUCTURE OF THE ARR

SPSS AMOS was used to carry out a confirmatory factor analysis. The development of the model was theory-driven. It was expected that the 10 ARR items would load onto two latent factors which reflected mothers' hostile and helpless states of mind with respect to their caregiving role and that these latent factors would be correlated with each other. The items which were expected to load on each latent factor were:

Hostile: Hostility:Parent's Experience (HPE)
 Hostility:Parent's Behaviour (HPB)
 Incoherence (In)
 Enmeshment (E)
 Mutual Enjoyment- reversed score (MER)
 Supportive Presence- reversed score (SPr)

Helpless: Fearful Affect (FA)
 Helplessness (H)
 Emotional Distress (ED)
 Idealisation (I)

Two of the 10 items, Mutual Enjoyment and Supportive Presence, were positively phrased and the covariance between their error terms was high, as indicated by the modification indices. This covariance was included in the model to constrain it as it is most likely an artefact of the measurement direction. The results showed that the model was not a good fit, $\chi^2 (33) = 90.30, p < .001$; CFI = .88, RMSEA = .10. Also, as can be seen in Figure 6.1, the loadings of three items (idealisation, incoherence and enmeshment) were low.

The three poorly fitting items were removed from the model and a second confirmatory factor analysis was carried out. This final model (shown in Figure 6.2) demonstrated a good fit on a number of estimates, $\chi^2 (12) = 14.16, p = .29$, CFI = .96, RMSEA = .03 (90% CI: .00, .09). The RMSEA level is $< .05$ and is therefore considered good (MacCallum, Browne, & Sugawara, 1996), and well below the recommended cutoff of .08 (Hu & Bentler, 1999). The CFI is $> .90$ which also indicates an acceptable model fit (Hu & Bentler, 1999).

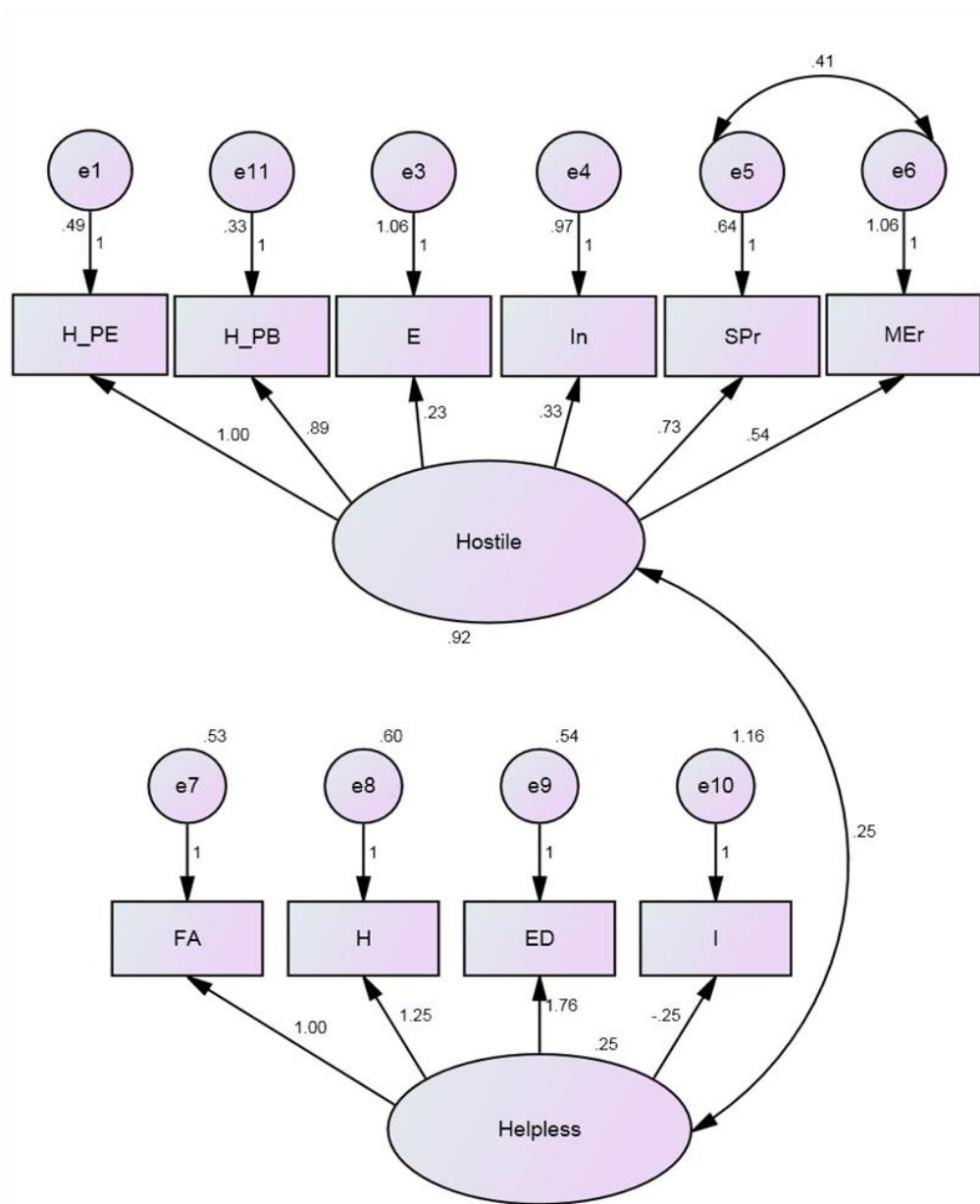


Figure 6.1. Path diagram showing initial model from confirmatory factor analysis of ARR items. Standardized estimates are shown

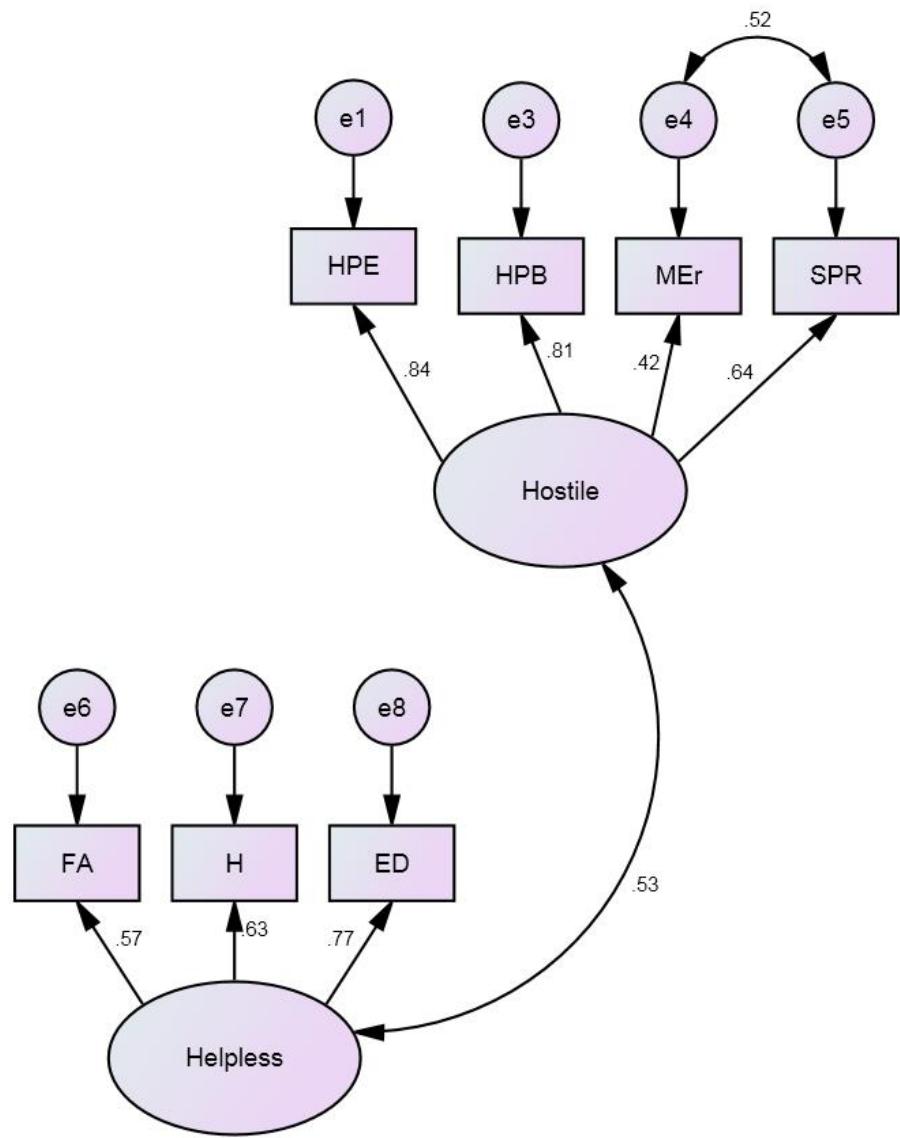


Figure 6.2. Path diagram showing final model from confirmatory factor analysis of ARR items. Standardized estimates are shown.

The correlations between each of the ten items of the ARR are shown in Table 6.2.

Table 6.2. Pearson's correlations between ARR items (N = 184)

	Hostility: Experience	Hostility: Behaviour	Fearful Affect	Helplessness	Emotional Distress	Idealisation	Enmeshment	Incoherence	Supportive Presence	Mutual Enjoyment
Hostility: Experience	1	.674**	.266**	.341**	.415**	-.184*	.075	.191**	-.512**	-.365**
Hostility: Behaviour		1	.147*	.248**	.309**	-.150*	.183*	.252**	-.562**	-.346**
Fearful Affect			1	.376**	.444**	-.044	.193**	.049	-.122	-.094
Helplessness				1	.473**	-.067	.103	.012	-.192**	-.134
Emotional Distress					1	-.086	.162*	.106	-.169*	-.109
Idealisation						1	.266**	.120	-.141	-.143
Enmeshment							1	.238**	-.208**	-.284**
Incoherence								1	-.310**	-.297**
Supportive Presence									1	.632**
Mutual Enjoyment										1

* Correlation is significant at the 0.050 level ** Correlation is significant at the 0.01 level (2-tailed)

6.3.1.1. Testing the replicability of the CFA model

Most of the mothers in the clinical (n = 57) and normative samples (n = 42) were interviewed on the PDI one year later. These follow-up PDIs were coded on the ARR coding system. To confirm the stability of the final model, the confirmatory factor analysis was carried out on the follow-up ARR ratings (N = 99). This model demonstrated sufficient goodness of fit to justify the use of these factors for subsequent analyses χ^2 (12) = 21.27, p = .05, CFI = .96, RMSEA = .08 (90% CI: .01, .15).

6.3.1.2. Exploratory Factor Analysis

The confirmatory factor analysis indicated a two factor model when three of the ten ARR items were excluded. These were theoretically related to the hostile and helpless states of mind that previous research has pointed to. However, two of three excluded variables, enmeshment and idealisation, were correlated with each other, indicating the possibility of a third latent factor in the coding system.

A principal components factor analysis with varimax rotation was carried out with the ARR items to explore the factor structure of the entire coding system. This analysis resulted in a three factor solution. The first two factors were related to those that emerged from the confirmatory factor analysis, i.e. hostile and helpless representations. The third factor had two variables with high factor loadings, enmeshment and idealisation, and was named a “Narcissistic” state of mind. The rotated component matrix is presented in Table 6.3. One ARR variable, “Incoherence” did not load highly on any of these factors and was therefore excluded from the computation of subscales.

Table 6.3. Principal Component Factor Analysis of ARR items showing item loadings ($> .50$) on the factors

	Hostile	Helpless	Narcissistic
Hostility: Experience	.723		
Hostility: Behaviour	.786		
Fearful Affect		.773	
Helplessness		.742	
Emotional Distress		.795	
Idealisation			.788
Enmeshment			.699
Incoherence			
Supportive Presence	.838		
Mutual Enjoyment	.717		

6.3.2. ARR SUBSCALES

The results of the CFA informed the computation of two subscales of the ARR measure. The exploratory factor analysis revealed a third representational subscale which was also computed. A total risk composite score, the sum of all ten items, was also computed. The subscales and their composite items were as follows:

1. ARR Hostile (sum of Hostility: Parent's Experience, Hostility: Parent's Behaviour, Mutual Enjoyment- reversed score and Supportive Presence- reversed score).
2. ARR Helpless (sum of Fearful Affect, Helplessness and Emotional Distress).
3. ARR Narcissistic (sum of Enmeshment and Idealisation).
4. ARR Risk (sum of all ten ARR items).

The correlation between the ARR hostile and ARR helpless subscales was significant, $r(184) = .35$, $p < .001$, indicating that the two representational dimensions were not mutually exclusive, as hypothesised. The ARR Narcissistic subscale did not correlate significantly

with the hostile and helpless subscales, indicating a third parental representation that was somewhat independent of hostility and helplessness.

6.3.3. ILLUSTRATIONS OF THE THREE TYPOLOGIES

In order to illustrate the Hostile, Helpless and Narcissistic states of mind that were captured in this study, some PDI quotes from mothers who were prototypical of each of these dimensions are given below.

6.3.3.1. Example of hostile states of mind

Extracts from the following PDI are from a mother in the clinical sample who was referred for severe depression, suicidal ideations, and concerns about child protection. The baby, who was one month old at the time of the interview, was the mother's second child. Her older son was being cared for by his maternal grandmother. This interview provides an extreme example of hostile maternal representations.

I: Okay, just to start with, to get a sense of the type of person that Person 1 is, could you choose three words for me that describe what he's like and tell them to me?

P: He's angry definitely.

I: Hungry? Oh, angry.

P: An-angry, an angry person. Not patient, never patient. Umm, he's cute.

I: Okay. Why did you choose angry, are there any examples or incid...?

P: Angry because if he doesn't get what, uhh, he's feeding-time, he screams, he wants to, he wants to play. He has to be fed on time. So, that, that make me angry... That's how a lot of people describe him, he's an angry baby. Cause he was born with a frown, when he was born.

I: And not patient?

P: He's very not patient; he needs to be picked up all the time. Umm the reason why I say is I'm comparing him with my first son and him, that's why. Umm my first son he was one

patient little boy, there was so much patience in him. He would go without food, without eating or drinking, for at least eight hours without crying. Patience, cuz we were outside and I didn't have any of his bottles or food and he wasn't breastfeeding. And we were outside and I forgot all his food and I forgot his nappy, everything, and I and... a first-time mother. He didn't do anything, just quite patient, just very nice as a little baby. This one, if his nappy's dirty or he's hungry, he just wouldn't wait. He's not patient.

I: And cute, why did you choose that?

P: When he smiles it's just so cute. Yeah, I just wanna yes, kinda bite him in the face. He's so cute, that's why I chose cute.

I: And could you describe a time in the last week or two when you felt that the two of you really didn't click, when you weren't getting on very well?

P: Oh definitely yesterday. He just kept crying in the car. I just didn't want to hold him. He didn't wanna be with me; I don't know what he wanted yesterday. First time yesterday, I didn't ask what he wanted. I just kept screaming at him.

I: So what was happening at the time?

P: We were in the car and I'm breastfeeding him, he doesn't want the breast. I'm holding him like this, he doesn't want me to hold him. I'm holding him upright but he doesn't want me to do that either. I give him a dummy; he doesn't want the dummy either. And there's a point I get really annoyed at his excessive screaming in the car and my mom's saying "Calm down, calm down, you're going to get us in a car crash." So I just got annoyed at one point. And my brother stopped the car and we wrapped him up really hard in this and he shut up for a while. He fell asleep...

I: So how were you feeling during that time?

P: Really angry. [laugh] Just wanna throw him out sometimes.

I: And how do you think he was feeling?

P: I think he was more angry than I was. [laugh] Cuz he was what this kinda "Ask, you don't understand what I want. You do it and you're wrong, you do it and you're wrong." ... That's why I don't want a kid anymore. No more, no child anymore. For a while anyway. This is tiring me out, using my patience sometimes.

6.3.3.2. Example of helpless states of mind

Extracts from the following PDI are from a mother in the clinical sample. Her baby, aged 9 months, was conceived by a rape, and was already showing significant developmental delays. This interview was rated high for both hostile and helpless states of mind, although fearfulness is the most predominant theme.

I: And when you worry about Person 1, what do you find yourself worrying about the most?

P: Um, it depends on the day. I'm very scared of paedophiles, especially because I told you I was so much time reading the newspapers, right? Everyday they talk about a new paedophile and they all get away with it. Basically, if you read the newspaper you realise that it's very easy to be a criminal in this country. The worst things you do the better you are off. And then you see people getting fines for the most stupid things or being in prison for things that they should not even be in prison. And then the ones that kill people or whatever get very short and there is even one criminal getting presents from the public and stuff like this. And, I don't know, it's like depressing when you see that. And then nothing is done for that. So.

I: So worrying? For his safety?

P: The safety of the baby but also I also worry very much about when he is, when he is a teenager. I'm very scared. People think so much babies are very cute and sometimes they have many. They just don't think all these babies normally everything goes right and we have to thank God if everything goes right until they become teenagers. Then they are teenagers, oh my God! Oh my God! That's all very scary, so I'm really, sometimes I think about it... I worry about everything I can't control. Sometimes I even have scared if someone breaks into the house when I am sleeping with the baby, ya know. Or a friend or someone I trust turns into a dangerous person, like the person who stole my money. This person stole money but didn't go in the house, right? But it also could have been someone

who turns crazy. And like the father of the baby, can't happen again. But even worse to do something to the baby, so of course it scares me. So I am a little bit paranoid about the things that could happen, just think of all the possible things that can go wrong and it make me very nervous.

I: Okay, could you tell me about a time in the last week or two when you felt angry as a parent?

P: Well, regarding the mommy situation, I feel sometimes really constrained and I think if I wasn't a parent right now, I could go out and look for a job and it wouldn't take long until I find something. Or I could leave this country and find a job in another country. It would be so easy to do. And, and now I just can't do anything. And I wouldn't be comfortable to leave the baby with a parent either, because I'm so scared about the things I read about, all these bad people. Or because, if I could, I would have someone at home staying with the baby, rather than putting the baby in nursery. But the thing is I'm too scared to leave the baby with someone in the house because I think what could these people be doing, what could this person be doing alone in the house. You know? And then I start thinking of all the horrible things, or they bring someone in the house when I'm not there and I don't know they're doing. It's just so dangerous. I think these things that could be dangerous.

I: Okay, um, the next question now is about separations between you and Person 1. Um, has there been a time when you and Person 1 have been apart?

P: Just little times, just one hour or one hour and a half.

I: And can you tell me about, um, one of those occasions of separation?

P: Sometimes if I have been to the gym or I have something to do, very close by, I can leave the baby with a friend. Because it's friends I know very well and I can trust. I feel okay as long as the baby is in one place that is very close for me or in the house. And I have very strict instructions for them and it makes me very, very nervous if they don't follow them. Basically if I leave the baby with someone, they should leave the baby sitting all the time, unless he is upset or cry. I don't want them to hold him or anything. I have scare that they might make him fall or something. So, I said, unless you're seeing that he's choking or he's really, really bad then you can take him out of the pram. But otherwise just leave him in the

pram. And if they feed him, just lift him but inside of the pram and do the burp, everything sitting, not changing nappies or anything unless the catastrophe. And, that's it, basically what they are to do is to just to stay with the baby but they have no, no, I don't allow them to go to the park or anywhere with the baby, I don't want. And, I tell them all the time if they have to go to toilet or anything, they have to take him too. That's the thing. I'm just very scared they leave him somewhere. This is why I don't want them to be pushing him around or anything. And if they are in a coffee shop they have to be with the baby all the time, so if it's very clear that they won't leave the baby, not even just one second, and they're gonna stay in the same place all the time and not touch the baby too much then it's okay. So, I once had one of my very good friends I saw him, he was holding him like this, and I was like [breathes angrily].

I: You were angry?

P: Really angry. And then...

I: Why?

P: Because I don't like people holding him when I'm not there to check. I'm just like this. It makes me feel if he falls or anything and I wasn't even there, you know. This is why when I know he's sitting, not much can happen in his chair, right? Well, he could choke basically but you can always do something like this, you know? And if you see he's really bad then you hold him a little bit and put him back. So, that friend also told me he did again with him when he was here. Like he would release him and then he would pull from the little legs to make him laugh and then put him back and I also am very angry about this because what happens if he pulls too long and the baby falls or something. So it makes me too nervous and I just said, the babysitting of this baby is a very, very basic one. It consists of just sitting next to the baby and if there is a need, give him his milk or give him his water. I mean, everybody's dream to have a babysitting like this because I don't expect much. If they want to play with the baby, they can show him things with his little hands and stuff but not take him out..

I: And how have those separations been for you? How have you felt?

P: Nothing. Usually if I am, if he's going to stay with a friend, that friend either will come to stay overnight or we will be with friend first in a coffee shop for a few hours because usually those separations are very short. Something I have to do for one or two hours, it's not longer than that normally. Unless well, one time when I left him one day with my mother when she came here. Yeah, and I felt really bad about that.

I: Did you?

P: Yes, because I don't like him to stay too long without me and I don't like people feeding him more than one time, so of course if he stays too long, he has to be fed more than once and it makes me nervous.

I: Why? What do you...?

P: I don't know. I just fear that they do a mistake or something. Not that they do it purpose. I always think accidents or mistakes or people who are not so used to be with a baby. Like I read in one time in the internet, there is one lady, she was in the park pushing a push chair and then she got a ringing of the phone, when she answered the phone and then she start doing some sort of note, and then when she stand up the baby was gone and what happens, she was on a little bit of a slope and the baby just went and fall in the river and died. It's a very horrible thing but the thing is it happened because she didn't have the reflex of hitting the brake and even when I remember when I first got the pushchair I had the problem too one time that I went out of here and then I saw the movement, I saw it going slowly because it doesn't need to be really steep to go, just a little bit and it's enough. But if you are not writing or anything, you notice it within one or two minutes, so I did something like this and then, "Oh my God!" It happens to me too. So it's just a question of getting used. Once you are doing pushchair thing for months and months, you don't even think anymore. You put the brakes all the time. But this is the thing, if someone is looking after the baby and they are not used to it. Then not having that reflex, so it can happen anytime that they forget the brake. That's just an example. This is why I don't like, uh, leaving the baby with people who don't have babies because they can do many mistakes, they don't get used to. And even as a mother I can do mistakes but of course once I did one I, you know, I, I take

the news that “Oh my God, this could happen.” Or I read something and I also take, take a notice about this more easily than someone who has no children, so.

6.3.3.3. Example of narcissistic states of mind

The following extracts are taken from the PDI from a mother in the clinical sample. She has an older daughter and the target infant (a boy, 11 months old). She had a stillbirth, also a boy, prior to having her son. She was in a violent relationship and was experiencing significant depression.

I: What do you like most about Person 1?

P: Everything. I can’t pick. I don’t like to pick that I like this or like that cause if I pick then I’m saying “I don’t like this about him or not.” I mean if I like everything then there’s no final picking which ones I like.

I: And what do you like least about him?

P: Nothing, I’m just enjoying my time with him, the time that I’ve got, cause you never know tomorrow, so...I don’t like to think I don’t like anything about him. If he was five or something or six, seven, eight then I can say why I don’t like... But even if he does something wrong, he’s just learning. So, it’s nothing bad.

I: Ok, and could you choose three words for me again, this time words that reflect the relationship between you and Person 1, the sort of relationship the two of you have.

P: Special...

I: Okay, special, why did you choose that, are there any examples or things that come to mind?

P: Um, special, he is special (laughs). He’s the boy that I lost, so he is special to me, he’s everything. I always look at him like that, you know, I don’t know that’s a special blessing that God gave me another boy, so he’s a special thing to me.

I: So, he has replaced your last baby?

P: Yeah, I think that. Even though like, even though still that's on my mind but at least I feel I'm given the chance to have a boy. That's a special thing to me.

I: Ok, and um, could you describe a time in the last week or two, one of those moments where you felt that you and Person 1 really clicked?

P: When, when he's, I don't know, when he's breast feeding and he just looks at me in a different way or... Sometimes he keep knocking my head here but he will look right into my eyes as he's doing it and like the connection he's trying to... It's really nice that he's observing me that well.

I: Mh, mh. Ok, and if you could think of one of those times that you were feeding him and he's looking at you like that. How were you feeling at that time?

P: Sometimes I'll feel down or something, but then when he just has to smile or something, and it just, it helps a lot. Yeah.

I: Right. And during those breast feeding times how do you think he feels at those times?

P: If I'm down, I think he can actually feel that, he can just... They say something happens between a mother and child. If you're not, if you're not happy, you know? Because nowadays he's running away from even his dad, so I think he senses that something's not right, and he doesn't like his dad to hold him that much. He starts screaming or something, so I don't know. So I think he does sense things are happening.

I: So you think he senses how you feel about his dad?

P: Yeah, I do. He knows, he can't talk but he just has to hear it or, yeah. And maybe he feels he needs to protect me after all he has seen.

I: Yeah. Ok, and on the other side, could you describe a time in the last week or two where you felt that you and Person 1 really didn't click or weren't getting on so well?

P: Um, not really. I can't think of anything there, not really. Cause we always, we're always getting along.

I: So there hasn't been a time that you felt...

P: Nothing towards... no. Not to my kids, no. [laughs] No matter how down I am or what, I don't think... they didn't do anything. They're innocent. So, yeah, yeah, so. I don't really... he hasn't done anything to me ...

I: And what gives you the most joy in being a parent?

P: Um, I don't know, everything. I don't, it's hard, it's not an easy job. As a parent, or at the end of the day, to wake up and see your child, it's a blessing. It's a real nice thing. And if you're down, they don't, they're there. They didn't do anything wrong they just there laughing, joking around and you know. So, they're innocent chil— people. They don't have no bad mind or anything against anybody. I guess that's the nice thing about it, is that you can talk to them and they're not gonna shout or swear at you or something. They just, like my daughter and me and, we just talk about anything, and that's like I'm talking to my old, and my friend or something. It's nice, as a five year old, she gives me advice on things and I take it in and if I'm wrong I apologize and... If she's, that's the relationship that we've got. So it's nice to feel that way and you can talk, I talk to them more than anyone else outside. Even Person 1 is little but I still talk to him and you know, it feels like he's listening cause there's no one cursing, you know, and saying anything bad. I think that's, it's a nice thing to have. But I do love being a parent.

I: And on the other side, what gives you the most pain or difficulty in being a parent?

P: Nothing with my kids... it's nice because you wake up and the first thing "Oh, I love you," that's what my daughter say is all. She hugs, she's always smiling or something, if you cry then she cries or she'll say "Stop crying, it's ok. It'll be alright. You don't need them. You'll be fine." Those are something that a five year old really don't need to be, but she says these things and it gives you the hope and confidence to keep doing what you're doing, cause it feels like she's appreciated what you have done. So, it feels nice, makes it much easier to go on.

6.3.3.4. Internal consistency

The Cronbach's alpha coefficients for the Hostile subscale and the total score were adequate ($\alpha = .807$, and $\alpha = .736$ respectively). The Helpless and Narcissistic subscales

were only comprised of three and two items respectively, and therefore only had moderate levels of internal consistency ($\alpha = .587$ for Helpless and $\alpha = .420$ for Narcissistic).

6.3.4. ARR SUBSCALES AND SOCIODEMOGRAPHIC FACTORS

Table A4 (Appendix 1) shows the Pearson's correlations between the ARR scales and RF with a range of sociodemographic variables. There were a number of significant correlations between the ARR subscales and demographic characteristics. These variables were not controlled for in the subsequent analyses as the aim was to examine the mechanisms of how parental representations impact on the parent-infant relationship. Future studies will be needed to unpack the role of individual family characteristics on the content of maternal representations.

6.3.5. CRITERION VALIDITY

A one-way Analysis of Variance was conducted to test whether the ARR scores discriminated between the high risk and normative samples. The mean ARR scores for each group are presented in Table 6.4. The results showed a significant difference in all four ARR scales for the clinical, prison and normative samples, $F(2,183) = 11.07, p < .001$ for Hostile; $F(2,183) = 20.05, p < .001$ for Helpless, $F(2,183) = 16.87, p < .001$ for Narcissistic, and $F(2,183) = 17.23, p < .001$ for the total score. Post hoc Tukey HSD tests revealed mothers in the clinical sample had significantly higher ARR hostile scores than those in the normative and prison samples, $p < .001$ and $p = .01$ respectively. The difference between the prison and normative mothers on this subscale was not significant, $p = .10$. The ARR helpless scores were significantly higher for the clinical mothers than those in the normative and prison samples, $p < .001$ and $p < .001$ respectively. However, the prison mothers did not show significantly different levels of helplessness than the normative group, $p = .21$. The Narcissistic subscale scores were significantly higher for the prison sample than both the normative and clinical samples, $p < .001$ and $p < .001$ respectively, but there were no differences between the clinical and normative groups, $p =$

.52. For the overall ARR risk scores, mothers in the normative sample scored significantly lower than the clinical and prison groups, $p < .001$ in both cases, and the clinical sample scored significantly higher than the prison sample, $p = .02$.

Table 6.4. Mean (SD) ARR scores for the clinical, prison and normative groups

	Clinical (n = 77)	Prison (n = 53)	Normative (n = 54)
ARR Hostile: Mean (SD)	10.77 (4.20)	9.09 (2.47)	8.02 (2.72)
ARR Helpless: Mean (SD)	7.35 (2.58)	5.58 (1.50)	5.06 (1.92)
ARR Narcissistic: Mean (SD)	3.31 (1.49)	4.71 (1.74)	3.13 (1.53)
ARR Risk: Mean (SD)	23.51 (6.55)	21.28 (3.69)	17.91 (4.88)

6.3.6. CONCURRENT VALIDITY

Table 6.5 shows the Pearson's correlations between the ARR and RF, assessed with the PDI during the infant's first year of life, and concurrent measures of the quality of parent-infant interactions, maternal attachment and maternal psychopathology.

The ARR hostile, ARR narcissistic, ARR risk and RF measures were significantly associated with most ratings of the quality of parent-infant interaction. The only exception was the infant's level of involvement in the interaction, which was not significantly correlated with RF but it was associated with ARR hostile, ARR narcissistic and ARR risk. Fisher r-to-z transformations were carried out to compare the strength of correlations between RF and the ARR subscales and the validation measures. The ARR helpless scales had significantly lower correlations than RF with concurrent measures of Dyadic Attunement, $z = -2.78$, $p = .003$, and Parent Positive Involvement, $z = -1.86$, $p = .032$. There were no differences in the strength of correlations between the ARR hostile, ARR narcissistic, ARR risk and RF scores and the measures of parent-infant interaction.

The ARR subscales were generally more highly associated with maternal attachment and psychopathology than RF was. Specifically, the ARR helpless subscale was significantly more strongly correlated with attachment anxiety than RF was ($z = 2.29, p = .001$). RF had significantly lower correlations than the ARR hostile, helpless and total risk subscales with the CES-D ($z = 2.24, p = .01$; $z = 2.51, p = .01$; and $z = 2.63, p = .01$ for ARR hostile, ARR helpless and ARR risk respectively) and BPI Cut 20 scores ($z = 1.68, p = .05$; $z = 2.74, p = .01$; and $z = 2.28, p = .01$ for ARR hostile, ARR helpless and ARR risk respectively).

The correlations between the individual ARR items and concurrent measures of parent-infant interaction are present in Table 6.6.

Table 6.5. Correlations between PDI-RR, PDI-RF and concurrent measures of the quality of parent-infant relationship, maternal adult attachment and maternal psychopathology

	ARR Hostile	ARR Helpless	ARR Narcissistic	ARR Risk	PDI-RF
PDI-RF (n = 183)	-.280**	.134	-.260**	-.227**	
Parent-infant interaction (n = 143)					
EA Summary	-.327**	-.149	-.279**	-.357**	.282**
CIB Dyadic Attunement	-.275**	.021	-.360**	-.296**	.322**
CIB Parent Positive Involvement	-.289**	-.023	-.283**	-.278**	.227**
CIB Child Involvement	-.205**	-.121	-.182*	-.248**	.141
Maternal attachment (n = 106)					
ECR: Maternal attachment anxiety	.116	.422**	.107	.254**	.130
ECR: Maternal attachment avoidance	.270**	.291**	.173	.291**	-.191*
Maternal psychopathology					
CES-D (n = 175)	.323**	.349**	.041	.360**	-.093
BSI general severity index (n = 103)	.334**	.375**	.219*	.387**	-.190
BPI cut 20 (n = 108)	.320**	.444**	.150	.392**	-.099

* Significant at the .050 level (2-tailed)

** Significant at the .001 level (2-tailed)

Table 6.6. Correlations between the individual ARR items and concurrent measures of RF and the quality of parent-infant relationship

	PDI RF	EA	CIB dyadic	CIB Parent	CIB Child
			Summary	attunement	involvement
			Involvement		
Hostile: Experience	-.099	-.227**	-.112	-.186*	-.140
Hostile: Behaviour	-.085	-.307**	-.265**	-.258**	-.210**
Fearful Affect	.196**	-.057	.103	.070	.033
Helplessness	.084	-.101	.004	-.028	-.114
Emotional Distress	.055	-.190*	-.041	-.081	-.185*
Idealisation	-.277	-.246**	-.368**	-.143	-.109
Enmeshment	-.138	-.193*	-.196*	-.178*	-.179*
Incoherence	-.203*	-.182*	-.247**	-.254**	-.164*
Supportive presence***	-.324**	-.264**	-.244**	-.222**	-.172*
Mutual Enjoyment***	-.381**	-.252**	-.255**	-.248**	-.131

* Significant at the .050 level (2-tailed)

** Significant at the .001 level (2-tailed)

*** Reversed score

6.3.7. PREDICTIVE VALIDITY

The mothers in the clinical and normative samples were seen for a follow-up assessment one year after the initial PDI was carried out. Table 6.7 presents the correlations between ARR and RF, assessed in the infant's first year of life, with measures of the quality of parent-infant relationship assessed in the infant's second year of life. The prison sample could not be included in these analyses as no one-year follow-up assessments were carried out with this group.

The ARR hostile, helpless and risk subscales and RF were significantly associated with all measures of later interactive behaviour, apart from Child Involvement. Fisher r-to-z transformations demonstrated no significant difference in the strength of the correlations

between the ARR hostile, helpless and risk subscales and RF. ARR narcissistic scores did not correlate with later interaction ratings, but this is likely to be due to the exclusion of the prison subsample in this analysis- the group of mothers who were most likely to show narcissistic states on minds with respect to their relationship with their baby.

Table 6.7. Correlations between PDI-RR and PDI-RF with measures of the quality of parent-infant relationship one year later (clinical and normative samples only, N = 89)

	ARR Hostile	ARR Helpless	ARR Narcisstic	ARR Risk	PDI- RF
EA Summary 12 months later	-.347 **	-.218 *	-.073	-.341 **	.241 *
CIB Dyadic Attunement 12 months later	-.231 *	-.183	-.038	-.252 **	.316 **
CIB Parent Positive Involvement 12 months later	-.303 **	-.248 *	-.040	-.322 **	.340 **
CIB Child Involvement 12 months later	.050	.082	-.042	.087	.020

* Significant at the .050 level (2-tailed)

** Significant at the .001 level (2-tailed)

In Table 6.8, models 1 to 5 show the individual contributions of each measure of maternal representations in predicting the quality of mother-infant interactions a year later. As similar results were found for the CIB and EA subscales, only results with the EA summary score as a dependent variable are presented here. The ARR hostile and ARR risk scores accounted for more variance than RF or ARR helpless scores. A stepwise linear regression analysis was carried out to examine the combined effect of ARR and RF in predicting the quality of mother-infant interaction a year later. The predictor variables entered into the stepwise model were RF, ARR hostile, ARR helpless and ARR risk. In the final model, which accounted for 11% of the variance in EA, ARR hostile was the only significant predictor, $F(1,82) = 11.12, p = .001$.

Table 6.8. Regression equations showing prediction of dyadic Emotional Availability in the second year of the infant's life from maternal representations in the first year (clinical and normative samples only)

Predictor variables	Beta (SE)	B	T	p
Model 1				
(Adj R ² = .05, F(1,82) = 4.993, p = .028)				
Constant		25.02 (2.07)		
PDI-RF	.98 (.44)	.24	2.24	.028
Model 2				
(Adj R ² = .11, F(1,82) = 10.645, p = .002)				
Constant		35.45 (1.92)		
ARR-Risk	-.29 (.09)	-.34	-3.26	.002
Model 3				
(Adj R ² = .11, F(1,82) = 11.124, p = .001)				
Constant		34.24 (1.54)		
ARR-Hostile	-.51 (.75)	-.34	-3.34	.001
Model 4				
(Adj R ² = .04, F(1,82) = 4.029, p = .048)				
Constant		32.50 (1.63)		
ARR-Helpless	-.49 (.25)	-.22	-2.01	.048
Model 5				
(Adj R ² = -.01, F(1,82) = .432, p = .513)				
Constant		30.32 (1.44)		
ARR-Narcissistic	-.29 (.44)	-.07	-0.66	.513

6.3.8. DOES THE ARR MODERATE THE PREDICTION OF MOTHER-INFANT INTERACTION FROM RF?

The ARR and RF variables were centred and the interaction terms were computed.

Hierarchical linear regressions were carried out to test for moderation effects with each of the ARR scales. EA in the second year of the infant's life was the dependent variable, RF and the ARR scale were independent variables, and the interaction between RF and the corresponding ARR scale was the moderator variable.

The moderation effects of ARR-hostile and ARR-helpless on the prediction of EA from RF were not significant, but there was a significant moderation effect of the interaction between ARR-Risk and RF on EA one year later (Table 6.9). The interaction between RF and ARR-Risk explained a significant increase in variance in later EA, $\Delta R^2 = .06, F(3, 82) = 6.88, p < .001$. Maternal RF was no longer significant in this model, indicating that the effect of RF on later parent-infant interactions was through the moderation effect with ARR-Risk. The interaction effects are illustrated in Figure 6.3. When there was little evidence of Representational Risk in the mother's baseline interviews, her capacity for parental mentalisation did not affect the quality of interaction one year later. However, for mothers who demonstrated high levels of representational risk, poorer levels of RF predicted poorer quality behavioural interactions one year later.

Table 6.9. Moderation effect of ARR Risk and RF in the first year of the infant's life in predicting dyadic Emotional Availability in the second year of the infant's life

Predictor variables	Beta (SE)	β	t	p
Model				
(Adj R ² = .18, F(1,82) = 6.879, p < .001)				
Constant	29.70 (.55)			
PDI-RF	.53 (.42)	.129	1.24	.219
ARR-Risk	-.30 (.09)	-.352	-3.38	.001
Interaction of RF and ARR-Risk	.14 (.06)	.253	2.45	.017

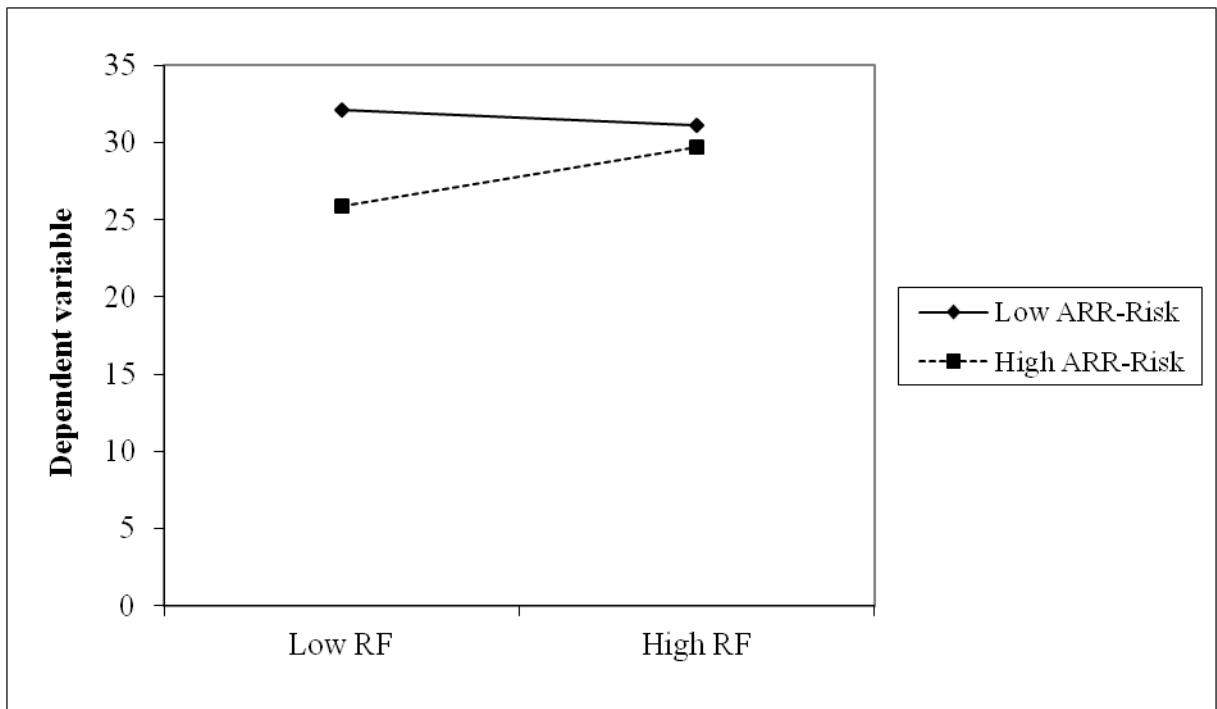


Figure 6.3. Moderation effect of ARR Risk on the prediction of EA (dependent variable) from RF

6.3.9. DOES THE ARR MEDIATE THE PREDICTION OF LATER PARENT-INFANT INTERACTION FROM RF?

The PROCESS macro for SPSS was used to test for mediation effects of the ARR subscales on the prediction of EA from RF.

ARR-Helpless and ARR-Risk scores were not significant mediators of the effect of RF on EA, indirect effect = -.04 (95% CI: -.281 .18) and indirect effect = .25 (95% CI: -.04; .94) respectively. However, there was a significant mediation effect of ARR-Hostile on the prediction of EA from RF (Figure 6.4).

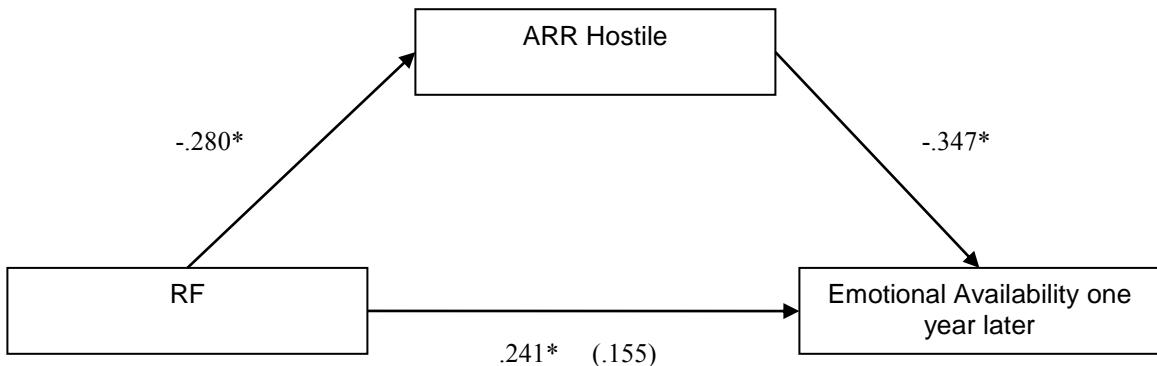


Figure 6.4. Standardised regression coefficients for the relationship between maternal RF and later parent-infant interaction as mediated by ARR-Hostility. The standardized regression coefficient of RF and emotional availability controlling for ARR-Hostile is in parentheses. (* $p < .05$)

The standardized regression coefficient between adult RF and parent-infant emotional availability one year later decreased and was no longer significant when ARR-Hostile was included in the model. The Sobel test confirmed that the change in beta weights was significant (*Sobel statistic* = 2.54, $p = .001$). This model, which accounted for 12% of the variance in EA, was statistically significant, $F(2,82) = 6.67, p = .002$. The indirect effect of RF via ARR-Hostile on EA was .35 (95% CI: .03, 1.11).

6.3.10. DOES THE ARR MEDIATE OR MODERATE THE PREDICTION OF MOTHER-INFANT INTERACTION FROM MATERNAL ADULT ATTACHMENT?

The quality of mother-infant interaction in the second year of life (EA summary) was significantly correlated with both maternal attachment avoidance ($r = -.388, p = .001$) and attachment anxiety ($r = -.330, p = .004$) measured by the ECR-R. These measures of adult attachment were also related to the ARR and RF scales (Table 6.4). A series of analyses were carried out to test whether any of the ARR scales or RF scores mediated or moderated the prediction of EA from maternal attachment.

RF did not mediate or moderate the prediction of EA from maternal attachment avoidance or anxiety. However, one of the ARR subscales, ARR-Helpless, partially mediated the relationships between both maternal attachment anxiety and, to a lesser extent, attachment avoidance and later EA (Figures 6.5 and 6.6).

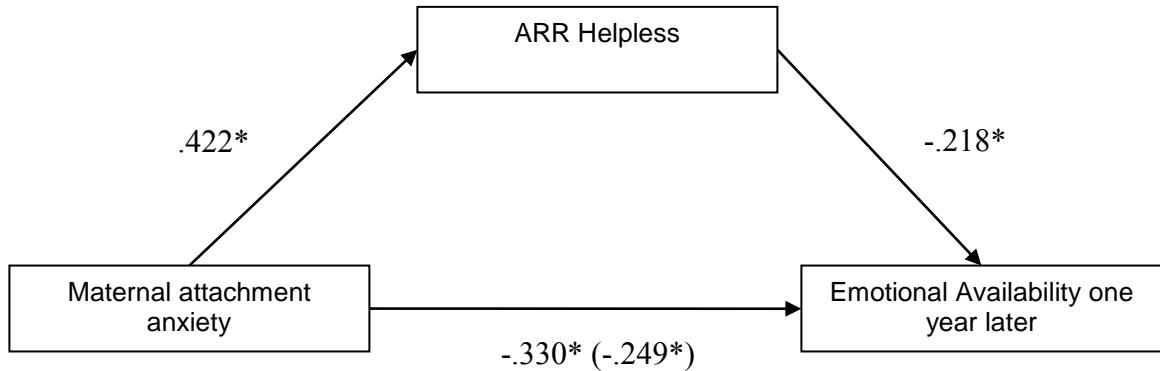


Figure 6.5. Standardised regression coefficients for the relationship between maternal attachment anxiety and later parent-infant interaction as mediated by ARR-Helpless. The standardized regression coefficient of attachment anxiety and emotional availability controlling for ARR-Helpless is in parentheses. (* $p < .05$)

The indirect effect of attachment anxiety via ARR-helpless on EA was $-.02$ (95% CI $-.05, -.01$). The Sobel test confirmed a significant change in beta weights (Sobel statistic = -1.85 , $p = .03$).

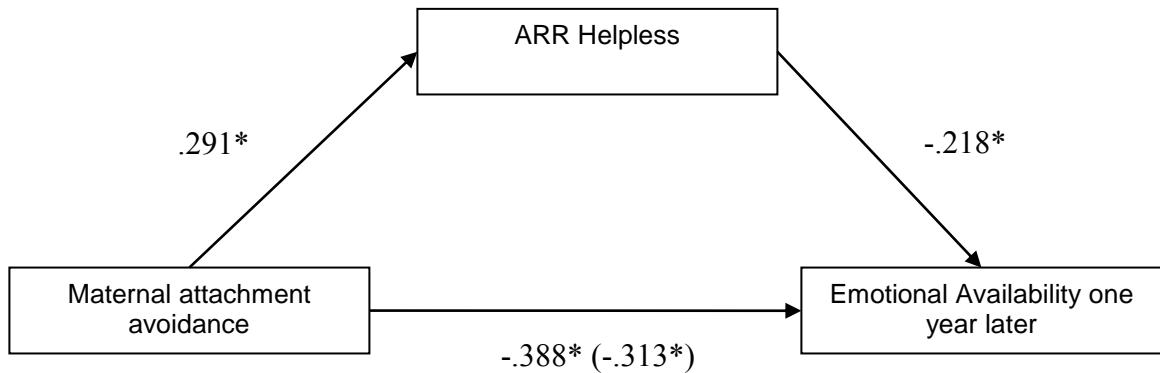


Figure 6.6. Standardised regression coefficients for the relationship between maternal attachment avoidance and later parent-infant interaction as mediated by ARR-Helpless. The standardized regression coefficient of attachment avoidance and emotional availability controlling for ARR-Helpless is in parentheses. (* $p < .05$)

The indirect effect of attachment avoidance via ARR-helpless on EA was $-.02$ (95% CI $-.05, -.01$). The change in beta weights was small, but significant (Sobel statistic = -1.69 , $p = .04$).

6.4. Discussion

This study examined the psychometric properties of a new coding system for assessing risk in parental attachment representations. It also addressed the question of whether or not the new coding system provides any more value added in the assessment of relational risk than the assessment of reflective functioning alone.

6.4.1. HOSTILE/HELPLESS PARENTAL REPRESENTATIONS

The multidimensional nature of the ARR coding provided some insight into the clustering of various aspects of parent's states of mind with respect to their relationship with their baby. The ten items of the ARR were theoretically derived and it was hypothesised that they would contribute to two related states of mind which may contribute to attachment disorganisation: Hostile and Helpless (Lyons-Ruth, et al., 2005). The confirmatory factor analyses showed that this was indeed the case for seven of the items. Idealisation, Incoherence and Enmeshment did not fit the two-factor model. This is not to say that these variables are not indicators of potential risk in the mothers' representations of their relationships with their babies, but rather that they did not contribute to the two-factor model which was theoretically derived. In fact, all three of these variables were significantly associated with concurrent measures of the quality of dyadic interaction, suggesting that they might be important indicators of risk in the parent's representation and are worthy of further exploration.

An exploratory factor analysis revealed a three-factor structure in the ARR coding system. In addition to the hypothesised hostile and helpless states of mind, a third factor, which was termed "narcissistic representations of the parent-infant relationship", was revealed. These representations are characterised by the mothers having glorified and unrealistically positive representations of their baby and/or themselves as parents, paired with a parentification of their infants. These mothers also tended to describe their infants as a

source of company, comfort, and in extreme cases, as the person who they would turn to for support and regulation. The identification of this representational construct in mothers' narratives may have significant clinical implications.

It was somewhat surprising that Idealisation did not fit the proposed hostile-helpless model. This construct has been found to be an important indicator of splitting in the parent's representation (Lyons-Ruth, et al., 2005), and is considered to be evident at one extreme of the hostile-helpless continuum. It is likely that, in some narratives, it does in fact indicate segregated systems of consciousness whereby the parent's glorification of themselves or their baby is a reflection of a brittle state of mind with respect to attachment. Many mothers in the prison sample tended to be highly idealising of their relationship with their baby, despite apparently poor quality behavioural interactions (Baradon, et al., 2008). There was, however, little evidence of idealisation in the clinical and normative samples. The mothers in the clinical sample were seeking professional help for their mental health problems and difficulties engaging with their baby. The context of the interviews with these help-seeking mothers prior to treatment randomisation meant that they were not likely to idealise their view of themselves as mothers or their babies. The inclusion of a non-clinical sample may have also confounded this variable. Mothers who were experiencing genuine levels of positive engagement with their babies may have had narratives that were rated as at least moderately idealised. In fact, idealisation has been described on a continuum of normal to pathological functioning (Kernberg, 1980) and at moderate levels may be indicative of a favourable attachment relationship. This may be particularly the case with early parent-infant relationships where it would be healthy and desirable for the mother to "fall in love" with her baby. This would involve some degree of idealisation in her representation of her baby. Oxytocin, the neuropeptide which has been linked with this early bonding between mother and baby and maternal idealisation, has also been shown to modulate fear responses (Dębiec, 2005). Thus, the measurement of normal and adaptive levels of idealisation in mothers' representations of their babies may actually be entirely discordant with a "helpless" state of mind which is characterized by unmodulated fearful affect. Any

measurement of this construct needs to ensure that only extreme and brittle defensive idealisation is picked up and a distinction is drawn between these extreme segregated systems (Bowlby, 1977) and the adaptive idealisation that emerges when a parent falls in love with her new baby (Stern, 1995).

Similarly, the finding that Enmeshment did not fit into the hostile-helpless model was unexpected. At a behavioural level, this construct has been clustered with hostile and intrusive caregiving, and it is considered to be a key element of the Hostile parenting described by Lyons-Ruth and colleagues (2005). This was not found at a representational level in the current study. Role reversed maternal representations were not associated with hostile states of mind, or in fact with the dimensions associated with a helpless state of mind. The discordance between these findings and those reported from behavioural observations may be due to differences in how the construct is measured. It is possible that role reversed distortions are more readily apparent in the mothers' narratives about the relationship than they would be in brief observations of interaction. The sorts of behaviours that are frequently picked up in the AMBIANCE coding system as role reversed (termed "self-referential" behaviours) may be more likely to indicate an intrusive stance (for example, directs infant's attention to self) (Bronfman, et al., 1999). These would be more likely to go hand in hand with more hostile parenting in general. In contrast, tapping into parents' general representations of how they view their relationship with their baby is far more likely to elicit the subtle indications of role reversal without any hostility or intrusiveness present.

There is evidence that enmeshment and idealisation together provide a potentially important correlate of non-optimal parent-infant relationships in the prison sample. Previous qualitative analyses of PDI narratives in this sample in their representations of their infants and these dyads were also seen to have less optimal behavioural interactions with each other (Baradon, et al., 2008). These two variables may play a key role in the identification of relational risk in parent narratives.

Incoherence in attachment related narratives has been found to be an important predictor of the quality of relationship (Bretherton, 1990b; Hesse & Main, 2000; Main & Goldwyn, 1984, 1995, 1998; Vaughn, et al., 2006). However, this variable was the only item of the ARR coding system that did not fit with the two or three factor model. It is possible that the measurement of incoherence in this sample was confounded by the multiple languages spoken by most of the mothers. As the sample was drawn from cosmopolitan inner city areas and women's prisons, many of the women did not speak English as a first language. Their interview narratives may have been rated as incoherent for language reasons, confounding the use of incoherence as an indicator of relational risk. It is also possible that the simple five-point scale measuring incoherence was not sufficiently detailed to detect the sort of incoherence that is associated with unconscious defensive processes in the context of attachment-related trauma. The AAI coding system provides an extremely complex description of coherence and how it may be violated (Grice, 1975). It is likely that this level of complexity is required to be able to accurately discern the defensive linguistic processes associated with attachment-related difficulties from simple language difficulties.

In summary, there were three very clear factors which were assessed with the ARR coding system: ARR Hostile, ARR Helpless, and ARR Narcissistic. The Hostile state of mind is likely to be associated with the frightening behaviour that has been linked with problematic parent-infant relationships. The Helpless subscale is related to negative affective states in the parent and may be associated with more subtle withdrawal and hesitation in the parent's responses to the infant. These two factors were related to each other, confirming the suggestion that hostile and helpless states of mind with respect to attachment represent different poles of the same unintegrated working model of attachment (Lyons-Ruth, 2002). Narcissistic states of mind were unrelated to hostility and helplessness in the mothers' representations, but these were still associated with less optimal parent-infant interactions. This suggests that a third category of parental representations which has hitherto not been

described separately may be an important feature of some early relational difficulties between parents and their infants.

Given the clinical importance of the ten ARR items and the fact that they were all significantly correlated with observed interaction ratings, all of the items were included in the total risk score. The validation of the ARR was carried out with the Hostile, Helpless and Narcissistic subscales and the total risk score.

6.4.2. RELIABILITY AND VALIDITY OF THE ARR

The internal consistency for the Hostility subscale and total Risk scores were adequate (George & Mallery, 2003). As there were only three items that constituted the Helpless subscale, the alpha coefficient was relatively low. As the Narcissistic subscale was only comprised of two items, the internal consistency for this subscale was also only moderate. However, the confirmatory factor analysis showed that the clustering of these items on these two subscales provided a model with a good fit to the data. This was confirmed by a second confirmatory factor analysis which was carried out with the follow-up data.

The criterion validity of the ARR subscales and total score was examined in terms of how well they discriminated between the three study samples. All of the subscales discriminated between at least one of the high-risk groups and the normative sample. More specifically, the clinical group were more likely to present with hostile and helpless states of mind and the prison group were more likely to have narcissistic states of mind than the normative group. The total risk score discriminated both high risk groups from the normative sample. Thus, the ARR appears to have good criterion validity. The inclusion of the narcissistic subscale appears to be particularly sensitive to some of the subtle representational distortions seen in the cohort of mothers in prison. As this group of mothers tended to talk about their relationships in overly positive terms, indicators of hostility and especially helplessness were not always present in their narratives. Thus, this population presents a particular profile of potential relational risk that is unlikely to be detected by indicators of

maternal emotional functioning. This was indicated by the low levels of maternal reflective functioning and less optimal dyadic interactive behaviour that were also seen in this population.

This study provided evidence for the concurrent validity of the ARR coding system. The Hostile and Narcissistic subscales and overall Risk scores were associated with significantly poorer quality observed parent-infant interactions. These variables were as strongly correlated with the interaction measures as RF was. The Helpless subscale was not strongly related to most measures of parent-infant interaction, suggesting that this typology of maternal representation is not as evident in brief episodes of behavioural interaction. This dimension relates to internalised states in the mother and it is likely that these states of mind are not clearly observable in brief interaction episodes. This does not necessarily imply that such helpless representations do not threaten the quality of the relationship, but rather that the behavioural manifestation may be more subtle. Attachment researchers are beginning to identify the “Helpless-Fearful” subgroup of parents as a clinically important but currently under-identified group who are often seen to be behaving in an adequate or even optimal manner on a range of current measures (Lyons-Ruth, et al., 2002). The subscale was highly associated with maternal attachment anxiety, attachment avoidance and psychopathology, and these have been consistently linked with impingements on the quality of parent-infant relationships. It is possible that mothers scoring highly on this dimension may be more variable in their interactions with their babies: involved and responsive at times, and at other times unavailable. This style of interaction is typical of depressed mothers (Cohn, et al., 1986; Murray, 1992). Helpless states of mind are likely to be associated with maternal withdrawal and subtle behaviours of hesitation and fearfulness (Lyons-Ruth, et al., 2002); behaviours which are more difficult to assess in dyadic interactions than those seen for more intrusive or negative parenting styles (Bronfman, et al., 1999). As the criterion measures used in this study were assessing general sensitivity and overall quality of interaction rather than Frightened or Frightening behaviour or infant

attachment disorganization, it is likely that more subtle behaviours associated with this construct were not picked up.

The ARR demonstrated better concurrent validity against measures of self-reported maternal adult attachment and particular forms of psychopathology than maternal RF did. Although it could be argued that the weak associations between RF and maternal depression, general psychopathology and borderline personality traits are indicative of the discriminant validity of the RF measure, the clinical literature does not support this. Maternal psychopathology, particularly depression and BPD have been repeatedly linked with impairments in the quality of parenting and poor outcomes for young children (Crandell, et al., 2003; Hobson, et al., 2005; Murray, 1988). Thus, the ARR appears to be a better measure for assessing the impact of these forms of psychopathology on mother's representations of their relationship with their infants. Similarly, it is expected that mothers' general attachment strategies (avoidance and anxiety) in close adult relationships would contribute towards the quality of relationship they have with their infant. The ARR may therefore provide a useful tool for furthering our understanding of the intergenerational transmission of attachment relationships via the mother's attachment representations.

The ARR hostile, helpless and total risk scores were more strongly related to the mother-report questionnaires (psychopathology and adult attachment) than RF was. However, the ARR Narcissistic and the RF scores were both unrelated to these measures. This suggests that the process of glorification and idealisation which resulted in both low RF and high ARR Narcissistic scores may also confound the mothers' reports of their own functioning on self-report questionnaires. It is likely that this finding relates most to the prison sample. Studies with incarcerated mothers and their children have reported similar biases in mother-report questionnaires (Goshin, 2010; Sleed, et al., 2013). Thus, in-depth independent assessments of parent-infant relational functioning are likely to be more valid instruments for use with this population.

This study also provided evidence for the predictive validity of the ARR, at least for the clinical and normative samples. Maternal representations, assessed by the ARR Hostile, Helpless and overall Risk scales when the infants were in the first year of life, were predictive of all parental and dyadic behavioural interaction ratings one year later. The ARR Narcissistic subscale was not predictive of later interaction quality. This is most likely due to the exclusion of the prison mothers from the predictive validity analyses as longitudinal data was not available for this group. It was this group of mothers who were most likely to present with high ARR Narcissistic scores. Given the significant concurrent validity of this subscale with parent-infant interactions, it is likely that similarly good predictive validity would have been found if data from the prison sample had been available.

The strength of prediction from all of the other subscales was as strong as that for the RF measure. When all of the ARR scales and RF measures were examined together in a single model, the ARR Hostile subscale was the only significant predictor of later dyadic interaction. Importantly, RF was no longer significant when controlling for the effects of Hostility. When rating parental narratives for RF, the overall score takes into account any evidence for hostility in the parent's representations (Fonagy, et al., 1998; Slade, Bernbach, et al., 2004). However, the assessment of this construct in its pure form, regardless of the parent's capacity to consider the mental world of themselves and their infants, is more strongly related to later behavioural interactions. Hostility on the ARR, characterised by dysregulated negative affect and the disclosure of negative attributions, appears to be the most visible form of representational risk at a behavioural level. It is probable that the behaviour of these parents would be frightening to the infant, placing these babies at risk of forming a disorganised attachment (Main & Hesse, 1990). Both RF and Helpless representations were also individually predictive of later dyadic functioning, suggesting that these constructs also play a role in the evolving quality of the parent-infant relationship. However, their contributions may be more subtle when looking at them in relation to brief episodes of mother-baby interaction. Further studies are needed to gauge

the validity of the ARR against other indicators of the quality of the relationship, such as attachment classifications, or measures of later outcomes for the child's social and emotional functioning.

6.4.3. THE CONTRIBUTION OF THE ARR TO OUR UNDERSTANDING OF RISK IN EARLY PARENT-INFANT RELATIONSHIPS

The assessment of parental representations with the ARR provided some further insights into how mothers' internal working models are related to the quality of attachment relationship with their babies.

The overall ARR Risk score moderated the effect of maternal RF in the first year on later behavioural interactions. RF was only related to later dyadic interaction if it was in the context of high ratings of representational risk on the ARR. This means that some mothers who demonstrated a limited capacity for parental mentalisation, but who did not talk about their relationship in a hostile, overwhelmed, idealised, incoherent or role reversed manner, were still able to maintain good enough behavioural interactions with their babies. The RF coding system takes into account some, but not all, of the variables in the ARR coding system. For example, RF scores would be lowered if there is evidence of hostility, idealisation or incoherence in the narrative (Slade, Bernbach, et al., 2004). However, the ARR Risk score provides scope for detecting other risk factors which are not picked up by the RF coding system, particularly those relating to maternal distress, fearfulness, and role reversal. The narratives of mothers exhibiting these elements of their representations are likely to be affectively laden. For example, a very distressed and fearful mother would be likely to talk at length about her overwhelming feelings and how these affect her and her baby. The abundance of mental state language in these mothers' discourses may lead to moderate to high ratings of RF, despite the potentially deleterious implications of these states of mind for the parent-infant relationship. The findings of this study demonstrate the importance of the multidimensional assessment of maternal representations.

Representational Hostility, as measured by the ARR mediated the relationship between RF and the quality of dyadic interaction one year later. This means that the prediction of dyadic functioning from the RF coding system can, to a large extent, be explained by parents' hostile representations of their relationships with their babies. This may simply be because the RF scores are lowered if there is evidence of hostility in the narrative (Slade, Bernbach, et al., 2004). A more likely explanation is that mothers with a limited capacity for parental mentalisation are less able to make sense of the causes and intersubjective implications of their own and their infant's behaviour. In this context, hostile attributions and dysregulated negative arousal are more likely to occur (Fonagy, et al., 2002). Whichever the explanation is, there is evidence that the direct assessment of hostile content in parent's narratives may be an important predictor of later quality of parent-infant interactions.

6.4.4. MATERNAL REPRESENTATIONS AND ADULT ATTACHMENT IN THE PREDICTION OF PARENT-INFANT INTERACTIONS

The ARR, particularly the Helpless subscale, provides some insight into the effect of mothers' general working models of attachment on the developing relationship with their babies. Helplessness in the mothers' PDI narratives partially mediated the prediction of dyadic interaction from self-reported attachment anxiety and avoidance. This finding means that the way in which mothers relate to other close adult attachment figures (such as romantic partners) influences the way they relate to their infant, and that this can partially be explained by feelings of distress, fearfulness and helplessness in their mothering role. The same mediation effect was not found with the measure of RF, contrary to the literature which posits that the capacity for mentalisation may be the key to understanding the intergenerational relationships (Fonagy & Target, 2005). The Helplessness subscale is closely linked with maternal psychopathology, but as it is measured specifically in the context of the parent-infant relationship, it may bridge the gap between internal working models of attachment and psychopathology.

6.4.5. LIMITATIONS AND FUTURE RESEARCH

There are several limitations to the current study which should be addressed in future research. Firstly, the small number of items in the ARR limits the conclusions that can be drawn about the factor structure of the measure. Although the final model of Hostile, Helpless and Narcissistic representations was found to be robust, the small number of items, especially on the Narcissistic subscale limits the internal consistency of these measures. The third factor in the measure was not hypothesised as the literature pointed to two predominant maternal states of mind that may impinge on the parent-infant relationship. The relative independence of the Narcissistic state of mind from these two other factors indicated the potential for fleshing out the exact variables that may load on this factor to strengthen this measurement. Future developments of the ARR may include more items which point to the Narcissistic state of mind. A second limitation of this study is the criteria against which the ARR was validated, particularly the parent-infant interaction ratings. The ARR is intended to be sensitive to severe disruptions in the parent-infant relationship and some forms of such disruptions can be subtle at a behavioural level (Lyons-Ruth, et al., 2002; van IJzendoorn, et al., 1999). Future studies are needed to investigate its concurrent and predictive validity against infant attachment disorganisation and infant developmental outcomes.

6.5. Summary and conclusions

This study has introduced a potentially useful new tool for screening and assessing impingements in early parent-infant relationships. The instrument has been designed to be accessible to frontline professionals who may not have a specialist background in infant mental health, attachment, or developmental psychopathology. There were acceptable levels of interrater reliability attained between relatively naive coders who had been trained in the measure over a short period. This lends support to the reliability of the instrument for such purposes.

The findings of this study corroborate previous research which has suggested there are two related profiles of caregiver behaviour and attachment representations which may be linked with problematic parent-infant relationships: hostile and helpless (Lyons-Ruth, 2002). The findings of this study also suggest that there may be a third profile of caregiver representations which are distinct from these hostile and helpless states of mind. These are characterised by highly idealised and role reversed views of the relationship. Further research with an expanded version of the ARR is needed to explore this further.

The ARR subscales and global score were found to have good concurrent and predictive validity in relation to the quality of behavioural interactions between the mothers and babies. The strength of these findings were at least as strong as those found for RF. This suggests that the ARR may be a useful measure to supplement or possibly even to be used in lieu of the more labour intensive and complicated assessment of RF on the PDI. The impact of RF on later parent-infant dyadic behaviour was moderated by the global ARR score and it appears that low levels of maternal RF capacity were only predictive of later problems if it was in the context of the representational distortions measured by the ARR. Furthermore, representational hostility mediated the link between RF and later dyadic behaviour. This suggests that the possible mechanism by which failures in maternal mentalisation translate to problematic interactions is through the development of hostile representations. The Helpless subscale of the ARR measure also provided some additional level of explanation for the development of problematic parent-infant relationships over and above the RF measure. More specifically, it was far more strongly associated with the sorts of maternal psychopathology that have been shown to impinge on infant attachment organization and later socio-emotional development (depression and BPD traits). It also mediated the prediction of parent-infant interactions from maternal adult attachment avoidance and anxiety. Helpless states of mind with respect to the parent-infant relationship were not seen to impinge on the quality of interaction as strongly as RF or representational hostility. This is the reason that most widely used assessment tools often fail to identify

these dyads as at-risk (Lyons-Ruth, et al., 2002). However, the links between maternal psychopathology and adult attachment found in this study suggest that is an important construct to measure.

Further research is needed to expand the ARR coding system further and to explore its validity in relation to infant attachment disorganisation and later development. However, this study has provided good evidence for the ARR as a promising tool for screening, measuring outcomes, and informing clinical interventions for parents and infants.

CHAPTER 7: SUMMARY AND CONCLUSIONS

The assessment of parent-infant relationships and the identification of early difficulties within these relationships have become a priority in health and social care. The need for assessment measures that can be applied to this developmental phase has been driven by the recognition that early attachment experiences can have wide-reaching implications for later development across the individual lifespan and across generations (Carlson, Sroufe, & Egeland, 2004; Lyons-Ruth & Jacobvitz, 2008; Sroufe, et al., 2005; Weinfield, Sroufe, & Egeland, 2000). Furthermore, the knowledge that early interventions may be effective in offsetting later costs to society (Charles, Bywater, & Edwards, 2011; Heckman, 2005; McIntosh, Barlow, Davis, & Stewart-Brown, 2009) has led to an increased focus on how one may detect early risks and measure treatment outcomes and efficacy for parents and young babies. Despite this recognition, many of the tools that are available for assessing the quality of parent-infant relationships have a limited basis in psychometric data. This series of studies has addressed this knowledge gap by examining assessments of mothers' representations of their babies as indicators of the quality of the parent-infant relationship. Three tools for assessing parents' representations of themselves as parents and/or their infants were examined in detail: 1) parent reports of infant social and emotional functioning on the Ages and Stages Questionnaire: Social-Emotional (Squires, et al., 2002), 2) the Parental Reflective Functioning coding system which is applied to the Parent Development Interview (Slade, Bernbach, et al., 2004), and 3) a new coding system for the Parent Development Interview, the Assessment of Relational Risk, which was developed as part of the current research. These measures were examined in normative and clinical/high-risk populations in relation to measures of observed parent-infant interactions. The impact of maternal psychopathology on these assessment tools was also investigated.

This thesis has contributed several pieces of knowledge to how we might assess and understand early parent-infant relationships:

1. It has expanded on current research by providing as yet unreported data on the psychometric properties of the Reflective Functioning coding system applied directly to assessments of parents' narratives about their relationships with their babies. This has important implications for the practical use of this increasingly widely used measure in different contexts and for different populations.
2. An alternative methodology for assessing early infant functioning, parent-report questionnaires, was examined. As questionnaires are a great deal less resource intensive than in-depth interviews or observational methods, research into the relative benefits of these measures as proxy indicators of the quality of parent-infant relationship is warranted.
3. This research has also contributed to our understanding of the impact of maternal psychopathology and adult attachment styles on the parent's capacity for mentalisation and how these influence the quality of the parent-infant relationship. This has, to some extent, filled the gap in what is known about mentalisation and psychopathology on the one hand, and attachment relationships and the intergenerational transmission of attachment on the other. There is a body of research which links adult psychopathology with impairments in reflective functioning (e.g. Fonagy & Luyten, 2009; Liotti & Gumley, 2009; Luyten, van Houdenhove, Lemma, Target, & Fonagy, 2012). We also know a great deal about the importance of a parent's capacity for mentalisation and how this may facilitate secure attachment relationships (Grienenberger, et al., 2005; Slade, et al., 2005). However, until now, little has been known about how parental psychopathology might relate to *parental* mentalisation in the context of the parent-infant relationship and the quality of those relationships. This has important theoretical implications for our understanding of developmental psychopathology and how it can be informed by the theory of mentalisation.

4. Finally, the current research has provided data about a potentially useful tool, the Assessment of Relational Risk, which can be used alongside the measure of parental RF to elucidate more multi-dimensional and possibly more clinically-informative information about parent's representations of their babies in a readily accessible manner.

Unlike many studies in this field which have sampled *either* clinical/ high-risk or low-risk populations, this research has been carried out with a heterogeneous sample of mothers and babies. It has thus illuminated our understanding of parental representations both for dyads at risk of relational difficulties and the general population of mothers and infants.

There are methodological, theoretical and clinical implications that have emerged from this series of studies and these are summarised below.

7.1. Methodological Implications

7.1.1. VALIDITY AND RELIABILITY OF THE PDI RF CODING

One of the key findings that emerged from this series of studies is that Reflective Functioning on the PDI is, on the whole, a valid and reliable measure of the quality of early parent-infant relationships. It discriminates between high- and low-risk cohorts of parents and it is related to a number of theoretically related constructs, both concurrently and as a predictor one year later. These findings confirm and further our knowledge from the few studies that have looked at the psychometric properties of the measure in low-risk parenting populations (Grienenberger, et al., 2005; Slade, et al., 2005). A detailed analysis confirming the validity and reliability of measures of parental reflective functioning in high-risk parenting populations has become imperative: the concept of mentalising is increasingly used in parenting assessments (Petridis & Hannan, 2011; Wittenberg, 2010; Wotherspoon et al., 2010). Furthermore, a number of services use the PDI as one of the parenting

assessment tools in family court proceedings (Association of Child Psychotherapists, 2013; Family Assessment Partnership, 2013; Mark Hatter Associates, 2013; The Anna Freud Centre, 2013). The consequences for infants and their caregivers of decisions that are based on such assessments can be considerable and professionals need to be well-informed about what their assessment tools can really tell them.

The discriminant validity of the standard RF coding system was shown to be inadequate in relation to infant age in the very early postnatal period. The psychological reorganisation that occurs during this distinctive phase of motherhood is marked by a lack of representational differentiation between self and baby, as well as a focus on the neonate's physical bodily experiences and regulatory needs (Stern, 1995). Thus, it appears that in the first two months of the infant's life most mothers are likely to be rated as having lower levels of RF than those mothers whose infants are just a little bit older, regardless of the quality of the relationship. Thus, this research has provided empirical evidence to support the recommendation of the author of the measure (Slade, personal communication, 2009): that the measure is not recommended to be used for parents in the very early postnatal period.

In line with research into RF on the AAI (Fonagy, et al., 1998), this study also found a modest association between a measure of nonverbal intelligence levels and RF. Mothers with below average levels of nonverbal intelligence tended to score lower for RF than those with average or above average nonverbal IQ levels. This finding may be linked with intergenerational attachment problems whereby poorer maternal IQ levels may in some cases be correlates of the mothers' own poor experiences of being parented (Corriveau et al., 2009; Csibra & Gergely, 2006; Koenig & Harris, 2005; Fonagy, Gergely & Target, 2007). A secure attachment relationship provides the infant with a sense of 'epistemic trust', and this relationship provides not only protection to the infant, but also a context for learning about the world. Disruptions in these early attachment relationships may impinge upon both learning and mentalising capacity (Crandell & Hobson, 1999; Fonagy & Allison,

2012). Thus, the association between low levels of IQ and parental mentalisation makes theoretical sense and does not necessarily indicate problems with the discriminant validity of the RF measure. Nevertheless, users of the PDI RF coding system should be cognisant of the potential confounding influence of parental learning difficulties on narrative measures of mentalisation, particularly in the context of conducting parenting assessments for family courts (Booth, Booth, & McConnell, 2005). Assessments of parent-infant interactive behaviour are likely to be more appropriate tools for this group of parents.

The distributions of demand question and overall RF scores were somewhat skewed in the normative, clinical and prison samples. This was most pronounced in the most high-risk sample, mothers living in prison Mother Baby Units. The implications of this finding are twofold. Firstly, the assumptions of normality for many statistical analyses of RF scores may be violated and data transformations may be required before any such tests are employed. Secondly, and probably more importantly, the RF scale may be relatively insensitive to subtle and qualitative differences in parental narratives when mothers' RF levels are at the lower end of the spectrum. The vast majority of mothers of infants in prison were deemed to have RF scores between 1 and 3. On the whole, these mothers were also seen to be more likely to have suboptimal interactions with their babies. Qualitative analyses of PDIs in this sample have highlighted the multifaceted indicators of risk in these mothers' representations, such as high levels of hostility, role reversal and idealisation (Baradon, et al., 2008). Although the RF scores did indeed indicate that the mothers in this population tended to have a poor capacity for parental mentalisation, thus indicating possible relational risk, it was not able to differentiate between qualitatively different types of representations that were impinging on the mother-infant relationships in this cohort. The alternative coding system developed as part of this research, the Assessment of Representational Risk, has to a certain extent addressed this shortcoming.

7.1.2. RF AND THE ASSESSMENT OF THE QUALITY OF PARENT-INFANT RELATIONSHIPS

This research has shown that parental mentalisation, or limitations thereof, may not fully account for variance in the quality of early parent-infant relationships and that RF on the PDI would be most informative as part of a wider battery of assessment tools. For example, maternal depression is predictive of less optimal parent-infant interactions *independently* of the mother's mentalising capacity. There is also an indirect effect of maternal RF on the quality of parent-infant interactions via the severity of maternal depression. In other words, the impact of maternal mentalisation on behavioural interactions between mothers and babies depends, in part, on whether or not she is experiencing depressive symptoms. Any comprehensive assessment of mother-infant relational functioning would therefore benefit from the inclusion of measures of both maternal mentalising capacity and depressive symptomology.

7.1.3. MATERNAL PSYCHOPATHOLOGY AS A PROXY MEASURE OF RF

An important finding is that a great deal of variance in the mothers' capacity to mentalise could not be accounted for by maternal psychopathology alone. Thus, self-reported questionnaires of maternal psychological functioning cannot be used as proxy measures of the relationship-specific metacognitive capacity to mentalise. Although resource intensive, semi-structured interviews which capture largely unconscious, metacognitive processes are likely to elicit important pieces of information that make a unique contribution to a comprehensive assessment of parent-infant relational functioning.

7.1.4. PARENT-REPORTS OF INFANT FUNCTIONING AS A PROXY MEASURE OF THE QUALITY OF PARENT-INFANT RELATIONSHIP

Infant social and emotional functioning is now widely understood as dependent upon and evolving within the parent-infant relationship (Sroufe, 2005). While there are few brief and inexpensive parent-report questionnaires which aim to capture the quality of parent-infant relationships, there are several such measures for assessing infant social and emotional functioning. It is possible that such instruments may prove useful as proxy indicators of the

quality of parent-infant attachment relationships but this suggestion was refuted by the findings of this study, at least in clinical parent-infant samples. Mothers who were participating in trials of parent-infant relational interventions completed the Ages and Stages: Social-Emotional, a brief screening instrument for social and emotional problems in early infancy, and were observed interacting with their infants. On the whole, the mothers' reports of their infants' functioning were not related to external observer or clinician ratings of infant interactive behaviour with their mothers. However, when mothers reported clinically significant levels of depression, their ratings of their infants' social-emotional functioning were related to how they themselves were seen to interact with their babies. In other words, depressed mothers were more likely to perceive their infants' behaviours as problematic and were also more likely to be insensitive, hostile, intrusive and/or withdrawn in the way they related to their infants. When mothers did not report clinically significant levels of depression, their ratings of their infants' social-emotional functioning did not relate to either their infants' or their own interactive behaviour.

The methodological implication of this finding is that the construct validity of parent-reported infant social-emotional questionnaires is questionable in clinical samples. When maternal depression is not prevalent, these questionnaires are not good proxy indicators of the quality of parent-infant relationships. When mothers are depressed, parent-report questionnaires do in fact indicate risk in the parent-infant relationship but this is more likely to be linked with the mothers' own difficulties in relating to their babies. In time, it is possible that these less optimal interactions will in fact translate into less optimal trajectories for the infant's social and emotional functioning (Bakeman & Brown, 1980; Seifer, et al., 1994), making these questionnaire for screening for early problems potentially still valid. Questionnaires of infant functioning are therefore likely to tap into the parents' negative representations of the relationship with the baby and this may impinge on how they relate to their infants. This finding provides some explanation for the powerful prediction of later infant temperament from parent-reports in early infancy, despite the poor

concurrent validity between parent reports and observations in the first months of the infant's life (Pauli-Pott, et al., 2003).

7.1.5. PREDICTING LATER PARENT-INFANT INTERACTIVE BEHAVIOUR

The prediction of later behavioural interactions between mothers and their babies from maternal RF in the first year was found to be relatively small (around 5%). The development of the Assessment of Relational Risk (ARR) coding system has significantly improved the prediction of the quality of interactive behaviour in the infant's second year. The total risk score derived from the ARR moderated the prediction of later interactive behaviour from maternal RF. In other words, maternal mentalisation was only predictive of later interactive dysfunction if the content of the mothers' representations also demonstrated elements of risk picked up by the ARR coding system. The additional contribution of the ARR in the assessment of parent-infant relational functioning most likely lies with the dimension of parental representations which is not necessarily associated with mentalising difficulties: namely helpless maternal states of mind. Most currently used measures of parent-infant relational functioning have been found to be insensitive to the identification of this group of mothers and infants (Lyons-Ruth, et al., 2002) and yet they represent a high-risk group in terms of the longer term outcomes for these infants (Lyons-Ruth, et al., 1993; Lyons-Ruth, et al., 1997; Spangler & Grossman, 1993; Wartner, et al., 1994). Thus, the ARR is a relatively accessible tool that is sensitive to detecting both obvious and more subtle elements of potential risk in early parent-infant relationships.

7.1.6. VALIDITY AND RELIABILITY OF THE ASSESSMENT OF RELATIONAL RISK

The final empirical chapter of this thesis presented a newly developed coding system for assessing parental representations, the Assessment of Relational Risk (ARR). This instrument yielded measures of three typologies of maternal representations which were associated with risk in the quality of parent-infant relationships: Hostile, Helpless and

Narcissistic. The instrument was developed for use by relatively naive coders with little previous knowledge of attachment theory and developmental psychopathology. With only a brief training in the application of the manual, the instrument demonstrated good interrater reliability, validating the utility of this instrument for a wide range of professionals. The criterion validity of the measure was confirmed as it was clearly able to discriminate between high risk and low risk parent-infant samples. Furthermore, the different subscales were able to distinguish between different types of risk: mothers in with mental health problems were more likely to have Hostile and Helpless representations of their relationships with their babies, while mothers in prison (with only moderate levels of reported psychopathology) were more likely to have Narcissistic representations of their relationships than a normative comparison group. The ARR Hostile, Narcissistic and Total Risk scales were shown to have good concurrent validity against ratings of maternal RF and the quality of parent-infant interactions. Although the Helpless subscale did not demonstrate concurrent validity against these measures, it was strongly associated with concurrent measures of maternal adult attachment and psychopathology. Thus, the instrument appears to provide a good multidimensional assessment of different risk factors which indicate potential disruptions to the parent-infant relationship. It is possible that other measures might not be sensitive to all of these states of mind that are picked up by the ARR. For example, measures of maternal RF alone may not be sensitive to the impact of maternal psychopathology on the parent-infant relationship, probably because the plethora of emotional mental state words that these mothers are likely to use would be likely to result in at least moderate RF scores. In contrast, mother-report questionnaires of the parent-infant relationship may be sensitive to maternal psychopathology, but would be unlikely to pick up on defensive idealisation or role reversal as measured by the Narcissistic subscale of the ARR.

The predictive validity of the ARR was also shown to be good. The Helpless, Hostile and Total Risk scales were shown to predict the quality of parent-infant interactions one year later for the clinical and normative samples. Unfortunately no longitudinal data were

available for the prison sample. As this was the group showing the highest prevalence of Narcissistic parental representations, the predictive validity of this subscale could not be tested in this study. However, longitudinal data from the clinical and normative samples confirmed the predictive validity of the Hostile and Helpless subscales, as well as the total ARR Risk measure. Not only were these ARR scales better predictors of later interactive behaviour than RF was, they also moderated the prediction of later behaviour from RF and other measures such as the ECR-R.

The total ARR Risk score moderated the prediction of later interactive behaviour from RF. In other words, limited maternal reflective functioning was only seen to predict poor relational outcomes if other risk factors were also apparent in the mothers' representations of their infants. There was also a mediation effect of Hostile representations on the prediction of later interactive behaviour from RF. The prediction of dyadic functioning from the RF coding system can, to a large extent, be explained by parents' hostile representations of their relationships with their babies. This effect may be due to the lowering of RF scores if there is evidence of hostility in the narrative (Slade, Bernbach, et al., 2004). Another way of understanding this effect is that poor reflective capacities result in the mother having a poor capacity to understand the meaning behind the infant's natural dependent states and needs for regulation, rendering her more likely to attribute more hostile and persecutory meanings for these behaviours. In this context, hostile attributions and dysregulated negative arousal are more likely to occur (Fonagy, et al., 2002).

The Helplessness subscale of the ARR provided some insight into the mechanism of how adult attachment avoidance and anxiety may impinge on the quality of parent-infant relationships. This subscale was most strongly related to maternal reports of attachment in other intimate relationships, and it partially mediated the prediction of later interactive behaviour from adult attachment experiences. In other words, Helpless internal working models of attachment appear to play an important role in the general quality of both romantic and parental relationships. This finding may relate to the negative affective

experiences that were associated with a Helpless states of mind, and may point to the importance of affect regulation in the formation of secure adult and parent-infant relationships (Brennan, Clark, & Shaver, 1998; Schore, 2001b). Another explanation for this finding may lay with the measure that was used. The self-report nature of the adult attachment measure (ECR-R) means that only those mothers who were able to explicitly acknowledge and describe their negative emotional experiences, that is, those who were likely to be rated as having Helpless representations on the PDI, were likely to endorse the negative items of the ECR-R.

7.2. Theoretical Implications

This series of studies provided some further insight into the interplay between parental representations, adult attachment patterns, parental psychopathology and parent-infant behaviours in populations of varying risk for relational problems.

7.2.1. MATERNAL PSYCHOPATHOLOGY AND EARLY PARENT-INFANT RELATIONSHIPS

The impact of maternal psychopathology on the mother's reflective functioning in relation to her infant and on the quality of parent-infant interaction was examined in detail.

Maternal psychopathology did not account for most of the variance in the capacity for mentalisation and there were only some modest associations between certain domains of psychological functioning and parental mentalisation. The specific forms of psychopathology that were related to maternal reflective functioning were, in the most part, those that previous adult research has linked with impairments in mentalising capacities: namely depression, somatization, phobic anxiety, paranoid ideation, and psychoticism (Brent, 2009; Brune, 2005; Liotti & Gumley, 2009; Luyten, et al., 2012; Moriguchi, et al., 2006; Uekermann, et al., 2008; Wang, et al., 2008). The only exception to this was the unexpectedly poor association between borderline personality disorder traits and the mothers' mentalising capacity. This is contrary to the large body of theoretical, clinical and empirical work which has linked BPD with poor reflective functioning (Fonagy, 2000; Fonagy & Bateman, 2008; Fonagy, Luyten, & Strathearn, 2011). However, the reliance on a binary self-report questionnaire for measuring BPD symptomology and the exclusion of mothers with current psychosis or substance or alcohol addiction from the sample may account for this apparent lack of association between BPD and RF. Despite this, there were significant associations between BPD traits measured by the BPI and the ARR Hostile, Helpless and Risk scores. Thus, there was evidence for this form of maternal psychopathology impacting on the mothers' representations of the parent-infant relationship, but this was not picked up by the RF coding system. These ARR scales were

also significantly related to other forms of psychopathology such as depression and general psychiatric symptomology. The differential findings for how the RF and ARR coding systems relate to maternal psychopathology may be due to the emphasis on affective state language in the RF coding system. Mothers who were experiencing high levels of distress were more likely to acknowledge difficult emotional experiences with their babies. Even if there was evidence that these heightened affective experiences with their babies were inadequately contained and regulated, the narratives of these mothers may still be rated as demonstrating moderately low RF levels simply for the rudimentary acknowledgement of their own and their infants' mental states. Narratives that would be rated at the lowest end of the spectrum would be characterised by either frank hostility and bizarre attributions (as also picked up by the ARR Hostile subscale) or disavowal and an absence of mental state words altogether (as picked up by the ARR Narcissistic subscale) (Slade, 2005). Narratives that are laden with emotional state words would therefore be unlikely to be rated at the lowest end of the RF spectrum unless they were also accompanied with hostile or narcissistic attributions. This was confirmed by the finding that the total ARR risk score moderated the prediction of later parent-infant interaction from RF. It is possible, then, that the mother's capacity for mentalisation is most important in the context of other risk factors. The Assessment of Representational Risk has provided a means of detecting the states of mind that are linked with poor parental mentalisation, but also those that indicate maternal distress, fear and helplessness- variables that have been linked with both maternal psychopathology and infant attachment disorganization (George & Solomon, 2008a; Hesse & Main, 2006; Lyons-Ruth, 2002).

The impact of maternal depression on the parent-infant relationship has become an area of particular clinical importance as it has been estimated to affect around 13- 23% of women during pregnancy and the first postnatal year (Gavin et al., 2005; Josefsson, Berg, Nordin, & Sydsjö, 2001; Watson, Elliott, Rugg, & Brough, 1984). One of the studies presented here examined in detail the association between maternal depression and the quality of parent-infant interactions, as well as the influence of maternal reflective functioning. The findings

were consistent with other research which showed two different behavioural manifestations of maternal depression in the interactions between mothers and their babies: intrusion and withdrawal (Lyons-Ruth, et al., 2002; Tronick & Reck, 2009). There was a direct effect of maternal depression on the interactional quality and this was independent of the mothers' capacity for reflective functioning. In contrast, the impact of maternal reflective functioning on the behavioural interactions was mediated by the severity of maternal depression. Thus, there are two pathways of how maternal depression impacts on the parent-infant relationship: directly and indirectly via the capacity to mentalise. The latter group is likely to be comprised of those mothers for whom the onset of depressive symptoms and limitations in mentalising capacity share some etiology in the mothers' own childhood attachment experiences. This explanation is supported by neuroimaging studies which have revealed brain areas that are linked with both depression and mentalisation (Choi-Kain & Gunderson, 2008; Hartmann, 2009; Price & Drevets). Similarly, hypothalamic–pituitary–adrenal (HPA) axis hyperactivation has been linked with childhood parental loss and maltreatment in postnatal women (Gonzalez, et al., 2009), adult depression (Pariante & Lightman, 2008) and a breakdown in the capacity to mentalise within attachment relationships (Gabbard, et al., 2008). However, it appears that there is another group of mothers who develop depression in the postnatal period and who are seen to have poor interactions with their babies, but who are still able to mentalise in relation to their infant. The etiology of depression for this group of mothers may be unrelated to their own childhood attachment experiences.

7.2.2. MATERNAL ADULT ATTACHMENT AND THE PARENT-INFANT RELATIONSHIP

There were some modest links between mothers' attachment styles with respect to their close adult relationships (such as with romantic partners) and their ability to mentalise in relation to their infants. More specifically, moderate levels of adult attachment anxiety and low levels of adult attachment avoidance were more likely to be associated with greater levels of parental reflective functioning. Fearful and dismissive adult attachment styles were linked with poorer reflective capacities. The overlap between mothers' adult

attachment styles and parental mentalisation in relation to their infants points to the likelihood of a common etiology of working models of attachment and the capacity for mentalisation, most likely stemming from the mothers' own childhood experiences of being parented and being treated as psychological agents (Fonagy, Steele, Steele, et al., 1991; McCarthy & Maughan, 2010). This is supported by other research which has linked mothers' attachment classifications and reflective functioning when talking about their childhood relationships with the capacity to mentalise in the context of their relationship with their own child (Slade, et al., 2005). The assessment of parental representations on the ARR added to the understanding of this link between RF and adult attachment. Helpless representations of the relationship with the baby partially mediated the prediction of later parent-infant interactions from the mothers' adult attachment avoidance and anxiety. Thus, fearful/helpless state of mind with respect to adult attachments and the parental role appears to be the most predominant means by which generalised internal working models may impinge on the parent-infant relationship.

One interesting result from this research corroborated unexpected findings also shown in another study (Wilson, 2011): that moderate levels, rather than the absence, of attachment anxiety facilitate the capacity to mentalise. These findings can be understood in terms of normal and adaptable levels of stress in attachment relationships. There is evidence that attachment anxiety, as measured by the ECR-R, is positively associated with oxytocin plasma levels and (Marazziti et al., 2006). Thus, moderate levels of attachment stress and oxytocin, the neuropeptide associated with social bonding, are likely to function together in the formation of romantic or parent-infant attachments. Self-reported attachment stress is likely to be indicative of the individual's investment in their close relationships, and the appreciation of the complex interplay between the two partners. In other words, we would expect that good enough adult close relationships would result in sufficient levels of anxiety to motivate the individual to continuously assess the quality of relationship and to repair ruptures as they inevitably occur. Similarly, mentalising processes are most necessary, and are most likely to occur, when the attachment and caregiving systems are

activated by moderately stressful conditions (Fonagy & Luyten, 2009; Fonagy, et al., 2011; Nolte et al., 2010). Thus, too little attachment anxiety (probably those mothers whose caregiving systems are underactivated by the infant's attachment needs, or who withdraw following frightening overactivation of the caregiving system) and very high levels of attachment anxiety (those whose caregiving systems are hyperactivated and dysregulated by the child's attachment needs) appear to be the least conducive to being able to think reflectively about the child's internal states. Helpless parental representations mediated the prediction of parent-infant interactions from adult attachment anxiety. Thus, the over-activation and under-activation of the attachment system is likely to reduce the sense of control one has over all close relationships, and it is this powerlessness in the mother that is directly experienced by the infant at a behavioural level.

7.2.3. MATERNAL REPRESENTATIONS AND THE PARENT-INFANT RELATIONSHIPS

Recent theoretical and empirical advances in attachment theory have suggested that there are two distinct but related typologies of parenting behaviour which may be disorganizing of the attachment system for the child. These have been called Hostile and Helpless (Lyons-Ruth, 2002; Lyons-Ruth, et al., 2007; Lyons-Ruth, et al., 2005). This work has mainly been derived from studies of parent and infant interactive behaviour (Lyons-Ruth, Bronfman, & Atwood, 1999) and adults' attachment representations with their own caregivers (Lyons-Ruth, et al., 2005). The current research was the first to investigate the model on attachment representations that are specific to the parent-child relationship.

This thesis provided evidence for the significance of polarised but related hostile and helpless states of mind in parents' representations of their relationship with their baby for identifying risk in the relationship. However, it also provided some evidence for an as yet unidentified cluster of parental representations that may be problematic for the development of the parent-infant relationship. Contrary to behavioural observation studies which have linked parental role reversal with hostile caregiver behaviours (Bronfman, et al., 1999), this research found parental role reversal at a representational level was not

related to hostile or helpless thoughts about the relationships. On the contrary, mothers who were likely to demonstrate some enmeshment with their baby and confusion around roles and boundaries, were also likely to be highly idealising of their relationships. Taken together, this was termed a “Narcissistic” state of mind with respect to the parent-infant relationship. This was not related to either hostile or helpless states of mind and thus represents an entirely segregated representation of the infant in the mothers’ minds.

The following theoretical model of how these three states of mind interact with maternal background factors to drive particular behavioural interactions is proposed:

As many attachment theorists have posited, the mother’s internal working models of close relationships are likely to stem from her own childhood attachment experiences (Bretherton & Munholland, 2008; Cohn, Cowan, Cowan, & Pearson, 1992; Collins & Read, 1990, 1994). It is now also acknowledged that personality, temperament, and genetic factors also play a role in predicting inter- and intrapersonal outcomes over the course of development, particularly through their interactions with early attachment experiences (Fonagy, 2001; Pierrehumbert, Miljkovitch, Plancherel, Halfon, & Ansermet, 2000; Shaver & Brennan, 1992; Spangler, Johann, Ronai, & Zimmermann, 2009; Vaughn, Bost, & van IJzendoorn, 2008; Zimmermann, Mohr, & Spangler, 2009). These factors have direct effects on the mothers’ capacity for mentalisation and emotional well-being, but also indirect effects via the generalised internal working models of attachment. More specifically, high levels of attachment avoidance and either high or low (but not moderate) levels of attachment anxiety are linked with the breakdown in mentalising capacity and the onset of mental health problems. These associations have been found in other studies, as well as the current series of studies (Conradi & de Jonge, 2009; Williams & Riskind, 2004). The effect of attachment avoidance on RF is direct, whereas there appears to be an interaction effect between attachment anxiety and psychopathology on RF.

Maternal mentalisation and psychopathology have differential effects on the mothers' representations of their relationship with their infants, as measured by the ARR. Poor mentalising capacity is associated with either Hostile or Narcissistic states of mind with respect to the relationship with the infant. In both cases, the mothers' inability to view their baby as a psychological agent in his or her own right results in highly distorted representations which are manifested as either highly idealising, overly positive and role reversed, or highly negative and denigrating. These states of mind have been recognised by others as highly disorganizing of the attachment relationship (George & Solomon, 2008a; Lyons-Ruth & Jacobvitz, 2008). They are likely to emerge from segregated systems -or the extreme repression, of attachment representations and may be indicative of particularly severe or pervasive relational trauma in the mothers' own attachment history (Bowlby, 1980). According to George and Solomon (1996), segregated systems of attachment representation are brittle and prone to breakdown. This breakdown of defensive processes may result in the flooding and dysregulation of the mother's attachment representations or a complete shutdown of the attachment system (George & West, 2003). The hostile and narcissistic states of mind measured in this research are likely to be sensitive to these two differential manifestations of segregated systems in attachment-related narratives. Both hostile and narcissistic states of mind were related to observations of the quality of parent-infant interaction. Broad ratings of maternal sensitivity were used in the assessment of the interactions, and therefore the maternal behaviours that followed on from both hostile and narcissistic states of mind were likely to be relatively easily observable aspects of the interactions, such as intrusiveness, insensitivity to infant communications, hostility, and mistimed or mismatched responses to the infant's cues.

Mothers who experience high levels of emotional distress and who are likely to report this in self-report questionnaires were shown to have qualitatively different representations of their relationships with their infants. These were characterised by helplessness, fearfulness and overwhelming negative affect in the way the mothers described their relationship with their babies. Some of these mothers also demonstrated some hostility in their

representations, and often alternated between hostile and helpless states of mind. This confirms the suggestion by Lyons-Ruth and colleagues that these states form two polar ends of the same continuum (Lyons-Ruth, 2002; Lyons-Ruth, et al., 2005). It is worth noting that self-report measures of maternal psychopathology were used in this series of studies, and so the apparent lack of association between psychopathology and narcissistic states of mind may be the result of this methodology rather than due to an absence of psychological symptomology for this group of mothers. In other words, mothers with highly idealised narratives may also use defensive idealisation in answering self-report questionnaires of psychological well-being. Interestingly, these states of mind were not strongly related to observed parent-infant interactions, either when assessed concurrently or one year later. There are two possible explanations for this. Firstly, it may be that mothers with high levels of depression and anxiety who hold predominantly helpless representations of their relationship with their baby do not comprise a high-risk parenting group. However, the abundance of research demonstrating the detrimental long-term effects of maternal psychopathology on the child's later development does not support this hypothesis (Beck, 1998; Gross, Conrad, Fogg, Willis, & Garvey, 1995; Halligan, Murray, Martins, & Cooper, 2007; O'Connor, Heron, Golding, Beveridge, & Glover, 2002). The second explanation for the lack of association between helpless states of mind and parental interactive behaviour is that the measure for assessing the quality of parent-infant interactions was not sensitive to the subtle behaviours that may be indicative of risk for these dyads. Indeed, a major criticism of many of the existing tools for assessing the quality of parent-infant relationships is that they are not sensitive to picking up the disruptions that occur with helpless states of mind, particularly those linked with maternal depression (Lyons-Ruth, et al., 2002). A behavioural coding system which emphasises the importance of subtle behaviours linked with helpless states of mind, such as the Fr (Main & Hesse, 2005) or AMBIANCE (Bronfman, et al., 1999) coding systems, may have revealed a significant link between the two measures. Despite the apparent lack of association between helpless representations and global maternal sensitivity and interactive behaviour, helpless representations were strongly related to the mothers' generalised adult attachment strategies

and maternal psychopathology. This suggests that helpless states of mind are likely to impact on the parent-infant relationship and pose some risk to the dyad. This risk may be missed by other assessments of mothers' narratives, such as the RF coding system. Thus, the multidimensional ARR coding system has provided an accessible but sensitive tool for the assessment of multiple types of risk in early parent-infant relationships.

7.2.4. MATERNAL REPRESENTATIONS AND MATERNAL AMBIVALENCE

The three maternal states of mind that have been identified in this research as impinging upon the quality of mother-infant relationship might be understood in terms of maternal ambivalence. They may represent three alternative and maladaptive strategies of how mothers of young babies grapple with the conflicting experiences of love and hate towards their infants, a phenomenon well identified in the psychoanalytic literature (Hoffman, 2003; Raphael-Leff, 2010; Winnicott, 1949). A Hostile state of mind is likely to emerge from narratives of mothers whose experience of their baby is overwhelmingly negative, resulting in representations of a "bad" or "difficult" child who serves as a scapegoat for the difficult emotional experiences and ambivalence that the mother may be experiencing in herself as a mother. The Narcissistic state of mind may represent the polar opposite of the continuum. For these mothers, the negative experiences of motherhood are intolerable and are split off from consciousness. The Helpless state of mind may occur when mothers are not fully able to integrate the ambivalent feelings that they have towards their baby and shift between them, with resulting feelings of guilt, shame and fear of the negative feelings that they have for a baby that they also love so dearly. Rozsika Parker (1997) has written extensively about the anxiety that is provoked when the coexistence of ambivalent feelings are experienced as unmanageable and feelings of hate cannot be mitigated by feelings of love. As this research has focused on risk in early parent-infant relationships, the three states of mind refer to essentially maladaptive or inadequate representations of the mother-infant relationship, possibly as a consequence of difficulties integrating ambivalent emotional experiences associated with parenting a young baby. There is, of course, a fourth category, which is the state of mind that facilitates maternal mentalising and sensitive responsiveness

towards the infant (Parker, 1995; Raphael-Leff, 2010). In these cases, the effective integration and management of ambivalent feelings of love and hate towards the infant may be seen as a way of promoting mentalisation and care for the infant:

“When manageable, the pain, conflict and confusion of the coexistence of love and hate actually motivate the mother to struggle to understand her own feelings and her child’s behaviour.” (Parker, 1997, p.21)

7.3. Clinical Implications

The clinical implications of this research lie primarily with the identification and assessment of risk in early parent-infant relationships, and untangling how the clinical material that emerges when working with parents and young infants might be understood. Most notably, this research has illuminated potentially important states of mind in mothers of young babies which could be missed in screening for relational difficulties.

7.3.1. BEYOND HOSTILE AND HELPLESS STATES OF MIND

The work of Lyons-Ruth and colleagues has contributed a great deal to our understanding of how certain attachment representations may impinge on the quality of parent-infant relationships through the identification of hostile and helpless states of mind (Lyons-Ruth, 2002; Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth, et al., 2005). Parental hostility is perhaps the most clearly identifiable risk factor in both observations of parent-child interaction and in the parents’ narratives and is unlikely to go undetected by even relatively naïve observers. In contrast, parental helplessness and fearfulness is often missed by many methods of behavioural observation, as these parents can still be seen to be sensitive in their interactions with their babies and appear rather fragile and sweet (Lyons-

Ruth, et al., 2002). The current research confirmed this: hostile states of mind were strongly and directly linked with poor interactions, while helpless states of mind were not as likely to be detected by a global assessment of maternal sensitivity.

The identification of a third, and separate state of mind which impinges on the parent-infant relationship, namely a Narcissistic state of mind, has far reaching clinical implications. Unlike the mothers who have a predominantly “Helpless” state of mind, Narcissistic mothers are unlikely to be seeking help for mental health problems or emotional distress. They are also unlikely to be expressing hostile thoughts and feelings about parenting, in the way that mothers in the “Hostile” subgroup would, which would signal concern to the professional network around the family. At least in the first months of the infant’s life, parents in the “Narcissistic” subcategory and their babies may not be identified as presenting with any problems. The very positive and idealised representation of the baby may be seen as a positive sign of primary maternal preoccupation (Winnicott, 1956). It may be only later on, when the developing infant moves into the phase of separation-individuation (Mahler, 1974) and the Narcissistic mother can be seen to interfere with this process and cling to her glorified sense of self in the baby, that problems may be identified. Thus, there is a need to be aware of subtle differentiation between maternal preoccupation and love for a newborn and more rigid and self-referential representations of the baby.

The later impact of parental narcissism on the child’s development has been well documented. The parent’s inability to recognize and respond to the child’s needs and emotional states through their self-serving distortions result in the development of a “false self” which may lead to either aggressive narcissistic traits or co-dependency in close relationships (Brown, 2008; Kohut, 1972, 1984; Rappoport, 2005). This theory is very much akin to the theory of mentalisation, which posits that failures in the parent’s capacity to reflect on the child’s authentic inner states leads to the development of a false self (Fonagy, et al., 2002). The strength of association between RF and narcissistic states of

mind in the parent found in this study confirms a significant overlap between narcissistic content and metacognitive mentalising capacities in the parent's representations.

The fact that, at least in this research, narcissistic states of mind tended to be independent of hostile states of mind was surprising. This raises the question of whether: a) these parents do in fact switch between idealising and denigrating representations, as described in the attachment literature (Lyons-Ruth, Yellin, Melnick, & Atwood, 2003) but they are able to hold their hostile attributions in check during the course of the interview, or b) if the split off hostility does in fact remain outside of the realm of the parent-infant relationship. If it is the latter, these parents may project the split off feelings of hostility elsewhere, such as toward other children or their romantic partners. Further research examining these states of mind in more detail is needed to understand the potential impact that parental narcissism may have on the wider family dynamics.

7.3.2. TREATING MATERNAL DEPRESSION

A further clinical implication of this research is the findings in relation to maternal depression. The impact of maternal depression on the quality of parent-infant interactions was direct and not mediated by the parent's capacity for mentalisation. On the contrary, it was maternal depression that mediated the link between mentalising and parent-infant interactions. This has important implications for the treatment of mothers with depression. The findings suggest that, at least in some cases, addressing the mother's depressive symptoms rather than her ability to reflect on her own and her infant's psychological world may directly improve the quality of relationship she has with her infant. There were likely to be two subgroups of depressed mothers in the sample investigated; those whose depressive symptoms were not linked with attachment-related difficulties in the mother's past, and those whose depression and inability to mentalise share a similar etiology relating to childhood relational trauma. For the latter group, interventions which focus on the parent's own attachment experiences, "ghosts in the nursery", and mentalising ability are likely to be effective in alleviating the depressive symptoms and strengthening the quality

of parent-infant relationship (Baradon et al., 2005; Fraiberg, Adelson, & Shapiro, 1975; Lieberman & Pawl, 1993; Sadler, Slade, & Mayes, 2006). For those mothers who retain adequate levels of reflective functioning in relation to their child but who are experiencing depression, interventions which focus on improving the mood of the mothers and reducing arousal in the infants are likely to be most effective (Field, 1998; Newport, Hostetter, Arnold, & Stowe, 2002).

7.4. Limitations

There were several limitations to the series of studies presented here that should be discussed. These relate to the sampling of participants and the measures employed.

Firstly, the studies have been conducted on pooled samples of participants recruited from several studies. Where possible, results have been reported for each sub-sample separately and for the pooled sample. Each of these studies had specific inclusion and exclusion criteria, which limit the generalization of findings to wider populations. The clinical sample explicitly excluded mothers with current psychotic symptoms and those who were currently addicted to drugs or alcohol. This has major implications for the conclusions that can be drawn from this study about maternal representations and mother-infant relationships in relation to all forms of maternal psychopathology. Maternal depression and anxiety were the domains of psychological symptomology most prevalent in this sample, and the findings linking maternal representations with these forms of psychopathology are likely to be robust. However, it would not be possible to generalize these findings to wider psychiatric populations where mothers may be experiencing other forms of psychopathology, such as puerperal psychosis, schizophrenia, or personality disorders. Therefore, the unexpected finding that maternal RF was unrelated to BPD features may be due to the exclusion criteria in the sampling rather than a real lack of association. Future research which purposively samples mothers with these diagnoses is necessary to elucidate

the nature of maternal representations, parental mentalisation, and the effects on parenting behaviour in these populations. The normative sample was recruited with the same inclusion and exclusion criteria as the clinical sample, apart from the psychiatric caseness of the mothers. Importantly, the sampling of these mothers was designed to enable them to be fairly well matched in terms of sociodemographic factors to the clinical sample, and they were therefore a relatively low-income, inner city group of mothers and babies who were experiencing a number of social risk factors. The results pertaining to this group cannot therefore be generalised to low-risk middle class parent-infant populations. Furthermore, both the normative and clinical samples explicitly excluded mothers with severe learning difficulties and infants with any sensory or motoric disability, such as blindness, hearing impairment, or cerebral palsy. Thus, no conclusions can be drawn about the effects of these factors on the parent-infant relationship or maternal representations. All three samples excluded mothers who did not have sufficient fluency in English to enable them to participate in the research without the assistance of an interpreter. Although this was necessary for practical reasons, it is important to recognise the likely ethnic bias that was introduced.

The second set of limitations to this series of studies lies with the measures used. Identical batteries of measures were used for the clinical and normative samples, but a much smaller set of measures were administered with the prison sample and far less was known about these mothers and babies. In particular, the only measure of maternal mental health used in the prison study was a brief self-report questionnaire of depressive symptomology. Many mothers in this group did not report high levels of depression, either because this was not highly prevalent in this sample or because of socially-desirable response biases. Other research has reported significant prevalence rates of psychopathology in this group of mothers and babies (Birmingham, et al., 2006; Gregoire, et al., 2010), but the limited range of measures used to tap psychiatric symptomology meant that this could not be explored in relation to the mother-infant relationships. The mothers and infants in the two community based groups were followed-up one year after the baseline assessments, but the prison

group was not. The follow-up data was used to investigate how maternal representations in the first year were predictive of later parent-infant relational functioning. As the prison sample was excluded from these analyses, the representations that were most often found in this sample (most notably, narcissistic states of mind) were not shown to be predictive of later dyadic interaction. As these representations were seen to be concurrently highly indicative of risk in the relationship, further understanding of the longer-term influence they have on the relationship would have a great deal of clinical significance. Longitudinal studies with this population are sorely needed.

A combination of parent-report and external ratings were used in this series of studies. For example, the PDI and parent-infant interactions were coded by external raters, while the measures of maternal psychopathology and adult attachment were based on parent-reported questionnaires. It may be that some of the findings reported were confounded by the source of data used. For example, there were strong links between maternal psychopathology, adult attachment and PDI narratives which explicitly revealed emotional distress (Helpless states of mind), but the links between these measures and ratings of parent-infant interactions were weak. If externally-rated measures of adult attachment (such as the Adult Attachment Interview) and maternal psychopathology (such as clinician-rated diagnoses) were used instead of parent-report measures, we may have found stronger links between these constructs and Hostile and Narcissistic states of mind and parent-infant interactions. Further research using these measures would illuminate whether or not this is the case.

Another major gap in this research was the lack of outcome data in terms of infant attachment and later outcomes for the child directly. The representational measures were validated against global measures of parent-infant interaction. Further data are needed to test their validity against the child's attachment behaviour in the Strange Situation Procedure, and longer term outcomes for the child's social and psychological functioning.

7.5. Summary

This research has expanded our understanding of the assessment of potential disruptions in early parent-infant relationships. Some instruments, such as parent-report questionnaires, may be useful screening tools for some parent-infant dyads at risk of relational difficulties, but may not be sensitive to detecting problems when certain states of mind are most prevalent in the mother's representations. More specifically, maternal enmeshment and defensive idealisation of the parent-infant relationship may have dire consequences for the infant's developmental trajectory, but these mothers are unlikely to report such difficulties when completing questionnaires. The Parent Development Interview (Slade, Aber, et al., 2004), and similar semi-structured interviews tapping parental representations, provide a rich and meaningful insight into mothers' representations of their relationship with their baby. Earlier coding systems for analyzing these narratives focused on the qualitative content of what parents were saying (Aber, et al., 1999; Slade et al., 1994; Zeanah, et al., 1993). More recently, analysis of parental representations has focused on the metacognitive capacity for reflective functioning as revealed within the narratives (Schechter, et al., 2005; Slade, Bernbach, et al., 2004). This measure takes into account the process of thinking about the relationship and how this is revealed in the narrative, rather than focusing on the content in and of itself. This method of assessment has proved useful in the detection of problems within the parent-infant relationships and in developing a theoretical understanding of how they evolve and are maintained. However, the current research posits that the content of what mothers say may still be an important indicator of the quality of the relationship and may provide a broader understanding of the nature of the relationship than the unidimensional assessment of reflective functioning. A new coding system for assessing the content of parental representations, the Assessment of Relational Risk (ARR), was developed. This measure captured multiple states of mind which impinged on the quality of parent-infant relationship directly. Not only were the ARR scales better predictors of later interactive behaviour than RF was, they also moderated the prediction of later behaviour from other measures. This raises the question of why the raw content of

how parents talk about their relationship with their babies is so important. Reflective Functioning measures a second order mental processing of the affective and cognitive experiences of the mother and baby. While there is no doubt that this is important and that this capacity does indeed predict important developmental and relational outcomes for the dyad, it is possible that the constructs being measured by the ARR are closer to the primary affective experiences of the mother and baby in their relationship. Neuroscientific studies of early development have uncovered the importance of affect and psychobiological regulation within the parent-infant relationship for infant development (Schore, 2012). It is possible that the spontaneous words that parents use to describe their relationship with their baby are much closer to the affective experiences of the infant within the relationship than the experience of being thought about as a psychological being. Of course the primary content of the mother's representations and her ability to mentalise are inextricably linked. However, the raw and unprocessed words that mothers choose to use in describing their relationship seem to be at least as important in predicting relational outcomes than the processing of the cognitive and emotional experiences of mother and baby.

This research has raised many new questions and pointed to new directions for further research into early parent-infant relationships. Additionally, it has furthered our understanding and provided some potentially important new methods for the continuation of this work.

APPENDICES

APPENDIX 1: ADDITIONAL TABLES OF DATA

Table A.10. Distribution of Reflective Functioning demand question scores (Chapter 3)

	Clinical n = 118	Normative n = 56	Prison n = 149	Total N = 323
Clicked				
Mean (SD)	3.9 (1.5)	4.6 (1.7)	3.8 (1.4)	4.0 (1.5)
Range	0-7	2-9	1-8	0-9
Skewness	.39	.462	.588	.423
Kurtosis	-.235	-.526	.528	.125
Not clicked				
Mean (SD)	4.3 (1.7)	4.9 (1.6)	2.8 (2.0)	3.7 (2.0)
Range	-1-7	1-9	1-8	-1-9
Skewness	-.353	-.125	.769	.050
Kurtosis	.137	.688	-.444	-.858
Relationship affecting personality				
Mean (SD)	3.3 (1.5)	4.1 (1.4)	3.0 (1.5)	3.3 (1.5)
Range	0-7	1-8	1-7	0-8
Skewness	.303	.319	.467	.346
Kurtosis	-.136	.464	.244	-.190
Joy				
Mean (SD)	3.0 (1.3)	3.3 (1.3)	2.7 (1.3)	2.9 (1.3)
Range	0-7	1-5	0-8	0-8
Skewness	.449	-.211	.654	.412
Kurtosis	.268	-.791	.673	.065
Pain or difficulty				
Mean (SD)	3.2 (1.4)	3.7 (1.3)	2.9 (1.5)	3.1 (1.4)
Range	0-7	1-7	0-8	0-8
Skewness	.161	-.130	.689	.332
Kurtosis	-.563	-.142	.805	.060
Having child changed you				
Mean (SD)	3.3 (1.4)	3.2 (1.4)	2.9 (1.5)	3.1 (1.4)
Range	1-8	1-6	1-8	1-8
Skewness	.906	-.022	.537	.546
Kurtosis	.701	-.973	.221	.255

Table A.11 continued. Distribution of Reflective Functioning demand question scores (Chapter 3)

	Clinical n = 118	Normative n = 56	Prison n = 149	Total N = 323
Angry				
Mean (SD)	4.4 (1.6)	4.3 (2.0)	3.0 (2.0)	3.9 (2.0)
Range	1-9	1-8	0-8	0-9
Skewness	.233	.022	.459	.139
Kurtosis	-.375	-.693	-.816	-.767
Guilty				
Mean (SD)	4.1 (1.8)	4.3 (1.9)	3.4 (1.9)	3.8 (1.9)
Range	0-8	1-9	0-8	0-9
Skewness	-.099	.152	.270	.100
Kurtosis	-.855	-.581	-.729	-.790
Needy				
Mean (SD)	3.9 (1.6)	3.9 (1.8)	Not applicable	3.9 (1.4)
Range	1-8	1-9		1-9
Skewness	.220	.403		.310
Kurtosis	-.174	.151		.021
Child upset				
Mean (SD)	4.3 (1.6)	5.0 (1.5)	3.6 (1.7)	4.1 (1.7)
Range	0-8	2-8	0-8	0-8
Skewness	-.165	.096	.227	.006
Kurtosis	-.535	-.400	-.156	-.407
Rejected				
Mean (SD)	2.8 (1.8)	3.6 (2.0)	2.1 (1.6)	2.6 (1.8)
Range	1-8	1-8	1-8	0-8
Skewness	.858	.054	1.545	.925
Kurtosis	-.134	-1.065	2.022	-.076
Parents				
Mean (SD)	4.8 (1.9)	5.4 (2.0)	3.6 (1.8)	4.4 (2.0)
Range	0-9	2-9	0-8	0-9
Skewness	.024	-.153	.645	.227
Kurtosis	-.404	-1.157	-.044	-.739
Child's feelings about separation				
Mean (SD)	3.1 (1.4)	3.6 (1.6)	3.1 (1.5)	3.2 (1.5)
Range	0-7	1-8	1-7	0-8
Skewness	.478	.737	.462	.559
Kurtosis	.396	.666	-.180	.314

Table A.12 continued. Distribution of Reflective Functioning demand question scores (Chapter 3)

	Clinical n = 118	Normative n = 56	Prison n = 149	Total n = 323
Mother's feelings about separation				
Mean (SD)	3.6 (1.4)	4.0 (1.4)	3.5 (1.3)	3.6 (1.4)
Range	1-8	1-7	1-7	1-8
Skewness	.508	.033	.427	.391
Kurtosis	.123	-.458	.188	-.053
Losing				
Mean (SD)	2.6 (1.6)	2.8 (1.8)	Not Applicable	2.7 (1.7)
Range	1-6	1-8		1-8
Skewness	.442	.666		.543
Kurtosis	-1.091	-.399		-.746
Overall RF Score				
Mean (SD)	4.1 (1.4)	4.6 (1.4)	3.4 (1.4)	3.8 (1.5)
Range	0-7	1-8	1-8	0-8
Skewness	.002	-.038	.748	.285
Kurtosis	-.199	.374	1.087	-.016

Table A.13. Scores for measures of parental mental health (Chapter 4, extended version of Table 4.2)

Measure	Clinical	Normative	Total
CES-D: Mean (SD)	-.122	-.035	-.177* (p=.025)
CES-D caseness	-.036	-.086	-.138
Pearlin Mastery Scale	.122	-.127	.096
BSI: Somatization	-.180	-.104	-.201* (p=.012)
Obsession-Compulsion	.039	-.051	.048
Interpersonal Sensitivity	-.035	-.001	-.090
Depression	-.103	-.094	-.170* (p=.033)
Anxiety	-.079	-.091	-.145
Hostility	-.020	-.128	-.099
Phobic anxiety	-.130	-.051	-.163* (p=.042)
Paranoid ideation	-.136	-.046	-.160* (p=.046)
Psychoticism	-.111	-.162	-.186* (p=.020)
General Severity Index	-.074	-.070	-.072
BPI: Identity Diffusion	-.094	.137	-.034
Identity diffusion caseness	-.111	.230	-.009
Primitive Defenses	-.103	.128	-.061
Primitive Defenses caseness	-.173	.071	-.122
Impaired Reality Testing	-.241	.149	-.132
Impaired RT caseness	-.225	.185	-.088
Fear of Fusion	-.096	-.044	-.128
Fear of Fusion caseness	-.076	-.028	-.095
Cut-20 Score	-.119	.063	-.091
Cut-20 caseness	-.142	.268* (p=.050)	-.035
PSI-SF: Parental Distress	-.017	-.082	-.124
Parent-child dysfunctional int.	.081	.004	.008
Difficult Child	-.062	-.062	-.089
Total Stress	-.004	-.061	-.092

Table A.14. Correlations between overall RF and parental mental health (Chapter 4, extended version of table 4.3)

Measure	Clinical	Normative	Total
CES-D: Total	-.122	-.035	-.177* (p=.025)
CES-D caseness	-.036	-.086	-.138
Pearlin Mastery Scale	.122	-.127	.096
BSI: Somatization	-.180	-.104	-.201* (p=.012)
Obsession-Compulsion	.039	-.051	.048
Interpersonal Sensitivity	-.035	-.001	-.090
Depression	-.103	-.094	-.170* (p=.033)
Anxiety	-.079	-.091	-.145
Hostility	-.020	-.128	-.099
Phobic anxiety	-.130	-.051	-.163* (p=.042)
Paranoid ideation	-.136	-.046	-.160* (p=.046)
Psychoticism	-.111	-.162	-.186* (p=.020)
General Severity Index	-.074	-.070	-.072
BPI: Identity Diffusion	-.094	.137	-.034
Identity diffusion caseness	-.111	.230	-.009
Primitive Defenses	-.103	.128	-.061
Primitive Defenses caseness	-.173	.071	-.122
Impaired Reality Testing	-.241	.149	-.132
Impaired reality testing caseness	-.225	.185	-.088
Fear of Fusion	-.096	-.044	-.128
Fear of Fusion caseness	-.076	-.028	-.095
Cut-20 Score	-.119	.063	-.091
Cut-20 caseness	-.142	.268* (p=.050)	-.035
PSI-SF: Parental Distress	-.017	-.082	-.124
Parent-child dysfunctional interaction	.081	.004	.008
Difficult Child	-.062	-.062	-.089
Total Stress	-.004	-.061	-.092

* Significant at the .05 level (2-tailed)

Table A4: Pearson's correlations between ARR subscales, RF and socio-demographic variables (Chapter 6)

	ARR Hostile	ARR helpless	ARR Risk	PDI-RF
Total sample (N = 184)				
Child age	-.124	-.231**	-.171*	.063
Mother age	-.218**	-.007	-.209**	.273**
Child gender	.061	.047	.052	.028
Maternal education (post high-school qualification)	-.128	.064	-.142	.256**
Clinical and normative samples (N = 130)				
Mother IQ	-.150	-.142	-.216*	.355**
Primiparous	-.130	.079	-.094	.212**
Single parent household	.069	.164	.206*	-.225*
Eligibility for income support				

APPENDIX 4: ETHICAL APPROVAL FOR CLINICAL, NORMATIVE AND PRISON STUDIES

Camden & Islington Community Local Research Ethics Committee

Room 3/14
Third Floor, West Wing
St Pancras Hospital
4 St Pancras Way
London
NW1 0PE

25 May 2005

Prof Peter Fonagy
Chief Executive
Anna Freud Centre & University College London
21 Maresfield Gardens
London
NW3 5SD

Dear Prof Fonagy

Full title of study: *Helping parents with mental health problems to parent young infants: A randomised controlled trial of Parent-Infant Psychotherapy (PIP)*

REC reference number: 05/Q0511/47

Protocol number:

Thank you for your letter of 13 May 2005, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair and Ms Gillian Miles.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

The favourable opinion applies to the research sites listed on the attached form.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document Type:	Version:	Dated:	Date Received:
Application	1	23/02/2005	25/02/2005
Investigator CV	1	23/02/2005	22/03/2005
Protocol	1	23/02/2005	25/02/2005
Covering Letter	1	23/02/2005	25/02/2005
Summary/Synopsis	2	13/05/2005	17/05/2005
Compensation	1	20/07/2004	25/02/2005

Arrangements			Enclosure
Interview Schedules/Topic Guides	1 - Family Background Interview	23/02/2005	25/02/2005
Interview Schedules/Topic Guides	1 The Therapy Experience Interview	23/02/2005	22/03/2005
Copy of Questionnaire	Social Support Questionnaire		22/03/2005
Copy of Questionnaire	GHQ-28		22/03/2005
Copy of Questionnaire	Pearlin and Schooler Mastery Scale		22/03/2005
Copy of Questionnaire	Appendix N CES-D		22/03/2005
Copy of Questionnaire	BSI 18		22/03/2005
Copy of Questionnaire	BSI		22/03/2005
Copy of Questionnaire	PSI		22/03/2005
Copy of Questionnaire	1 - Child Health Record Review	23/02/2005	25/02/2005
GP/Consultant Information Sheets	1	18/02/2005	25/02/2005
Participant Information Sheet	2	13/05/2005	17/05/2005
Participant Consent Form	2	13/05/2005	17/05/2005
Response to Request for Further Information		13/05/2005	17/05/2005
Referrer Information Sheet	2	13/05/2005	17/05/2005
Inclusion/Exclusion	2	13/05/2005	17/05/2005
Referral Consent Form	1	23/02/2005	25/03/2005
GP letter	1	23/02/2005	22/03/2005
Grant Offer Letter		20/07/2004	23/03/2005

Management approval

The study should not commence at any NHS site until the local Principal Investigator has obtained final management approval from the R&D Department for the relevant NHS care organisation.

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Notification of other bodies

The Committee Administrator will notify the research that the study has a favourable ethical opinion.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

05/Q0511/47	Please quote this number on all correspondence
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With the Committee's best wishes for the success of this project,

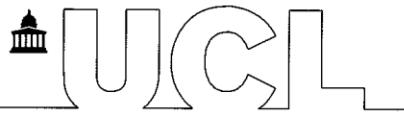
Yours sincerely,

Stephanie Ellis
Chair

E-mail: kathryn.simpson@camdenpct.nhs.uk

Enclosures *Standard approval conditions*

Site approval form (SF1)



Professor Peter Fonagy
Psychoanalysis Unit
Department of Clinical, Educational and Health Psychology
UCL

01 December 2008

Dear Professor Fonagy

Notification of Ethical Approval
Ethics Application: 1603/001: A study of early parent-infant relationships

I am pleased to confirm that your project has been approved by the UCL Research Ethics Committee for a period of 12 months from the commencement of the project, i.e. 1st December 2008.

Members made a minor comment in relation to the Informed Consent Form which should contain an additional bullet point relating to consent for video-recording. It was recommended that participants, who initially consented to being video-recorded, should be re-contacted at a later stage and given the option to withdraw their consent if they so wished. Participants should also be told how long the videotapes will be held and when they will be destroyed.

It was suggested that the stock phrase 'will not affect the standard of care you receive' should be removed from the Information Sheet as it was deemed to be inappropriate in the context of this project.

Members were also concerned about the negative and repetitive nature of the questionnaires which might lead the mothers to believe that they have a problem. It was recommended that the mothers involved in the research should be reassured that they have been recruited from a normative, non-clinical population and that this should be emphasised in the Information Sheet.

Approval is subject to the following conditions:

1. It is a requirement of the Committee that research projects which have received ethical approval are monitored annually. Therefore, you must complete and return our 'Annual Continuing Review Approval Form' PRIOR to the 1st December 2009. If your project has ceased or was never initiated, it is still important that you complete the form so that we can ensure that our records are updated accordingly.
2. You must seek Chair's approval for proposed amendments to the research for which this approval has been given. Ethical approval is specific to this project and must not be treated as applicable to research of a similar nature. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing the 'Amendment Approval Request Form'.

The forms identified above can be accessed by logging on to the ethics website homepage: <http://www.grad.ucl.ac.uk/ethics/> and clicking on the button marked 'Key Responsibilities of the Researcher Following Approval'.

3. It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. Both non-serious and serious adverse events must be reported.

Reporting Non-Serious Adverse Events

For non-serious adverse events you will need to inform Ms Helen Dougal, Ethics Committee Administrator (h.dougal@ucl.ac.uk), within ten days of an adverse incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Chair or Vice-Chair of the Ethics Committee will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Reporting Serious Adverse Events

The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator immediately the incident occurs. Where the adverse incident is unexpected and serious, the Chair or Vice-Chair will decide whether the study should be terminated pending the opinion of an independent expert. The adverse event will be considered at the next Committee meeting and a decision will be made on the need to change the information leaflet and/or study protocol.

On completion of the research you must submit a brief report (a maximum of two sides of A4) of your findings/concluding comments to the Committee, which includes in particular issues relating to the ethical implications of the research.

Yours sincerely



Sir John Birch
Chair of the UCL Research Ethics Committee

Cc: Michelle Sleed, The Anna Freud Centre

UCL Research Ethics Committee, c/o The Graduate School, North Cloisters, Wilkins Building
University College London Gower Street London WC1E 6BT
Tel: +44 (0)20 7679 7844 Fax: +44 (0)20 7679 7043
h.dougal@ucl.ac.uk
www.ucl.ac.uk/gradschool



The Graduate School
University College London
Gower Street London WC1E 6BT

Professor Leslie C Aiello
Head of the Graduate School

Tel: 020 7679 7844
Fax: 020 7679 7043
Email: gradschoolhead@ucl.ac.uk

17 March 2004

Mr Toby Etterley
42 Stannmore Road
Belvedere
Kent
DA17 6EB

Dear Mr Etterley

Re: Notification of Ethical Approval

Project ID: 0185/001: An evaluation of the implementation of the 'New Beginnings' course in Holloway prison

Further to the Secretary's email of 18 February 2004, the above research has been given ethical approval following review by the UCL Committee for the Ethics of Non-NHS Human Research for a period of 12 months from the commencement of the project (27 February 2004) subject to the following conditions:

1. It is a requirement of the Committee that research projects, which have received ethical approval, are monitored annually. Therefore, you must complete and return our 'Annual Continuing Review Approval Form' PRIOR to 27 February 2005. If your project has ceased or was never initiated, it is still important that you complete the form so that we can ensure that our records are updated accordingly.
2. You must seek Chair's approval for proposed amendments to the research for which this approval has been given. Ethical approval is specific to this project and must not be treated as applicable to research of a similar nature. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing the 'Amendment Approval Request Form'.

The forms identified above can be accessed by logging on to the ethics website homepage: <http://www.grad.ucl.ac.uk/ethics/> and clicking on the button marked 'Key Responsibilities of the Researcher Following Approval'.

3. It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. Both non-serious and serious adverse events must be reported.

Reporting Non-Serious Adverse Events.

For non-serious adverse events you will need to inform Ms Helen Dougal, Ethics Committee Administrator (h.dougal@ucl.ac.uk), within ten days of an adverse incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Chair or Vice-Chair of the Ethics Committee will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Reporting Serious Adverse Events

The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator immediately the incident occurs. Where the adverse incident is unexpected and serious, the Chair or Vice-Chair will decide whether the study should be terminated pending the opinion of an independent expert. The adverse event will be considered at the next Committee meeting and a decision will be made on the need to change the information leaflet and/or study protocol.

4. On completion of the research you must submit a brief report (a maximum of two sides of A4) of your findings/concluding comments to the Committee, which includes in particular issues relating to the ethical implications of the research.

Yours sincerely



Sir John Birch
Chair of the UCL Committee for the Ethics of Non-NHS Human Research

cc: Dr Pasco Fearon, Sub-Department of Clinical Health Psychology, UCL

APPENDIX 5: INFORMATION SHEETS AND CONSENT FORMS FOR CLINICAL, NORMATIVE AND PRISON STUDIES

Participant Information Sheet

A study of psychological help for mothers with young babies

You are being invited to take part in a research study. This information sheet is to answer some of your questions and to help you decide if you want to take part.

1. What is the purpose of the study and why have I been chosen?

We understand that you and your doctor/ health visitor/ or other professional have spoken about some concerns about how you are feeling, or how your baby is doing. This study will compare a service called parent-infant psychotherapy with the services that are normally offered in your area. Parent-infant psychotherapy is a psychological service for mothers and babies together. We would like to see how well it works compared to the services that are usually available. This study will help us to find out in what ways these different services will benefit different families.

2. Do I have to take part?

No, it is up to you to decide whether or not to take part. If you decide to take part you are still free to change your mind at any time and without giving a reason. A decision to pull out of the study at any time will not affect the standard of care you receive. If you would like to receive treatment but not take part in the study, the person who has referred you (such as your GP or health visitor) can discuss the treatment options with you.

3. What will I have to do if I take part?

If you decide to take part in the study, a researcher will see you and your baby together. This can be done either at the place where you were referred from, at the Anna Freud Centre, or in your home, whichever you prefer. During these interviews, you will be asked some questions about how you think you and your baby are doing and you will complete some questionnaires with the researcher.

Sometimes we might find out from this first interview that the study is not quite right for some mothers and babies. If this happens, the researcher will discuss this with you and you will not be included in the study. If you do still wish to receive some kind of help, you can discuss other options with the person who referred you to the study.

If you the study is suitable for you and it's something you are interested in doing, you will either receive parent-infant psychotherapy or you will receive what we call "treatment as usual". If you are placed in the "treatment as usual" group, you will continue to receive the care/treatment you have from your GP, health visitor, mental health team, psychiatrist, etc. If you are in the "parent-infant psychotherapy group", you will be offered appointments with a parent-infant psychotherapist in addition to the services you already use.

Because we don't know which of the two types of treatment is better for which people, we need to place people to both types of treatment and then compare the groups. The type of treatment group you are placed in will be done by a computer and you have a 50:50 chance of being in either group. You will not be able to choose which treatment group you go to. Once you have been placed in one of the two groups, the research psychologist will let you know which one you will be receiving.

By taking part in the study you and your child will be seen by a researcher 3 times in one year. The researcher will complete a set of questionnaires with you about how you are feeling, what it's like for you to be a parent, and about your experience of services you have used. We will also do a simple assessment of your baby's development by playing some games with him or her, and we will video-record you and your baby spending time together for a little while. At the 6-month follow-up, we will also ask if you are willing for your baby to take part in a study of infant brain development. During this we will record tiny electrical signals of your baby's brain using sensors on your baby's scalp. The sensor net doesn't produce any electricity, it only measures the electrical impulses your baby's brain naturally creates. The procedure is non-invasive and won't harm your baby in any way. For your baby it will be the same feeling as wearing a hat. This is voluntary and will be up to you to whether or not you would like your baby to take part. At the 12 month follow-up we will ask you and your child if you would be willing to do an experiment which involves you and your child being together and then separating for short time periods so that we can see how these separations are for your child. This is voluntary and it will be up to you if you would like to do it or not. These research assessments will probably take between one-and-a-half to two-and-a-half hours at each time point.

4. Will it be difficult to do?

Parents usually find the questionnaires quite interesting, and talking over their relationship with their baby is often enjoyable or helpful. Finding that problems have improved in later assessments is good to know. The babies enjoy the simple tests (which are like the ones

doctors use in Well Baby Clinic checks), and their parents enjoy seeing what their baby can already do.

5. What are the possible disadvantages and risks of taking part?

Sometimes the questionnaires and interviews used in this study can be a bit upsetting because they include asking about any problems you are having. However, this would probably be no more difficult than when you discussed the same things with your doctor or health visitor. It does take some time (about two hours at three different time points), and that might be difficult if you are very busy.

6. What are the possible benefits of taking part?

The study gives you the chance to be offered help with any problems you have for yourself and your baby. Both parent-infant psychotherapy and the community services that are normally offered have been very helpful for many parents and children. Also, the information we get from this study will help us in the future to provide the best services to other families with young children experiencing difficulties. So if you take part you will know that you are making a difference for others like you.

7. What if something goes wrong?

If you are not happy with anything about the research or if you want to talk to somebody about the study, you may contact any of the people listed at the end of this information sheet.

8. Will my taking part in this study be kept confidential?

The information you give will be kept very private. We make sure of this by keeping the questionnaires and videotapes locked away, and we will not write your name or any other personal details on any of these. All personal information you give us will be remain locked away and then destroyed after 5 years. When we report the results of the study, we will not include any personal details about any of the families that took part so that they can be recognised. Only the research staff will be able to look at the information you give us. Your General Practitioner will be sent a letter saying that you have agreed to take part in the study and which treatment group you have been put in. However, your doctor and practice staff will not need to be told about your assessments or what is discussed in the therapy, except in very rare cases if there is serious risk to you or your baby, which is not already known to your doctor. If that happened, of course we would talk to you about this as well as to your doctor.

9. Who is organising and funding the research?

This study is being conducted by the Anna Freud Centre and has been funded by the Big Lottery Fund. The study has been approved by a local research ethics committee.

10. Contact for Further Information

If you would like further information about the study, you can contact the Research Psychologist:

Michelle Sleed
Anna Freud Centre
21 Maresfield Gardens
NW3 5SD

Telephone: 020 74432216
Email: Michelle.Sleed@annafreud.org

Or you could contact the Chief Investigator of the study:

Prof Peter Fonagy
Anna Freud Centre
21 Maresfield Gardens
NW3 5SD

Telephone: 020 76795960
Email: P.Fonagy@ucl.ac.uk

Thank you for your time.

Patient Identification Number:

CONSENT FORM

A study of psychological help for mothers with young babies

Name of Researchers: Peter Fonagy, Michelle Sleed

Please initial box

1. I confirm that I have read and understand the information sheet dated 11/2008 (version 5) for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.

3. I understand that I will be videotaped with my baby as part of the research.

4. I agree for myself and my baby to take part in the above study.

5. I agree for the video of play with my baby to be used for teaching professionals about baby development and behaviour (optional).

Name of Parent

Date

Signature

Name of child

Researcher taking consent

Date

Signature

Title of Project:

The nature and quality of early parent-infant relationships in a normative population.

This study has been approved by the UCL Research Ethics Committee [Project ID Number]:

Name, Address and Contact Details of Investigators:

Prof Peter Fonagy
Anna Freud Centre
21 Maresfield Gardens
NW3 5SD

Telephone: 020 76795960
Email: P.Fonagy@ucl.ac.uk

Michelle Sleed
Anna Freud Centre
21 Maresfield Gardens
NW3 5SD

Telephone: 020 74432216
Email: Michelle.Sleed@annafrued.org

We would like to invite to participate in this research project.
(i.e. *you or your child*)

You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

Details of the Study:

This research will be carried out to examine in more detail the nature and quality of early parent-infant relationships in a normative population. We are currently collecting data from high risk and clinical populations of mothers and babies. This project will allow us to collect data from a non clinical population in order to compare. We are recruiting a sample of mothers and babies from mother-baby groups, clinics and children's centres and those mothers that chose to take part will be interviewed and asked to complete a set of questionnaires about how they are feeling, about their baby and about the relationship between them. We will also video record the mothers and babies playing together to assess the quality of parent-infant interaction.

It is entirely up to you to decide whether or not to take part. If you decide to take part you are still free to change your mind at any time and without giving a reason. A decision to pull out of the study at any time will not affect the standard of care you receive and you may withdraw your data from the project at any point up until it is transcribed for use in the final report. If you would like to access

services but not take part in the study, the researcher you are in contact with can discuss the service options with you.

If you decide to take part in the study, a researcher will see you and your baby together. This can be done either at the Anna Freud Centre, or in your home, whichever you prefer. During these interviews, you will be asked some questions about how you think you and your baby are doing and you will complete some questionnaires with the researcher.

By taking part in the study you and your child will be interviewed by a researcher 3 times in one year. The researcher will complete a set of questionnaires with you about how you are feeling and what it's like for you to be a parent. We will also do a simple assessment of your baby's development by playing some games with him or her, and we will video-record you and your baby spending time together for a little while. At the 12 month follow-up we will ask you and your child if you would be willing to do an experiment which involves you and your child being together and then separating for short time periods so that we can see how these separations are for your child. This is voluntary and it will be up to you if you would like to do it or not. These research assessments will probably take one-and-a-half to two hours at each time point. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form.

There are some disadvantages and risks of taking part, for example the questionnaires and interviews that will be used may be a bit upsetting because they include asking about any problems you are having. However the researchers carrying out the interviews will be trained and supervised in carrying out the interviews in a sensitive manner. The research team will also be able to put you in touch with the services and supports available in your area, should you need further support. In addition, it does take some time (about two hours at three different time points), and that might be difficult if you are very busy.

However, many parents find the opportunity to talk about their feelings about their baby and parenthood very helpful. Also, they often find the developmental assessments with their baby very interesting as they learn what the expected developmental milestones are. As we will be following these families up for a year, they find it interesting to see how things change for them over time.

The information you give will be kept very private. We make sure of this by keeping the questionnaires and videotapes locked away, and by only writing your assigned identity number not your name or any other personal details on these. Videos of mothers and infants will also be labelled with identity numbers and will be stored in a locked cabinet. All electronic data will be strictly anonymous and password protected. When we report the results of the study, we will not include any personal details about any of the families that took part so that they can be recognised. Only the research staff will be able to look at the information you give us.

It is up to you to decide whether to take part or not. If you decide to take part you are still free to withdraw at any time and without giving a reason.

All data will be collected and stored in accordance with the Data Protection Act 1998.

Informed Consent Form for in Research Studies
(*define target group i.e. Parent/Guardian/Child/Teacher*)

PLEASE COMPLETE THIS FORM AFTER YOU HAVE READ THE INFORMATION SHEET AND/OR LISTENED TO AN EXPLANATION ABOUT THE RESEARCH.

Title of Project:

The nature and quality of early parent-infant relationships in a normative population.

This study has been approved by the UCL Research Ethics Committee [Project ID Number]:

- Thank you for considering to take part in this research. The person organising the research must explain the project to you before you agree to take part.
- If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.
- I understand that if I decide at any other time during the research that I no longer wish to participate in this project, I can notify the researchers involved and be withdrawn from it immediately without penalty and without affecting the standard of care I receive.
- I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.

Participant's Statement

I

agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Information Sheet about the project, and understand what the research study involves.

Signed:

Date:

Researcher's Statement

I

confirm that I have carefully explained the purpose of the study to the participant and outlined any reasonably foreseeable risks or benefits (where applicable).

Signed:

Date:



Research Participant Information Sheet

A course for mothers and babies called 'New Beginnings' is currently being offered to mothers and babies in three UK mother-baby units. If this course is a success it is intended that it would be made available to other mums and their babies in UK prisons. Although the Unit at HMP (insert name) will not currently be holding the course, we need your help to find out about your experiences with your baby and whether this course would be useful to mums and babies.

What will I have to do if I take part?

If you agree to take part, you and your baby will meet with a researcher for about an hour on two occasions roughly a month apart. In both of these meetings:

- You will be asked some questions about your child and your relationship with her/ him. There aren't any right or wrong answers - only your ideas and opinions. This discussion will be tape recorded.
- You will then be videoed with your child for about 10 minutes. Again there is no right or wrong way; it is simply for us to see how you are together.

Two months later, you will meet with the same researcher again to discuss how things have been for you and your baby since the last meeting. This meeting will take no more than half an hour.

What do me and my baby get from it?

The discussions will focus entirely on you and your baby. It will be an opportunity to think and talk about your baby.

As a thank you for your help some photos of you and your baby will be printed from the video for you to keep.

Unfortunately we cannot provide the photographs if you choose not to participate, as we will not have the video clips of you and your baby.

Do I have to take part?

No, taking part is voluntary.

- If you do not want to take part in the research project you do not have to, nor do you have to give a reason. No pressure will be put on you to try and change your mind.
- If you start and then choose to pull out this will **not** affect your current prison sentence or your chances of parole. You can pull out of the research at any time.

Confidentiality

All the information you give and the video material **will be confidential** and used for the purpose of this study only. The data will be collected and stored away from the prison in accordance with the Data Protection Act 1998. It will be securely destroyed by December 2014.

The information will be used in a way that will not allow you or your baby to be identified individually. Prison authorities will not have access to any of this information.

However, if during our discussion we believe that you or your baby are at risk we will have to inform a responsible person in the mother-baby unit. If you have any questions or feel you need someone to talk things through with at any time during your participation in this study, please speak to your personal officer.

THANK YOU VERY MUCH FOR YOUR HELP



This study is approved by University College London's Committee on the ethics of non-NHS Human Research.

'New Beginnings' A course for Mothers and Babies

Evaluating the course Participant Information Sheet

What is the research for?

The 'New Beginnings' course is currently only being offered to mothers and babies in three UK mother-baby units. If this course is a success it is intended that it should be made available to other mothers and their babies in UK prisons. We need you to help us to see if it is a useful experience for you and your baby.

What will I have to do if I take part?

If you agree to take part, you and your baby will meet with a researcher for about an hour, just before the course starts and then again just after the course ends. In both of these meetings:

- You will be asked some questions about your child and your relationship with her/ him. There aren't any right or wrong answers - only your ideas and opinions. This discussion will be tape recorded.
- You will then be videoed playing with your child for about 10 minutes. Again there is no right or wrong way in this, it is simply for us to see how you are together.

Two months after you finish the course, you will meet with the same researcher again. This is to see how things have been for you and your baby since the course and the meeting will take no more than half an hour.

What do me and my baby get from it?

As well as getting a chance to think and talk about your baby, as a thank you for your help some photos of you and your baby together will be printed from the video stills for you to keep in your portfolio.

Unfortunately we cannot provide these if you choose not to participate in the research as we will not have the video clips of you and your baby.

Do I have to take part?

No, **taking part is voluntary**. You can do the course without taking part in this study. Taking part (or deciding not to) will **not** affect your prison sentence or chances of parole in any way. If you do not want to take part you do not have to give a reason. No pressure will be put on you to try and change your mind. You can pull out of the research at any time.

Please note:

- You can join the 'New Beginnings' course and choose not to take part in this study.
- If you choose to pull out this will **not** affect your current prison sentence or your chances of parole.

Confidentiality

All the information you give (including video material) **will be confidential** and used for the purpose of this study only. The data will be collected and stored away from the prison in accordance with the Data Protection Act 1998. It will be securely destroyed by December 2014.

The information will be used in a way that will not allow you or your baby to be identified individually. Prison authorities will not be able to link any information provided to you.

However, if during our discussion we believe that you or your baby are at risk we will have to inform a responsible person in the mother-baby unit.

If you have any questions or feel you need someone to talk things through with at any time during your participation in this study, please speak to your personal officer.

THANK YOU VERY MUCH FOR YOUR HELP

This study is approved by University College London's Committee on the ethics of non-NHS Human Research.



THE ANNA FREUD CENTRE

DEDICATED TO THE WELL-BEING OF CHILDREN

'New Beginnings' A course for Mothers and Babies Evaluating the course Informed Consent Form

Name: _____

	Yes	No
1. I have read and understood the attached information sheet and have been able to ask questions.		
OR: I have had the attached information sheet explained to me and have been able to ask questions.		
2. I understand that I can pull out of the study at any time without having to give reasons.		
3. I understand that joining in the study or pulling out of it will not affect my parole or the length of my sentence in any way.		
4. I am aware of and give consent to the tape recording of my discussion with the researcher.		
5. I am aware of and give consent to the video recording of my play with my baby.		
6. I agree with the publication of the results of this study in a Prison Service Report and research journal. I understand that I will not be identified in these publications.		
7. I give consent that I would like to be involved in this research project.		

Signature of Participant: _____ Date: _____

Signature of Researcher: _____ Date: _____

Approved by University College London's Committee on the Ethics of Non-NHS Human Research

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