

Does Maternal Reflective Functioning Relate to
Emotional Availability in Mother-Infant Interactions?

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Overview

This volume is divided into three parts. Part 1 presents a review of the literature regarding the predictive validity of the Adult Attachment Interview (George, Kaplan & Main, 1985) since van IJzendoorn's (1995) meta-analysis on the subject. The review replicates van IJzendoorn's, confirming the prediction of infant attachment by the AAI and to a lesser extent maternal behaviour. The literature reviewed highlights a move in research since 1995, away from focusing exclusively on maternal sensitivity in understanding the transmission of attachment from parent to child, to consider other potential mediators and moderators of attachment transmission.

Part 2 presents an empirical paper investigating the relationship between maternal reflective functioning and emotional availability in two high-risk samples of mothers and their infants. The samples were drawn from two projects investigating the effectiveness of clinical interventions, one in a community sample and the other in a prison population. Two research psychologists undertook data collection (M.S. & J.N.), whilst the author (J.G.) undertook the majority of data coding. One of the research psychologists plans to submit a PhD thesis (M. Slead 2009) based on some of the data used in the current empirical paper.

An association was found between maternal reflective functioning and emotional availability in the prison sample but not the community sample. However, reflective functioning could account for some of the variance in emotional availability identified between the two samples. Within the community sample, associations between emotional availability and parenting stress as well as emotional availability and aspects of maternal psychopathology were identified. Maternal IQ, which has

been neglected in past research regarding maternal representations and mother-infant interaction, was found to be strongly associated with maternal representations and emotional availability. Clinical implications and directions for future research are discussed.

Part 3 contains a critical analysis of the research process. Methodological choices are discussed and building on the discussion contained within the empirical paper, the clinical implications and directions for research are expanded upon. Part 3 ends with some personal reflections on the research conducted.

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Part 1: Literature Review

The Predictive Validity of the Adult Attachment Interview:

A review of the literature since van Ijzendoorn's (1995) meta-analysis

Abstract

This review investigates the literature concerning the predictive validity of the Adult Attachment Interview (AAI; George, Kaplan & Main, 1985) since van IJzendoorn's (1995) meta-analysis on this subject. The review replicates van IJzendoorn's (1995), confirming the AAI's prediction of infant attachment and, to a lesser extent, the prediction of maternal behaviour. There has been a move away from focusing exclusively on sensitivity as a mediator of attachment transmission towards recognition of broader maternal behaviours, infant behaviours and contextual factors involved in the process. The investigation of maternal representations may offer an opportunity to close the 'transmission gap' highlighted by van IJzendoorn (1995) and warrants further investigation. Methodological issues regarding the literature, directions for future research and clinical implications are discussed.

Background

Research has consistently shown that secure infants have more positive developmental, relational, and social outcomes than those with insecure attachments (see Thompson 1999 for a review, cited in Goldberg, Benoit, Blokland, & Madigan, 2003), whilst disorganized infant attachment is considered a major risk factor for the development of child psychopathology (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). The origins of different attachment relationships are therefore of interest to researchers and clinicians in seeking to develop interventions to promote optimal outcomes.

A central feature of attachment theory is the suggestion of an intergenerational transmission of attachment from parents' mental representations of attachment

experiences to infants through their interactions (Bowlby, 1973; Main, Kaplan, & Cassidy, 1985; both cited in Meins, 1999). Theoretically, autonomous mothers are expected to have secure infants, dismissing mothers avoidant infants, preoccupied mothers resistant infants, and unresolved loss or trauma to be associated with infant disorganization (Main, 1995, cited in Goldberg et al., 2003). The assumption being that mothers able to coherently represent their own thoughts and feelings in relation to attachment would be able to recognise and respond sensitively to attachment needs for comfort, safety, and proximity in their children (Main et al., 1985, cited in Meins, 1999). Higher parental sensitivity was therefore thought to be associated with secure attachment, lower sensitivity with insecure attachments (Ainsworth, Bell, & Stayton, 1971, 1974, cited in Meins, 1999).

In 1995 van IJzendoorn published a meta-analysis concerning the AAI's ability to predict firstly the quality of infant attachment and secondly the parents' responsiveness towards infants' attachment signals. Eighteen samples ($n=854$) were included in analyses of the AAI's prediction of infant attachment. In terms of three-way attachment classifications, AAI (dismissing, autonomous, and preoccupied) and Strange Situation (SS) (avoidant, secure, and resistant) classifications corresponded as theoretically predicted in 70% of dyads. The addition of unresolved and disorganized classifications lowered the correspondence to 63%. A combined effect size of $d=1.06$ was found in the predicted direction, with autonomous mothers more likely to have secure infants and non-autonomous mothers insecure infants. With regards to the AAI's prediction of maternal behaviour, 10 samples were identified ($n=389$) in the meta-analysis. A combined effect size of $d=0.72$ in the predicted direction was found, with autonomous mothers more responsive towards their infants

than non-autonomous mothers. van IJzendoorn (1995) confirmed the predictive validity of the AAI for infant attachment and parental responsiveness. Drawing on this meta-analysis and the meta-analysis of Goldsmith and Alansky (1987), only 23% of the direct association between parental state of mind and infant attachment was explained by maternal sensitivity/responsiveness (Pederson, Gleason, Moran, & Bento, 1998). The traditional explanation of the association between parental and child attachment through sensitive responsiveness was insufficient to fully explain the association. van IJzendoorn (1995) suggested a need for increasing sophistication in measures of responsiveness, although argued that even taking into account measurement error a substantial ‘transmission gap’ would remain to be explained. van IJzendoorn suggested temperamental characteristics, genetic transmission and other interactive mechanisms be investigated.

The aim of the current review was to draw together literature since 1995, which addresses the associations between adult attachment representations and infant attachment, and adult attachment representations and maternal behaviour. The review will consider developments in the investigation of attachment transmission and whether the ‘transmission gap’ identified by van IJzendoorn (1995) remains to be explained.

Search Strategy and Selection Criteria

Metalib was employed to search the following search engines: PsycINFO, PsycCRITIQUES, MEDLINE, JSTOR and Web of Science. The search terms “attachment,” “attachment behaviour,” “object attachment,” “attachment transmission,” “mother-infant interactions,” “mother-infant relations,” “mother-child

interactions,” and “mother-child relations,” were used in various combinations. This was followed by manual searches of the reference lists of articles retrieved in the computerised search. For inclusion in the current review, articles had to be published post-1995; not included in van IJzendoorn (1995); English language; and employ the AAI (George et al., 1985) and either the SS (Ainsworth, Blehar, Waters, & Wall, 1978) or Attachment Q-set (AQS; Waters & Deanne, 1985), OR the AAI and a measure of maternal behaviour. Since van IJzendoorn (1995) did not specifically seek to explore literature concerning the association between parental behaviour and infant attachment, this was also beyond the scope of this paper. A total of nineteen studies (n= 1282) meeting the inclusion criteria were elicited from the search (see Appendix 1 for description of the studies). Twelve of these studies addressed the AAI’s prediction of infant attachment, eight the prediction of optimal maternal behaviour and seven the prediction of atypical maternal behaviour. The data in the studies was translated into Relative Risk Ratios of the prediction of infant attachment classifications from AAI classifications. Effect sizes were calculated for the AAI’s prediction of infant attachment, prediction of maternal behaviour, prediction of infant behaviour and additional mediators of attachment transmission.

The results are divided into six sections: the literature concerning the AAI’s prediction of infant attachment security; attachment classifications; the AAI’s prediction of maternal behaviour; the prediction of other potential mediators of attachment transmission; the prediction of infant behaviour from adult attachment; and finally contextual factors and new approaches to studying attachment transmission are considered.

Adult Attachment as a Predictor Of Infant Attachment Security

Relative Risk Ratios were calculated for seven studies for the prediction of infant attachment security from adult attachment security (see Appendix 2, Table I). Effect sizes for ten studies are shown below in Table 1.

Table 1: Effect sizes for the AAI's prediction of SS secure verses insecure classifications

Study	n	Statistic	Effect Size (d)	
Aviezer, Sagi, Joels, & Ziv (1999)	43	0.04 ^a	0.06	
Bailey, Moran, Pederson & Bento (2007)	98	6.21 ^a	0.52	
Bernier & Dozier (2003)	64	0.37 ^b	0.80	
Dozier, Chase Stovall, Albus, & Bates (2001)	50	8.56 ^a	0.91	
Madigan, Moran & Pederson (2006)	82	9.04 ^a	0.70	
Pederson, Gleason, Moran, & Bento (1998)	60	19.14 ^a	1.37	
Raval et al. (2001)	96	0.34 ^b	SS	U/D+ = 0.72
		0.40 ^b	SS	U/D- = 0.87
		0.25 ^b	Security Scale	U/D+ = 0.52
		0.34 ^b	Security Scale	U/D- = 0.72
Sagi et al. (1997)	45	0.01 ^a	0.03	
Slade, Grienberger, Bernbach, Levy, & Locker (2005)	40	0.24 ^a	0.49	
Tarabulsky et al. (2005)	64	0.36 ^c	0.77	

Note: ^aChi-square value (1df), ^bPearson correlation, ^cPoint biserial correlation

In a sample of mothers and infants from an Israeli kibbutz, Sagi et al. (1997) and Aviezer, Sagi, Joels, and Ziv (1999) investigated attachment transmission. They failed to find a significant association between mothers' AAIs and infants' security of attachment (Relative Risk (RR) 1.10, 95% Confidence Interval (CI) 0.70 to 1.75, $n=45$, Sagi et al., 1997; RR 1.14, 95% CI 0.69 to 1.88, $n=48$, Aviezer et al., 1999). However, the administration of the SS outside of the laboratory setting it was intended for, suggests caution should be taken in interpreting these findings. In contrast to Sagi and his colleagues, a significant association between autonomous AAI classifications and secure infant attachment classifications (RR 3.61, 95% CI 1.24 to 10.54, $n=50$) was found by Dozier, Chase Stovall, Albus, & Bates (2001) in a sample of foster mothers and infants. Of note, Dozier et al.'s (2001) sample also differed from many in attachment research, as mothers were older (mean age, 47 years old) and predominantly African-American (64% of sample). This provides some support for the generalisability of findings on attachment transmission to older, African-American mothers who are non-biologically related. However, as with Sagi et al.'s (1997) study, caution regarding the use of the SS is needed, as the procedure was devised for infants aged between 12 and 18 months but was used in this study with infants up to 24 months. Despite this, analysis of data, which only included younger children, did not reveal significant differences in the conclusions drawn in the study. Avoiding this methodological limitation, but also using a sample of foster mothers, approximately half of who participated in the Dozier et al. (2001) study, Bernier and Dozier (2003) considered attachment transmission using continuous rather than dichotomous measures of attachment. The coherence of discourse scale in the AAI was used as an indicator of autonomy verses non-autonomy of attachment state of mind and an infant security scale was used ranging from 0 (least secure) to 5

(most secure). They found that the coherence of discourse scale significantly correlated with infant attachment security, higher scores for coherence of discourse were associated with higher security of attachment ($d = 0.80$).

Using a sample of Canadian, upper-middle class mothers, Pederson et al. (1998) found that security of adult attachment was positively associated with security of infant attachment (RR 3.79, 95% CI 1.80 to 7.98, $n=60$), which was replicated in a larger sample by Raval et al. (2001; RR 1.93, 95% CI 1.28 to 2.91, $n=96$). The prediction of infant attachment security was slightly lower when unresolved classifications were included within the secondary 'best fit' classification, for example unresolved-secure were classified as secure (RR 1.56, 95% CI 1.12 to 2.18, $n=96$). Raval et al. (2001) used the infant security scale also used by Bernier and Dozier (2003) in addition to SS classifications in analyses. Similar effect sizes were found, ranging from $d=0.52$ to $d=0.87$, when data was analysed in terms of different infant attachment measures and whether unresolved/disorganized classifications were included or excluded.

Adolescent mothers are often associated with high psychosocial risk factors, such as poverty or low educational attainment. Tarabulsky et al.'s (2005) sample of adolescent mothers was therefore of higher risk than the samples utilised in the studies above, and subsequently contained an overrepresentation of non-autonomous classifications compared with lower risk samples. Tarabulsky et al. (2005) replicated research with older mothers showing that mothers classified as autonomous were significantly more likely to have infants with higher security scores as assessed by the AQS (Waters, 1995) than non-autonomous mothers ($d=0.77$). Madigan, Moran

& Pederson (2006) and Bailey, Moran, Pederson and Bento (2007) also used samples of Canadian, adolescent mothers with low socio-economic status and replicated Tarabulsky et al.'s (2005) finding that autonomous attachment styles were associated with secure infant attachment ($d=0.70$, & $d=0.52$ respectively).

To summarise, samples of mother-infant dyads including foster mothers and adolescent mothers have consistently shown a significant association between maternal security of attachment and infant security of attachment; overall mean Relative Risk Ratio 2.25 (95% CI 1.20 to 4.46, $n= 479$). Cohen (1988, cited in van IJzendoorn, 1995) stated that effect sizes (d) of 0.2 be considered small, 0.5 moderate, and 0.8 large. The majority of effect sizes for the AAI's prediction of infant attachment security/insecurity were therefore 'moderate' to 'large'. Small effect sizes were found in smaller samples. The two smallest effect sizes were elicited from an Israeli sample used by Sagi et al. (1997) and Aviezer et al. (1999), the only studies to include concurrent assessment of adult and infant attachment.

Adult Attachment as a Predictor of Infant Attachment Classification

In terms of whether AAI classifications predict infant attachment classifications, the highest correspondence was found when classifications were made in terms of secure/insecure and autonomous/non-autonomous, for example Pederson et al. (1998) found a 80% correspondence and Raval et al. (2001) a 66.7% correspondence. In three-way attachment classifications, correspondence consistent with theoretical predictions ranged from 73.3% of dyads (Pederson et al., 1998) to 58% (Raval et al., 2001). A lower correspondence between AAI and SS classifications was found for four-way attachment classifications ranging from 52% (Dozier et al., 2001) to 47% (Bailey et al., 2007).

Avoidant and resistant attachment

(See Appendix 2, Table II & III for Relative Risk Ratios)

The prediction of avoidant SS classification from non-autonomous AAI classifications ranged from RR 1.06 (95% CI 0.10 to 11.52, n=50) to 3.05 (95% CI 0.87 to 10.65, n=60). The average Relative Risk Ratio was 2.06 (95% CI 0.63 to 8.94). Effect sizes (see Table 2) ranged from d=0.17 to d=0.42. The two larger effect sizes (Pederson et al., 1998, & Raval et al., 2001) were drawn from middle-class samples in contrast to the other studies.

Table 2: Effect sizes for non-autonomous AAI classifications prediction of avoidant infant attachment

Study	Total n	Chi- square statistic	Effect size (d)
Bailey, Moran, Pederson & Bento (2007)	98	1.34	0.24
Dozier, Chase Stovall, Albus, & Bates (2001)	50	0.34	0.17
Madigan, Moran & Pederson (2006)	82	1.37	0.26
Pederson Gleason, Moran, & Bento (1998)	60	2.51	0.42
Raval et al. (2001) (excluding unresolved/disorganized classifications)	96	2.52	0.33

The chance of non-autonomous AAI classifications predicting resistant SS classifications ranged from RR 1.14 (95% CI 0.36 to 3.63, n=60) to RR 2.40 (95% CI 0.80 to 7.22, n=96). The average Relative Risk Ratio was 1.72 (95% CI 0.49 to 7.49). Effect sizes (see Table 3) ranged from d=0.03 to d=0.28. Therefore a slightly

larger prediction of avoidant attachment from non-autonomous AAI classifications was found than for resistant attachment, though this was still a small effect size.

Table 3: Effect sizes for non-autonomous AAI classification's prediction of resistant infant attachment

Study	Total n	Chi- square statistic	Effect size (d)
Dozier, Chase Stovall, Albus, & Bates (2001)	50	0.06	0.07
Pederson Gleason, Moran, & Bento (1998)	60	0.01	0.03
Raval et al. (2001) (excluding u/d classifications)	96	1.85	0.28
Sagi et al. (1997)	45	0.01	0.03

Disorganized attachment (see Appendix 2, Table IV for Relative Risk Ratios)

In two Canadian samples of predominantly middle-class, married or cohabiting mothers, Raval et al. (2001) identified a Relative Risk Ratio of 1.43 (95% CI 0.52 to 3.90, n=96) and Goldberg et al. (2003) a Relative Risk Ratio of 2.63 (95% CI 1.61 to 4.29, n=197) that mothers classified with unresolved attachment had infants classified with disorganized attachment. Goldberg et al. (2003) found a non-significant but above chance likelihood that mothers with unresolved attachment would have infants with disorganized attachment regardless of unresolved secondary classifications. However, in a sample of mothers from the Netherlands, Schuengel, Bakermans-Kranenburg, and van IJzendoorn (1999) found that unresolved-insecure but not unresolved-secure classifications were associated with infant disorganized attachment (d=0.52. see Table 4 for effect sizes).

Within a sample of adolescent mother-infant dyads, Madigan et al. (2006) found a non-significant but above chance likelihood of a correspondence between mothers with unresolved attachment and infants with disorganized attachment (RR 1.68 95% CI 1.19 to 2.38, n=197). This was also found in Bailey et al.'s (2007) adolescent sample (RR 1.44, 95% CI 1.04 to 1.98, n=98). Another sample, potentially at more risk of disorganized attachment classifications, is that of children placed in foster care. Dozier et al.'s (2001) study using a sample drawn from this population found the strongest prediction of all the studies reviewed for the prediction of disorganized attachment from unresolved attachment (RR 2.77, 95% CI 1.45 to 5.30, n=50), equating to a medium effect size.

Lyons-Ruth, Yellin, Melnick and Atwood (2005) noted that the association between unresolved and disorganized attachment is generally weaker than the association between organized attachment styles. Although within the current literature review the mean Relative Risk Ratio of AAI prediction of disorganized attachment (RR 1.99 95% CI 1.16 to 3.57) was only slightly weaker than for organized attachment (combining mean RR ratios for AAI prediction of avoidant, resistant and secure SS classifications; 2.01 95% CI 0.78 to 6.83), the literature shows fewer significant associations between unresolved and disorganized classifications compared to those between autonomous and secure classifications. One explanation proposed by Lyons-Ruth et al. (2005) for the weaker correspondence between unresolved and disorganized attachment was that, in contrast to other AAI classifications, the entire AAI transcript is not considered for an unresolved classification, which is dependent upon the reporting of a loss or abuse experience. Lyons-Ruth et al. (2005) pointed to a further methodological issue resulting in a 'transmission block', for disorganized

attachment (Lyons-Ruth, Yellin, Melnick, & Atwood, 2003): the hypothesis that unresolved attachment styles result from loss or abuse experiences, whilst disorganized attachment results from caregivers' unintegrated fear which prompts controlling attachment behaviour in children (Main et al., 1985, cited in Meins, 1999). An infant with disorganized attachment who does not experience loss or abuse would then, in theory, not maintain a disorganized attachment strategy. Lyons-Ruth et al. (2005) subsequently developed a means of assessing disorganized-controlling strategies in adulthood on the AAI. The Hostile/Helpless state of mind (H/H) coding system scores discourse patterns throughout the transcript along six scales including "identification with a hostile caregiver," and "laughter at pain." The coding system describes individuals who display contradictory, unintegrated emotional evaluations of caregivers. A 'hostile stance' is said to be a continuation of a controlling stance in childhood and a 'helpless stance' a continuation of a position in childhood, which sought to help an impaired parent. Lyons-Ruth et al. (2005) applied the H/H coding system to 45 AAIs. Fifty-six percent of autonomous mothers and 50% of those classified as unresolved were also classified as H/H. H/H state of mind but not unresolved attachment status predicted disorganized attachment ($d=0.75$ and $d=0.10$ respectively).

The prediction of disorganized infant attachment from unresolved adult attachment ranged from $d=0.07$ to $d=0.60$. The strongest prediction of disorganized attachment came from the H/H coding system applied to the AAI ($d=0.75$). It was difficult to account for the heterogeneity in effect sizes, which could not be accounted for by design, means of sample recruitment, nationality of sample, or age of mothers or infants. It was particularly difficult to account for the effect size elicited by Raval et

al. (2001), although contextual factors may have been important in both Raval et al.'s (2001) and Lyons-Ruth et al.'s (2005) small effect sizes elicited from samples from opposite ends of the socio-economic spectrum. Within Raval et al.'s (2001) sample, 82.4% of mothers with unresolved attachment classifications were married or living with their partner and 88.2% worked a mean average of 37.4 hours per week. Therefore these mothers were likely to spend less time with their infants than single mothers who did not work, and the attachment status of the infant's other carers or other variables relating to this context may have been more important in the development of the infant's attachment style than the mother's unresolved attachment. Within Lyons-Ruth et al.'s (2001) sample all of the mothers had experienced trauma and came from an extremely low socio-economic background. Factors relating to this context, such as maternal mental health difficulties, may have a greater impact on the development of disorganized infant attachment, than mother's unresolved attachment. There are several other possible factors to consider with regards to the small relationship between unresolved and disorganized attachment identified by Lyons-Ruth et al. (2001). This sample differed from others in using a retrospective design and a clinical sample. Lyons-Ruth et al. suggested that their failure to identify a strong relationship between unresolved and disorganized attachment was due to a high prevalence of parenting dysfunction and adverse childhood experiences of mothers in this sample. Therefore the pervasive unintegrated states of mind in these mothers were identified by the H/H classification, whereas the unresolved classification target's lapses in the monitoring of reasoning and discourse, which for this sample may have been less relevant to consider.

Table 4: Effect sizes for the AAI's prediction of disorganized infant attachment

Study	AAI Classification	n	Statistic	Effect size (d)
Bailey, Moran, Pederson & Bento (2007)	U	98	3.81 ^a	0.40
Dozier, Chase Stovall, Albus, & Bates (2001)	U	50	3.21 ^a	0.52
Goldberg, Benoit, Blokland, & Madigan (2003)	U	197	13.01 ^a	0.53
Lyons-Ruth, Yellin, Melnick & Atwood (2005)	U	35	0.05 ^b	0.10
Lyons-Ruth, Yellin, Melnick & Atwood (2005)	H/H	41	0.35 ^b	0.75
Madigan, Moran & Pederson (2006)	U	82	6.71 ^a	0.60
Raval et al. (2001)	U	96	0.12 ^a	0.07

Note. ^aChi-square value (1 df), ^bpoint biserial correlation coefficient

In summary, the prediction of infant attachment classifications from AAI classifications is strongest for the dichotomous prediction of secure or insecure infant attachment. The prediction of avoidant and resistant infant attachment classifications from non-autonomous AAI classifications elicited small effect sizes. The prediction of disorganized attachment from unresolved adult attachment generally elicited slightly stronger effect sizes than for other insecure infant classifications. The largest effect size for the prediction of disorganized attachment came from the use of the H/H coding system rather than unresolved classification.

Adult Attachment as a Predictor of Maternal Behaviour

Following van IJzendoorn (1995), the prediction of maternal optimal behaviour was considered by contrasting autonomous and non-autonomous classifications, where the hypothesised difference in maternal behaviour is assumed to be most evident.

Optimal maternal behaviour (see Appendix 2, Table V for effect sizes)

In a sample comprised only of mother-son dyads, Slade, Aber, Belsky, and Phelps (1999) considered mothering behaviour in relation to positive affect, negative affect, sensitivity to child's needs and goals, and intrusiveness reflected in trying to assert parent's agenda and detachment. Adult attachment differences did not predict positive parenting. However, autonomous mothers displayed less negative mothering than non-autonomous mothers in interactions with their toddlers ($d = -0.37$). It is relevant to note that the study employed a naturalistic home observation, conducted when fathers were present, in contrast to other studies, which may have resulted in less observation of mothering behaviour and the failure to find autonomous classifications predicted positive mothering behaviour.

Pederson et al. (1998) sought to strengthen the power of their sensitivity measure by observing mothers when their attention was divided between infants (13 months old) and another task, common in daily life, and using a structured assessment of maternal behaviour, the Maternal Behaviour Q Set (MBQS) (Pederson & Moran, 1995). They found that autonomous mothers had significantly higher sensitivity scores than non-autonomous mothers ($d = 0.58$, 95% CI 0.45 to 0.71). Raval et al. (2001) also employed the divided attention task but considered a wider range of maternal behaviours in relation to younger infants (6 months old) than observed by Pederson

et al. (1998). Autonomous mothers were more responsive in terms of percentage of responses to possible signals ($d=0.58$, 95% CI -3.56 to 4.73), responsiveness to infant's distress ($d = 0.62$, 95% CI -4.48 to 5.72), and monitored their infants more ($d=0.58$, 95% CI 0.21 to 0.96) than mother's classified as non-autonomous. The authors suggest that mothers who monitor their infants more are more likely to notice signals and respond sooner. Raval et al. (2001) and Pederson et al. (1998) utilised similar samples of predominantly Caucasian, middle-class mothers. However, Raval et al. (2001) in contrast to Pederson et al. (1998) used a prospective design, preventing the suggestion that mother-infant interaction influenced AAI classification. This may offer an explanation for the slightly stronger effect size found by Pederson et al. (1998) for the association between autonomous attachment and maternal responsiveness as AAI's were administered after observations.

Aviezer et al. (1999) considered maternal behaviour using the Emotional Availability Scale (EAS) (Biringen, Robinson & Emde, 1993) in an Israeli sample. The EAS focuses on the emotional features of interaction and considers the role of mother and child in interactions. Aviezer et al. (1999) found that mothers classified as autonomous were more sensitive ($d= 0.77$, 95% CI 0.52 to 1.02) and better at structuring play ($d = 0.93$, 95% CI 0.76 to 1.11). Higher emotional availability scores were associated with secure infant attachments. Biringen et al. (2000) also employed the EAS (3rd edition, Biringen, Robinson, & Emde, 1998) with a North-American sample. They found that security versus insecurity of mother's attachment classifications predicted dimensions on the EAS, with the exception of maternal non-intrusiveness and maternal hostility. The association between AAI and maternal sensitivity resulted in the strongest effect size of all the studies reviewed concerning

AAI prediction of optimal maternal behaviour ($d=1.09$, 95% CI 0.63 to 1.55). It is important to note that Biringen et al. (2000) used a sample of older children (5-year-olds) compared with other studies in this review and caution should be taken in generalising from this study; however, Aviezer et al.'s (1997) findings support Biringen et al.'s (2000) conclusions that autonomous attachment is associated with more optimal emotional availability in mothers.

Consistent with research with older mothers, Tarabulsky et al. (2005) found autonomous classifications were associated with greater sensitivity in interactions ($d=0.87$) in a sample of adolescent mothers. Sensitivity mediated the relationship between maternal attachment and infant security when ecological variables were not considered. In another adolescent sample, Bailey et al. (2007) found that autonomous mothers displayed significantly more sensitivity in interactions than mothers classified as unresolved. Dismissing and avoidant attachment classifications were associated primarily with sensitive parenting, in contrast to research linking insecure attachment to insensitive caregiving. It may be that the sensitive interactions of dismissing mothers are restricted to adolescent samples or that dismissing mothers are more sensitive than research often indicates. The study failed to show that maternal behaviour mediated the link between autonomous states of mind and secure attachment found in lower risk samples (Pederson et al., 1998; Raval et al., 2001). However, maternal behaviour did mediate the association between unresolved and disorganized infant attachment. The only study reviewed, which considered directly unresolved and not-unresolved attachment and maternal sensitivity, found that unresolved mothers did not differ significantly in maternal sensitivity from those classified as not-unresolved (Jacobvitz, Leon, & Hazen, 2006).

This suggests that other types of maternal behaviour may be important in the transmission of unresolved attachment.

Frightening atypical maternal behaviour (see Appendix 2, Table VI for effect sizes)

It has been suggested that unresolved attachment relates to elevated levels of frightening/frightened (FR) or atypical maternal behaviour due to sudden changes in consciousness prompted by intrusive traumatic memories (Main & Hesse, 1990, 1992; cited in Goldberg et al., 2003; & Schuengel et al., 1999 respectively). A meta-analysis concerning disorganized attachment concluded that “frightening parental behaviour may play an important role” (van IJzendoorn et al., 1999; 225) in the origins of disorganized attachment but that this was not the only causal factor.

In a sample of mothers from the Netherlands, Schuengel et al. (1999) considered the role of FR behaviour as assessed by the FR coding system (Main & Hesse, 1992) in disorganized attachment transmission. Unresolved attachment overall was associated with FR behaviour ($d=0.08$, 95% CI -0.25 to 0.40). However, this association was related more strongly to mothers classified as unresolved-insecure, who had the highest FR behaviour scores of all mothers, whilst mothers classified unresolved-secure displayed the lowest FR scores. This may have contributed to a weaker overall association between unresolved attachment and FR behaviour than found in other studies. The difference between unresolved-secure and unresolved-insecure mothers was not accounted for by group differences such as maternal depressive symptoms. It appeared that maternal security reduced the risk posed by unresolved loss. Although the results need to be interpreted with caution due to the small sample, in which only 20 of the 85 mothers were classified with unresolved

attachment, one explanation of the results is that secure mothers monitor their infants more closely than insecure (see Raval et al., 2001) and therefore experience fewer intrusions of thoughts relating to unresolved trauma. Schuengel et al. (1999) found that mothers with unresolved loss reported more dissociative experiences on the Dissociative Experiences Scale (Bernstein & Putnam, 1986) than mothers without unresolved loss; however, this was not significantly associated with FR behaviour contrary to Main and Hesse's (1992) theory. In a middle-class, North-American sample of mother-infant and father-infant dyads, Abrams et al. (2006) found that the Dissociative-FR subscale of the FR coding system (Main & Hesse, 1998) was the central predictor of infant disorganization and the only sub-scale significantly related to unresolved adult attachment.

In contrast to Schuengel et al. (1999) and Abrams et al. (2006), Jacobvitz et al. (2006) used a prospective design to investigate FR behaviour. A prospective design ensured that the birth of a child could not be said to have triggered fear, resulting in an unresolved classification and FR behaviour. Jacobvitz et al. (2006) found that mothers classified as unresolved displayed higher FR than those not unresolved, with a large effect size ($d=1.01$). In contrast to Schuengel et al. (1999) unresolved-secure mothers did not score lowest on FR of all mothers, but did display significantly lower FR than those classified as unresolved-insecure. Jacobvitz et al. (2006) suggested that this was due to differences in observational context with Schuengel et al. (1999) using a naturalistic observation, arguably of lower stress to mother and infant, than that employed in this study, which required mothers to change babies' nappies and clothes as part of the observation. This is supported by the fact that Abrams et al. (2006) also used a mildly stressful laboratory observational task, resulting in a

stronger effect size than Schuengel et al. (1999) of the prediction of FR from unresolved attachment ($d=1.12$) regardless of the sex of parent.

Goldberg et al. (2003) also used a prospective design to investigate unresolved attachment and a broader measure of maternal behaviour than the FR coding system, the Atypical Maternal Behaviour Instrument for Assessment and Classification (AMBIANCE) (Lyons-Ruth, Bronfman, & Parsons, 1999). The AMBIANCE considers extreme insensitivity and actions that reflect an inability to repair disrupted interactions. Mothers classified as unresolved exhibited more atypical behaviour than mothers who were not unresolved regardless of secondary classification as secure or insecure ($d=0.45$, 95% CI -1.85 to 2.76). The results were consistent with Jacobvitz et al. (2006) with a small difference between unresolved-secure and unresolved-insecure mothers in terms of caregiving behaviour, the latter displaying less optimal interactions with their infants. Goldberg et al. (2003) suggested that the transmission of unresolved/disorganized attachment may be better investigated in high-risk samples, containing higher proportions of these attachment classifications, than in the low-risk sample used in this study.

Following Goldberg et al.'s (1999) suggestion, several studies have used samples of adolescent mothers with low socio-economic status. Bailey et al. (2007), using a divided-attention task, found that mothers classified as unresolved displayed a higher mean level of disengaged behaviour ($d=0.77$, 95% CI 0.69 to 0.84) and more non-synchronous behaviour ($d=0.31$, 95% 0.27 to 0.36) than not-unresolved mothers. Madigan et al. (2006) investigated atypical maternal behaviour in a sample of adolescent mothers. In contrast to Goldberg et al. (1999), the AMBIANCE measure

was used outside of the SS to reduce a potential source of common method variance that would contribute to strong associations between infant attachment and maternal behaviour when these are assessed in the same setting. However, mother-infant observations were conducted immediately after the SS, which may have resulted in less optimal interactions than usual with both mother and child potentially stressed and distressed by the SS. Therefore the assessment of maternal behaviour has questionable validity. However, Madigan et al. (2006) found that mothers with unresolved classifications were more likely than those with not-unresolved classifications to show disrupted patterns of interaction with infants ($d=0.56$) with a slightly stronger effect size in the context of play without toys compared to play with toys. In contrast to Goldberg et al. (2003), Madigan et al. (2006) found evidence of the mediation effect of maternal behaviour for adult to infant attachment, although only in the play session without toys. The authors suggest that playing without toys may be more stressful and increase the likelihood of collapse in behavioural and attentional strategies. This may indicate that impoverished environments lacking play resources may increase the risk of atypical maternal behaviour in interactions, as resources appear to support infant-mother interaction. Lyons-Ruth et al. (2005) also used a low-income sample and the AMBIANCE measure. They found that an AAI classification of H/H state of mind regarding attachment significantly related, whilst unresolved attachment was only marginally related to higher rates of maternal disrupted affective communication ($d=0.85$ and $d=0.70$ respectively) as observed within the SS procedure. Maternal disrupted affective communication mediated the relationship between H/H states of mind and infant disorganization.

In summary, the prediction of maternal behaviour from the AAI was variable, possibly reflecting the variety of approaches used to measure behaviour. Within optimal maternal behaviour the majority of effect sizes were small: nationality of sample, socio-economic status, or age of mothers, could not account for variability in effect sizes. There was some indication that samples of older children appeared to elicit stronger effect sizes, as did the use of a measure of emotional availability, concurrent assessment of AAI and maternal behaviour, and observations outside of the home (Aviezer et al., 1999; Biringen et al., 2000). However, Tarabulsky et al. (2005) identified a large effect size, administering the AAI following observations of maternal behaviour at home using the MBQS in a sample of young infants (6 and 10 months old). There was a suggestion that studies employing longer observations were associated with smaller effect sizes, for example Bailey et al. (2007) assessed behaviour over a 2-hour period whereas Biringen et al (2000) used 20-minute assessments. However, Tarabulsky et al. (2005) once more proved an exception, basing their assessments of maternal behaviour on two home visits.

Regarding FR and atypical maternal behaviour the effect sizes were predominantly moderate to large. Socio-economic status, whether mothers were adolescents, and the type of design or measures used, could not account for the variability in effect sizes. The largest effect size identified by Abrams et al. (2006) was elicited from the smallest sample size and may therefore be misleading. The smallest effect size (Schuengel et al., 1999) was found in a study, which differed from others as it was conducted outside of North-America or Canada in a unique sample of mothers, all of whom had experienced loss.

Adult Attachment as a Predictor of Mediators of Attachment Transmission

Other Than Sensitivity

Three studies considered alternative mediators of attachment transmission to the variable of maternal behaviour (see Appendix 2, Table VII for effect sizes). Slade et al. (1999) considered maternal representations as assessed by The Parent Development Interview (PDI) (Aber, Slade, Berger, Bresgi, & Kaplan, 1985). The PDI codes affective features and underlying structure of mother's representations of their experiences in relation to their child. Slade et al. (1999) found that mothers classified as autonomous on the AAI were higher on the 'joy-pleasure/coherence' subscale on the PDI than other mothers ($d=0.52$, 95% CI 0.36 to 0.67) and those scoring higher on this sub-scale were more 'positive' in mothering of their 15 to 21-month-old sons. Dismissing mothers scored higher on the 'anger' sub-scale of the PDI which related to less positive mothering. Adult attachment was not the sole factor in determining the nature of maternal representations of the relationship with child. The authors suggested that conducting observations with fathers present and only including sons in the sample may have contributed to the failure to identify maternal representations as a mediator of adult attachment to mothering behaviour.

Similar to Slade et al.'s (1999) suggestion that maternal representations of their child mediated the association between attachment and caregiving behaviour, Meins (1999) proposed the concept of parental mind-mindedness as mediating the association between parent attachment and infant attachment. She suggests that mothers classified as autonomous are 'mind-minded,' which indicates a proclivity to treat infants as individuals with minds and a capacity to perceive their child's point of view. High mind-mindedness would promote sensitive parenting and facilitate

secure attachment. Bernier and Dozier (2003) investigated maternal mind-mindedness and attachment transmission in a sample of foster mothers and children (12 to 24-months-old). A mother's tendency to use mental features in describing her child (mind-mindedness) was negatively related to security of maternal attachment ($d=0.61$). Mind-mindedness accounted for the totality of the predictive power of adult attachment on infant attachment. The authors argued that using mental state language regarding young infants indicated poor attunement, impacting on caregiving behaviour. Although no objective measure was made of the accuracy of mother's statements or maternal behaviour, Bernier and Dozier (2003) concluded that maternal mind-mindedness explains the intergenerational transmission of attachment.

Using a similar concept to mind-mindedness, Slade, Grienemberger, Bernbach, Levy and Locker (2005) considered the role of Reflective Functioning (RF) in attachment transmission. RF relates to the understanding of intersubjective and interpersonal experiences. It includes an ability to treat the person, whose behaviour you wish to understand, as a rational agent with beliefs and desires (Dennett, 1987, cited in Fonagy & Target, 2005) as in mind-mindedness. However, more than mind-mindedness, parental-RF includes an ability to reflect on one's own mental states and concurrently hold the infant's internal experiences in mind. This facilitates the provision of a secure environment for the child. Maternal reflective functioning is measured by the PDI (Aber et al., 1985) and scored by an addendum to Fonagy, Target, Steele, and Steele's (1998) reflective functioning scoring manual (Slade, Bernbach, Grienemberger, Levy & Locker, 2004). Slade et al. (2005) found that mothers classified as autonomous displayed significantly higher RF than all other

mothers, and mothers classified as unresolved displayed the least RF ($d=1.38$, 95% CI 0.96 to 1.80). A preliminary analysis found that RF largely mediated the relationship between adult and child attachment.

Adult Attachment as a Predictor of Infant Behaviour

Several of the studies found in the literature search included measures of infant behaviour (see Appendix 2, Table VIII for effect sizes). Aviezer et al. (1999) and Biringen et al. (2000) found that infants of mothers classified as autonomous displayed significantly higher mean emotional responsiveness scores ($d=0.80$, 95% CI 0.53 to 1.06 and $d=0.96$, 95% CI 0.64 to 1.28 respectively) and higher parent involving behaviour ($d=0.54$, 95% CI 0.16 to 0.92; and $d=0.79$ 95% CI 0.45 to 1.12 respectively) than infants of mothers classified as non-autonomous. Raval et al. (2001) failed to find any significant relationships between AAI classifications and a range of infant behaviours including number of clear or possible requests and distress requests. It may be that the emotional features of dyadic interaction are more strongly predicted by the AAI than the indexes of infant behaviour considered by Raval et al. (2001).

In relation to infants of unresolved mothers, Bailey et al. (2007) found that, within their sample of adolescent mothers, the infants were significantly less harmonious in interactions than infants of other mothers, and showed a preference for visitors over their mother compared to infants of autonomous mothers. No significant association was found between AAI classifications and infant sad or withdrawn profile.

Contextual Factors and New Approaches to Understanding Attachment

Transmission

Contextual factors were considered in several of the studies elicited in the literature search. Sagi et al. (1997) found a significant interaction between maternal attachment, infant attachment and sleeping arrangement in an Israeli kibbutz sample. There was a 76% correspondence between mother and infant attachment classifications in dyads where infants slept at home, and 40% correspondence when infants slept in communal environments with a greater proportion of insecure infants in communal sleeping arrangements. All other variables were controlled for, including quality of day-time care, which led Sagi et al. (1997) to suggest that the unfamiliarity of night-time carers in communal sleeping environments precluded responsive caregiving, resulting in greater numbers of insecurely attached infants. Aviezer et al. (1999) found that mothers of infants in communal settings were less optimal in their structuring of interactions with infants than those with infants sleeping at home. Therefore there was not a simplistic link between lower sensitivity of mothers of infants in communal settings to account for the higher proportion of insecurely attached infants, as traditional interpretations of attachment theory may suggest (e.g. Ainsworth et al. 1971, 1974). Sagi et al. (1997) and Aviezer et al. (1999) concluded that communal sleeping arrangements impeded attachment transmission.

Tarabulsky et al. (2005) considered several contextual factors in attachment transmission in an adolescent sample. They found an inverse association between satisfaction with paternal support and infant security, and a marginal association between lower depression and higher infant attachment security. Tarabulsky et al.

(2005) suggested that paternal support may be inversely related to attachment if fathers possess personal risk factors such as drug use, which exacerbate difficulties in the household and may also distract mothers from accurately perceiving and responding to infant signals; maternal depression may also interfere with this capacity. Maternal education was significantly associated with infant attachment security and maternal sensitivity. Tarabulsy et al. (2005) concluded that there were two paths to infant attachment security mediated by maternal sensitivity, one from maternal attachment and the other from socio-economic factors indexed by maternal education. This infers that greater maternal cognitive competence relates to increased ability to perceive infant signals accurately. This was supported by Biringen et al. (2000); more highly educated mothers were more optimal in several dimensions of emotional availability than less educated mothers. The results suggest that attachment transmission needs to be considered within the environmental context within which it is embedded.

Tarabulsy et al. (2005) amongst others (Pederson et al., 1998 & Raval et al., 2001) noted that maternal attachment contributed significantly and independently of sensitivity to infant attachment security, contrary to a mediation model of attachment transmission through sensitivity. Atkinson et al. (2005) re-analysed Pederson et al.'s (1998) and Raval et al.'s (2001) samples and found that levels of sensitivity appeared to facilitate transmission of attachment in matched mother-infant dyads. In dyads that were mis-matched, for example secure mothers with insecure infants, maternal sensitivity was more consistent with infant than maternal attachment. The authors concluded that sensitivity was a moderator able to block transmission of insecure

attachment, or if lacking block transmission of secure attachment, suggesting a need to broaden traditional mediation models of attachment theory.

Another study to take a different approach in investigating attachment transmission was Bailey et al. (2007), which employed Latent Class Analysis (LCA) and a relationship-oriented approach (see Bergman, 2002; Bergman & Magnusson, 1997), alongside a variable-oriented approach. LCA identified two dominant dyadic groups: one class corresponded primarily with organised attachment patterns and the other disorganized attachment. The first class was descriptive of 45% of the sample and composed primarily of sensitive/harmonious dyads, mothers classified as not unresolved and securely attached infants, although it did contain some disorganized relationships. The second class accounted for 55% of the sample, primarily including dyads characterised as disengaged, non-synchronous mothers lacking sensitivity and infants who either preferred interaction with strangers or were sad/withdrawn towards mothers. The mothers in this class had predominantly non-autonomous attachment representations and the infants disorganized attachment relationships. The LCA identified a complex picture of attachment transmission in this sample of adolescent mothers and suggests a need for methods other than multivariate statistical analysis to further investigate attachment transmission.

Discussion

The review of research since van IJzendoorn's (1995) meta-analysis replicates his conclusion that there is a strong association between adult and infant attachment status with autonomous mothers more likely to have securely attached infants than insecurely attached infants. The only studies failing to find a significant association

between maternal and infant attachment security used an Israeli Kibbutz sample (Aviezer et al. 1999 & Sagi et al, 1997). It may be that the attachment transmission in this unique context differed from that in the Canadian and North-American samples reviewed, which is supported by the finding that attachment transmission appeared to be blocked in this sample by communal sleeping contexts. An alternative explanation for the weaker association between AAI and SS may be that the samples were relatively small compared to others reviewed, and the SS was administered outside of the laboratory setting for which it was intended; indicating that the results may have less validity than others reviewed.

Few of the studies reviewed contained primary data of organized insecure attachment classifications restricting the investigation of the predictive validity for these. The strength of the association between the AAI and insecure infant attachment was generally weaker than between AAI and secure infant attachment. Slightly stronger associations between unresolved and disorganized attachment classifications were found than for other insecure classifications, although there was considerable heterogeneity in effect sizes which was difficult to account for. Contextual factors appeared important in the strength of association between unresolved and disorganized attachment; the smallest effect sizes were found in a sample of unresolved mothers who appeared to have less daily contact with their infants (Raval et al., 2001) and a sample from an extremely deprived background (Lyons-Ruth et al., 2005). In addition, Schuengel et al. (1999) suggested the secondary attachment classifications may be important in whether unresolved attachment is transmitted from parent to infant, finding that only unresolved-insecure attachment predicted disorganized attachment. Lyons-Ruth et al. (2005) found that H/H state of mind but

not unresolved attachment predicted disorganized attachment. Further research therefore appears warranted in relation to the secondary classifications given to mothers with unresolved classifications and to investigate the H/H coding system as a predictor of infant attachment in larger samples than used by Lyons-Ruth et al. (2005).

In relation to the AAI's prediction of maternal behaviour, autonomous attachment was associated with greater sensitivity in interactions (e.g. Pederson et al., 1998; Tarabulsky et al., 2007) and less disengaged interactions (Bailey et al., 2007) than mothers with other classifications. Autonomous attachment was also associated with more optimal emotional availability in mothers and infants (Aviezer et al., 1999; Biringen et al., 2000). Compared to the overall effect size, van IJzendoorn (1995) calculated ($d=0.72$) there was great variability in the strength of the associations found between AAI and optimal maternal behaviour in this review, and the majority of effect sizes were small. There was a failure to identify clear explanations for this variability between studies. Attempts have been made to strengthen the measurement of sensitivity (Pederson et al., 1998; Raval et al., 2001) but this has failed to close the transmission gap. van IJzendoorn's (1995) conclusion that measurement error alone would not account for the transmission gap appears to be supported in this review and other variables such as infant temperament may be important for further consideration to account for this transmission gap.

In terms of unresolved/disorganized attachments, there was no relation to maternal sensitivity (Jacobvitz et al., 2006; van IJzendoorn et al., 1999), although both FR behaviour and atypical maternal behaviour were predicted by an unresolved AAI

classification in the majority of the studies with a moderate to large effect size. Schuengel et al. (1999) qualified this by stating that only unresolved-insecure attachment classifications predicted increased FR behaviour, though others did not replicate this (Goldberg et al., 2003; Jacobvitz et al., 2006). The smallest effect size was found by Schuengel et al. (1999), one possible explanation of this was that the sample was Dutch in contrast to the other North-American and Canadian studies. As noted above, it may be that the process of attachment transmission differs cross-culturally. Lyons-Ruth et al. (2005) also found a weak, albeit significant, association between unresolved attachment and atypical maternal behaviour. However, they identified the strongest effect size of all the studies reviewed for atypical maternal behaviour in terms of the prediction of behaviour from hostile/helpless state of mind regarding attachment. The authors suggest that, regardless of attachment classification, mothers with trauma histories will display a mixture of hostile and helpless states of mind to manage their affective experiences, resulting in less optimal maternal behaviour (Lyons-Ruth et al., 2005).

Overall the picture that emerges from the literature reviewed is that attachment transmission is more complex than the model put forward by van IJzendoorn (1995) and his predecessors (e.g. Ainsworth et al., 1971, 1974; Bowlby, 1969, 1973, 1980. all cited in Meins, 1999) who suggested that the transmission of attachment is primarily mediated from parent to child by maternal sensitivity. Sensitivity contributes to infant attachment both independently of and related to adult attachment (Pederson et al., 1998; Raval et al., 2001) and may also be a moderator of attachment transmission able to prevent the transmission of insecure attachment (Atkinson et al., 2001). Atypical maternal behaviour and contextual factors are also

important in determining whether attachment is transmitted from parent to child (Sagi et al., 1997; Tarabulsky et al., 2005). The role of maternal representations of their infants, in terms of RF and maternal mind-mindedness (Bernier & Dozier, 2003; Slade et al., 2005), appears to be an important development in understanding how representations translate into behaviour. Fonagy and colleagues suggest that a mother's capacity for reflective functioning will be evidenced in her AAI in an ability to consider past attachment experiences in terms of mental states connected to the behaviour of self and others. This in turn will be associated with a capacity to reflect on her infant's affective experiences and respond in a sensitive way, the first step to the promotion of a secure infant attachment relationship. A mother with less reflective functioning capacity is thought to have less ability or desire to reflect on her infant's experience and thus respond sensitively to their needs (Fonagy et al., 1995; Fonagy & Target, 2005). These hypotheses are supported by a preliminary mediational analysis showing that RF mediated the association between AAI and SS classifications with mothers classified as autonomous more likely to have higher RF and secure infants (Slade et al., 2005).

Theories specifically related to the transmission of disorganized attachment are compatible with Fonagy and colleagues' accounts of attachment transmission. Main and Hesse (1990, 1992) suggest that, for mothers with unresolved loss/trauma experiences, unresolved affects and memories may be triggered by infants in a dissociative process, and impede mother-infant interactions. This is supported by the finding that the dissociative-FR sub-scale was the most strongly associated FR sub-scale with unresolved and disorganized attachment (Abrams et al., 2006). However, research is still needed into the role of dissociative processes in disorganized

attachment transmission, as Schuengel et al. (1999) found that the number of dissociative experiences reported by mothers was unrelated to FR or infant disorganization. There is a hypothesis that the experience of inconsistent behaviour from caregivers, due to dissociative experiences or hostile/helpless state of minds (Lyons-Ruth et al., 2005), results in an absence of an organized response to stressful situations in infants. Related to Fonagy and colleagues' accounts of attachment transmission, it seems logical that mothers overwhelmed by their own affective experience may be unable to maintain a stance in which the infant is seen as a separate individual with their own needs and be unable to respond optimally to their infants.

Limitations

In order to assess the predictive validity of the AAI, adult attachment would need to be assessed pre-natally to avoid the potential influence on attachment representations of having children and the corresponding changes parenthood brings. However, few of the studies reviewed employ a prospective design, for example Lyons-Ruth et al. (2005) administered AAIs five years after the SS procedure was conducted.

Therefore the influence of ongoing mother-infant interactions on mother's processing of her own attachment experiences could not be ruled out (Schuengel et al., 1999).

A limitation of the majority of the studies was that they were correlational and a range of variables could therefore have impacted on attachment or behaviour such as maternal mental health. This suggests that caution should be taken in conclusions regarding the predictive validity of the AAI for infant attachment or maternal behaviour. Furthermore, it is important to emphasise that although AAIs, maternal behaviour and SS classifications appear to correlate in the studies reviewed this does

not necessarily mean that adult attachment causes differences in maternal behaviour and infant attachment.

There are a number of other methodological limitations of studies, which impede cross-comparison. Samples across studies varied greatly, for example in terms of sample size, mothers' ages, and infants' ages. For example, Raval et al. (2001) observed infants at 6 months old, whilst Biringen et al. (2000) assessed mother-infant interaction when children were 5 years old. Maternal behaviour important in attachment transmission at one time point may be different from behaviour at another point. Pederson et al. (1999) suggested that earlier observation of mother-infant dyads may offer greater insight into attachment transmission before the infant has adapted to the care-giving provided. Differences across studies in how maternal behaviour was assessed and the context of observations highlights both the difficulty of operationalising the concept of caregiving behaviour and the need for caution in drawing conclusions across studies. Greater variation in how optimal maternal behaviour compared to atypical maternal behaviour was measured may have contributed to greater variance in the effect sizes calculated in the AAI's prediction of the former than latter. With greater uniformity of measurement tools, the AAI's ability to predict optimal maternal behaviour would become clearer.

Despite the differences between samples highlighted above, there are a number of ways in which they were extremely similar, such as the overall higher proportion of white, North-American or Canadian, middle-class mothers; questioning the ecological validity of some of the conclusions, if they are to be generalised to all mothers and infants. However, researchers appear to be moving towards greater

recognition of the diversity of mother-infant dyads and in particular the differences between high and low risk samples or even within these two classifications (e.g. Bailey et al., 2007) and therefore global generalisations from studies may be less desirable than when van IJzendoorn (1995) published his meta-analysis.

An overall limitation of the literature review was the search criteria; due to time constraints, non-English and unpublished articles were excluded from analyses. The exclusion of “grey literature” may have resulted in an over-estimate of the strength of the relationship between AAI and infant attachment and maternal behaviour since unpublished research tends to include more non-significant findings.

Future Research and Clinical Implications

In terms of future research, the finding that less atypical maternal behaviour is more evident in mothers classified as unresolved-secure than those classified as unresolved-insecure (Goldberg et al. 2003; Jacobvitz et al. 2006), and that sensitivity can act as a moderator of attachment transmission (Atkinson et al., 2001) suggests a potentially protective role of a secondary autonomous classification and maternal sensitivity. There is a need to investigate how some mothers with trauma/loss experiences develop coherent discourse about attachment experiences to warrant secondary classifications of secure, as well as how some mothers are able to interact sensitively with insecure attachment classifications but not others and prevent the transmission of disorganized attachment. Maternal, infant or ecological variables may be important to consider. This area of research would be important in developing interventions to promote secure attachment and prevent transmission of

insecure attachment since secure attachment is associated with more optimal outcomes globally.

It would be interesting to look at the differences in attachment transmission between lower and higher risk samples, as well as different high-risk samples, for example ecological factors in adolescent mothers may differ greatly from other high-risk samples such as mothers with mental health difficulties (Bailey et al., 2007; Tarabulsky et al. 2005). A literature review concerning attachment transmission in fathers would also be beneficial. These areas would be invaluable to consider targeted interventions at different groups of parent-infants to promote secure infant attachment.

The literature considering maternal reflective functioning and mind-mindedness suggests that the way the infant is viewed is crucial in how mothers relate to their infants and subsequently infant attachment. Current literature suggests that promoting maternal sensitivity alone would be insufficient to promote secure attachment. It may be that interventions to promote reflective functioning, in addition to interventions at the behavioural level to reduce atypical maternal behaviours, may be the most successful at reducing the risk of disorganized attachment transmission. However, if maternal representations are predictive of maternal behaviour, interventions would be most effective in terms of clinical outcome and cost-effectiveness if targeted at the level of representations. Research to include infant contributions to mother-infant interactions appears timely, and the EAS (Biringen et al., 1998), given its particularly strong relationship with attachment found in this review, along with the inclusion of infant and maternal sub-scales

appears to be a particularly useful tool for further research into the association between representations and behaviour. It would be important to consider the association between maternal representations and mother-infant behaviour in samples most at risk of the transmission of disorganized attachment, since these are the populations most in need of effective interventions.

Summary

This review has considered research post 1995 concerning the predictive validity of the AAI in terms of infant attachment and maternal behaviour. The review replicates van IJzendoorn's (1995) meta-analysis with a strong prediction of infant attachment from AAI classifications. The prediction of maternal behaviour from AAI classification was more variable, eliciting predominantly small and medium effect sizes. Attachment transmission research has increasingly considered ecological variables (e.g. Tarabulsy et al., 2007), the role of infants in mother-infant interactions (e.g. Bailey et al., 2007), and the use of alternative methodological approaches to investigate the process (e.g. Bailey et al., 2007). However, these variables along with attempts to refine sensitivity measures (Pederson et al., 1998; Raval et al., 2001), and broaden the range of maternal behaviours considered, has largely failed to close the transmission gap identified by van IJzendoorn (1995). The investigation of the role of RF and maternal mind-mindedness in mediating the association between AAI and maternal behaviour (Bernier & Dozier, 2003; Slade et al., 2005) may offer an opportunity to close the transmission gap and warrants further research.

References

- Aber, J. L., Slade, A., Berger, B., Bresgi, I., & Kaplan, M. (1985) *The Parent Development Interview*. Unpublished manuscript. Cited in Slade et al. (1999)
- Abrams, K., Rifkin, A., & Hesse, E. (2006) Examining the role of parental Frightened/Frightening Subtypes in predicting disorganized attachment Within a Brief Observational Procedure. *Development and Psychopathology*, 18, 345-361
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1971) Individual differences in Strange Situation Behavior of one-year-olds. In H. R. Schaffer (Ed.) *The Origins of Human Social Relations New York: Academic Press*. Cited in Meins (1999)
- Ainsworth, M. D. S., Bell, S. M., Stayton, D. J. (1974) Infant-mother attachment and social development: Socialisation as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Eds.) *The Introduction of the Child Into a Social World*, London: Cambridge University Press. Cited in Meins, (1999).
- Ainsworth, M. D. S., Blehar, M., Waters, E., & Wall, S. (1978) *Patterns of attachment*. Hillsdale, NJ: Erlbaum. Cited in van IJzendoorn, (1995)

- Atkinson, L., Goldberg, S., Raval, V., Pederson, D., Benoit, D., Moran, G., Poulton, L., Myhal, N., Zwiers, M., Gleason, K., & Leung, E. (2005) On the relation between maternal state of mind and sensitivity in the prediction of infant attachment security. *Developmental Psychology*, 41, 1, p.42-53
- Aviezer, O., Sagi, A., Joels, T., & Ziv, Y. (1999) Emotional availability and attachment representations in kibbutz infants and their mothers
Developmental Psychology, 35, 3, 811-821
- Bailey, H. N., Moran, G., Pederson, D. R., & Bento, S. (2007) Understanding the transmission of attachment using variable- and relationship-centered approaches. *Development and Psychopathology*, 19, 313-343.
- Bergman, L., & Magnusson, D. (1997) A person-oriented approach in research on developmental psychopathology. *Development And Psychopathology*, 9, 291-319. Cited in Bailey et al. (2007)
- Bergman, L. (2002) Studying processes: Some methodological considerations. In L. Pulkkinen & A. Caspi (Eds.) *Paths to successful development: Personality in the life course* (pp.177-199) New York: Cambridge University Press. Cited in Bailey et al. (2007)
- Bernier, A. & Dozier, M. (2003) Bridging the attachment transmission gap: The role of maternal mind-mindedness. *International Journal of Behavioral Development*, 27, 4, 355-365

Bernstein, E. M., & Putnam, F. W. (1986) Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease*, 174, 727-735.

Cited in Schuengel et al. (1999)

Biringen, Z., Robinson, J., & Emde, R. N., (1993) *The Emotional Availability Scales*

Unpublished manuscript, University of Colorado, Health Science Center,

Denver. Cited in Aviezer et al. (1999)

Biringen, Z., Robinson, J., & Emde, R. N., (1998) *The Emotional Availability Scales*

(3rd edition) Unpublished manual Colorado State University. Cited in

Biringen et al. (2000)

Biringen, Z., Brown, D., Donaldson, L., Green, S., Krcmarik, S., & Lovas, G. (2000)

Adult Attachment Interview: linkages with dimensions of emotional

availability for mothers and their pre-kindergarteners. *Attachment & Human*

Development, 2, 2, 188-202

Bowlby, J. (1969) *Attachment and Loss: Vol 1. Attachment* London: Hogarth Press.

Cited in Meins, (1999)

Bowlby, J. (1973) *Attachment and Loss: Vol. 2. Separation: Anxiety and anger.*

London: Hogarth Press. Cited in Meins (1999)

Bowlby, J. (1980) *Attachment and Loss Vol. 3. Loss, sadness and depression.*

London: Hogarth Press. Cited by Meins (1999)

Cohen, J. (1988) *Statistical power analysis for the behavioural sciences*. Hillside, NJ: Erlbaum. Cited by van Ijzendoorn (1995)

Dennett, D. (1987) *The Intentional Stance*. Cambridge, MA: MIT Press. Cited in Fonagy & Target, 2005

Dozier, M., Chase Stovall, K., Albus, & Bates, B. (2001) Attachment for infants in foster care: The role of caregiving state of mind. *Child Development*, 72, 5, 1467-1477

Fonagy, P., Steele, M., Steele, H., Leigh, T., Kennedy, R., Matton, G., et al., (1995) Attachment, the reflective self, and borderline states: The predictive specificity of the Adult Attachment Interview and pathological emotional development. In S. Goldberg, R. Muir, & J. Kerr (Eds.) *Attachment Theory: Social Developmental, and Clinical Perspectives* (pp.223-279). Hillsdale, NJ: Analytic Press. Cited in Slade et al. (2005)

Fonagy, P., Target, M., Steele, M., & Steele, H. (1998) *Reflective Functioning Manual, Version 5.0, for application to Adult Attachment Interview*. London: University College London. Cited in Slade et al. (2005)

Fonagy, P. & Target, M. (2005) Bridging the transmission gap: An end to an important mystery of attachment research? *Attachment & Human Development*, 7, 3, 333-343.

George, C., Kaplan, N., & Main, M. (1985) *Adult Attachment Interview*.

Unpublished manuscript, University of California, Berkeley. Cited in van IJzendoorn, (1995)

Goldberg, S., Benoit, D., Blokland, K., & Madigan, S. (2003) Atypical maternal behavior, maternal representations, and infant disorganized attachment. *Development and Psychopathology*, 15, 239-257

Goldsmith, H. H., & Alansky, J. A. (1987) Maternal and infant temperamental predictors of attachment: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 55, 805-816. Cited in van IJzendoorn (1995)

Jacobvitz, D., Leon, K., & Hazen, N. (2006) Does expectant mothers' unresolved trauma predict frightened/frightening maternal behaviour? Risk and protective factors. *Development and Psychopathology*, 18, 363-379

Lyons-Ruth, K., Bronfman, E., & Parsons, E. (1999) Maternal frightened, Frightening or atypical behavior and disorganized infant attachment patterns. In J. Vondra & D. Barnett (Eds.) *Atypical attachment in infancy and early childhood. Monographs of the Society for Research in Child Development*. Cited in Goldberg et al. 2003

Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2003) Childhood experiences of trauma and loss have different relations to maternal unresolved and hostile helpless states of mind on the AAI. *Attachment & Human Development*, 5, 330-52. Cited in Lyons-Ruth et al. (2005).

Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2005) Expanding the concept of unresolved mental states: Hostile/helpless states of mind on the Adult Attachment Interview are associated with disrupted mother-infant communication and infant disorganization. *Development and Psychopathology*, 17, 1-23

Madigan, S., Moran, G., & Pederson, D. (2006) Unresolved states of mind, disorganized attachment relationships, and disrupted interactions of adolescent mothers and their infants. *Developmental Psychology*, 42, 2, 293-304

Main, M. (1995) Recent studies in attachment. In S. Goldberg, R. Muir, & J. Kerr (Eds.) *Attachment theory: Social development and clinical perspectives* (pp. 407-474) Hillsdale, NJ: Analytic Press. Cited in Goldberg et al. (2003)

- Main, M., & Hesse, E. (1990) Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behaviour in the linking mechanism? In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.) *Attachment in the preschool years: Theory, research, and intervention* (pp.161-182). Chicago: University of Chicago Press. Cited in Goldberg et al. (2003)
- Main, M., & Hesse, E. (1992) *Frightening, frightened, timid, dissociated or disorganized behavior on the part of the parent: Coding system*. Unpublished manuscript, University of California, Berkeley. Cited in Schuengel et al., (1999)
- Main, M. & Hesse, E. (1998) *Frightening, frightened, dissociated, deferential, spousal and disorganized parental behaviour: A coding system for parent-infant interactions (6th ed.)* Unpublished manuscript, University of California, Berkeley. Cited in Abrams et al. (2006)
- Main, M., Kaplan, N. & Cassidy, J. (1985) Security in infancy, childhood, and adulthood: A move to the level of representation. In Bretherton & E. Waters (Eds.) *Growing points in attachment: Theory and research. Monographs of the Society for Research in Child Development, 50, Serial No. 209*, 66-104. Cited in Meins (1999)
- Meins, E. (1999) Sensitivity, security, and internal working models: Bridging the transmission gap. *Attachment & Human Development, 1, 3*, 325-342

Pederson, D. R., & Moran, G. (1995) Maternal behavior Q-set (Appendix B).

Monographs of the Society for Research in Child Development, 60 (2-3, Serial No. 244), 247-254. Cited in Pederson et al. (1998)

Pederson, D. R., Gleason, K. E., Moran, G., & Bento, S. (1998) Maternal attachment representations, maternal sensitivity, and the infant-mother attachment relationship. *Developmental Psychology*, 34, 5, 925-933

Raval, V., Goldberg, S., Atkinson, L., Benoit, D., Myhal, N., Poulton, L., & Zwiers, M. (2001) Maternal attachment, maternal responsiveness, and infant attachment. *Infant Behavior & Development*, 24, 281-304

Sagi, A. van IJzendoorn, M. H., Scharf, M., Joels, T., Koren-Karie, N., & Aviezer, O. (1997) Ecological constraints for intergenerational transmission of attachment. *International Journal for Behavioral Development*, 20, 287-299.

Schuengel, C., Bakermans-Kranenburg, M., van IJzendoorn, M. (1999) Frightening maternal behavior linking unresolved loss and disorganized infant attachment. *Journal of Consulting and Clinical Psychology*, 67, 1, 54-63

Slade, A., Aber, J., Belsky, J., & Phelps, J. (1999) Mothers' representations of their relationships with their toddlers: Links to adult attachment and observed mothering. *Developmental Psychology*, vol. 35, 3, 611-619

Slade, A., Bernbach, E., Grienberger, J., Levy, L., & Locker, A. (2004) *Addendum to Fonagy, Target, Steele, & Steele reflective functioning scoring manual for use with the Parent Development Interview*. Unpublished Manuscript. New York, NY: The City College and Graduate Center of the City University of New York. Cited in Slade et al. (2005)

Slade, A., Grienberger, J., Bernbach, E., Levy, D., & Locker, A. (2005) Maternal reflective functioning, attachment, and the transmission gap: A preliminary study. *Attachment & Human Development*, 7, 3, 283-298

Tarabulsky, G. M., Bernier, A., Provost, M., Maranda, J., Larose, S., Moss, E., & Larose, M., & Tessier, R. (2005) Another look inside the gap: Ecological contributions to the transmission of attachment in a sample of adolescent mother-infant dyads. *Developmental Psychology*, 41, 1, 212-221

Thompson, R. A. (1999) Early attachment and later development. In J. Cassidy & P. R. Shaver (Eds.) *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 265-286) New York: Guilford Press. Cited in Goldberg et al., (2003)

van IJzendoorn, M. (1995) Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychology Bulletin*, 117, 3, 387-403

van IJzendoorn, M., Schuengel, C., & Bakermans-Kranenburg, M. (1999)

Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*, 11, 225-249

Waters, E., & Deanne, K. E. (1985) Defining and assessing individual differences in attachment relationships: Q-methodology and the organization of behaviour in infancy and early childhood. *Monographs of the Society for Research in Child Development*. Cited in van IJzendoorn (1995)

Waters, E. (1995). The Attachment Q-Set, Version 3.0. (Appendix A). In E. Waters, B. Vaughn, G. Posada, & K. Kondo-Ikemura (Eds.), *Caregiving, cultural and cognitive perspectives on secure-base behavior and working models: New growing points of attachment theory and research. Monographs of the Society for Research in Child Development*, 60(2-3, Serial No. 244), 234-246. Cited in Tarabulsky et al. (2005)

Part 2: Empirical Paper

**Does Maternal Reflective Functioning Relate to
Emotional Availability in Mother-Infant Interactions?**

Abstract

Maternal Reflective Functioning (RF) and emotional availability (EA) were investigated in 2 high-risk samples of mothers and their infants: a community and a prison sample. RF was assessed using the Parent Development Interview (Slade, 2005a) and EA using the Emotional Availability Scale (Biringen, Robinson & Emde, 1998) to code 10-minute observations of mothers interacting with their infants. Both representations and emotional availability were significantly less optimal in the prison sample than the community sample. RF was strongly associated with all of the EA dimensions, with the exception of maternal non-intrusiveness within the prison sample. No association between RF and EA was identified within the community sample, although several maternal characteristics were associated with more optimal RF/EA scores including higher IQ and lower parenting stress. The Maternal Sense of Mastery Scale (Pearlin & Schooler, 1978) was found to significantly positively correlate with both RF and several dimensions of EA. Preliminary hierarchical regressions within the prison sample revealed that when infant age was controlled for RF was a significant predictor of maternal sensitivity, non-hostility and child responsiveness. ANCOVAs suggested that RF could account for some of the variance in EA, identified between the two samples. The differences in RF and EA scores between the two samples were discussed; alongside directions for future research and the clinical implications of the results.

Introduction

In an effort to address what has been termed a “transmission gap”, in the association between maternal representations and infant attachment security (Rosenblum, McDonough, Muzik, Miller, & Sameroff, 2002), the present study seeks to

investigate whether mothers' representations of their child, themselves as parents, and their relationships with their child, relate to emotional availability in parent-child interactions in two samples at risk of developing insecure attachment relationships.

Maternal Mind-Mindedness and Maternal Reflective Function

Meins (1999) suggested the concept of Maternal Mind-Mindedness (MMM) as the mechanism behind the intergenerational transmission of attachment. MMM refers to the mother's "proclivity to treat her infant as an individual with a mind, rather than merely as a creature with needs that must be satisfied" (Meins, Fernyhough, Fradley & Tuckey, 2001:638). A parent with mind-mindedness would in theory be more sensitive to their child's mental state, not just physical and emotional needs, enabling them to respond appropriately to their child. A similar concept to MMM is Reflective Function (RF) (Fonagy, Steele, Moran, Steele, & Higgitt, 1991, cited in Slade, 2005), an index of attachment related mentalization. Mentalization refers to both a cognitive process, similar to perspective-taking, and an emotional process involving a capacity to hold, regulate and fully experience one's own and others' emotions without becoming overwhelmed (Slade, 2005). Maternal RF considers reflective processes within the context of parent-child relationships. The mother's capacity to contain and regulate her child's affect will be linked to her capacity to make sense of her child's internal experience (Fonagy, 1996, cited in Grienberger, Kelly & Slade, 2005). However, it is insufficient for the mother to merely understand the child's mental states and emotions; the mother must also communicate this behaviourally to the child (Fonagy & Target, 1998, cited in Slade, 2005). The failure of a caregiver to hold and contain the child's experience, due to a deficit in their capacity to mentalize, is viewed as underlying the development of

insecure attachment (Fonagy & Target, 1997) and various forms of psychopathology (Slade, 2005).

Maternal Representations and Attachment

In an effort to unite the cognitive and behavioural level of parent-child relations, research has considered the association between parental representations and attachment. Zeanah, Benoit, Hirschberg, Barton, and Regan (1994, cited in Biringen, Matheny, Bretherton, & Sherman, 2000) used the Working Model of Child Interview (WMCI) (Zeanah, Benoit & Barton, 1993) to classify maternal representations as balanced, unbalanced-disengaged or unbalanced-distorted. Mothers with balanced representations were more likely to have securely attached infants whilst disengaged or distorted representations were associated with insecure attachment. A different approach to assess representations found secure infant attachment was associated with a larger number of mentalizing comments in mothers' commentaries of videoed mother-infant interactions (Oppenheim, Koren-Karie, & Sagi, 2001, cited in Oppenheim & Koren-Karie, 2002) and a higher proportion of appropriate mind-related comments in parent-child interactions (Meins et al., 2001). The reference to mentalizing comments was hypothesised to reflect recognition of the child as a psychological agent. Slade, Grienberger, Bernbach, Levy, and Locker (2005b) also found a significant relationship between representations, as assessed by RF, and attachment. A preliminary mediation analysis suggested that RF plays a crucial role in the transmission of attachment from parent to child. It appeared that mothers with a capacity to regulate and organise their thoughts and feelings about relationships with a caregiver also have a capacity to regulate, organise and sensitively respond to

their child's needs (Slade et al., 2005b:283). However, a limitation of this study was the absence of a measure of maternal behaviour to support this hypothesis.

Emotional Availability and Attachment

In addition to the associations between maternal representations and attachment, associations have also been identified between measures of emotional availability and adult (Siri-Oyen, 1997, cited in Biringen et al., 1998) and child attachment (Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000). These studies have utilised the Emotional Availability Scale (EAS, Biringen, Robinson & Emde, 1993, 1998) to investigate emotional availability in parent-child behavioural interactions. The EAS integrates ideas from attachment (e.g. Ainsworth, Blehar, Waters & Wall, 1978, cited in Biringen et al., 1998) and emotional availability perspectives (e.g. Emde, 1980, cited in Biringen et al., 1998) to provide a dyadic measure of interactions based on the notion that genuine affect that is congruent between mother and child is crucial for optimal interactions. Secure attachment has been found to associate with more sensitive, optimally structuring maternal behaviour, and high child responsiveness and child involving behaviour on the EAS (Biringen et al., 1998).

Maternal Representations and Parent-Child Interactions

One study to consider the association between maternal representations and parent-child interaction was Rethazi, Landy and Menna (1996) using the EAS (Biringen et al., 1993) and WMCI (Zeanah et al., 1993) in a sample of mothers and aggressive pre-schoolers. They found that representations were strongly associated with the degree of emotional availability of mothers in interactions: mothers with balanced representations were significantly more sensitive than those with disengaged

representations. Lok and McMahon (2006) also investigated emotional availability and maternal representations, in the form of MMM, using a sample of 4-year-olds and their mothers. They found that higher proportions of mental comments used by mothers to describe their children (MMM) predicted non-hostility in interactions. Higher MMM was also associated with greater non-intrusiveness scores. However, the study failed to identify the predicted link between MMM and sensitivity. The authors suggest that, to achieve a high MMM score, little reference is needed to emotion-focused descriptors and these may be particularly important in considering maternal sensitivity. A limitation of the study was the failure to use the infant subscales of the EAS to consider infants' contribution to interactions.

Grienberger et al. (2005) employed a measure of maternal representations which took into account more emotional features of representations than MMM. The Parent Development Interview (PDI) (Aber, Slade, Berger, Bresgi, & Kaplan, 1985) was used to investigate reflective function in a sample of highly educated, middle-class mothers. Interactions of mothers with their infants (10-14 months-old) were coded for disrupted affective communication using the Atypical Maternal Behavioural Instrument for Assessment and Classification (AMBIANCE) (Bronfman, Parsons & Lyons-Ruth, 1999). The AMBIANCE measure had a strong negative correlation with the level of maternal reflective functioning. Maternal behaviour mediated the impact of maternal reflective functioning upon infant attachment, suggesting that maternal reflective function has a clear impact on atypical behaviour in parent-child interactions.

High-risk samples, maternal representations and mother-infant behaviour

Several studies have considered maternal behaviour in samples at greater risk of developing insecure attachment relationships than the samples described above. For example, Easterbrooks, Chaudhuri, and Gestsdottier (2005) investigated emotional availability in a sample of adolescent mothers. Current life context, including maternal depression and social support, alongside childhood history were related to emotional availability patterns. However, maternal emotional availability was not lowest in those mothers reporting the highest levels of depressive symptoms. This contrasts with previous research which has shown that depressed mothers tend to be more disengaged, less sensitive, and more affectively negative than non-depressed mothers in interactions with their infants (Field, 1994, Tronick, 1989; cited in Rosenblum et al., 2002). In a sample comprised of only depressed mothers, van Doesum, Hosman, Riksen-Walraven and Hoefnagels (2007) found that three characteristics contributed to variance in maternal sensitivity: level of education, family income and feelings of parental competence. Two groups were found to be particularly at risk of displaying lower emotional availability in interactions: young mothers with high levels of depressive symptoms and low-income mothers who felt insecure about their parental competence. Research has also found an association between quality of maternal behaviour and maternal self-efficacy beliefs (Teti & Gelfand, 1991) and perceived caregiving control. Interestingly, mothers with low perceived control displayed increased levels of categorical thinking concerning child development (Guzell & Vernon-Feagans, 2004), which may suggest associations between maternal representations of their child, maternal perceived control and mother-infant interactions.

Trapolini, Ungerer and McMahon (2008) appear to offer some insight into the role of depression in relation to maternal representations and parenting behaviour. They found that 'never depressed' mothers displayed significantly higher sensitivity (as assessed by the EAS; [Biringen et al., 1998]) than a 'chronically depressed' group of mothers. There were no group differences for any other EAS dimension. The association between chronic depression and lower sensitivity was partially mediated and moderated by a mother's capacity to take her child's perspective on the PDI (Aber et al., 1985) with chronically depressed mothers displaying an impaired capacity for this. The authors conclude that a mother's ability to take her child's perspective is affected by cognitive distortions associated with chronic depression, which in turn interfere with her capacity to interact sensitively with her child. An additional maternal characteristic associated with more optimal representations of the mother-infant relationship was higher level of maternal education, though education was not associated with differences in mother-infant interaction. A limitation of this study was that the sample was comprised of mother-infant dyads with overall low risk characteristics, and therefore the generalisability of findings to populations in which there are multiple-risk factors is questionable.

In a high-risk sample of mother-infants drawn from an area of high-deprivation, Szewczyk Sokolowski, Hans, Bernstein & Cox (2007) found an association between maternal representations as assessed by the WMCI (Zeanah, Benoit, Hirschberg & Barton, 1986) and mother-infant interaction. Mothers with disengaged representations were less sensitive, more passive and used less encouragement and guidance with their infants, as assessed by the Parent-Child Observation Guide (PCOG) (Bernstein, Percansky & Hans, 1987), a measure of mother-toddler

communication. In terms of maternal characteristics, those with higher levels of education were more likely to have balanced representations than disengaged representations of the mother-infant relationship. However, parenting behaviour did not differ as a function of maternal education. Maternal depression was unrelated to maternal representations. However, higher reported maternal hostile psychological symptoms were associated with increased odds of having unbalanced maternal representations. Maternal hostile psychological symptoms and conflict with grandmothers predicted maternal behaviour independently of maternal representations. This suggests that in high-risk samples the association between maternal representations and maternal behaviour may be weakened or over-ridden as a result of risk factors such as maternal mental health difficulties. Further research is required to see whether these results are replicated in other high-risk samples.

Current Study

There is an absence in the literature of research considering maternal representations and parent-child interactions in “high-risk” samples with children below 12 months of age. For clinical purposes research needs to be extended in this area. As secure attachment relationships are associated with a range of positive developmental, relationship and social outcomes, it is important to identify which factors facilitate the development of secure attachment relationships. Current research points to the importance of improving the caregiver’s emotional availability and capacity to mentalize to promote secure attachment even though the relationship between these two variables remains unclear.

The literature suggests that a range of maternal characteristics and contextual factors may be important in terms of mother-infant relationships, such as income (van Doesum et al., 2007) and maternal hostile symptomatology (Szewczyk Sokolowski et al., 2007). Maternal IQ was not investigated in any of the studies reviewed above, although maternal educational attainment, which may be viewed as an index of maternal IQ, has been included in many of the studies. Associations between higher educational attainment and more optimal maternal representations (Meins et al., 2001; Szewczyk Sokolowski et al., 2007; Trapolini et al., 2008) and more optimal parenting behaviour (van Doesum et al., 2007) have been identified; although other research has found no association between mothers education and representations (Biringen et al., 2000) or parenting behaviour (Lok & McMahon, 2006). Therefore further research is needed to clarify the relationship, if any between maternal IQ and maternal representations and behaviour. The role of additional maternal characteristics, including psychological distress and parenting stress, alongside additional contextual factors, such as indices of social exclusion, also require further investigation.

The current study has two aims:

- 1) To explore the association between maternal RF and EA of both mother and infant in interactions in two high-risk samples of mother-infants. Based on the literature reviewed above, it is hypothesised that maternal RF will be positively associated with EA.
- 2) To investigate the impact of contextual and maternal characteristics, including indices of social exclusion, maternal IQ, parenting stress and psychopathology.

Based on the literature, it is hypothesised that other characteristics of the mother-infant dyad may moderate or mediate any relationship between RF and EA.

Method

Participants

A sample was drawn from an existing project involving high-risk mother-infant dyads, which seeks to compare the effectiveness of parent-infant psychotherapy and treatment as usual in a high-risk sample of mothers in the community (Fonagy et al., 2009a). Data from this project will also contribute to another study (Sleed, 2009). A comparison sample of high-risk mother-infant dyads was drawn from an existing project considering the effectiveness of a course conducted within mother and baby units (MBU) in prisons, addressing the attachment relationship of mother-infants (Fonagy et al., 2009b). See appendix 3 for an outline of each researchers role in the study.

A power calculation indicated that, assuming, an alpha of .05 and a power of .80, a sample size of 84 was required to identify a medium effect size. The minimum viable sample size was 28 to identify a large effect size of .5 (Cohen, 1992, cited in Barker, Pistrang & Elliott, 2005).

High-risk community sample (n=50) Mothers of infants less than 1 year old, identified by health care professionals as requiring counselling or mental health services, were referred by three GP practices serving deprived and socially excluded populations in London. Mothers met probable psychiatric caseness criteria based on the General Health Questionnaire (GHQ-28) (Goldberg, 1978) and at least one of the

following criteria: (1) low income household; (2) long term unemployment; (3) temporary or overcrowded accommodations; (4) single; (5) chronic physical illness or disability; (6) childhood history of foster or institutional care; (7) social isolation associated with recent relocation; (8) less than 20 years of age; or (9) previous diagnosis of non-psychotic psychiatric illness. Mothers were excluded from the study if they were either: (1) non-English speaking; (2) currently experiencing psychosis; (3) had substance abuse disorders or chronic drug dependence; or (4) an IQ below 70. (See appendix 4 for a table of the frequencies for each social exclusion criterion).

The mean age of the mothers was 31.34 years (S.D. = 5.41, range 21 – 41 years) and infants mean age 4.8 months (S.D. = 3.21, range .8 – 12.30 months). The majority of infants were female (58%, n=29), Caucasian (56%, n=28) and their mother's first child (64%, n=32). Forty-four percent of mothers (n=22) had higher education and only one mother had no formal qualifications. Sixty-two percent of mothers (n=31) scores on the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), were indicative of major depression (scores >26).

Prison Sample (n=20) Mothers and their infants from all seven MBUs within the U.K. were eligible for participation in the research project. This sample did not have any exclusion criteria. The offences the mothers committed were not recorded as part of data collection, although they are likely to be heterogeneous, including drugs offences, fraud, and burglary. Within the MBUs, six weeks after the baby's birth mothers are required to attend an education class or work, while their baby attends an onsite crèche. The mothers then look after their infants throughout the night in their

own private room. The MBUs vary as to whether rooms are locked overnight. Babies that have contact with their fathers or extended family members outside of prison, occasionally leave prison without their mothers for weekends away.

The mean age of mothers within the prison sample was 22.94 years (S.D. = 3.83, range 17 – 31 years) and infants mean age 4.92 months (S.D. = 3.23, range .33 – 11.30 months). The majority of infants were female (60%, n=12), Caucasian (50%, n=10) and their mother's first child (85%, n=17). Fifteen percent (n=3) of mothers had higher education and 30% (n=6) no formal qualifications. Twenty percent of mothers (n=4) scores on the CES-D (Radloff, 1977), were indicative of major depression (scores >26).

Comparison of samples

Mothers within the prison sample were on average significantly younger ($M = 22.94$, $S.E. = .86$) than those in the community sample ($M = 31.34$, $S.E. = .77$; $t(68) = 6.32$, $p = .001$). The difference in infant' ages between the two groups was non-significant.

The majority of infants across samples were Caucasian. Mothers within the community sample had a significantly greater mean CES-D score (28.54 , $S.E. = 1.77$) than those within the prison sample ($M = 16.55$, $S.E. = 2.09$; $t(64) = 3.96$, $p = .001$).

See appendix 4 for further demographic information on the sample.

Ethical Considerations

Participation in the research was voluntary and mothers were able to withdraw at anytime. To ensure informed consent, a research psychologist on the existing studies went through an information sheet and consent form with participants.

Data was securely kept within locked cabinets and confidentiality maintained by assigning ID numbers to data rather than using names.

There was potential in the study to observe evidence that infants were at significant risk of harm. In the community sample, this would initially be discussed by the research psychologist and supervisor working on the existing project, with the parent and GP. In the prison sample, discussion would be with the relevant prison authorities.

Study one was passed by the Camden and Islington Community Local Research Ethics Committee and study two by the UCL Committee for the Ethics of Non-NHS Human Research. Permission was granted from the prison governors to conduct research within the prisons (see appendix 5 for copy of ethic approval, information sheets and consent forms).

Procedure

Within the community sample, a research psychologist (M.S.) screened families for eligibility and then administered all measures to participants at baseline, 6 months and 12 months post-baseline, either within the family home or at the research site.

Within prison sample, mothers received an information sheet on the project one or two days before the research psychologist (J.N.) arrived at the MBU. Once consent was obtained, the research psychologist administered all measures to participants at baseline and 5 weeks later when the intervention course was complete for MBUs

receiving intervention. In the current study only baseline data from both samples was used.

Within the community sample, the PDI was administered on the first of two appointments and the videoed interaction was the last measure in a second testing session, usually within a week of the first appointment. In the prison sample, the videoed interaction was the last measure to be administered and took place immediately after the PDI.

Design

A cross-sectional, correlational design was employed in order to investigate the relationship between RF and EA. The associations between both of these variables and demographic and contextual variables were investigated to consider the discriminant validity of the RF and EA measures as well as identify potential mediators of the proposed relationship between RF and EA. The association between RF and EA was then investigated in both the community and prison sample.

Measures

Parent Development Interview (PDI) (Slade et al. 2005a).

The PDI is a forty-five item, semi-structured interview concerning parental representations of themselves as parents and their relationship with their child. The interview explores a mother's capacity to think about her child as an individual, as well as her own experiences of parenting and is scored for RF. The interview is introduced as 'talking about you and your baby and your experiences of being a parent'. A mother is asked to describe times when her child may have felt distressed

or rejected and for five adjectives to describe her child, along with reasons for each adjective. Other questions focus more on a mother's relationship with her child, including what makes it pleasurable or difficult. Mothers' are asked to describe themselves as parents and give their thoughts and feelings relating to separation from their children. There are also questions concerning the impact on parenting of a mother's own experiences of being parented.

Scoring is based on transcripts of audiotapes. RF on the PDI is assessed under four broad categories: 1) awareness of the nature of mental states; 2) explicit effort to tease out mental states underlying behaviour; 3) recognising developmental aspects of mental states; and 4) mental states in relation to the interviewer. An 11-point scale ranges from -1 (negative RF) to 9 (exceptional RF). Scores under 5 indicate negative, absent or low RF. Coding was conducted by trained coders; including the author (J.G.) and a group of graduate students/research psychologists. All coders achieved a good level of reliability with the author of the PDI for the overall RF score (Intraclass Correlations >0.70). Within the current sample, 17% ($n=12$) of PDIs were double-coded and an Intraclass Correlation Coefficient (ICC) of .84 was achieved. Reliability for individual sub-scales of the PDI was weak and therefore analyses were only conducted for the overall RF score.

Emotional Availability Scale Third Edition (Biringen et al., 1998)

Mother and infant were videotaped in free-play for 10 minutes with instructions to be as they "normally are with their child". Videos were coded on 6 sub-scales:

Maternal Sensitivity refers to the mother's responsiveness to her child, her ability to be warm, to negotiate conflicts, her flexibility, her creativity and

acceptance of the child and the quality of her affective interactions. Scores range from highly insensitive (1) to highly sensitive (9).

Maternal Structuring refers to the extent the mother teaches, models, directs and controls interactions ranging from non-optimal (1) to optimal structuring (5).

Maternal non-intrusiveness measures the mother's ability to be available without being intrusive, namely over-directive, over-stimulating and interfering. Scores range from intrusive (1) to non-intrusive (5).

Maternal non-hostility assesses the degree of hostility ranging from overt hostility (1) to no hostility (5).

Child responsiveness refers to the child's eagerness to engage with the mother and the display of clear pleasure in interactions ranging from non-optimal (1) to optimal (7).

Child involvement with parent refers to the degree the child attends to and engages with the parent ranging from non-optimal (1) to optimal in involving behaviours (7).

Coding of the EAS was conducted by the author (J.G.) and one other research psychologist (S.T.) who were blind to other measures. Both coders were trained using a video course produced by the instrument's constructor, and certified by her as reaching reliability. Within the current sample, inter-rater reliability was assessed for 27% of the sample (n=19). ICCs ranged from .61 (child involving scale) to .92 (maternal sensitivity scale) with an overall ICC of .92.

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

The CES-D is a 20-item measure of depressive symptoms, in which each item is rated on a scale from 0 to 3 in terms of frequency of occurrence during the past

week. The total score ranges from 0 to 60, with a score >26 widely accepted as a cut-off point indicative of major depression (Zich, Attkisson, & Greenfield, 1990). The reliability of the CES-D has been tested on clinic populations and probability samples of US households (Radloff, 1977). The scale has high internal consistency reliability, adequate test-retest stability and good construct validity in both clinic and community samples.

Measures administered only to the Community Sample

Test of Non-verbal Intelligence (TONI-3) (Brown, Sherbenou & Johnson, 1997).

The TONI-3 is a language-free measure of cognitive ability that is robust and highly predictive of general intellectual functioning. The examiner pantomimes the instructions and the test items from a picture book. Participants are required to point to the picture missing from a pattern matrix. The test is administered until all 45 items have been answered or a “ceiling” is reached when an individual answers 3 out of 5 consecutive items incorrectly. The total raw score is the sum of all correct responses. The measure has high internal consistency, good test-retest reliability and high inter-rater reliability (Brown et al., 1997).

The Brief Symptom Inventory (BSI) (Derogatis, 1993). The BSI is a 53-item, self-report measure of current overall psychiatric and somatic symptomatology. Nine sub-scales assess primary symptom dimensions of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Patients rate their level of distress during the past week using a 5-point scale ranging from 0 (not at all) to 4 (extremely). The sub-scales yield a Global Severity Index (GSI), a measure of the overall psychological distress,

which is calculated by adding up all the values and dividing by the total number of items to which the individual responded. The BSI has been shown to be a reliable and valid measure of current global psychological distress (Derogatis, 1993).

Maternal Sense of Mastery (Pearlin & Schooler, 1978). This is an instrument to assess the extent to which an individual feels that she/he has control over life events, in contrast to feeling ruled by fate. Seven items are rated on a 7-point scale ranging from strongly agree to strongly disagree. A high total score indicates a higher sense of mastery, with higher scores associated with low depression and higher self-esteem. Pearlin and Schooler reported adequate test-retest correlations.

Parenting Stress Inventory Short Form (PSI-SF) (Abidin, 1995). The PSI-SF is a 36-item questionnaire, which measures the parent's stress levels in the relationship to their child. There are three sub-scales of Parent-Child Dysfunctional Interaction (PCDI), Parental Distress (PD), and Difficult Child (DC). Items are rated on a 5-point Likert scale, ranging from strongly agree, to strongly disagree. Scores are simply added up for each sub-scale with the total of all the sub-scales equating to the total stress score. The measure has been found to be reliable and valid.

Results

The first sub-section presents descriptive data for the community sample in terms of emotional availability (EA) and reflective function (RF). This is followed by preliminary analyses of potential moderators of RF and EA. The relationship between RF and EA is then explored within the community sample. The descriptive data for the prison sample are then presented and relationship between RF and EA in

this sample explored. Finally ANCOVAs are used to consider the relationship between RF and EA between the two samples whilst controlling for the effect of RF.

Community Sample

Descriptive Data

The reflective functioning scores of the sample were normally distributed. The mean RF score for the community sample was 4.00 (S.D.= 1.43, range 0-7). Forty percent of mothers scored between 0 and 3 where 3 is indicative of ‘questionable or low RF’ and 0 ‘disorganised disavowal’ of mentalizing.

In terms of the EA subscales, Biringen et al. (1998) indicated that scores on the sensitivity scale could be considered optimal (6-9) or sub-optimal (<6). Within this sample, 42% (n= 21) of mothers displayed optimal levels of sensitivity in interactions. No infant received a rating of optimal responsiveness or involving behaviour towards mother. The scores were therefore substantially lower than those in Easterbrooks et al.’s (2000) sample of depressed low-income mothers, in which 54% of mothers displayed optimal sensitivity in interactions with their children. The EA dimensions were found to have generally normal distributions, except for non-hostility (which was negatively skewed) and child responsiveness (which had a platykurtic distribution). Due to the distributions, non-parametric tests were employed for analyses involving the EAS.

Analyses of Potential Moderator Variables

Correlations between RF, the EA scales and demographic variables were explored. The child’s gender, ethnicity, and age were all unrelated to RF or EA. However, the age of the mother was found to be significantly positively associated with the non-

intrusiveness scale ($r_s = .34$, $p = .01$, $n = 50$, 95% Confidence Interval (CI) .07 to .64); the older the mothers were, the higher or more optimal their EA was in terms of non-intrusiveness. Mothers age was not associated with the other EA scales or RF.

The relationship between the number of other children mothers had and maternal sensitivity was significant ($r_s = -.28$, $p = .048$, $n = 50$, 95% CI -.57 to -.002), suggesting that the greater the number of children the mothers had the lower the maternal sensitivity observed. The number of other children mothers had was not associated with the other EA scales, although mothers with more children were associated with lower RF scores ($r_s = -.32$, $p = .025$, $n = 50$, 95% CI -.62 to -.05).

In terms of maternal depression, mothers with lower levels of depression as measured by the CES-D displayed more optimal maternal sensitivity in interactions ($r_s = -.34$, $p = .02$, $n = 46$, 95% CI -.65 to -.06). Depression scores were not associated with any other EA scales or RF.

The community sample included measures of several additional variables to those within the prison sample, and analyses of these variables in relation to EA and RF follow.

Maternal IQ

The mean maternal IQ was 105.31 (S.D.= 15.13, range 72-135, $n = 45$). Pearson's correlations showed that maternal IQ was strongly positively associated with RF ($r = .45$, $p = .002$, $n = 45$, 95% CI .18 to .78). Spearman's rho correlations revealed that IQ was also significantly associated with more optimal emotional availability scores

in terms of sensitivity ($r_s = .37$, $p = .01$, 95% CI .09 to .69), structuring ($r_s = .32$, $p = .03$, 95% CI .03 to .63), non-intrusiveness ($r_s = .29$, $p = .05$, 95% CI -.004 to .60), non-hostility ($r_s = .42$, $p = .003$, 95% CI .15 to .75), and child involving behaviour ($r_s = .33$, $p = .03$, 95% CI .04 to .65). The results suggest that mothers with higher IQ scores, as assessed by the TONI-3, had more optimal interactions with their infants in terms of emotional availability, with the exception of the child responsiveness scale, which was not associated with IQ.

Social Exclusion Criteria

In terms of the social exclusion criteria used to recruit to the sample, neither the EA scales nor overall RF were associated with the total social exclusion score. None of the EA scales were significantly associated with any of the individual social exclusion criteria. However, t-tests showed that RF was significantly associated with eligibility for income support; on average those who were eligible had lower RF scores ($M = 3.63$, $S.E. = .27$, $n = 27$) than those who were ineligible ($M = 4.43$, $S.E. = .29$, $n = 23$; $t(48) = 2.05$, $p = .05$). This represented a moderate effect size ($d = .59$). Mothers who reported long-term unemployment scored on average significantly lower on RF ($M = 3.47$, $S.E. = .21$, $n = 19$) than those who did not ($M = 4.32$, $S.E. = .29$, $n = 31$; $t(47.79) = 2.40$, $p = .02$). This represented a moderate effect size ($d = .71$).

Maternal psychological characteristics

Maternal Sense of Mastery (MSM) was significantly associated with maternal sensitivity ($r_s = .36$, $p = .01$, $n = 46$, 95% CI .08 to .68), structuring ($r_s = .34$, $p = .02$, 95% CI .06 to .65), and non-intrusiveness ($r_s = .32$, $p = .03$, 95% CI .03 to .63); indicating that mothers reporting a greater sense of control over their life scored

higher on these dimensions of emotional availability. Those reporting greater sense of mastery also scored significantly higher in terms of RF ($r = .35$, $p = .02$, $n = 46$, 95% CI .06 to .66).

Parent Stress Index total scores were significantly associated with both maternal sensitivity and child responsiveness ($r_s = -.36$, $p = .01$, $n = 46$, 95% CI -.68 to -.08 & $r_s = -.31$, $p = .03$, 95% CI -.62 to -.02 respectively). In terms of the PSI subscales, maternal sensitivity was significantly associated with Parental Distress ($r_s = -.36$, $p = .01$, 95% CI -.68 to -.08). The PSI Parent-Child Dysfunctional Interaction scale was significantly associated with five of the six EA scales; sensitivity ($r_s = -.46$, $p = .001$, 95% CI -.80 to -.20), structuring ($r_s = -.40$, $p = .01$, 95% CI -.72 to -.12), non-hostility ($r_s = -.39$, $p = .01$, 95% CI -.71 to -.11), child responsiveness ($r_s = -.43$, $p = .003$, 95% CI -.76 to -.16), and child involvement ($r_s = -.45$, $p = .002$, 95% CI -.78 to -.88). These results suggest that greater levels of parental stress and in particular parent-child dysfunctional interaction were associated with lower emotional availability of dyads. The PSI was not associated with RF.

BSI (see appendix 6 for a table of correlations between BSI scales and EA and RF) The Somatization subscale was the only BSI scale associated with both RF ($r_s = -.32$, $p = .03$, $n = 46$, 95% CI -.63 to -.03) and a dimension of EA; maternal sensitivity ($r_s = -.32$, $p = .03$, 95% CI -.63 to -.03). RF was not associated with any of the other BSI subscales. Higher maternal sensitivity was associated with lower symptomatology on the Hostility, Depression, and Psychoticism BSI scales ($r_s = -.32$, $p = .04$, 95% CI -.63 to -.03; $r_s = -.37$, $p = .01$, 95% CI -.69 to -.09; and $r_s = -.41$, $p = .01$, 95% CI -.73

to -.14 respectively). Higher scores on the BSI Phobic Anxiety scale were associated with lower sensitivity ($r_s = -.39$, $p = .01$, 95% CI -.71 to -.11), lower maternal non-hostility ($r_s = -.39$, $p = .01$, 95% CI -.71 to -.11) and lower child involving behaviour ($r_s = -.34$, $p = .02$, 95% CI -.65 to -.75). Higher scores on the Paranoid Ideation BSI subscale were significantly associated with lower maternal sensitivity ($r_s = -.44$, $p = .003$, 95% CI -.77 to -.17), lower maternal non-intrusiveness ($r_s = -.30$, $p = .05$, 95% CI -.61 to -.01) and lower maternal non-hostility ($r_s = -.30$, $p = .005$, 95% CI -.61 to -.01). Maternal sensitivity was the only EA dimension associated with the BSI Global Indices of Distress ($r_s = -.41$, $p = .01$, 95% CI -.73 to -.14).

Relationship between RF and EA

To address the main aim of the study, the association between RF and EA was investigated using correlations. RF was not associated with any of the EA dimensions. Partial correlations were also carried out controlling for the influence of all variables that were associated with both EA and RF (maternal IQ, Maternal Sense of Mastery and BSI Somatization), but this yielded no further significant associations indicating the absence of suppressor variables.

Prison Sample

Descriptive Data

The mean RF score for the prison sample was 3.15 (S.D.= 1.14, range 2-6). A larger proportion of mothers from the prison sample scored below 3 ('questionable or low' RF) than mothers from the community sample; 75% compared with 40%.

Table 1 shows a comparison of the descriptive statistics for each EA scale between the two samples. Within the prison sample, 15% ($n=3$) of mothers displayed optimal

levels of sensitivity in interactions (scoring 6-9), compared with 42% of mothers from the community sample. One infant received a rating of optimal responsiveness, whilst no infant received a score of optimal involving behaviour towards the mother.

Table 1: Mean, standard deviations, and range for EA scales

	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
<i>Maternal</i>						
Sensitivity	5.19	1.83	2.0-8.5	4.08	1.88	1.5-7.5
Structuring	3.25	.85	1.5-4.5	2.20	.86	1.0-4.0
Non-intrusiveness	3.88	.94	1.5-5.0	2.80	1.36	1.0-5.0
Non-hostility	4.49	.78	2.5-5.0	4.23	.87	2.5-5.0
<i>Child</i>						
Responsiveness	4.06	1.64	1.5-6.5	3.52	1.68	1.0-7.0
Involving Behaviour	3.63	1.67	1.0-6.5	2.88	1.47	1.0-6.0

The EA dimensions were found to have normal distributions and therefore parametric tests were employed for analyses of these dimensions. However, the distribution of RF scores was slightly positively skewed (skewness 1.110, std. error of skewness .512) and non-parametric tests were employed for analyses involving this variable.

Mann-Whitney tests were used to compare the community and prison sample sub-groups on EA factors and RF scores. On average, mothers within the community sample displayed more optimal emotional availability on the sensitivity scale (Mean rank= 38.86, n= 50) than mothers within the prison sample (Mean rank= 27.1, n= 20; U= 33, p= .03). Community sample mothers also displayed on average more optimal structuring (Mean rank= 41.46, n= 50) than mothers within the prison sample (Mean

rank= 20.6, $n= 20$; $U= 202$, $p= .001$), as well as more optimal non-intrusiveness (Mean rank= 40.16, $n= 50$) than the prison sample (Mean rank= 23.85, $n= 20$; $U= 267$, $p= .002$). There was not a significant difference between the two groups in terms of non-hostility, child responsiveness or child involving behaviour.

The distribution of RF when the two samples were combined was normal, therefore a parametric t-test was used to compare the mean RF scores of mothers in the two samples. Mothers within the community sample scored on average more highly on reflective functioning ($M= 4.00$, $S.E.= .20$, $n= 50$) than mothers within the prison sample ($M= 3.15$, $S.E.= .25$, $n= 20$; $t(68)=2.37$, $p= .02$).

Analyses of Potential Moderator Variables

In terms of infant characteristics neither gender, or ethnicity were associated with RF or EA scores of the mother-infant dyads in the prison sample. However, the age of infants was positively associated with RF ($r_s = .53$, $p= .02$, $n= 20$, 95% CI .11 to 1.07), indicating that mothers of older infants displayed increased levels of reflective functioning. Older infants were also involved in more optimal interactions in terms of maternal sensitivity ($r_s = .57$, $p= .01$, 95% CI .17 to 1.12), structuring ($r_s = .85$, $p= .001$, 95% CI .78 to 1.73), child responsiveness ($r_s = .60$, $p= .02$, 95% CI .22 to 1.17) and child involving behaviour ($r_s = .52$, $p= .02$, 95% CI .1 to 1.05). These results contrasted with those from the community sample, which found no association between RF or EA in terms of infant's age.

In terms of maternal characteristics neither mother's age or level of depression (as assessed by the CES-D) were associated with either RF or EA. The number of other

children mother's had was significantly associated with maternal structuring ($r_s = -.54$, $p = .02$, $n=20$, 95% CI -1.08 to $-.13$), child responsiveness ($r_s = -.54$, $p = .01$, 95% CI -1.08 to $-.13$) and child involvement ($r_s = -.55$, $p = .01$, 95% CI -1.09 to $-.14$). These results contrasted with those from the community sample, which found an association between RF and number of other children mothers had, and maternal sensitivity and number of children.

Relationship between RF and EA

Spearman's rho correlations found that all of the EA scales were associated with RF (see Table 2) with the exception of non-intrusiveness.

Table 2: Correlations between RF and EA scales

		Overall RF	
		Spearman's rho	95% Confidence Interval
<i>Maternal</i>	Sensitivity	.72(**)	.43 to 1.38
	Structuring	.52(*)	.10 to 1.05
	Non-intrusiveness	.11	-.36 to .59
<i>Child</i>	Non-hostility	.66(**)	.31 to 1.27
	Responsiveness	.70(**)	.39 to 1.34
	Involving Behaviour	.48(*)	.05 to 1.0

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

Note $n=20$

Linear regressions showed that RF was able to predict some of the variance in maternal sensitivity, non-hostility and child responsiveness when infant age was controlled. RF accounted for 45% of the variance in maternal sensitivity when infant age was controlled for ($F(2,17) = 8.88$, $p = .002$, $\beta = .48$, $t(17) = 2.57$, $p = .02$), 31% of the variance in non-hostility ($F(2,17) = 5.35$, $\beta = .54$, $t(17) = 2.59$, $p = .02$) and 44% of

the variance in child responsiveness ($F(2,17) = 8.47$, $\beta = .41$, $t(17) = 2.18$, $p = .04$). However, multiple regressions revealed that RF did not significantly independently contribute to the prediction of structuring ($t(17) = .84$, $p = .41$) or child involving behaviour ($t(17) = 1.04$, $p = .32$) when infant age was controlled for. It is important to note that due to the sample size these results can only be treated as preliminary.

ANCOVAs were employed to investigate whether RF as a covariate could account for variance in EA dimensions that had been identified according to which sample the mother-infant dyads were in. ANCOVA was not conducted for the hostility dimension of EA, as this was not normally distributed. In relation to maternal sensitivity, there was a significant relationship with the covariate, RF ($F(1,66) = 12.83$, $p = .001$). There was also a significant effect of sample type (prison or community) on sensitivity after controlling for the effect of RF ($F(1,66) = 5.19$, $p = .03$). The model accounted for 19% of the variance in sensitivity. There was a significant relationship with RF and maternal structuring ($F(1,66) = 5.27$, $p = .03$) and a significant effect of sample type on structuring, after controlling for the effect of RF ($F(1,66) = 7.05$, $p = .01$). The model accounted for 26% of the variance in structuring. Neither RF, nor group type were significantly related to non-intrusiveness.

In terms of the child dimensions of EA, the covariate RF was significantly related to child responsiveness ($F(1,66) = 7.77$, $p = .01$). There was also a significant effect of sample type after controlling for the effect of RF ($F(1,66) = 4.47$, $p = .03$). However, the assumption of homogeneity of regression slope was broken within this model ($p = .04$) and therefore the results should be treated with caution. The covariate RF was significantly related to the other child dimension of EA, involving behaviour

($F(1,66)=4.24$, $p=.04$). However, there was not a significant effect of sample type after controlling for the effect of RF ($p=.22$).

The ANCOVAs suggest that differences between the two samples in terms of sensitivity, structuring, child responsiveness and involving behaviour may relate to variability in RF that is missed in the correlational analyses conducted for the community sample, which failed to identify an association between RF and any of the EA dimensions. However, the ANCOVAs also indicate that unexplained variance remains after accounting for the influence of RF on EA, as sample type remains significantly related to differences in EA with the exception of the child involving behaviour dimension.

Summary

RF was significantly associated with EA, with the exception of the non-intrusiveness dimension, in the prison sample of mother-infants. Correlational analysis found no association between RF and EA within the community sample of mother-infants. Mother-infants within the prison sample displayed significantly lower RF and EA compared with the community sample. ANCOVAs suggest that some of the variation in EA between the two samples relates to variance in RF.

In terms of contextual and maternal characteristics, the number of children mothers had was significantly related to differences in RF and EA in both samples. Within the community sample of mother-infants, increased parental stress and decreased maternal sense of control were associated with lower EA; the latter variable was also associated with lower RF. Maternal psychopathology as measured by the BSI

subscales (Derogatis, 1993) indicated that increased symptomatology on a range of subscales were associated with impaired EA, with the exception of child responsiveness.

Discussion

Maternal Reflective Function and Emotional Availability

Two high-risk samples of mother-infants were investigated in terms of maternal representations and mother-infant emotional availability. The prison sample scored lower in terms of both RF and EA. Statistical analyses indicated that RF could account for some of the variance in EA between the two samples in terms of sensitivity, structuring, child involving behaviour and responsiveness. However, there was still variance between the two samples that was unaccounted for. One possible explanation for the lower RF and EA scores within the prison sample is that these mothers potentially spent less time with their infants than mothers within the community sample, as mothers within prison are expected to attend education courses or work in the daytime without their infants. By spending less time with their infants, mothers within the prison sample may have had less familiarity with their infant's cues in interactions, and subsequently less conceptualisation of their infant's behaviour in terms of mental states than mothers within the community sample; they would also have less experience of interaction with their infants. Another hypothesis for the lower RF and EA scores within the prison population may have been that the mothers in this sample had less investment in thinking about mental states and attending to other's needs in interactions. Many of the prison mothers talked of feeling guilty about their babies being in prison, and subsequently thinking in great depth about their infant's thoughts, feelings, and behaviour, may

have been too overwhelming to bear along with managing their own thoughts and emotions about their situation.

In terms of the primary aim of the study, to investigate whether maternal RF was associated with mother-infant emotional availability, no relationship between RF and EA was identified in the community sample. However, within the prison sample there was a significant association in the predicted direction; mothers who scored more highly in terms of their reflective functioning, were part of more emotionally available dyads, in terms of maternal sensitivity, structuring, non-hostility, child responsiveness and involving behaviour. The association identified within the prison sample of mother-infants supports previous research with older children, which has found an association between maternal representations and parenting behaviour (Rethazi et al., 1996; Szewczyk Sokolowski et al., 2007; Trapolini et al., 2008). However, the results conflict somewhat with Lok and McMahon (2006) who only found an association between maternal representations and maternal non-hostility and non-intrusiveness; the later dimension of EA was not found in the current study to relate to RF. One explanation for the identification of more associations between representations and EA than found by Lok and McMahon, is that they used maternal mind-mindedness rather than RF as an index of maternal representations. It may be that RF assesses aspects of maternal representations more related to emotional availability in parent-infant interactions, in contrast to a measure of maternal representations based on only general descriptions of a parent's child. Furthermore, Lok and McMahon (2006) used a sample of low-risk mothers and their 4 year-olds; therefore the associations between maternal representations and emotional availability could well be different in the high-risk sample of mothers and younger

children used in the current study. However, it must be noted that the prison sample (n=20) was much smaller than Lok and McMahon's sample (n=89) and therefore the associations between representations and emotional availability dimensions found in the current study should be treated with caution.

The association between RF and EA identified in the prison sample, alongside the results of the analysis of covariance including all seventy participants, indicate that the relationship between maternal representations and mother-infant interaction appears important; particularly given that the measure of EA was based on a snapshot of only ten minutes of the mother-infant relationship. The results suggest that mothers with a greater capacity to see their infant as an individual and account for his or her behaviour in terms of mental states (for example, interpreting crying as a result of an underlying need, rather than for no reason) will display greater emotional availability towards the child. The infant in turn appears to develop a desire to engage with its mother, as well as displaying an interest in the world at large, which is evidenced in greater emotional availability towards the mother. Many mothers in the study appeared to find it difficult to think about their infants' emotions and mental states accurately. For example, in response to the question, *"When your child is upset what does she/he do?"* stating,

"I have never seen (child) upset. Never. She just cries when she wants to eatbut I've never seen her upset." (Infant 7.6 months old);

"Oh (child) tries, he would do anything for attention. So if that involved crying, he would do it. How he does it is like he will start off crying as like with fake tears, with no tears whatsoever, and then if he isn't getting your full attention, ... he'll just bring up a notch or two or three or four" (Infant 4.6 months old).

These distortions in understanding the reasons behind behaviour and in some cases having no explanation for behaviours would make optimal emotional responsiveness towards the child difficult. In turn, the impact on the child, it could be hypothesised, would be a sense of confusion as to their own internal experience and a withdrawing from emotional availability towards the parent. A hypothesis is that such children will go on to develop an insecure attachment style.

There are several hypotheses of why no association between RF and EA within the community sample was found. One explanation is that there is no relationship between RF and EA within populations such as the high-risk community sample within this study. However, it is relevant to note Szewczyk Sokolowski et al.'s (2007) finding that the association between representations and parent-infant interactions was overridden by contextual risk factors within their high-risk community sample. It may be that contextual risk factors within the community, but not prison sample had greater importance in the prediction of EA than maternal representations. Another consideration is that there was potentially greater variability within the community sample of mother-infants than the prison population. For example, there was increased variability in terms of the mother's accommodation, involvement of other family members in the infant's care and reason for participation within the study. In addition, the context of mother-infant observations varied greatly within the community sample compared to the prison sample, where observations were always in the same room and only with the mother and infant present. Furthermore, within the prison sample RF and EA measures were administered concurrently, in contrast with the community sample where the measures were often separated by a week. These differences within the community

sample may have created additional variance in measures, potentially impacting on the ability to identify any relationship between RF and EA within the community sample. It may be that within low-risk samples or high-risk samples with greater control of confounding variables an association between representations and emotional availability may be found. However, another explanation could be that the association identified within the prison sample was a type I error, given the much smaller sample size than the community sample.

Contextual and maternal characteristics

An additional aim of the study was to investigate the impact of contextual and maternal characteristics on RF and EA. The demographic and contextual variables available for both samples will first be considered. Following this, measures only administered to the community sample will be discussed.

Prison and Community Sample

Within the community sample older mothers displayed significantly more optimal levels of non-intrusiveness in their interactions with infants. However, no association between mothers' age and EA or RF was identified within the prison sample. This difference may relate to the significantly younger age of mothers within the prison sample and smaller spread of ages, which may have made it difficult to identify any difference in EA or RF between mothers in terms of age. Within the prison sample, in contrast to the community sample, infants' age was significantly positively associated with RF and more optimal EA, in terms of sensitivity, structuring, child responsiveness and involving behaviour. This suggests that within the prison sample of mother-infants there was greater emotional availability between both members of the dyad when infants were older. Given the

generally lower RF and EA within the prison sample compared to community sample, it may be that coupled with an existing impairment in RF, mothers within this sample found it particularly difficult to think in terms of mental states when children are younger which was reflected in less optimal interactions between mother and infant.

One interesting finding was the association between the number of children mothers had and mother-infant relationships. Mothers with more children had on average significantly lower RF within the community sample and displayed significantly lower sensitivity in interactions. Within the prison sample, mothers with more children were part of dyads with lower structuring, child responsiveness and child involving behaviour. One explanation for these findings is that mothers with more children are less able to view the infant in this study as an individual, possibly as a result of spending less one-to-one time with the infant, compared to mothers with fewer children to divide their time between. This could also impact on a mother's accurate awareness of mental states most likely to be experienced by her infant at his/her age. This weaker capacity will in turn be reflected in a mother's reduced ability to respond accurately to her child's signals and, as a consequence of this, her child will have fewer experiences of optimal interactions with her, prompting reduced emotional availability towards her. The results contrast with Szewczyk Sokolowski et al. (2007), who failed to identify an impact of number of other children on maternal representations or parenting behaviour. In their sample, mothers had on average 3.1 children per household whereas in the current sample 68% of mothers had no other children; the results of the present study may therefore be viewed as questionable and require further investigation.

In terms of maternal psychopathology both samples were administered the CES-D (Radloff, 1977). Within the community sample, higher levels of depression were significantly associated with lower maternal sensitivity. However, depression was not associated with any other EA dimension or RF within the community sample and there were no associations identified within the prison sample. The results conflict somewhat with Lok and McMahon (2006) who identified an association between lower depression and more optimal maternal representations, sensitivity, and non-intrusiveness. It may be that there is no relationship or only a small relationship between depression and maternal representations or EA in samples such as the ones in this study. Alternatively factors such as the chronicity of the depression (Trapolini et al., 2008; van Doesum et al., 2007), which was not assessed in this study, may moderate any association between depression and mother-infant relationships. A further possibility is that the overall elevated levels of depression in the community sample (62% reached cut-off for major clinical depression) could have made it difficult to identify more associations between level of depression and EA or RF. In contrast, within the prison sample only 20% of mothers scored above this cut-off, suggesting that some of the mothers in this sample might have been defended against discussing or acknowledging negative feelings, impacting on the validity of the depression scores. Some support for this hypothesis comes from the responses to PDI questions concerning negative emotions, for example mothers denying that there are ever times that they feel angry or do not 'click' with their child. The questionable validity of the responses within the prison sample may have precluded an association between RF, EA and depression being identified. Therefore, although the two samples appear different in terms of levels of maternal depression, it may

well be that the levels of depression recorded in the prison sample are an under-estimate of the true level of psychopathology, and the community and prison samples may be more similar than the results suggest. This is supported by previous research, which has highlighted the prevalence of mental health difficulties in female prisoners (Office for National Statistics, 1998, cited in Birmingham, Coulson, Mullee, Kamal & Gregoire, 2006). The association between mother-infant relationships and depression requires further investigation due to the conflicting results found between the two samples and within the literature more widely.

Additional contextual and maternal characteristics investigated in the community sample

None of the social exclusion criteria used to recruit mothers to the community sample were significantly associated with EA, which was somewhat surprising given the growing literature linking contextual risk factors with mother-infant interactions (e.g. Easterbrooks et al., 2005; Szewczyk Sokolowski et al. 2007). It may be that other indexes of social exclusion, such as domestic violence, may be more relevant to EA than those measured within the present study. Alternatively the lack of power may have prevented associations being identified between EA dimensions and social exclusion criteria. Despite the failure to identify any association between EA and social exclusion criteria, RF was found to be significantly associated with mother's eligibility for income support and long-term unemployment; indexes of socio-economic status. Mothers eligible for income support and/or those who were long-term unemployed displayed on average lower RF than mothers not eligible for income support and/or not long-term unemployed. These results are consistent with previous research linking low socio-economic status and less optimal maternal

representations (Szewczyk Sokolowski et al. 2007) and may reflect the impact of greater stress on a mother's ability to hold her child in mind.

In terms of maternal characteristics, IQ was found to be strongly positively associated with RF and also positively associated with five of the six EA dimensions; sensitivity, structuring, non-intrusiveness, non-hostility, and child involving behaviour. Although it appears logical that RF should be strongly related to IQ, given the measures reliance on verbal expression and reasoning ability, the association between IQ and EA is somewhat surprising as educational attainment, used as an index of IQ, has largely not been associated with parenting behaviour (Lok & McMahon, 2006; Szewczyk Sokolowski et al., 2007), although van Doesum et al (2007) identified an association between higher maternal sensitivity and higher level of education. It may be that IQ independently influences EA and RF. Mothers with higher IQ may be more able to perceive cues in infant's behaviour and respond appropriately in interactions. Such mothers are also likely to have superior reasoning ability and may therefore be more able to thinking about infant behaviour in terms of mental states. An alternative hypothesis could be that the impact of IQ on EA is mediated through RF. Baron and Kenny (1986, cited in Trapolini et al., 2008) stated that for a variable to function as a mediator a) the independent variable (IQ) has to be significantly related to the dependent variable (EA), b) the independent variable has to significantly relate to the proposed mediator (RF), c) the proposed mediator has to be significantly related to the dependent variable while controlling for the independent variable, and d) the indirect effect of the independent variable on dependent variable has to be reduced in the presence of the mediator. The failure to find an association between RF and EA within the community sample meant that the

first criteria of a mediational model was not met. However, a larger sample with greater statistical power may be able to test the proposed mediational model through path analyses. The independent and additive effects of IQ and RF on EA could be investigated using hierarchical regression analyses, if indeed all of the criteria for a mediational analysis are met.

A third hypothesis to explain the association between IQ and RF, and IQ and EA may be that there is a problem with the validity of the EA and RF measures. As both measures were strongly associated with IQ the discriminant validity of the measures may be questioned. All of the hypotheses indicate a need to consider in future research concerning maternal representations and mother-infant behaviour the effects of IQ, which has been neglected in past research.

Another maternal characteristic, Maternal Sense of Mastery (MSM) was significantly associated with RF and several EA dimensions (sensitivity, structuring and non-intrusiveness). The association found between parenting behaviour and MSM is similar to that identified in previous research with related concepts of self-efficacy and perceived parental control. Lower self-efficacy was associated with less optimal parenting behaviour (Teti & Gelfand, 1991) and low perceived parental control associated with increased directiveness in interactions with 1 year olds (Guzell & Vernon-Feagans, 2004). It appeared that mothers with a greater feeling of control in their life were able to provide their infants with more optimal EA in interactions. An interesting finding from Guzell and Vernon-Feagan's (2004) study was that mothers with low perceived control displayed increased categorical thinking about child development. They argued that this style of thinking would be accessed at times of

stress as a heuristic and prompt less perspective taking. This could be likened to RF in that mothers with a lower sense of global mastery displayed lower levels of reflective functioning and therefore a less complex reasoning style. One hypothesis could be that a mother may have mentalizing ability but, without a general sense of control over her life, this ability is less evidenced in her behaviour with her infant. However, this hypothesis was not supported by the current study, which failed to find an association between mentalizing ability and EA within the community sample.

An important contextual factor found to relate to five of the six dimensions of EA was parenting stress and in particular the ‘parent-child dysfunctional interaction’ dimension. Higher scores on all of the EA dimensions, with the exception of non-intrusiveness were associated with lower scores on the parent-child dysfunctional interaction dimension of the PSI. It seems logical that a mother’s view of the quality of her relationship with her infant would impact on both mother and infant emotional availability. The parent-child dysfunctional interaction dimension includes feelings of alienation towards and rejection by their child. It seems somewhat surprising that this dimension of parenting stress was not associated with RF given that statements on the sub-scale appeared to reflect low RF (for example, “*Sometimes my child does things that bother me just to be mean*”). This may be due to method variance as the PSI was a self-report measure and RF was assessed by interview. On the one hand, parents may take more time to answer the self-report measure but, on the other, they may actually be more rushed and therefore more likely to agree with statements on the PSI, impacting on the measure’s validity. The statements on the PSI are more negative in tone than the open-ended questions on the PDI; for example, the PDI asks whether a mother can “*Describe a time in the last week she felt angry*”. A mother

may be more open to her negative thoughts and feelings towards her infant when prompted to be and/or when not facing an interviewer. The PDI could provide a more balanced picture of the mother's view of her relationship with her infant than the PSI. One hypothesis is that, during stressful times, the more negative conceptualization of the relationship reflected in the PSI, comes to the fore and guides a mother's response to her infant, which overrides her capacity to mentalize. This is likely to be particularly evident in mothers with lower RF capabilities who are less able to regulate and modulate experience through mentalizing at times of high emotional intensity (Slade et al., 2005b).

In terms of maternal psychopathology as measured by the BSI (*Derogatis, 1993*), the global indices of distress was only significantly associated with maternal sensitivity. All of the other EA dimensions, with the exception of child responsiveness were associated with at least one of the BSI subscales. This suggests that different aspects of symptomatology may be associated with different aspects of EA in interactions and future research should not restrict investigations to maternal depression. It appeared that mothers with elevated symptomatology interacted with their infants in less emotionally available ways, possibly related to having fewer cognitive resources to consider the infant in the interactional dyad. However, given the number of BSI subscales and EA dimensions the results should be treated with caution given the risk of type I errors and further research with larger studies appears warranted in this area.

Limitations and future research

Although there are a number of strengths to this study such as the inclusion of child dimensions of the EAS (Biringen et al., 1998) and the use of two high-risk samples, which are clinically most relevant to study, there are several limitations. One such limitation is that the study is unable to establish the direction of causality as measures were administered at one time point. Although, the proposed theoretical model implicated RF as preceding and predicting EA, it may be that representations are predicted by emotional availability. It is also possible that the relationship is bi-directional. Ideally future research should follow-up samples to assess the direction of causality.

A limitation of the methodology is the use of two samples, rather than to pool samples and increase the statistical power of the study. Due to the differences between a community and prison population of mother-infants the decision was made not to pool the samples. In addition to the significant difference between the two samples in terms of RF and EA, there were many differences between the samples and the methodologies used, which precluded pooling the samples. One such difference was the lack of formal exclusion criteria in the prison sample, which meant that differences between the samples, for example the potential inclusion of mothers with IQs below 70, could not be controlled for and therefore the two samples were used for comparison rather than aggregated.

In terms of the findings regarding maternal psychopathology, a strength of the design of the community sample was the inclusion of additional dimensions of symptomatology than depression alone, which has been the focus of much of the

literature in this area. However, a corresponding limitation of the design of the prison study was that fewer measures of psychopathology were administered. Therefore the power of the study to investigate maternal psychopathology and RF/EA was reduced. Given the high prevalence of mental health difficulties in female prisoners (Office for National Statistics, 1998, cited in Birmingham et al., 2006), it would be important to investigate the impact of mental health on RF and EA in a larger prison sample with greater statistical power.

An additional concern regarding the measures relates to the relatively short length of the observations of mother-infant interaction. Longer periods of observation may have increased the validity of the EA measure by prompting what Biringen et al. (1998) refer to as emotional ‘leakage’ by mothers unable to maintain a level of optimal emotional availability. However, it is relevant to note that within the current study relatively few mothers were optimally emotionally available even over short observations. Longer observations may have enabled more optimal EA to be observed as mothers became more comfortable being observed. Ideally longer observations or several observations should be conducted in future research.

There is a need to investigate the relationship between maternal representations and emotional availability of mother-infant interactions in other ‘high-risk samples’ such as adolescent mothers or mothers with alcohol or drug dependency, to ensure that clinical interventions to promote secure attachment are tailored appropriately to each mother-infant dyad; given that interventions are most effective when specific to particular risk factors (Department of Health, 2004). This is particularly important given the differences identified between two high-risk samples in the current study in terms of representations and emotional availability.

Clinical and theoretical implications

The preliminary results suggest that increasing a parent's mentalizing skills may aid emotional availability between mothers and their infants. The identified association between MSM, RF and EA within a high-risk community sample suggest that interventions to promote a mother's sense of control over her life may contribute to more optimal emotional availability between mother and infant. Interventions could take the form of practical support to problem solve situations or encouragement and guidance for mothers to assert control in their wider life. Mothers and babies in prison appeared to be particularly in need of clinical interventions given their lower RF and emotional availability and subsequent higher risk of developing insecure attachment relationships.

The study goes beyond the existing literature to suggest that there is a potential relationship between RF and mother-infant emotional availability in two high-risk samples of mothers and their young infants. Therefore the results appear to tentatively suggest an explanation for the "transmission gap" in the association between maternal representations and infant attachment security (Rosenblum et al., 2002), as both representations and emotional availability have previously been independently associated with infant attachment security. Within the prison sample of mother-infants, RF accounted for 31-41% of the variance in emotional availability in terms of sensitivity, non-hostility and responsiveness. Covariate analysis suggested that RF was able to account for variance across both samples in sensitivity, structuring, child responsiveness and involving behaviour. However, within the high-risk community sample alone, no association between RF and EA was identified: instead several other variables were found to associate with maternal

representations and emotional availability. This reasserts the complexity of the interplay between cognitive, behavioural, and contextual levels of caregiving relationships. It would be interesting to investigate in a low-risk mother-infant sample whether the association between RF and EA is evident, with fewer contextual risk factors.

Conclusion

Maternal RF predicted some of the variance in EA in two high-risk samples of mother-infants; this was more evident within a sample of mother-infants drawn from a prison population than a sample drawn from a community population. Maternal IQ strongly related to EA and RF within a high-risk community sample. This finding warrants further investigation in larger samples to explore in more depth the role of IQ in maternal representations and mother-infant interactions. Several maternal characteristics were associated with more optimal emotional availability in dyads namely, lower levels of psychopathology and parenting stress. The results suggest that a mother's sense of control over her life may play an important role in whether her mentalizing capacity is evidenced in her parenting behaviour. The results infer that it may be important in clinical interventions to promote secure attachments, to target the representational levels of mother-infant relationships in addition to the behavioural level.

References

- Aber, J., Slade, A., Berger, B., Bresgi, I., & Kaplan, M. (1985) *The parent development interview. Unpublished protocol*, The City University of New York. Cited in Slade et al. (2005)
- Abidin, R. (1995) *The Parenting Stress Index: Short Form*. Charlottesville, VA: Pediatric Psychology Press
- Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978) *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum. Cited in Biringen et al. (1998)
- Barker, C., Pistrang, N., & Elliott, R. (2005) *Research methods in clinical psychology: an introduction for students and practitioners*. Chichester: Wiley
- Baron, R. M., & Kenny, D. A. (1986) The moderator-mediator variable distinction in social psychological research: Conceptual strategic, and statistical consideration. *Journal of Personality and Social Psychology*, 51, 1173-1182. Cited in Trapolini et al. (2008)
- Bernstein, V. J., Percansky, C. & Hans, S. L. (1987) *Screening for socio-emotional impairment in infants born to teenage mothers*. Paper presented at the meeting of the Society for Research in Child Development, Baltimore, MD. Cited in Szewczyk Sokolowski et al. (2007)

- Biringen, Z., Robinson, J. & Emde, R. (1993) *Emotional availability scale. Second edition. Unpublished manual*, Department of Human Development & Family Studies, Colorado State University, CO, USA.
- Biringen, Z., Robinson, J. & Emde, R. (1998) *Emotional availability scale Third edition. Unpublished manual*, Department of Human Development & Family Studies, Colorado State University, CO, USA.
- Bringen, Z., Matheny, A., Bretherton, C. & Sherman, M. (2000) Maternal representation of the self as parent: connections with maternal sensitivity and maternal structuring. *Attachment & Human Development*, 2, (2), 218-232
- Birmingham, L., Coulson, D., Mullee, M., Kamal, M., & Gregoire, A. (2006) The mental health of women in prison mother and baby units. *The Journal of Forensic Psychiatry & Psychology*, 17 (3), 393-404
- Bronfman, E., Parsons, E., & Lyons-Ruth, K. (1999) *Atypical maternal behaviour instrument for assessment and classification (AMBIANCE): Manual for coding disrupted affective communication, Version 2. Unpublished manuscript*, Harvard Medical School, Cambridge, MA. Cited in Grienberger et al. (2005)
- Brown, L., Sherbenou, R. J., Johnson, S.K. (1997) *Test of Nonverbal Intelligence-3 (TONI-3)* Austin, TX: PRO-ED

Cohen, J. (1992) A power primer. *Psychological Bulletin*, 112, 155-159. Cited in
Barker, et al., 2005

Derogatis, L. R. (1993) *The Brief Symptom Inventory*. Minneapolis, MN: National
Computer Systems

Department of Health (2004) *National Service Framework for children, young
people and maternity services: Core standards*. London: DH

Easterbrooks, M. A., Chaudhuri, J. H., & Gestsdottier, S. (2005) Patterns of
emotional availability among young mothers and their infants: A dyadic,
contextual analysis. *Infant Mental Health Journal*, 26, 309-326

Emde, R. N. (1980) Emotional Availability: A reciprocal reward system for infants
and parents with implications for prevention of psychosocial disorders. In P.
M. Taylor, (Ed.) *Parent-Infant Relationships*. Orlando, FL: Grune & Stratton.
Cited in Biringen et al. (1998)

Field, T. (1994) The effects of mother's physical and emotional unavailability on
emotional regulation. In N. A. Fox (Ed.) *The development of emotion
regulation: Biological and behavioural considerations. Monographs of the
Society for Research in Child Development*, 59 (2-3, Serial No. 240), 208-227
Cited in Rosenblum et al., 2002

Fonagy, P. (1996) The significance of the development of metacognitive control over mental representations in parenting and infant development. *Journal of Clinical Psychoanalysis*, 5, 67-86. Cited in Grienenberger et al (2005)

Fonagy, P., Steele, M., Moran, G., Steele, H. & Higgitt, A. (1991) The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal*, 13, 200-216. Cited in Slade (2005)

Fonagy, P. & Target, M. (1997) Attachment and reflective function: Their role in self-organization. *Development & Psychopathology*, 9, 679-700

Fonagy, P. & Target, M. (1998). Mentalization and the changing aims of child psychoanalysis. *Psychoanalytic Dialogues*, 8, 87 – 114. Cited in Slade (2005)

Fonagy, P. and colleagues (to be published 2009a) Helping parents with mental health problems to parent young infants: A randomised controlled trial of Parent-Infant Psychotherapy (PIP) and Counselling

Fonagy, P., and colleagues (to be published 2009b) *An evaluation of the implementation of the 'New Beginnings' course in Holloway prison.*

Goldberg, D. P. (1978). *Manual of the General Health Questionnaire*. Windsor: NFER

- Grienenberger, J., Kelly, K., & Slade, A. (2005) Maternal reflective functioning, mother-infant affective communication, and infant attachment: Exploring the link between mental states and observed care giving behaviour in the intergenerational transmission of attachment. *Attachment & Human Development*, 7 (3): 299-311
- Guzell, J.R. & Vernon-Feagans, L. (2004) Parental perceived control over caregiving and its relationship to parent-infant interaction. *Child Development*, January/February, 75, (1), 134-146
- Lok, S. M. & McMahon, C. A. (2006) Mothers' thoughts about their children: Links between mind-mindedness and emotional availability. *British Journal of Developmental Psychology*, 24, 477-488
- Meins, E. (1999) Sensitivity, security and internal working models: bridging the transmission gap. *Attachment & Human Development*, 1, (3): 325-342
- Meins, E Fernyhough, C., Fradley, E., & Tuckey, M. (2001) Rethinking maternal sensitivity: Mother's comments on infant's mental processes predict security of attachment at 12 months. *Journal of Child Psychology & Psychiatry*. 42 (5), 637-648
- Office for National Statistics (1998) *Psychiatric morbidity among prisoners in England and Wales*. London: HMSO. Cited in Birmingham et al. 2006

- Oppenheim, D., Koren-Karie, N., & Sagi, A. (2001) Mother's empathic understanding of their pre-schoolers' internal experience: Relations with early attachment. *International Journal of Behavioural Development*, 25, 16-26. Cited in Oppenheim & Koren-Karie (2002)
- Oppenheim, D., & Koren-Karie, N. (2002) Mothers' insightfulness regarding their Children's internal worlds: The capacity underlying secure child-mother relationships. *Infant Mental Health Journal*, 23 (6), 593-605
- Pearlin, L. I. & Schooler, C. (1978) The structure of coping. *Journal of Health & Social Behavior*, 19, 2-21
- Radloff, L. S. (1977) The CES-D Scale: A self-report depression scale for use in the general population. *Application of Psychological Measures*, 1, 385-401
- Rethazi, M., Landy, S., & Menna, R. (April, 1996) *The relationship between maternal attachment and mother-child interaction in a sample of aggressive preschoolers*. Poster presented at the International Conference on Infant Studies, Providence, RI. Cited in Biringen et al. (1998)
- Rosenblum, K. L., McDonough, S., Muzik, M., Miller, A., & Sameroff, A. (2002) Maternal representations of the infant: Associations with infant response to the still face. *Child Development*, July/August, 73, 4, 999-1015

- Siri-Oyen, A. (1997) *Multi-risk dyads: Maternal attachment and emotional availability. Paper presented at the Society for Research in Child Development*, Washington, DC. Cited in Biringen et al. (1998)
- Slade, A. (2005) Parental reflective functioning: An introduction *Attachment & Human Development*, 7 (3): 269-281
- Slade, A., Aber, J. L., Berger, B., Bresgi, I., & Kaplan, M. (2005a) Parent Development Interview Revised. Unpublished, The City College and Graduate Center of the City University of New York
- Slade, A., Grienemberger, J., Bernbach, E., Levy, D., & Locker, A. (2005b) Maternal reflective functioning, attachment, and the transmission gap: A preliminary study *Attachment & Human Development*, 7 (3): 283-298
- Sleed, M. (to be submitted as Phd thesis 2009) *Maternal Representations and the Parent-Infant Relationship*
- Szewczyk Sokolowski, M., Hans, S. L., Bernstein, V. J., & Cox, S. M. (2007) Mothers' representations of their infants and parenting behaviour: Associations with personal and social-contextual variables in a high-risk sample. *Infant Mental Health Journal*, 28 (3), 344-365

Teti, D. M. & Gelfand, D. M. (1991) Behavioral competence among mothers of infants in the first year: The mediational role of maternal self-efficacy. *Child Development*, 62, 918-929

Trapolini, T., Ungerer, J. A., & McMahon, C. A. (2008) Maternal depression: relations with maternal caregiving representations and emotional availability during the preschool years. *Attachment & Human Development*, 10, (1), 73-90

Tronick, E. Z. (1989) Emotions and emotional communication in infants. *American Psychologist*, 44, 112-119. Cited in Rosenblum et al., (2002).

van Doesum, K. T. M., Hosman, C. M. H., Riksen-Walraven, J. M., & Hoefnagels, C. (2007) Correlates of depressed mothers' sensitivity toward their infants: The role of maternal, child, and contextual characteristics. *Journal of the American Academy of Child & Adolescent Psychiatry*, 46, (6), 747-752

Zeanah, C., Benoit, D., Hirschberg, L. & Barton, M. (1986) *Working model of the child interview: Rating scales and classifications*. Cited in Szewczyk Sokolowski et al. (2007)

Zeanah, C. H., Benoit, D. & Barton, M. (1993) *Working model of the child interview. Unpublished manual*, Tulane University, New Orleans. Cited in Biringen et al. (2000)

Zeanah, C., Benoit, D., Hirschberg, L., Barton, M., & Regan, C. (1994) Mothers' representations of their infants are concordant with infant attachment classifications. *Developmental Issues In Psychiatry & Psychology*, 1, 9-18.
Cited in Biringen et al. (2000)

Zich, J. M., Attkisson, C. C., & Greenfield, T.K. (1990) Screening for depression in primary care clinics: the CES-D and the BSI. *International Journal of Psychiatry in Medicine*, 20, 259-277

Ziv, Y., Aviezer, O., Gini, M., Sagi, A., Koren-Karie, N. (2000) Emotional availability in the mother-infant dyad as related to the quality of infant-mother attachment relationship. *Attachment & Human Development*, 2, (2).
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Part 3: Critical Analysis

Critical Analysis

The following critical analysis includes a discussion of the methodological choice not to use a pooled sample, and the use of the EAS (Biringen, Robinson, & Emde, 1998) to measure mother-infant interaction. This is followed by consideration of the adoption of a positivistic approach to investigate maternal representations and mother-infant interaction. Directions for future research and clinical implications of the study are then discussed, with the final section containing some personal reflections on the research process.

Methodological choices

Use of a pooled sample

The original intention of this study was to use the community sample alone to investigate maternal representations and mother-infant interaction. However, recruitment to this sample was slower than expected as health professionals were made aware of the intervention project and referred mothers. Subsequently, at the point of data analysis, the sample size was 50. A power calculation indicated that assuming a medium effect size of .3, an alpha of .05 and a power of .80, a sample size of 84 was required (Cohen, 1992, cited in Barker, Pistrang, & Elliott, 2005). The decision was therefore made to include an additional sample of mother-infants drawn from prison mother and baby units (MBUs). A benefit of including the prison sample was that mothers in prison are an under-researched population and little is known about their mother-infant relationships (Birmingham, Coulson, Mullee, Kamal, & Gregoire, 2006). There was some debate as to whether this additional sample could be used to increase the power of the study by pooling it with the existing community sample. It could be argued that prison mothers are on an extreme end of a continuum of social exclusion, for example isolated from support

networks, often with a childhood history of foster or institutional care, which would have justified pooling this sample with a high-risk community sample. However, there were several issues which would have made pooling the samples problematic, and impeded the validity of aggregated results.

One key difference between the two samples was the way in which they were recruited. Community mothers were referred to the project on the basis of having difficulties forming a relationship with, or managing their infant. In contrast, prison mothers did not have this conceptualisation and were merely participating in a course conducted at the prison. This is likely to have prompted differences in the responses of the two groups to the administered measures. As mothers in the community sample had sought help, they may have made fewer attempts than mothers in the prison sample, to minimise difficulties on the measures. Prison mothers may have felt greater discomfort at being observed fearing additional judgement of them in their position of powerlessness, which would have impacted on their presentation of themselves. Paradoxically, the prison mothers could have been more relaxed in being observed with their infants' as they are likely to have been observed frequently by prison staff. Another difference between the contexts of the two samples was that some of the mothers in the prison sample faced forthcoming separation from their infants, which may have prompted differences in both emotional availability and the manner of answering questions on the PDI; for example, mothers being more withdrawn from infants or the opposite, becoming more intrusive. These differences between mothers in the two samples on the PDI and EAS measures would have been minimised by aggregating the results.

Another limitation of pooling the samples would have been the difference in design of the two existing research projects. Mothers in the prison sample were given a still photo from the video interactions as an incentive to participate, in contrast to mothers in the community sample. There is a strong hypothesis that this impacted greatly on differences in mother-infant interactions between the two groups. There was greater intrusiveness in the interactions between mothers and infants in the prison sample for example, mothers turning their child towards the camera or repeatedly kissing them. This may have reflected the desire for a good photo or a feature of mothers in a more socially excluded situation, or something else entirely that differed between prison and community mothers. A further issue relating to design differences between the studies, which was noted in the discussion, was that mothers in the prison sample were administered fewer measures than in the community sample. This restricted what could be investigated in terms of identifying what might underlie differences in EA or RF between the two samples. This reflects to an extent the difficulty of conducting research within prison settings where there are often greater restrictions on the time that can be taken to conduct research and therefore the number of measures that can be administered. It was thought that despite the potential benefit of pooling the two high-risk samples in order to increase the statistical power to investigate the association between RF and EA, given all of the differences between the two samples the validity of any findings would be compromised too greatly.

Measure of mother-infant interaction

It was noted in the review paper that the study of attachment transmission has broadened from focusing exclusively on maternal sensitivity to include additional aspects of parenting behaviour. The use of the Emotional Availability Scales (EAS)

(Biringen et al., 1998) in the current study supports this expanded conceptualisation of parenting behaviour. Variability between different types of parenting behaviour was captured by the EAS, providing a more representative view of maternal behaviour than focusing exclusively on sensitivity would have done. Another benefit of using the EAS (Biringen et al., 1998) is the inclusion of child dimensions of emotional availability. This attempts to capture the complexity of early interactions, which are neglected by focusing exclusively on maternal interactive behaviour, as is the case in the majority of previous research (e.g. Lok & McMahon, 2006; Szewczyk Sokolowski, Hans, Bernstein, & Cox, 2007; Trapolini, Ungerer, & McMahon, 2008).

Although there are strengths in the measure of mother-infant interaction used in the current study, there are also several limitations. The discussion section referred to the limitation of using relatively short observations from which to assess emotional availability. Fluctuations in interactions between mothers and infants will be dependent upon context and the mood of each participant (Bretherton, 2000).

Observations may not have been representative of the day-to-day interactions of mothers and their infants. This could have been particularly relevant in this sample where many mothers reported mental health difficulties in which their mood and subsequently their capacity for emotional availability may fluctuate greatly.

Furthermore, the emphasis within the EAS of assessing interactions on the basis of genuine affect may be particularly difficult to distinguish from feigned positive affect in relatively short observations (Biringen et al., 1998). An alternative to carrying out longer observations would have been to conduct multiple observations to obtain an average measure of emotional availability, as this would have gone some way to accounting for the impact of extraneous variables on the interactions. In some

interactions, infants were hungry or tired and this in turn will have impacted on both the mother's and the infant's emotional availability. However, multiple observations would not have been practical for one research psychologist to conduct and the additional time taken to conduct multiple observations may well have been unacceptable to mothers.

A further concern with the observations was the variety of environments within which they were conducted. For example, within the community sample some mother-infant dyads were observed at the clinic and some at the mother's home. This meant that there was no control over the familiarity of the environment to mother and child, and, in some cases, whether other individuals such as siblings were present and involved in the interaction. This impacts on the ability to aggregate observations of emotional availability between mother-infant dyads with confidence in the validity of findings. Some mothers may have appeared more sensitive within the clinic setting than they would usually have done, as there were fewer distracters (Guzell & Vernon-Feagans, 2004). Future research should attempt to control for the context of observations. An additional issue regarding the validity of the observations arises as a result of them being conducted at the end of testing sessions. On the one hand, both members of the dyad may have been tired after completing the other measures and/or there may have been carry over effects in the sense that questions on the PDI or other measures may have impacted on a mother's EA, resulting in a non-representative view of the interactions. On the other hand, however, some mothers may have valued the observations as the last aspect of testing with fewer demands placed on them compared to a questionnaire or interview.

A personal reflection on the use of the EAS to code observations was that the infant was often used as a reference point from which to score the mother. In some ways this is advantageous as infants, in contrast to their mothers, are less likely to display non-genuine affect or pseudo-emotionally available behaviours, increasing the validity of the assessment of mother-infant interactions. However, Biringen et al. (1998) intended the measure to be based equally on consideration of mother and infant, whilst acknowledging that a mother cannot look ‘good’ in terms of her emotional availability without the infant. Mothers would often appear emotionally warm and sensitive until attention was given to the infant, who would be avoiding the mother’s gaze or arching their back away from the mother. The coders were placed in somewhat of a bind, not wanting to give too much weight to one member of the dyad but also needing to view the infant as crucial to the assessment of the mother’s emotional availability. Aviezer, Sagi, Joels, and Ziv (1999) suggested that, to overcome this difficulty, coders of the mother and infant scales should be independent. However, it may be problematic to separate the coding of each member of the dyad when each member’s behaviour is inter-dependent on the other.

Approaches to studying maternal representations and mother-infant interaction

There are several issues in relation to how research should or can be conducted into mother-infant relationships, for example whether it can take a positivistic approach. In relation to the EAS measure, the manual emphasises that counter-transference to the observations should be helpfully employed to guide coding of dyads, for example coding sensitivity a 3 “the observer feels somewhat uncomfortable or sad when watching this interaction” (Biringen et al., 1998:28). The use of counter-transference to guide scoring of EA does not sit easily within a positivistic approach to research,

which suggests that the focus of investigation should be restricted to observable phenomenon. Furthermore, investigations should be objective and value free, conflicting somewhat with the EAS, which requires coders to assess the genuineness of affects. It may be argued that research considering maternal representations (unobservable constructs) and emotional availability cannot adhere to a strict interpretation of positivistic science.

A feature of a positivistic approach is the use of quantitative methods of data collection and there is a question as to how well such methods are able to capture the mother-infant relationships investigated. I was concerned at times that ascribing numbers to participants in terms of their reflective functioning and emotional availability would lose too much of the nuances of the participants' responses and behaviour. For example, on the PDI, a RF score of 1 may be due to either successful disavowal of mentalizing or a distorting or self-serving response, which are quite different forms of responding. In terms of the observations, several prison mothers appeared to lack understanding of their infant's desire to explore, appearing hurt or angry when this happened (*"you don't love mummy then, you're ignoring me"*). By using quantitative techniques to investigate mother-infant relationships, this could only be reflected by reducing the mother's score for sensitivity, non-hostility or non-intrusiveness. Qualitative techniques on the other hand, would have enabled a richer description of the mother-infant relationship and more in-depth analysis.

Nevertheless, quantitative techniques were beneficial in reducing the complexity of the relationships to more simplistic descriptions. The EAS and PDI scoring manual provided a focus for attention and without these the complexity of the mother-infant relationships may have been overwhelming. The use of quantitative techniques also

enabled the comparison of dyads in a way that qualitative techniques would not have done, for example they showed that mothers in the prison sample were less optimal in their mentalizing capacity and emotional availability than mothers in the community sample. Furthermore, quantitative techniques are required if the research is intended to make larger generalisations about mother-infant dyads, particularly to support the development of clinical interventions. When bidding for funding, there will be more interest in the size of the effect of any given intervention, in terms of numbers of mother-infants improving their interactions, than a detailed description of the same mother-infants.

Quantitative techniques are often associated with a variable- rather than person-oriented approach to research. Bailey, Moran, Pederson, and Bento (2007) note that the investigation of the transmission of attachment has largely been restricted to variable-oriented approaches seeking to evaluate a linear model of attachment. They point to the value of using person-oriented approaches to look at the patterns of organisation of variables, in addition to variable-oriented approaches. Bailey et al. (2007) argue that a person-oriented approach is more able to capture the non-linear aspects of attachment processes. The use of the EAS with infant and mother subscales goes some way towards a person-oriented approach, although the statistical analyses of dyads reduced the mother-infant relationship to a more linear process between representations and behaviour and between mother and child. One possible resolution to the difficulty of selecting research design and methods is the use of triangulation. By using multiple methods of data collection and analysis, the strengths of different approaches could be drawn upon and the weaknesses minimised.

Future research

The sub-scales of the PDI are a potentially rich source of data, which captures variability in RF that the global score fails to do. Slade, Grienemberger, Bernbach, Levy, and Locker note “that disequilibrium and dysregulation are normal occurrences” (2005:293) in reflective functioning. Without investigating the sub-scales contributing to the global RF score, there is a risk of viewing a mother, for example as someone that is always low in RF when there may be an area where she is able to demonstrate higher RF, such as reflecting on her own mental states rather than those of her child. It could be that mother-infant interactions were more consistent with certain scales than the overall RF score, so it is important for future research to include the analysis of the PDI sub-scales.

The discussion section of the empirical paper noted that future research, by assuming a longitudinal design, would aid the identification of the direction of causality between RF and EA. A longitudinal design would also identify when emotional availability patterns between mothers and infants become more organised and less fluid. This could indicate the necessity of intervening before a certain point in order to maximise the opportunity of facilitating secure attachment and would have implications as to where limited resources should be targeted.

The current study focused exclusively on mothers and their infants. It is important for future research to investigate the infant’s relationship with other attachment figures. It may be that infant emotional availability is related to other caregivers’ representations, particularly in the case of infants where the mother is less involved in their day-to-day care for example those with severe mental illness. Expanding the

area of investigation to include measures of child developmental level or temperament would also be useful. Child variables could be important moderators of the relationship between RF and EA. Mother's perceptions of their infant's temperamental difficulty have been reported to relate to mother-infant interaction although the nature of this relationship is inconsistent (Crockenberg, 1986, cited in Teti & Gelfand, 1991).

Clinical implications

The results from the prison sample in particular tentatively suggest that there is a need to intervene at the mother's representational level of mother-infant relations in order to promote a secure infant attachment. This potentially has implications for the length of interventions. One hypothesis is that promoting maternal reflective functioning will take longer than behavioural interventions alone, as therapeutic work may need to be targeted at the mother's early attachment relationships in order to develop mentalizing skills in relation to attachment relationships. Alternatively, it may be sufficient to increase mentalization of current relationships. It could be argued that mothers with low reflective functioning require interventions to work through early attachment experiences whereas, for those with slightly higher but sub-optimal reflective functioning, interventions relating to current relationships would be sufficient. A clinical implication would be the potentially greater emotional cost to mothers of interventions targeted at the representational rather than the behavioural level of the mother-infant relationship. If, however, future research finds that the relationship between RF and EA is bi-directional, intervention at the behavioural level alone may be sufficient.

Clinical interventions which target the mother's mentalizing capacity in relation to the relationship with her infant is liable to have a beneficial effect on the mother's mental health. Mentalizing-based treatments have been developed for a range of mental health difficulties (see Allen & Fonagy, 2006), and interventions targeting mother-infants would therefore promote secure infant attachment and benefit maternal mental health. In terms of efficiency, allocating resources towards mother-infant clinical interventions appears to be a sound idea.

Within the community sample, several variables were highlighted which may impact on mother-infant relationships. Mother's sense of control over her life, mental health and parental stress were all associated with RF and/or EA and may provide a focus for interventions to promote secure infant attachment, given that RF and EA have both been associated in the literature with infant attachment (see Slade et al., 2005b; Ziv et al., 2000).

Personal Reflections

I was keen to undertake research with clinical relevance to the field of early intervention in attachment relationships between mothers and their infants.

Watching interactions of high-risk mothers and their infants, as well as reading transcripts of mothers discussing their infants, has confirmed the vital need for better services for these vulnerable infants and families.

My involvement with this research has emphasised the value of clinicians conducting research something that occurs relatively infrequently within the NHS. In the scoring manual for the EAS, in addition to promoting the use of counter-transference

as a guide to coding, Biringen et al. suggest that coders use “contextual cues and clinical judgement to infer the appropriateness of behaviours” (1998:3). Without clinical experience of working with mothers and infants, the validity of scores would be impaired. Some of the observations and transcripts were uncomfortable to score, as one would expect from high-risk samples. This left me feeling both relieved that the dyads were involved in some form of clinical intervention and curious as to whether the relationships improved following the interventions. Follow-up research to investigate this will be conducted as part of the intervention outcome studies.

I found myself wondering what the experience of participating in the research was like for the mothers and infants and whether questioning mothers about their relationships caused them to think more about things they had done or not done? Furthermore, did it increase their anxieties of being a mother, particularly for the prison mothers who had not been referred due to any identified problems in their mother-infant relationship? Did mothers enjoy the experience of sharing details of their relationship with their infant with the researcher? Or were they left with a feeling of sadness from recounting difficult childhood experiences and seeing similarities between themselves and the caregivers they held negative views of? From the infants’ viewpoint, the videoed interaction may have forced them to interact with a caregiver they would rather not have interacted with, or it may have provided an enjoyable encounter with their mother. Several of the mothers made similar comments to the research psychologist, particularly those within the prison sample: *“What do I do? I don’t normally play with him”*. Would the experience of participation therefore influence them to interact more with their infant? One assumes that there were many different feelings elicited by participation and it would

be interesting in future research concerning maternal representations and mother-infant interactions to include questions on the experience of participating in the research.

Summary

Despite the methodological issues encountered with regards to the failure to use a pooled sample, the measure of emotional availability and quantitative techniques, the research contributes something new to the literature regarding maternal representations and mother-infant interaction in young infants. The inclusion of child dimensions of emotional availability reflects a positive shift away from focusing exclusively on maternal sensitivity in investigations into the transmission of attachment. The quantitative techniques used in the study infer a relationship between RF and EA does exist, providing directions for future clinical research in larger samples to investigate whether promoting mentalizing capacities in mothers enhances mother-infant emotional availability. Further research investigating maternal representations and mother-infant interaction is also needed in several additional areas, including other high-risk mother-infant populations and infant, as well as maternal characteristics, which may impact on the identified relationship between RF and EA.

References

- Allen, J. & Fonagy, P. (2006) *The Handbook of mentalization based treatment*.
London: Wiley Blackwell
- Aviezer, O., Sagi, A., Joels, T., & Ziv, Y. (1999) Emotional availability and attachment representations in kibbutz infants and their mothers
Developmental Psychology, 35 (3), 811-821
- Bailey, H. N., Moran, G., Pederson, D. R., & Bento, S. (2007) Understanding the transmission of attachment using variable- and relationship-centered approaches. *Development and Psychopathology*, 19, 313-343.
- Barker, C., Pistrang, N., & Elliott, R. (2005) *Research methods in clinical psychology: an introduction for students and practitioners*. Chichester: Wiley
- Biringen, Z., Robinson, J. & Emde, R. (1998) *Emotional availability scale Third edition. Unpublished manual*, Department of Human Development & Family Studies, Colorado State University, CO, USA.
- Birmingham, L., Coulson, D., Mullee, M., Kamal, M., & Gregoire, A. (2006) The mental health of women in prison mother and baby units. *The Journal of Forensic Psychiatry & Psychology*, 17 (3), 393-404
- Bretherton (2000) Emotional availability: an attachment perspective. *Attachment & Human Development*, 2, (2), 233-241

- Cohen, J. (1992) A power primer. *Psychological Bulletin*, 112, 155-159. Cited in Barker, et al., 2005
- Crockenberg, S. B. (1986). Are temperamental differences in babies associated with predictable differences in care-giving? In J. V. Lerner & R. M. Lerner (Eds.), *Temperament and social interaction in infants and children: New directions for child development* (W.Damon, editor-in-chief) (pp. 53-73). San Francisco: Jossey-Bass. Cited in Teti & Gelfand (1991)
- Guzell, J.R. & Vernon-Feagans, L. (2004) Parental perceived control over caregiving and its relationship to parent-infant interaction. *Child Development*, January/February, 75, (1), 134-146
- Lok, S. M. & McMahon, C. A. (2006) Mothers' thoughts about their children: Links between mind-mindedness and emotional availability. *British Journal of Developmental Psychology*, 24, 477-488
- Slade, A., Grienenberger, J., Bernbach, E., Levy, D., & Locker, A. (2005) Maternal reflective functioning, attachment, and the transmission gap: A preliminary study *Attachment & Human Development*, 7 (3): 283-298

Szewczyk Sokolowski, M., Hans, S. L., Bernstein, V. J., & Cox, S. M. (2007)

Mothers' representations of their infants and parenting behaviour:

Associations with personal and social-contextual variables in a high-risk sample. *Infant Mental Health Journal*, 28 (3), 344-365

Teti, D. M. & Gelfand, D. M. (1991) Behavioral competence among mothers of

infants in the first year: The mediational role of maternal self-efficacy. *Child Development*, 62, 918-929

Trapolini, T., Ungerer, J. A., & McMahon, C. A. (2008) Maternal depression:

relations with maternal caregiving representations and emotional availability during the preschool years. *Attachment & Human Development*, 10, (1), 73-90

APPENDIX 1

Summary table of studies included in the review

Study	N	Design	SES	Sample features	Age mother-infant interaction assessed	Age attachment assessed	AAI Frequencies					SS Frequencies			
							Autonomous	Dismissing	Preoccupied	Unresolved	Cannot Classify	Secure	Avoidant	Resistant	Disorganized
Abrams, Rifkin, & Hesse (2006)	75 32 (AAIs)	Correlational, Retrospective ^a	M	Caucasian, U.S.A. sample, mothers & fathers	12-18mths	12-18mths	14	11	1	6		28	21	3	23
Atkinson et al. (2005)	199			See Pederson et al. (1998) & Raval et al. (2001)											
Aviezer, Sagi, Joels, & Ziv (1999)	43	Concurrent, Quasi-experimental between group comparison.		Israeli Kibbutz sample	14-22mths	14-22mths	30	3	8		2	29		17	
Bailey, Moran, Pederson & Bento (2007)	98	Prospective ^b Correlational	L	Adolescent (M= 18.4 yrs), 81% Caucasian, Canadian sample	12mths	12mths	25	36		37		33	7		58
Bernier & Dozier (2003)	64	Prospective ^c , Correlational	D	Foster-mothers, 67% African-American, U.S.A. sample		12-24mths	35	16		13		29	2	4	29
Biringen et al. (2000)	35	Concurrent, Correlational	D	U.S.A. sample	5yrs old		26	3	2	4					

Note: ^aAAI administered 5 years post-SS; ^bAAI administered when infant 6 months old, before AQS; ^cAAI administered between 33 months prior & 18mths post placement before SS.

Study	N	Design	SES	Sample features	Age mother-infant interaction assessed	Age attachment assessed	AAI Frequencies					SS Frequencies			
							Autonomous	Dismissing	Preoccupied	Unresolved	Cannot Classify	Secure	Avoidant	Resistant	Disorganized
Dozier, Chase Stovall, Albus, & Bates (2001)	50	Prospective ^a , Correlational	D	Foster mothers, 64% African-American, diverse SES, U.S.A. sample		12-24mths	34	11		5		26	3	4	17
Goldberg, Benoit, Blokland, & Madigan (2003)	197	Prospective, Correlational	M	"Predominantly Caucasian," Canadian sample.	12mths	12mths	Not-U = 151			46		Not-disorganized =152			45
Jacobvitz, Leon, & Hazen (2006)	116	Prospective, Correlational	D	82% Caucasian, U.S.A sample,	8mths		55	32	29						
Lyons-Ruth, Yellin, Melnick & Atwood (2005)	45	Retrospective ^b Correlational	L	80% Caucasian, mothers with high rates of childhood trauma, U.S.A. sample	18mths	18mths	18	3	5	13	6	19	7		19
Madigan, Moran & Pederson (2006)	82	Prospective, Correlational	L	Adolescent mothers (M=18.4yrs), majority Caucasian, Canadian sample	12mths	12mths	32	21		29		27	7		48
Pederson, Gleason, Moran, & Bento (1998)	60	Retrospective ^c , Correlational	H/M	All Caucasian, Canadian sample,	13mths	13mths	32	18	10			32	16	12	

Note: ^aAAI administered between 33months prior & 18months post placement before SS; ^bAAI administered when children 7 years old; ^cAAI administered within 6 months after SS

Study	N	Design	SES	Sample features	Age mother-infant interaction assessed	Age attachment assessed	AAI Frequencies					SS Frequencies			
							Autonomous	Dismissing	Preoccupied	Unresolved	Cannot Classify	Secure	Avoidant	Resistant	Disorganized
Raval et al. (2001)	96	Prospective, Correlational	M	Majority Caucasian, Canadian sample,	6mths	12mths	44	20	15	17		50	16	13	17
Sagi et al. (1997)	45	Concurrent, Between group comparison		Israeli Kibbutz		14-22mths	31	3	11			31		14	
Schuengel, Bakermans-Kranenburg, & Van IJzendoorn, (1999)	85	Retrospective ^a Between group's (U vs Not-U),	M	All mothers had experienced loss, Dutch sample,	10-11mths	14-15mths	Not-U = 65			20		53	Insecure= 32		
Slade, Belsky, Aber, & Phelps (1999)	125	Prospective ^b , Correlational	M/L	Married, Caucasian, U.S.A. sample, all male infants	15 & 21mths		77	26	22						
Slade, Grienberger, Bernbach, Levy, & Locker (2005)	40	Prospective, Correlational	M	94% Caucasian, U.S.A. sample		14mths	23	6	8	3		22	5	3	10

Note: ^a AAI administered when infant 12 months old, approximately 1 month after interaction observation; ^b AAI administered when infants 12-15 months, before observations

Study	N	Design	SES	Sample features	Age mother-infant interaction assessed	Age attachment assessed	AAI Frequencies					SS Frequencies			
							Autonomous	Dismissing	Preoccupied	Unresolved	Cannot Classify	Secure	Avoidant	Resistant	Disorganized
Tarabulsy et al. (2005)	64	Retrospective ^a , Correlational		Adolescent, (M=17.4yrs) Canadian sample.	6 & 10mths	15 & 6mths (AQS)									
Van Ijzendoorn, Schuengel & Bakermans-Kranenburg (1999)	6281	Meta-analysis	D	Diverse		Diverse						3235	1094	665	1287

Note: ^a AAI administered after AQS.

APPENDIX 2

Tables showing:

**Relative Risk Ratios of the AAI's prediction
of infant attachment classification &**

**Effect sizes for the AAI's prediction of maternal behaviour, other
mediators of attachment transmission and infant behaviour**

Table I: Relative risk ratios of AAI prediction of secure verses insecure SS classifications

Study	Total N	Relative Risk Ratio	95% Confidence Interval	
			Lower	Upper
Aviezer, Sagi, Joels, & Ziv (1999)	43	1.14	.69	1.88
Bailey, Moran, Pederson & Bento (2007)	98	2.15	1.27	3.64
Dozier, Chase Stovall, Albus, & Bates (2001)	50	3.61	1.24	10.54
Madigan, Moran & Pederson (2006)	82	2.70	1.51	4.81
Pederson, Gleason, Moran, & Bento (1998)	60	3.79	1.80	7.98
Raval et al. (2001)	96	(U/D -) = 1.56	1.12	2.18
		(U/D+) = 1.93	1.28	2.91
Sagi et al. (1997)	45	1.10	.70	1.75
Total	474	Mean RR: 2.25	1.20	4.46

Table II: Relative risk ratios of non-autonomous AAI classification's prediction of avoidant infant attachment

Study	N	Relative Risk Ratio	95% Confidence Interval	
			Lower	Upper
Dozier, Chase Stovall, Albus, & Bates (2001)	50	1.06	.10	11.52
Pederson Gleason, Moran, & Bento (1998)	60	3.05	.87	10.65
Raval et al. (2001)	96	2.06	.91	4.64
Total	206	Mean RR: 2.06	.63	8.94

Table III: Relative risk ratios of non-autonomous AAI classification's prediction of resistant infant attachment

Study	N	Relative Risk Ratio	95% Confidence Interval	
			Lower	Upper
Dozier, Chase Stovall, Albus, & Bates (2001)	50	2.13	.31	14.41
Pederson Gleason, Moran, & Bento (1998)	60	1.14	.36	3.63
Raval et al. (2001) (excluding u/d classifications)	96	2.40	.80	7.22
Sagi et al. (1997)	45	1.23	.49	3.08
Total	251	Mean RR: 1.72	.49	7.08

Table IV: Relative risk ratios of unresolved AAI classification's prediction of disorganized SS classification

Study	N	Relative Risk Ratio	95% Confidence Interval	
			Lower	Upper
Bailey, Moran, Pederson & Bento (2007)	98	1.44	1.04	1.98
Dozier, Chase Stovall, Albus, & Bates (2001)	50	2.77	1.45	5.30
Goldberg, Benoit, Blokland, & Madigan (2003)	197	2.63	1.61	4.29
Madigan, Moran & Pederson (2006)	82	1.68	1.19	2.38
Raval et al. (2001)	96	1.43	.52	3.90
Total	523	Mean 1.99	1.16	3.57

Table V: Effect sizes for the AAI's prediction of maternal responsive behaviour

Study	Comparison	Type of Behaviour	Statistic	Mean S.D.		Effect size (d)	95% Confidence Interval	
				Secure	Insecure		Lower	Upper
Aviezer et al. (1999)	Secure vs insecure	Sensitivity		6.95 .80	6.31 .90	.77	.52	1.02
		Structuring		4.83 .55	4.27 .70	.93	.76	1.11
Bailey, Moran, Pederson & Bento (2007)	Secure vs insecure	Sensitivity		.43 .62	.19 .56	.42	.30	.53
Biringen et al. (2000)	Secure vs insecure	Sensitivity		6.85 1.16	5.33 1.92	1.09	.63	1.55
		Structuring		4.02 .79	3.06 1.42	.97	.64	1.30
		Non-intrusiveness		4.29 .98	4.50 .43	-.24	-.53	.05
		Non-hostility		4.58 .72	4.50 .83	.11	-.14	.36
Jacobvitz, Leon, & Hazen (2006)	Secure vs insecure	Sensitivity		4.54 .81	4.29 1.05	.27	.09	.44
	Unresolved vs not-unresolved	Sensitivity		4.24 1.12	4.47 .87	-.25	-.42	-.07
Pederson Gleason, Moran, & Bento (1998)	Secure vs insecure	Responsiveness		.57 .39	.27 .63	.58	.45	.71

Study	Comparison	Type of Behaviour	Statistic	Mean S.D.		Effect size (d)	95% Confidence Interval	
				Secure	Insecure		Lower	Upper
Raval et al. (2001)	Secure vs insecure	Total responsiveness		53.5 21.26	45.7 19.3	.39	-3.66	4.43
	Secure vs insecure	Response to possible signals		53.6 21.17	41.5 20.35	.58	-3.56	4.73
Raval et al. (2001)	Secure vs insecure	Response to clear signals		75.8 29.62	77.4 23.46	-.06	-5.35	5.23
		Mean response latency		3.3 2.13	4.5 2.83	-.47	-.98	.03
		Response to safety issues		87.0 20.57	76.5 37.34	.34	-5.82	6.50
		Response to infant distress		84.7 22.60	68.9 27.69	.62	-4.48	5.72
		Monitoring (frequency)		2.4 2.18	1.3 1.59	.58	.21	.96
Slade, Belsky, Aber, & Phelps (1999)	Secure vs insecure	Positive mothering		13.91 3.17	13.23 3.55	.21	-.38	.79
		Negative mothering		6.00 1.25	6.45 1.13	-.37	-.59	-.16
Tarabulsky et al. (2005)	Attachment Security (AQS)	Sensitivity	.37			.87		

Note: ^aPoint biserial correlation

Table VI: Effect sizes for the AAI's prediction of frightening or atypical maternal behaviour

Study	AAI Category	Behaviour/ Context	Statistic	Mean S.D.		Effect size (d)	95% Confidence Interval	
				U	Not-U		Lower	Upper
Abrams, Rifkin, & Hesse (2006)	U	FR	7.60 ^b			1.12		
Bailey, Moran, Pederson & Bento, (2007)	U	Disengaged behaviour		.36 .35	.07 .395	.77	.69	.84
		Nonsynchronous behaviour		.13 .23	.06 .22	.31	.27	.36
Goldberg, Benoit, Blokland, & Madigan (2003)	U	Atypical maternal behaviour		32.6 16.92	25.11 16.37	.45	-1.85	2.76
Jacobvitz, Leon, & Hazen (2006)	U	FR	5.11 ^c			1.01		
Lyons-Ruth, Yellin, Melnick & Atwood (2005)	U	Atypical maternal behaviour	.33 ^{a d}			.70		
Lyons-Ruth, Yellin, Melnick & Atwood (2005)	H/H	Atypical maternal behaviour	.39 ^{a d}			.85		
Madigan, Moran & Pederson (2006)	U	Atypical maternal behaviour	.27 ^d			.56		
	U	Atypical maternal behaviour Play with toys		4.00 1.81	3.14 1.64	.52	.27	.76
		Atypical maternal behaviour Play without toys		5.09 1.86	4.05 1.81	.57	.31	.84
Schuengel, Bakermans-Kranenburg, & Van IJzendoorn (1999)	U	FR		3.45 1.11	3.33 1.62	.08	-.25	.40

Note: ^aN= 35, excluding CC classifications; ^bChi-square value, 1 df; ^ct-test statistic, df 112, $p < .0001$; ^dpoint biserial correlation coefficient

Table VII: Effect sizes for the AAI secure/insecure classification's prediction of potential mediators of attachment transmission

Study	Mediator	Statistic	Mean SD		Effect size (d)	95% Confidence Interval	
			Secure	Insecure		Lower	Upper
Bernier & Dozier (2003)	Mind- mindedness	.29 ^a			.61		
Slade, Belsky, Aber, & Phelps (1999)	Joy/pleasure representations		.19 .74	-.24 .95	.52	.36	.67
	Anger representations		-.03 .82	.05 .85	-.10	-.24	.05
	Guilt-separation representations		-.04 .69	.075 .83	-.15	-.29	-.02
Slade, Grienberger, Bernbach, Levy, & Locker (2005)	Reflective function		5.74 1.51	3.88 1.09	1.38	.96	1.80

Note: ^a*pearsons correlation coefficient*

Table VIII: Effect sizes for the AAI's prediction of infant behaviour

Study	Type of Behaviour	Mean S.D		Effect Size (d)	95% Confidence Interval	
		Autonomous	Non-autonomous		Lower	Upper
Aviezer et al. (1999)	Responsiveness	5.48 .75	4.77 1.15	.80	.53	1.06
	Involving behaviour	5.33 1.09	4.65 1.61	.54	.16	.92
Biringen et al. (2000)	Responsiveness	5.60 .84	4.67 1.27	.96	.64	1.28
	Involving behaviour	5.73 .91	4.94 1.24	.79	.45	1.12

APPENDIX 3

Outline of the author's contribution to the empirical project

Author's Contribution to the Empirical Project

The samples used in the current study were from a community sample and prison sample of mothers and their infants. A research psychologist (M.S.) working on the existing intervention evaluation project conducted screening of participants and data collection within the community sample. A second research psychologist (J.N.), working on the prison intervention evaluation project conducted data collection for the prison sample.

The author (J.G.) coded 46% of the Parent Development Interviews (Slade et al., 2005) and 99% of the video observations included in the current study.

M.S. plans to use part of the data contained in this thesis within a PhD thesis concerning maternal representations and the parent-infant relationship.

APPENDIX 4

Demographic characteristics of the sample

Table showing the frequencies of participants within the community sample meeting each criteria of social exclusion.

	1	2	3	4	5	6	7	8	9
Yes	27 (54%)	19 (38%)	18 (36%)	20 (40%)	15 (30%)	2 (4%)	23 (46%)		34 (68%)
No	23 (46%)	31 (62%)	32 (64%)	30 (60%)	35 (70%)	48 (96%)	27 (54%)	50 (100%)	16 (32%)

Note: n=50

1 Low income households (eligibility for income support)

2 Long term unemployed (>2years)

3 Temporary or overcrowded accommodation (more than 2 persons per room)

4 Single or unpartnered

5 Presence of chronic physical illness or disability

6 Early childhood history of foster or institutional care

7 Social isolation associated with recent relocation

8 Less than 20 years of age

9 Previous diagnosis of non-psychotic psychiatric illness

Table showing mother's educational attainment in each sample

	Community Sample (n=50)	Prison Sample (n=20)	Total Sample (n=70)
No qualifications	1 (2%)	6 (30%)	7 (10.0%)
GCSE or equivalent	8 (16%)	9 (45%)	17 (24.3%)
A-levels	12 (24%)	1 (5%)	13 (18.6%)
NVQ	3 (6%)		3 (4.3%)
HND	4 (8%)	1 (5%)	5 (7.1%)
Higher education	22 (44%)	3 (15%)	25 (35.7%)

Table showing the ethnicity of infants in each sample

	Community Sample (n=50)	Prison Sample (n=20)	Overall sample (n=70)
White	28 (56%)	10 (50%)	38 (54.3%)
Black	5 (10%)	7 (35%)	12 (17.1%)
Asian	5 (10%)		5 (7.1%)
Mixed	10 (20%)	2 (10%)	12 (17.1%)
Other	2 (4%)	1 (5%)	3 (4.3%)

Table showing the mean, standard deviation and range of maternal psychopathology measures within the community sample

	Mean	Standard Deviation	Minimum	Maximum
GHQ Total	14.62	6.46	4.00	28.00
MMS	28.00	7.06	13	44
<u>Brief Symptom Inventory</u>				
Global Indices of Distress	1.42	0.73	0.17	3.19
Somatization	8.38	6.82	0	22
Obsessive Compulsive	12.02	6.09	3	24
Interpersonal Sensitivity	6.31	3.66	0	15
Depression	10.04	5.38	2	24
Anxiety	7.89	5.06	0	20
Phobic Anxiety	5.71	4.79	0	16
Hostility	5.82	5.06	0	20
Paranoid Ideation	6.44	5.01	0	17
Psychoticism	6.07	4.11	0	14
<u>Parent Stress Index</u>				
Total	87.41	20.00	47	133
Parental Distress	38.78	8.19	18	56
Parent-Child Dysfunctional Interaction	22.54	7.66	12	41
Difficult Child	26.09	8.52	13	44

Note: General Household Survey Questionnaire (GHQ) n = 50, Brief Symptom Inventory (BSI) n= 45, Parent Stress Index (PSI) n =46, MMS n = 46.

APPENDIX 5

**Copies of ethics approval, participant information sheets,
and consent forms**

Camden & Islington Community Local Research Ethics Committee

25 May 2005

Prof Peter Fonagy

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) and Counselling*

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

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			
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.

With the Committee's best wishes for the success of this project,

Yours sincerely,

Chair

E-mail:

Enclosures

Standard approval conditions

Site approval form (SF1)



Central Office for Research Ethics Committees (COREC)

NOTICE OF SUBSTANTIAL AMENDMENT

For use in the case of all research other than clinical trials of investigational medicinal products (CTIMPs). For substantial amendments to CTIMPs, please use the EU-approved notice of amendment form (Annex 2 to ENTR/CT1) at <http://eudract.emea.eu.int/document.html#guidance>.

To be completed in typescript by the Chief Investigator in language comprehensible to a lay person and submitted to the Research Ethics Committee that gave a favourable opinion of the research ("the main REC"). In the case of multi-site studies, there is no need to send copies to other RECs unless specifically required by the main REC.

Further guidance is available at <http://www.corec.org.uk/applicants/apply/amendments.htm>.

Details of Chief Investigator:

Name: Prof Peter Fonagy
Address: The Anna Freud Centre

Telephone:
E-mail:
Fax:

Full title of study:	Helping parents with mental health problems to parent young infants: A randomised controlled trial of parent-infant psychotherapy and counselling
Name of main REC:	Camden and Islington Community LREC
REC reference number:	05/Q0511/47
Date study commenced:	01/06/2005
Protocol reference (if applicable), current version and date:	
Amendment number and date:	Amendment 1, 22/09/2006

Type of amendment (indicate all that apply in bold)

(a) Amendment to information previously given on the REC application form

Yes

If yes, please refer to relevant sections of the REC application in the "summary of changes" below.

(b) Amendment to the protocol

Yes

If yes, please submit either the revised protocol with a new version number and date, highlighting changes in bold, or a document listing the changes and giving both the previous and revised text.

(c) Amendment to the information sheet(s) and consent form(s) for participants, or to any other supporting documentation for the study

Yes

If yes, please submit all revised documents with new version numbers and dates, highlighting new text in bold.

Is this a modified version of an amendment previously notified to the REC and given an unfavourable opinion?

No

Summary of changes

Briefly summarise the main changes proposed in this amendment using language comprehensible to a lay person. Explain the purpose of the changes and their significance for the study. In the case of a modified amendment, highlight the modifications that have been made.

If the amendment significantly alters the research design or methodology, or could otherwise affect the scientific value of the study, supporting scientific information should be given (or enclosed separately). Indicate whether or not additional scientific critique has been obtained.

1. **Additional procedure at 12 month follow-ups (sections A10 and A13 of form)** At the 12-month follow-up interviews with the families we will, with the parents' consent, carry out the "Ainsworth's Strange Situation Procedure" (SSP). This is a laboratory procedure involving a series of separations and reunions between the mother and child (see brief summary below). This will be video-recorded and used to classify the attachment security of the child. Knowing more about the attachment security of the infants post-intervention will add considerable scientific value to the study. We are comparing individual counselling with parent-infant psychotherapy. Our hypothesis is that the relational and attachment focus of the parent-infant psychotherapy will have added benefits for the child in terms of his development, affect regulation and attachment security over the individual maternal counselling. We know from the literature that the attachment patterns in infancy have great effects on later psychosocial functioning. By knowing more about the infant's attachment after intervention, we will know more about the immediate and longer-term benefits of the PIP and counselling for the child. The SSP is the most widely accepted method of assessing infant attachment behaviour and it is therefore a

valuable addition to the protocol.

Below is a short summary of the steps involved in the SSP. A more detailed document is attached.

- a) Mother and baby introduced into bright friendly room with one way mirror with toys on floor
- b) Mother and baby alone, baby free to explore (3 minutes)
- c) Stranger enters, sits down, talks to mother and then tries to engage the baby in play (3 minutes)
- d) Mother leaves. Stranger and baby alone (up to 3 minutes, shorter if infant is distressed)
- e) First reunion. Mother returns and stranger leaves unobtrusively. Mother settles baby if necessary, and tries to withdraw to her chair (3 minutes)
- f) Mother leaves. Baby alone (up to 3 minutes – again mother returns if baby distressed)
- g) Stranger returns and tries to settle the baby if necessary, and then withdraw to her chair (up to 3 minutes)
- h) Second reunion. Mother returns and stranger leaves unobtrusively. Mother settles baby and tries to withdraw to her chair (3 minutes)

2. **Addition to semi-structured interview at baseline and 12 months (section A10 of form):** We would like to start administering the Parent Development Interview (attached) with the parents at baseline and at the 12 months follow ups. This is a standardised semi-structured interview that taps into parents' representations of themselves as parents, of their children, and of the relationship between them. Our experience of using this questionnaire with parents is that it reveals rich information about interviewees experiences of parenting and perceptions of themselves and their child. We feel this will greatly add to the understanding of study participants at baseline and will also be sensitive to change following the intervention. Experience of using this interview schedule with clinical groups has demonstrated that parents find the questions useful and interesting and the interview enjoyable. Inclusion of this interview schedule in the assessment procedure will not normally increase total time to more than 2 hours (as previously estimated).

Any other relevant information

Applicants may indicate any specific ethical issues relating to the amendment, on which the opinion of the REC is sought.

The Strange Situation (amendment 1 above) can be somewhat stressful for the infants and the parents as it involves a series of separations and reunions between them. It is a standard assessment which has been used many thousands of times including over 400 administrations in our laboratory at UCL and the investigator has two decades of experience with the procedure. No significant ill effects have been reported. On 66-75% of testing occasions the infant cries briefly in the situation when alone or with stranger. A number of safeguards will be put in place to reduce the stress on both parent and child. Firstly, the research psychologist will fully explain the procedure and the reasons for doing it with the parent. Only after a full and careful discussion will consent be sought. Mothers will be told that this is a voluntary procedure and that they do not have to take part in this section of the assessment if they do not wish to do so. Choosing not to do this procedure will not in any way influence their participation in the research or in the therapy if this is still ongoing.

Secondly, mothers are told that during the separation periods they can go back into the room sooner than the full 3 minutes if the infant is significantly distressed and/or if they feel uncomfortable with this. This is part of the standard instruction on the SSP.

Finally, the research psychologist will allow time after the SSP to debrief with the mother and infant and discuss any emotions or difficulties they might have had during the procedure. In most cases, the counselling or PIP would have come to an end by the 12 month follow-up. If the research psychologist feels that the mother needs additional support following the SSP and debriefing session, a one-off session with a parent-infant psychotherapist from The Anna Freud Centre will be arranged. If it is felt that more intensive support is needed for the mother and baby, the appropriate services in the family's local area will be sought. This would be a standard procedure at the final interview with the families, regardless of the SSP, as we have a responsibility to ensure that all is done to support these high-risk families where further need is assessed.

It should also be noted that many researchers who use the SSP have commented that these separations and reunions between mother and infant are often a normal part of their everyday lives, and therefore the SSP is not often experienced as much more stressful than other day to day stresses they often encounter.

List of enclosed documents		
<i>Document</i>	<i>Version</i>	<i>Date</i>
Protocol Amendment	2	20/09/2006
Patient Information Sheet	2	20/09/2006
Parent Development Interview	1	20/09/2006
The Ainsworth Strange Situation procedure	1	20/09/2006

Declaration

- I confirm that the information in this form is accurate to the best of my knowledge and I take full responsibility for it.
- I consider that it would be reasonable for the proposed amendment to be implemented.

Signature of Chief Investigator:

Print name:

Date of submission:



THE ANNA FREUD CENTRE

DEDICATED TO THE WELL-BEING OF CHILDREN

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 two types of help for mothers and young babies: counselling and parent-infant psychotherapy. Parent-infant psychotherapy is a service for the mothers and babies together, and counselling is a service for parents on their own. We expect that both these treatments will help. 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 your local GP practice, 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 then begin either counselling or parent-infant psychotherapy. 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, your counsellor or therapist will contact you to arrange how and when you want to start the therapy.

As well as the counselling or therapy, you and your child will also 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, what it's like for you to be a parent, and about your experience of therapy. 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. These research assessments will probably take between one-and-a-half to two 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 counselling and parent-infant psychotherapy 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 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.



THE ANNA FREUD CENTRE

DEDICATED TO THE WELL-BEING OF CHILDREN

Professor Leslie C Aiello
Head of the Graduate School

Tel: 020 7879 7844

Fax: 020 7879 7043

Email: graham@annafreud.org.uk

Patient Identification Number: _____

CONSENT FORM

17 March 2004

A study of psychological help for mothers with young babies

Mr Toby Etherley

42 St James's Square

Belvedere

Kent

DA17 9EB

Name of Researchers: Peter Fonagy, _____, Michelle Slead

Please initial box

1. I confirm that I have read and understand the information sheet dated 05/2005

Dear Mr Etherley

(version 2) for the above study and have had the opportunity to ask questions.

Re: Notification of Ethical Approval

Project ID

course in Holistic Health

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.

Further ethical approval following review by the UCL Committee for the Ethics of Non-NHS Human Research (27 February 2004) subject to the following conditions:

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.

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.

Name of Parent

Date

Signature

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 continued ethical approval by completing the 'Amendment Approval Request Form'.

Name of child

The forms identified above can be accessed by logging on to the ethics website homepage

<http://www.annafreud.org.uk> clicking on the 'Research' link and then on the 'Ethics' link of the Research Continuing Approval.

Researcher taking consent

Date

Signature

3. It is your responsibility to report any serious or adverse events involving risks to participants or others. Both non-serious and serious adverse events must be reported.



The Graduate School
University College London
Gower Street London WC1E 6BT

Head of the Graduate School

Tel:
Fax:
Email:

17 March 2004

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 _____, Ethics Committee Administrator (_____), 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

Chair of the UCL Committee for the Ethics of Non-NHS Human Research

cc: Sub-Department of Clinical Health Psychology, UCL



Annual Continuing Review Approval Form

It is a requirement of the UCL Research Ethics Committee that research projects which have received ethical approval by the Committee are monitored annually. Therefore, this form must be completed and returned **PRIOR** to the date that the current approval expires. If your project has ceased or was never initiated, it is still important that you complete this form so that we can ensure that our records are updated accordingly.

1	ID Number: 0185/001	Principal Investigator:
2	Project Title: An evaluation of the implementation of the 'New Beginnings' course in Holloway prison.	
3	Current Approval Expires: 27 th February 2008	
4	Project Status: (please tick relevant box) <input checked="checked" type="checkbox"/> Active <input type="checkbox"/> Terminated	
5	Current Status of Human Participant Use: Beginning date: 27 th February 2004 Date completed (if applicable): Total Number enrolled to date: 88	
6	Human participants will no longer be used. Please explain: N/A	
7	If funded study, please indicate: Agency: The Anna Freud Centre (project sponsored by the Home Office) Project Period: Agency Award Number:	
8	Number of participants who withdrew from the project: 4 Please provide reasons for withdrawal: Due to early release or deportation of foreign nationals these mothers have not been able to complete the entire course.	

9	Have you modified your research since your last review?	<input type="checkbox"/> Yes	<input checked="checked" type="checkbox"/> No
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If so, you are required to submit a revised application form to the Committee for review.

10 Please provide with this form a brief report describing the progress of your study thus far.

Include a description of any **adverse or unforeseen circumstances** arising out of the research project (e.g. a complaint by a participant, an incident endangering a research worker taking a questionnaire out to a population study, etc) together with a summary of any recent literature, findings, or other relevant information associated with your study.

Print Name:

Signature:

Date:

20/02/08

FOR OFFICE USE ONLY:

Approval

The continuing monitoring of this protocol has been reviewed and approved by the Committee. The re-approval date is ... 27th February 2008 ... and is valid for 1 year from this date.

Date: 26/3/2008

Please return completed form to:

Secretary of the UCL Research Ethics Committee
Graduate School

DEDICATED TO THE WELL-BEING OF CHILDREN

DEDICATED TO THE WELL-BEING OF CHILDREN

- DEDICATED TO THE WELL-BEING OF CHILDREN**

New Beginnings ...

- A course for Mothers and Babies at HMP (insert name)

Information sheet for mothers

You and your baby are invited to join **New Beginnings** - a course about parenting offered at the Mother and Baby Unit.

The aims of the course are

- to give you more knowledge about babies' development
- to make you feel confident about being a good mother to your baby
- to help you and your baby enjoy each other in these early months
- to give your baby the best chances for healthy and happy development in the first months of his/her life
- to support you in preparing to say good bye to your baby, where that is the case

1...

Why it is worth your while to do this course

- you will enjoy getting to know your baby and understanding how important you are to him/her
- a happy first relationship is something your baby can take with him/her and build upon in the future
- you and your baby may face separation from each other during your prison sentence. Understanding your feelings can be helpful to both of you in preparing for this.
- you will receive accreditation for the course

We will provide you with a folder in which you can file the handouts from the course, your individual work (pictures, poems, thoughts), photographs of you and your baby. The folder will be yours to keep.

How will the course be run?

Up to 6 mothers and babies can participate in each course. You will meet as a group with two experienced facilitators.

In the meetings there will be discussions of specific subjects to do with being a mother to your baby, and you will also be given some individual worksheets to be done between the meetings.

What will you be expected to do?

- attend regularly
- bring your baby each time

You can help us...

If we find that this course is helpful, we hope to get permission to run it in mother and baby units across the country. In order to find this out we need to get some information from you.

If you agree, we will meet you and your baby individually *before the beginning of the course and again after it ends* in order to ask you some questions about being a mother and to videotape you and your baby. This material will be confidential. It will be used in a study to assess whether the course has been helpful, and we will be able to print some pictures of you and your baby for you to keep.



THE ANNA FREUD CENTRE

DEDICATED TO THE WELL-BEING OF CHILDREN

'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 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.

Please note that you are free to choose whether you would like to take part in all or some of the research. If there are parts of the research that you are not comfortable with you are under no pressure to do them. We only want you to do what you feel comfortable with. Any kind of participation will be greatly appreciated.

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

* This form is to be completed independently by the participant.

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: _____

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APPENDIX 6

Correlations between BSI subscales, Emotional Availability and Reflective Functioning

Table showing correlations between Brief Symptom Inventory (BSI) sub-scales, Emotional Availability (EA) and Reflective Functioning (RF)

	1	2	3	4	5	6	7	8	9	10
Overall RF	-.32(*)	-.16	-.08	-.14	-.24	-.25	-.25	-.10	-.06	-.22
<i>Maternal</i>										
Sensitivity	-.32(*)	-.32(*)	-.37(*)	-.29	-.39(**)	-.44(**)	-.41(**)	-.32(*)	-.13	-.42(**)
Structuring				-.10	-.25	-.24	-.16	-.001	-.02	-.18
Non-Intrusiveness	-.17	-.08	-.20	.04	-.14	-.30(*)	-.15	-.19	-.05	-.21
Non-hostility	-.22	-.20	-.20	-.18	-.39(**)	-.30(*)	-.29	-.28	-.04	-.28
<i>Child</i>										
Responsiveness	-.16	-.16	-.18	-.10	-.26	-.17	-.19	-.13	-.04	-.18
Involving Behaviour	-.24	-.19	-.18	-.15	-.34(*)	-.18	-.24	-.17	-.14	-.24

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

Note. Correlations are Spearman's rho correlations, N=45

1 BSI Somatization, 2 BSI Interpersonal Sensitivity, 3 BSI Depression, 4 BSI Anxiety, 5 BSI Phobic Anxiety, 6 BSI Paranoid Ideation, 7 BSI Psychoticism, 8 BSI Hostility, 9 BSI Obsessive compulsive, 10 BSI Global Indices of Distress