

Maternal Responsiveness and Child Social and Emotional Development



DOCTORATE IN CLINICAL PSYCHOLOGY

Literature Review

The Association between Maternal Sensitivity and Child Social and Emotional
Development:

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Literature Review¹

The Association between Maternal Sensitivity and Child Social and Emotional Development

Abstract

Purpose: This review examines literature about maternal sensitivity (MS) and its relationship with a child's social and emotional development (SED); investigating confounding factors and highlighting gaps in the literature and future directions.

Background: Mother-child interactions are fundamental to psychological development. Delayed SED produces negative effects into adolescence. SED emerges within the mother-infant relationship in response to positive MS to infant cues, reflecting empathy, interest, and kindness.

Results: 34 relevant studies were identified and discussed. Most used longitudinal cohort designs where the validity of the associations is increased. High MS at 6 to 36 months was positively associated with good child SED, especially social functioning and even in the high-risk samples.

Conclusions: Methodological limitations and little adjustment for confounding variables limits a fuller understanding of the effects of mother and child factors on MS and SED. Exploration of large UK longitudinal studies is needed to clarify whether positive MS is associated with later good SED, with an emphasis on social competence and SED in adolescence while considering confounding variables.

Keywords: Maternal sensitivity, maternal responsiveness, social development, emotional development

¹ This literature review is formatted according to the nominated journal, Psychological review. Instructions to authors are included in Appendix B1.

Introduction

This review explores Maternal Sensitivity (MS) in mother-child interactions and its relationship with a child's Social and Emotional Development (SED); focusing on how MS in the first few years impacts on a child's social functioning and the exploration of maternal and child factors, which may disrupt this relationship.

There is an established body of research that shows that early delays in SED produce negative effects, including low levels of social competence and elevated levels of problem behaviours, which may persist from toddlerhood through middle childhood and into adolescence, and can be associated with later social withdrawal, peer rejection, social difficulties, antisocial behaviour, and academic under-achievement (Rubin, Coplan, & Bowker, 2009; Boyd, Barnett, Bodrova, Leong, & Gomby, 2005; Bennett et al., 1999; Campbell, Shaw, & Gilliom 2000; White, Moffitt, Earls, Robins, & Silva, 1990). It is critical therefore to determine what factors may place children at risk for poor SED to inform future social and health policy.

Mother-child interactions provide a fundamental basis for psychological development and are vital for an infant's SED (Stern, 1985) and this link is likely to be universal (LeVine & Norman, 2001; van IJzendoorn & Sagi, 2001).

MS was conceptually introduced in the 1970's as part of attachment theory (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1969) and is defined as the capacity of mothers to recognise their infant's emotional, cognitive and communicative needs and respond to them appropriately (Ainsworth et al, 1978). By its reciprocal nature this capacity is influenced by infant factors (Oehler, Strickland & Nordlund, 1991; Spencer & Meadow-Orlans, 1996; Van den Boom, 1994).

From an attachment viewpoint SED emerges within the mother-infant relationship in response to positive MS through reciprocating quickly and

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appropriately to infant cues, reflecting empathy, interest, and kindness (Brophy-Herb et al, 2010). This sensitive approach is later internalised as a secure base for social-emotional adaptation (Bowlby, 1969; Feldman & Eidelman, 2009). Security of attachment during infancy predicts positive and negative aspects of social development during childhood and adolescence, such as empathy (Kestenbaum, Farber, Ellen & Sroufe, 1989), social competence and engagement (Thompson, 2008; Rose-Krasnor, Rubin, Booth & Coplan, 1996), pro-social behaviour, being popular and more socially active at school (Bohlin, Hagekull, & Rydell 2000) as well as behaviour problems (England & Carlson, 2004) and internalizing problems (Booth, 1994).

Successful MS is the main predictor of attachment security, a crucial goal of the first year (Ainsworth et al. 1978; Cerezo, Pons-Salvador & Trenado, 2008) and meta-analyses have established this causal link with sensitive mothers rated as more likely to have securely attached infants (Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2003). However, greater MS to distress but not to non-distress was more discriminating at 6 months for attachment security, and maternal mind-mindedness has also been found to be a better predictor (McElwain & Booth-LaForce, 2006; Meins, Fernyhough, Fradley & Tuckey, 2001).

Many factors can impact negatively on a mother achieving positive MS including lack of social support, poverty, postnatal depression (PND), the mother's own attachment style and marital conflicts (Fonagy, Steele & Steele, 1991, Murray, Fiori-Cowley, Hooper & Cooper, 1996; Kivijärvi, Räihä, Virtanen, Lertola & Piha, 2004, Shin, Park, & Kim, 2006). Infant factors such as a difficult temperament, prematurity, sensory defects, chronic illness and physical handicap can also affect the development of positive MS (Beckwith, Rofga & Sigman, 2002).

Method

Identification of Relevant Studies

A structured search strategy was adopted using ISI Web of Science and PsycInfo without date restrictions in August 2012 and April 2013. The search terms were “MS” OR “maternal responsiveness” AND “SED” and additional terms (see table 1). The following combination terms revealed no additional papers: “maternal responsiveness” AND “social competence/social skills”. Reference lists from articles were also searched. Relevant articles in this review include those looking at maternal responsiveness or MS in relation to child SED. Papers were excluded if they were duplicates, not written in English or used animal participants. A remaining 34 were reviewed.

This review will examine the definition of MS and features of child SED before reviewing the relevant articles, which are organised by study design. Maternal and child confounding factors and methodological issues will also be explored.

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Table 1

A table showing combinations of search terms and the number of relevant results

Search terms	Number of results (ISI Web of Knowledge)	Number of relevant papers	Number of results (PsycINFO)	Number of relevant papers
Maternal Sensitivity AND Social Development	273	19	41	6
Maternal Sensitivity AND Social Competence	59	10	29	7
Maternal Responsiveness AND Social Development	240	9	27	3
Maternal Sensitivity AND Emotional Development	140	8	52	4
Maternal Responsiveness AND Emotional Development	114	5	17	2
Maternal Sensitivity AND Social and Emotional Development	53	9	25	4
Maternal Sensitivity AND Social Skills	33	3	23	5
Maternal Sensitivity AND Socioemotional Development (not socio-emotional = 0 results)	26	3	9	2
Total unique relevant papers		34		

from two electronic databases.

Conceptual and Definition Problems

Maternal Sensitivity

Many maternal qualities (e.g. acceptance) and appropriate responsiveness can define MS (van Doesum, Hosman, Riksen-Walraven & Hoefnagels, 2007). With so many available measures, confusion and a lack of definition makes comparisons difficult (Meins et al, 2001).

Maternal Responsiveness, mother-infant interaction, maternal competency are often used interchangeably for MS and Shin, Park, Ryu, & Seomun (2008) using a ‘concept analysis’ have illustrated these overlaps. MS is a dynamic process involving reciprocal give-and-take with the infant, contingent on the infant’s behaviour and the quality of maternal behaviours. Maternal responsiveness reflects an aspect of MS; the promptness or frequency of response to the infant’s signals (De Wolff & van IJzendoorn 1997). Maternal competency focuses on the mother’s skills and knowledge rather than the quality of her behaviour. The mother-infant interaction provides the context (Gibson, Ungerer, McMahon, Leslie & Saunders, 2000). Due to the overlap of terms in the literature, papers looking at maternal responsiveness and MS are included within this review.

Social and Emotional Development

SED underlies almost every aspect of school, home and community life, including effective learning and forming relationships that are fundamental to school improvement. Positive SED enhances a child’s ability in a number of areas (Boyd et al, 2005; see table 2).

In the absence of good SED poor social competence will develop with the associated negative behaviours that will impair social and academic achievement

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(Feldman & Masalha, 2010; Rubin et al, 2009; Boyd et al, 2005; Bennett et al, 1999; Campbell, et al 2000; White et al, 1990).

Table 2

Positive social and emotional development outcomes for children.

<p>Positive social and emotional development enhances a child's ability to:</p> <ul style="list-style-type: none">• be effective and successful learners;• make and sustain friendships;• accurately read and comprehend emotional states in others;• develop empathy for others;• deal with and resolve conflict effectively and fairly;• solve problems with others or by themselves;• manage strong feelings such as frustration, anger and anxiety;• be able to promote calm and optimistic states that promote the achievement of goals;• recover from setbacks and persist in the face of difficulties;• work and play cooperatively;• compete fairly and win and lose with dignity and respect for competitors;• recognise and stand up for their rights and the rights of others;• understand and value the differences and commonalities between people, respecting the right of others to have beliefs and values different from their own.
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Note. Positive social and emotional development outcomes for children. Adapted from Boyd et al, 2005.

Literature Review

Cross-sectional Cohort Studies

Page, Whilhelm, Camble and Card (2010) found a positive association between high MS and good SED at 8-12 months in a large (n=6377) representative USA sample but the association was stronger for verbal stimulation.

Greater maternal responsiveness but not warmth (positive affect, pleasure, and appreciation of the child) was associated with greater empathy and pro-social responding at 72-96 months (n=106, Davidov & Grusec, 2006). Interestingly, maternal warmth, but not MS to distress, was linked to better regulation of positive affect and to greater peer acceptance in boys only.

Conradt and Ablow (2010) found that positive MS during and following distress predicted better emotional and behavioural reactivity at 5 months (n=91). These infants also showed fewer resistant behaviours and greater engagement with greater levels of MS during the reunion episode.

Case Control Designs

A nested case-control study of socially withdrawn (n=20) and healthy children (n=143) measured at 4 1/2 and 8 years found low levels of positive child behaviours (smiling and gazing) at 3 months in association with poor maternal behaviors (including insensitivity) and this significantly predicts social withdrawal in middle childhood so a dysfunctional pattern may be a precursor of childhood social withdrawal (Gerhold, Lauct, Texdorf & Schmidt, 2002).

Longitudinal Cohort Studies with Small Samples

In considering external factors that may operate in low-income samples a significant association between MS and child SED has been found, although with a small effect size (n=119, Brophy-Herb et al, 2010). Assessed at age 7, observed

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maternal insensitivity was associated with teacher ratings of greater externalizing but not internalizing and passive/withdrawn behaviour. At age 8 poor MS and hostility were associated with child depressive symptoms (n=43; Easterbrooks, Bureau & Lyons-Ruth (2012).

Further, MS has been found to mediate the relationship between parenting stress and a child's SED and parental stress was a stronger predictor of poorer parenting behaviour and less good SED than parental depression, suggesting high MS as a model for good SED (n=114, Whittaker, Jones-Harden, See, Meisch, & Westbrook, 2010).

In developmental delay children (n=30), Niccols and Feldman (2006) found mothers with high MS had children with more pro-social behaviour (compliance and social engagement) at 24 months.

Using adoptive samples, Jaffari-Bimmel, Juffer, Van IJzendoorn, Bakermans-Kranenburg and Mooijaart (2006) found that both previous and current parental sensitivity (measured at 12, 18, 30, 84 and 168 months) predicted social development in adolescence (n=160). Stams, Juffer and van IJzendoorn (2002) found that high MS predicted better social development (6 to 84 months, n=146) with positive early mother-child interactions and attachment relationships predicting later good SED, independent of infant temperament and gender.

In premature and low-birth weight samples (assessed at 6, 12, 24, 42 and 54 months) high MS is found to have a positive effect on SED. Landry, Smith, Miller-Loncar and Swank (1997) found that early sensitive parenting behaviours that were not highly controlling or restrictive were associated with greater increases of social development (n=299). Landry, Smith, Swank, Assel and Vellet (2001; n=282) found that consistently good maternal responsiveness resulted in better child social

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development, especially in premature children (n=179).

In alcoholic (n=130) and non-alcoholic (n=97) mothers, Eiden, Colder, Edwards and Leonard (2009) found that lower MS at 2 years was predictive of lower child self-regulation and lower social competence at 3 years. Mäntymaa, Puura, Luoma, Salmelin and Tamminen (2004) found that a mother's hostility and/or intrusiveness but not poor MS at 8-10 weeks predicted behavioural/emotional problems in the child at 24 months (n=50, approximately half of families had psychosocial risk factors).

Three studies in normal populations sample are more representative; Feldman and Eidelman (2009) found positive correlations between intelligence, MS, and child social engagement at birth, 3, 6, 12, 24 and 60 months in a sample from Israel (n=126), despite including 46 mothers with high depressive symptoms. Kochanska, Forman and Coy (1999) found that good maternal responsiveness at 9 and 14 months (n=112) predicted positive socialisation effects, including higher empathy to maternal distress at 22 months. High MS measured during infancy was associated with good peer competence at 72-84 months (Barglow, Contreras, Kavesh & Vaughn, 1997; n=113). From a cultural perspective, Feldman and Masalha (2010) found high MS in infancy facilitated social competence among Israeli but not Palestinian children (5 to 33 months, n=163).

Longitudinal Cohort Studies with Large Samples

Good MS has been associated with good relational competence with peers at first grade (n=1,394, Mintz, Hamre, & Hatfield, 2011), at 24 and 36 months (n=612; National Institute of Child Health and Human Development [NICHD], 2001). Positive MS was the best predictor of a child's good social development throughout

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the early school years (n=1,364; NICHD, 2003 and n=864; NICHD, 2004) and interestingly, high quality child-care buffered the negative effects of external factors.

Early but not concurrent high MS has been positively associated with later (54 months) social problem-solving/social competence and a negative predictor of a child's loneliness in first grade (n=1016, Raikes & Thompson, 2008). Roisman, Booth-LaForce, Cauffman, Spieker & the NICHD Early Child Care Research Network [ECCRN] (2009) found that earlier but not concurrent MS was associated with depth of romantic engagement and peer competence in adolescence (180 months; n=957).

In middle childhood and at age 15, Haltigan, Roisman and Fraley (2012) found poor MS predicted problem behaviour as rated by teachers but these effects were not confirmed using maternal reports (n=1,306). In adjusting for confounders (e.g. maternal education), Fraley, Roisman and Haltigan (2012) found that the impact of positive MS on good social competence is sustained over-time.

After controlling for infant temperament, Leerkes, Blankson and O'Brien (2009) found that positive MS to distress but not to non-distress at 6 months was related to fewer behavioural problems and higher social competence at 24 and 36 months (n=376).

In depressed mothers with poor MS their infants at 36 months are less cooperative, more problematic and have poorer cognitive-linguistic functioning (n=1,215; NICHD, 1999), social competence and child externalising problems but not internalising problems (n=1,171, Campbell, Matestic, von Stauffenberg, Mohan & Kircher, 2007).

A large UK study (n=7906) found warm maternal engagement at 9 months was associated with positive SED at 3 and 5 years (Mensah & Kiernan, 2010). Spinrad et

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al, (2007) found that observed positive MS and warmth were negatively related to externalizing problems, and low scores of separation distress from caregivers' reports were positively related to social competence; all measured at 18 months (n=256) and 12 months later (n=230).

Randomised Controlled Trials

In a randomized trial of intervention Landry, Smith and Swank (2006) assigned low-income mothers (very low birth-weight, n=144 and full-term, n=120) to receive 10 weekly home visits completing developmental screens with (n=133) or without (n=131) an intervention that improved maternal responsiveness. Improved social and cognitive development at 6-13 months was seen in the intervention group and was most apparent for those born at very low-birth weight.

Summary of Findings

In summary, the literature search revealed 34 research articles. Some used cross-sectional cohort designs, which reduce the predictive power of the associations, as the direction of effects cannot be established. The majority use longitudinal cohort designs where the validity of the associations is increased, however those with relatively low sample sizes and using clinical samples make generalisation of the results difficult and not all adjust for confounders with only one using a UK population. It is not clear whether it is MS to distress rather than non-distress that is important or how severe maternal insensitivity has to be to have a negative impact on SED. But in general high MS at 6 to 36 months was positively associated with good child SED, especially social functioning and even in the high-risk samples.

Review of Methodologies

Design and Sample

Sample sizes varied and power increased with sample size: <100 to >6000. There are large studies (>1000) with measures at multiple time-points from 6 to 36 months (NICHD, 2001; 2003; 2004; Leerkes et al, 2009) and several others that have measures into middle childhood (e.g. Mensah & Kiernan, 2010; Campbell et al, 2007) but few studies look at outcomes in adolescence (e.g. Haltigan, et al, 2012; Fraley et al, 2012; Jaffari-Bimmel et al, 2006). Most samples are over represented by mothers that are better educated and have a higher income-to-needs ratio, so making them less easy to generalize from, though the larger samples reduce the effects of differential drop out and its negative consequence.

The majority of studies use high-risk samples including mothers with PND, alcohol misuse, low socio-economic status and infants who are premature, have developmental disorders and are adopted. Only data from two longitudinal normal population cohorts look at MS on child SED (Page et al, 2010; NICHD, 2001, 2003, 2004).

Measuring Maternal Sensitivity

Similar to the findings of several meta-analyses (e.g. De Wolf & van IJzendoorn, 1997), measures of MS differed across studies but the majority code 5-15 minute videotaped mother-infant interactions within the infant's first year. This is considered to be precise and reliable (Skoovgaard, Houmann, Landorph & Christiansen, 2004) as exact and objective analyses can be carried out (Kempainen, 2007). Observations took place in home and laboratory settings using structured tasks, observation of free play, MS to infant distress (Leerkes, et al, 2009), MS during a reunion following separation (Easterbrooks et al, 2012) and engaging in discussion on

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topics of disagreement such as chores (Fraley et al, 2012).

There are many tools to code MS, which have established high inter-rater and test-retest reliability and good validity. These include, The Global Rating Scale for mother–infant interaction (Murray et al., 1996); Emotional Availability Scales (Biringen, Robinson, & Ende, 1993), The Home Observation of the Measurement of the Environment inventory (HOME; Caldwell & Bradley, 2003); the Coding Interactive Behavior manual (a global rating system of parent–child interaction; Feldman, 1998); and the Maternal Behaviour Q-sort (MBQS; Pederson, Moran, & Bento, 1999). Observations tend to record the frequency of maternal behaviours (e.g. smiling).

The large NICHD studies developed MS composite scores from various ratings of maternal behaviour at 12, 24, 36 and 54 months and at age 15, on a 7-point MS rating scale. High internal consistency (.80 to .85) and inter-rater reliability (.83 to .91) were established for these composites (NICHD, 2003; Fraley et al, 2012). Less frequently, studies used self-report scales but these tend to be less reliable unless used in conjunction with an observed measure.

Measuring Social and Emotional Development

The most widely used tool for measuring SED were parent report questionnaires of which the most frequent, The Child Behavior Checklist (CBCL; Achenbach, 1992) has good validity and reliability data across many languages and cultural contexts. Other measures include the Strengths and Difficulties Questionnaire (Goodman, 1997) and variations of The Infant–Toddler Social & Emotional Assessment (Carter & Briggs-Gowan, 2000).

Studies looking specifically at social outcomes have used the CBCL to compute a social competence score and also used The Social Skills Rating System

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(SSQ; Gresham & Elliott, 1990), California Preschool Social Competency Scale (Levine, Elzey, & Lewis, 1969), and Adaptive Social Behavior Inventory (Hogan, Scott, & Bauer, 1992).

In older children teacher reports were sometimes used, including the teacher CBCL and the SSQ as well as the Social Competence and Behavior Evaluation Scales (LaFreniere & Dumas, 1996).

Direct observations were rarely used but are considered most valid, as objective observers rate behaviour, which is consistently and reliably defined. In infancy SED can be measured during observed social engagement and specific tools are utilised such as the Nursing Child Assessment Teaching Scale (Barnard, 1978). Different tools were used at later time-points coding social behaviour in dyadic peer interactions.

The most thorough and accurate way of measuring SED would be to use various sources of information (e.g. mother, teacher or self reports) combined with some observations of children interacting with their peers. Discrepancies between mother and teacher reports and observed measures should allow a more balanced and consistent picture of SED.

The Influence of Confounding Variables

Confounding variables can be categorised as operating predominately through the mother or coming from the child. Factors impacting on MS and SED that were commonly adjusted for include: income-to-need ratio, maternal education, maternal age, maternal depression and child gender.

Income and Education are strongly related (Smetana, 2000) and their absence may negatively impact on MS because stressful living conditions, which often accompany poverty and lower education, may lead to an overly controlling and a less

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sensitive style of interacting with children (Dix, 1991; Ispa et al, 2004). Adolescent mothers have been found to be less sensitive, but this may be the result of co-occurring factors such as education and financial status (Elster, McAnarney & Lamb, 1983). Depressed mothers tend to interact with their infants in either an intrusive or withdrawn/passive style; often failing to respond sensitively to infant cues (Field, 2010).

Maternal depression is considered a risk factor for negative SED in young children (Cummings, Davies, & Campbell, 2000) due to mothers being less sensitive and proactive, and less likely to engage in playful and affectionate interactions (Carter, Garrity-Rokous, Chazen-Cohen, Little & Briggs-Gowan, 2001; Cohn & Campbell, 1992; DeMulder & Radke-Yarrow, 1991; Murray, 1992; Raikes & Thompson, 2008). Evidence exists that when depressive symptoms are more chronic, mothers are more insensitive and their children show poorer social functioning (NICHD, 1999).

Gender differences were found for a child's SED (e.g. girls having higher empathy and pro-social responding scores) and child gender moderated the relationships between maternal predictors (such as MS) and SED outcomes (Davidov & Grusec, 2006). Stams et al (2001) found more positive outcomes for girls' SED aged 7 following an effective intervention to enhance MS. Mothers may respond less sensitively to boys due to differing expectations in their behaviour, arousal and activity levels (Tamis-LeMonda, Briggs, McClowry & Snow, 2001). Another study found that teacher social competency reports indicated that girls display higher social competence compared to boys (Eiden et al, 2009).

Very few studies adjusted for children with 'difficult' temperaments (e.g. NICHD, 2004); characterised by easily and intensely distressed, hard to soothe,

trouble adapting to change and possibly predisposed to poor affect regulation and problematic peer relations (Rothbart & Bates, 1998, Calkins & Degnan, 2006).

Leerkes, et al (2009) found that the benefit of MS on affect dysregulation but not social competence varied for children with different temperamental dispositions and Davidov and Grusec (2006) found that a ‘difficult’ temperament was a significant predictor of poorer regulation of negative affect.

Even rarer confounders include, birth order which impacts on SED with first-borns tending to achieve more academically, be more ambitious and later-borns being more socially competent, more impulsive and independent of authority (Richardson & Richardson, 1990; Claxton, 1994). Mothers of first-borns spend more time engaging in social interaction with their infants (Cohen & Beckwith, 1977) and hence parity may moderate the effects of mother-infant interactions (Fish & Stifter, 1993). Also a greater duration of breastfeeding has been shown to be associated with better MS (Tharner et al, 2012; Pearson et al, 2011). However, none of the longitudinal studies adjusted for this.

Other risk factors for poor MS and/or SED have been found in a range of samples such as prematurity (Gerhold et al, 2002), low birth-weight (Landry et al, 1997), adoptive children (Jaffari-Bimmel et al, 2006) and alcoholic mothers (Eiden et al, 2009).

Overview and Future Directions

The review confirms that high MS is positively associated with a child’s SED. There is great variability between studies and many use clinical or high-risk samples making the findings difficult to generalise and cross-sectional designs mean that the

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direction of effects cannot be established, reducing the predictive power of the associations.

Reports from the large US longitudinal NICHD study, allow adjustment for some confounding variables (mainly maternal education, social class, depression and age) and consequently provide more significant findings about cause-effect relationships by clarifying how these factors influence the observed relationship. However, in the only UK population study (Mensah & Kiernan, 2010), no measure of early-observed MS was used.

The literature is still unclear about the severity of maternal insensitivity for a negative impact on SED (Mäntymaa et al, 2004) and whether MS to distress but not to non-distress can better predict a child's SED (Leerkes et al, 2009; Davidov & Grusec, 2006). There is a gap in the literature regarding the assumption of the universality of the impact of MS on child SED (LeVine & Norman, 2001; van IJzendoorn & Sagi, 2001), with respect to cultural differences in the mother-child interactions. In further clarifying whether positive MS is found in association with later good SED, investigation of large UK longitudinal studies should emphasise social competence and emotional recognition over child behaviour problems, while still investigating confounding variables.

Adjusting for maternal and child characteristics is important; in particular less is known about the influence of parity, breastfeeding and child temperament on MS. By including a measure of child temperament taken prior to MS this may indicate whether mothers are less sensitive to infants with 'difficult' temperaments and whether these infants differ in their SED.

Given the later negative social and educational consequences of early delays in SED further research in determining what factors influence poor SED would be

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important. Methodological limitations in previous research and the lack of adjustment for confounding variables limits a fuller understanding of the effects of mother and child factors on MS and SED. Further investigation of the influence of child temperament, PND, maternal education alongside other confounders may clarify the interplay and influence on the development of positive MS and good SED outcomes.

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