

## **Attachment and attachment-related outcomes in preschool children: A review of recent evidence**

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### **Aim of this Overview**

The aim of this overview is to examine what the evidence tells us about some of the innovative methods of working to improve attachment security in babies.

The paper only includes evidence about ‘what works’:

- From systematic reviews published since the last update of the Healthy Child Programme in 2008 and from randomized controlled trials published since 2008;
- From studies that have examined the effectiveness of interventions that are aimed at improving attachment or attachment-related (e.g. parental mental health) outcomes.

The paper describes the key implications for practice

### **INTRODUCTION**

‘Secure attachment’, which is defined as the ability of the infant/child to obtain comfort from the caregiver when distressed, has been shown to be significantly associated with a range of improved outcomes for children across all domains of their functioning, including emotional, social and behavioural adjustment, school achievement, and peer-rated social status (Sroufe, 2005). ‘Insecure attachment’

on the other hand, which is defined as the inability to use the parent to obtain comfort when distressed (i.e. the infant using strategies of avoidance or ? to obtain closeness) and 'disorganised attachment' defined as an infant who ?, are associated with a range of later problems including externalising disorders (Fearon, Bakermans-Kranenburg, van Ijzendoorn, Lapsley & Roisin, 2010), dissociation (Lyons-Ruth, Yellin, Melnick & Atwood, 2005), PTSD (MacDonald, Beechly, Grant-Knight, Augustyn, Woods et al. 2008) and personality disorder (Steele & Siever, 2010). For example, one longitudinal study of children with disorganised attachment at 1-year of age found that by six years of age the children were showing signs of controlling behaviours toward their parents, avoidance of their parents, dissociative symptoms, behavioural/oppositional problems, emotional disconnection, aggression toward peers, and low social competence in preschool (Lieberman & Amaya-Jackson, 2005).

Research conducted over the last few decades suggests that only two thirds of children are securely attached, and that disorganised attachment has a prevalence of 15-19% in population samples (De Wolff & Van Ijzendoorn, 1997), up to 40% in disadvantaged populations (Weinfield, Whaley & Egeland 2004) and 80% in maltreated populations (Cyr, Euser, Bakermans-Kranenburg & van Ijzendoorn, 2010).

A systematic review of 12 studies found that parental sensitivity was a significant predictor of attachment security (De Wolff & van Ijzendoorn, 1997). However, more recent research has also identified the importance of the specific quality of the attunement between parent and infant (Beebe et al., 2010), in

addition to the parent's capacity for what has been termed 'maternal mind-mindedness' (Meins, Fernyhough, Fradley & Tuckey, 2001) or 'reflective function' (Slade, Grienberger, Bernback, Levy & Locker, et al., 2005). and a range of anomalous forms of parent-infant interaction (Lyons-Ruth et al 2005).

## **SUPPORTING ATTACHMENT**

The provision of support for parenting with the aim of improving children's social, emotional and behavioural wellbeing is a key part of the UK government-funded Healthy Child Programme (HCP) (Shribman & Billingham, 2009, which is the key universal public health service for improving the health and wellbeing of children, through health and development reviews, health promotion, parenting support, and screening and immunisation programmes. Its goals are to identify and treat problems early, help parents to care well for their children, change health behaviours, and protect against preventable diseases. The programme is evidence-based, and aims to prevent problems in child health and development, and contribute to a reduction in health inequalities. The evidence underpinning the current programme for 0-5 year-olds was recently updated (Axford, Barlow, Coad, Schrader-McMillan, Bjornstad et al. 2015), and this paper presents the findings of that review in terms of interventions that are aimed at improving attachment or attachment related parenting behaviour.

## **WHAT DOES THE EVIDENCE TELL US ABOUT THE EFFECTIVENESS OF INTERVENTIONS AIMED AT IMPROVING ATTACHMENT OR ATTACHMENT RELATED OUTCOMES IN BABIES**

### ***Attachment***

Six studies provided an evaluation of the effectiveness of an intervention in changing infant attachment status. One systematic review that examined the effectiveness of parent-infant/toddler psychotherapy included eight RCTs comparing the effectiveness of parent-infant/toddler psychotherapy (PIP) with a no-treatment control group (4 studies) or comparing PIP with other kinds of treatment (including an infant-led model of parent-infant psychotherapy, counselling/CBT and interaction guidance) (Barlow, Bennett, Midgley, Larkin & Wei, 2015).

Parent-infant/child psychotherapy involves a therapist working with the parent and infant/toddler together, establishing a therapeutic alliance with the parent in order to identify unconscious patterns of relating in terms of the parents' own experiences of being parented and their internal working models. The aim of the therapy is to help the parent to recognise the way in which their current interactions are shaped by past experiences, in order to enable them to respond more freely and sensitively to their infant (Barlow et al. 2015). The included studies targeted parents experiencing a range of problems, such as those who have maltreated their children and parents in prison.

The results show that parents who received PIP were more likely to have an infant who was rated as being securely attached to the parent; however, there were no significant differences in studies comparing outcomes of PIP with one of the other models of treatment (e.g. video feedback, counselling, CBT). The authors concluded that PIP is a promising model in terms of improving infant attachment in high-risk families but that further research is needed into its

impact on potentially important mediating factors, such as mental health, reflective functioning, and parent-infant interaction, and its effectiveness relative to other methods of working.

One randomized controlled trial (Bernard, Dozier, Bick, Lewis-Morrarty, Lindhiem & Carlson 2012) evaluated the effectiveness of the Attachment and Biobehavioural Catch-Up (ABC) programme with 113 parents and 120 young children (aged 1.7 to 21.4 months) at risk of maltreatment, as indicated by recent contact with Child Protection Services. ABC is a manualised intervention that typically involves around 10 one-hour sessions that focus primarily on providing parents with “in the moment” feedback about their interactions with their child using video feedback to highlight parents’ strengths, challenge weaknesses, and celebrate changes in behaviours (Lind, Bernard, Ross & Dozier, 2014). The study found that a lower proportion of children in the ABC group (32%) were classified as having a disorganised attachment compared with children in the control group (57%). Further, a higher proportion of children in the ABC group were classified as securely attached (52%) compared with children in the control group (33%), although this effect was not sustained after children over 24 months old at the time of assessment were excluded.

A further RCT (Moss, Dubois-Comtois, Cyr, Tarabulsky, St-Laurent & Bernier 2011) evaluated the effectiveness of a home-delivered programme using video feedback with maltreating parents. The programme consisted of eight weekly home visits of approximately 90 minutes structured in four sequences, including discussion on a parent-chosen theme, videotaped interactive session, video

feedback session and wrap-up session. The RCT involving 67 maltreating caregiver-child dyads found significant improvements for the intervention group in parental sensitivity; more intervention children became secure and fewer remained insecure; and more intervention children moved from being disorganised to organised. Older children in the intervention group showed lower levels of internalising and externalising problems (Moss et al., 2011).

One RCT (Cassidy, Woodhouse, Sherman, Stupica & Lejuez, 2011) examined the effectiveness of an individually delivered version of the group-based Circle of Security programme, which involves the use of videotaped feedback to help the mother enhance her observation skills and to recognise infant signals related to these needs. The programme also seeks to help parents to understand and manage psychological factors that may interfere with their responses. This programme involved three one-hour home visits every 3 weeks between 6.5 and 9 months. Approximately 2 weeks later, a final visit is delivered during which the home visitor gives the mother a copy of videotapes used in the intervention and discusses any ongoing parenting concerns (Cassidy et al. 2011). An RCT involving 220 parents of irritable infants found evidence of improved attachment security for the highly (89% cf. 62%) but not moderately irritable infants (63% cf. 58%). Maternal security was also an important moderating factor, with highly irritable infants of securely attached mothers being more likely to become securely attached compared with no effect for moderately irritable infants. For fearful mothers, highly irritable infants were equally likely to be secure in the intervention group (69% probability) and in the control group (69% probability); similarly, for moderately irritable infants, no effect of intervention

emerged. For more dismissing mothers, the intervention was efficacious for highly irritable infants but not for moderately irritable infants of more dismissing mothers. In contrast, when mothers were classified as preoccupied, there was evidence of an intervention effect for moderately irritable infants, but not highly irritable infants.

One RCT (Kalinauskiene Cekuoliene, van Ijzendoorn, Bakermans-Kranenburg, Juffer & Kusakovskaja 2009) evaluated the effectiveness of Video-feedback Intervention to Promote Positive Parenting (VIPP) with 54 Lithuanian mothers rated low in sensitive responsiveness. The intervention comprised five 90-minute sessions at home (the last one with fathers) and was delivered by two clinical psychologists. Infants were aged 6 months and 12 days on average at the first visit. The intervention had a statistically significant and large effect ( $d=0.78$ ) on mothers' sensitive responsiveness, but there was no effect on attachment security. The authors concluded that a relatively brief and low-cost programme can effectively support mothers who lack sensitivity in interactions with their infants.

One further RCT (Sadler, Slade, Close, Webb, Simpson, Fennie, Mayes 2013) examined the effectiveness of Minding the Baby, which a mentalisation-based home visiting intervention focused on improving the reflective functioning of first-time mothers aged 14-25 experiencing a range of problems during the perinatal period, including child protection issues, depression, homelessness, poverty or violent relationships. 'Mentalisation' refers the ability to understand behaviour in terms of mental states (Fonagy, Gergely, Jurist & Target, 2002).

Minding the Baby (MTB) is home visiting programme delivered by two specially trained practitioners (a qualified nurse and social worker alternate) for an hour a week, from the third trimester of pregnancy until the infant is 2 years of age. Clinicians provide developmental guidance, crisis intervention, and parenting and practical support, in order to increase reflective parenting, promote the mother-infant attachment relationship, and to model and foster a range of parenting skills (Sadler et al. 2013). The RCT involved 139 mothers of mostly Latina or African-American or Caribbean descent with low education and income, some of whom (11%) had child protection concerns, and found a significantly higher percentage of secure infants in the MTB group (n=41, 64%) compared with the control group (n=30, 48%). In addition, a significantly lower percentage of intervention group dyads (27%) were classified as having disorganised attachment, compared with the control group dyads (43%). The intervention group mothers had fewer instances of rapid subsequent childbearing and a trend toward fewer open cases with child protection services than mothers in the control group (0% compared to 5%). There were no significant differences between groups in maternal reflective functioning, depression or psychological distress but a trend toward improved communication for teenage mothers – 67% of the intervention group teenage mothers versus 94% of the control group had scores in the disrupted range.

### ***Attachment-related outcomes***

Five systematic reviews and five RCTs evaluated the effectiveness of interventions in improving an attachment-related outcome.



One systematic review of infant massage was identified (Bennett, Underdown & Barlow, 2013), which included 34 RCTs involving healthy parent-infant dyads in which the infant was under the age of six months. Infant massage involves the teaching of infant massage strokes within a group setting of around 6-8 mothers for 1-2 hours on a weekly basis. No significant differences were found for a range of aspects of infant temperament, parent-infant interaction and mental development. The authors concluded that the findings do not currently support the use of infant massage with low-risk groups of parents and infants, and that there may be more potential for change with demographically and socially deprived parent-infant dyads, and that future research should focus on this.

One review of 29 studies (13 RCTs, 8 quasi-experimental designs (QEDs), 8 pre-post design) examined the effectiveness of video feedback on parental behaviours, sensitivity, responsiveness, verbal and non-verbal communication, and child problem behaviours (Fukkink, 2008). Of these, 23 included children aged under five years. The results showed a positive, statistically significant effect for video feedback intervention on parenting behaviours. Brief video-feedback interventions with parents in high-risk groups were the most effective. The overall effect on child behaviour was described as being between 'small' and 'average'. The authors concluded that family programmes that include video feedback achieve the intended dual level effect in terms of parents improving their interaction skills, which in turn help in the development of their children.

One RCT (Negrão et al. 2014) examined the use of VIPP-SD (Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline) with 55

Portuguese mothers of children aged 1-4 years who were living in poverty and about whom there were concerns in terms of their caregiving. The six sessions were spread over 3-4 months, and mother and child interaction was videotaped followed by feedback of videos recorded in the previous session. The RCT found significant improvements favouring the intervention group in overall measures of maternal emotional availability, child behaviour and family environment, with post hoc results showing significant improvements in a number of domains: maternal non-intrusiveness, child responsiveness and involvement. The domains of maternal sensitivity, structuring and non-hostility also improved but failed to achieve significance. The results also showed a significant improvement in family cohesion but not expressiveness or conflict. A further RCT (Lind et al 2014) examined the effectiveness of the Attachment and Biobehavioural Catchup (ABC) intervention with 260 US vulnerable parents of children under two years of age following allegations of maltreatment. The results of the RCT showed significant differences favouring the ABC group in terms of lower levels of negative affect expression. Children in the ABC group displayed lower overall levels of anger, lower levels of anger toward parent, and lower levels of global anger/sadness. Yagmur et al. (2014) evaluated the effectiveness of a culturally sensitive adaptation of VIPP-SD for 86 Turkish minority parents in the Netherlands (VIPP-TM). The intervention involved six home visits lasting 2.5-3 hours over four months. Visits were recorded, and used to illustrate themes. The RCT found significant improvements favouring the intervention groups for sensitive parenting and non-intrusiveness. There was no effect on maternal discipline overall or on the subscales for laxness, physical discipline, or supportive presence.

One systematic review was identified that evaluated the effectiveness of home visiting on attachment-related outcomes (Nievar, Van Egeren & Pollard, 2010). Home visiting programmes are manualised interventions that involve an intensive series of home visits beginning prenatally (in some models) and continuing during the child's first two years of life. They are delivered by specially trained personnel who provide information, support and training regarding child health, development and care. Common themes include early infant care, infant health and development and parenting skills, but programmes may also cover maternal health and well-being, diet, smoking, drug/alcohol use, exercise, transition to parenthood and the parent's relationship with their partner. This review included 35 controlled studies evaluating the effectiveness of home visiting programmes and found that interventions were moderately successful ( $d = .37$ ) at improving maternal behaviours, as measured by a combination of survey and observational measures that assessed the home learning environment and maternal sensitivity.

One RCT evaluated the effectiveness of a mentalisation-based programme known as the Mothers and Toddlers Programme (MTP), which comprises 12 weeks of individual therapy as an adjunct to standard outpatient substance abuse treatment programmes (Suchman, DeCoste, McMahon, Rounsaville, Mayes, 2011). The aim of MTP is to improve maternal capacity for reflective functioning and for sensitivity and responsiveness to toddler emotional cues. The results of this small RCT involving 47 women and their children found moderately higher mean reflective functioning scores for the MTP group, and slightly higher scores

for coherence, sensitivity, and quality of representation subscales for the MTP group, when compared with the comparison intervention (Suchman et al., 2010). There was improved caregiving behaviour for MTP mothers, and improvements in depression and global distress. At six-week follow-up the combined data for women receiving the 12- and 24-week programmes showed that the higher mean reflective functioning score was maintained but reduced. At follow-up there was also a slightly higher quality of maternal representation for the MTP group, and moderately higher mean NCAST (Nursing Child Assessment Satellite Training) scores for child communication with the mother for the MTP group. However, effects for depression were not sustained at six-week follow-up (Suchman et al., 2011).

One further relevant RCT evaluating the effectiveness of parent child psychotherapy was identified. Ghosh Ippen, Harris, Van Horn & Lieberman (2011) examined the effectiveness of a standard parent-child psychotherapy intervention that was delivered by a psychotherapist and involved a mean number of 32 weekly sessions of 60 minutes duration with both the parent and child aimed at enhancing the parent's capacity to provide safe and developmentally appropriate caregiving to the child. The results of an RCT with 75 parent-child dyads involving preschool age children (3-5 years) who had experienced multiple traumatic and stressful life events found significant improvements favouring the intervention group for child PTSD (5% cf. 53%), = depression, co-occurring diagnoses, and behaviour, maternal PTSD and depression.

One RCT examined the effectiveness of a group-based programme spanning the perinatal period in improving parent-infant interaction (Puckering, McIntosh, Hickey & Longford, 2010). Mellow Babies is a 14-week group-based day programme targeting women experiencing depression and is underpinned by cognitive behavioural theory. Morning sessions provide the mothers with an opportunity to reflect on their own lives, draw links between past and present feelings and relationships, and consider ways of managing depression using broadly cognitive behavioural approaches. In the afternoon, participants engage in play-time involving interaction coaching, baby massage, looking at picture books, lap games and nursery rhymes to promote sensitive interaction and attunement, after which videos of mothers interacting with their babies are used to demonstrate sensitive interaction. The results of the small RCT involving 20 mothers found significant improvements in maternal depression and in parent-infant interaction in terms of positive anticipation, positive responsiveness, negative autonomy and negative control. There were also trends favouring the intervention group for negative distress, positive control, positive co-cooperation and positive autonomy. There were no significant differences between groups for positive distress, negative anticipation, negative responsiveness or negative co-operation.

Two reviews examined a range of sensitivity- and relationship-focused interventions in specific populations, including depressed mothers (Kersten-Alvarez, Hosman, Riksen-Walraven, Van Doesum, Hoefnagels, 2011) and low-income mother-infant dyads (Mortensen & MasterGeorge, 2014). Kersten-Alvarez et al (2011) included 10 controlled studies evaluating 13 preventive

interventions (including interpersonal psychotherapy, non-directive counseling, CBT, infant massage, home-based interaction coaching, parent training, support group, and mother-infant therapy) aimed at improving sensitivity in depressed mothers, and found a small-to-medium effect overall ( $g=.32$ ). Interventions providing infant massage were found to be highly effective in improving maternal sensitivity. Mortensen & MasterGeorge (2014) included 18 studies (15 of which were RCTs) of 19 relationship-based interventions (including home visiting, VIPP, Parent-Infant Programme, Family Check-Up, and pregnancy programmes focusing on alcohol use), all targeting disadvantaged mother-child dyads. Most of the interventions took place exclusively in the home. A meta-analysis focusing on observed parent-child interaction found a small mean effect size ( $d=.23$ ).

## **Discussion**

The results of this review of systematic reviews, and RCTs not included in the reviews, show that parent-infant psychotherapy, video feedback, and mentalisation-based programmes appear to be promising approaches to improving attachment in a range of high-risk infants, including those with maltreating parents. These, and other interventions, such as home visiting and parenting programmes, also appear to be effective in improving a range of attachment-related outcomes, such as aspects of parent-infant/toddler interaction related to maternal sensitivity, and reflective functioning. Although only evidence published since 2008 has been included, these results confirm the findings of earlier systematic reviews (e.g. Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Barnes & Freude-Lagevardi, 2003).

The theories of change underpinning the different programmes are diverse and range from psychoanalytic models (e.g. parent-infant psychotherapy) that focus primarily on changing the parents' internal working models, through programmes that focus explicitly on improving parents' capacity for reflective functioning (e.g. Minding the Baby, Mother and Toddler Programme), to those that focus more explicitly on the interaction between the parent and infant/toddler, and on sensitive parenting based on attachment theory (video feedback and VIPP). There is, however, an increasing eclecticism, with programmes focusing explicitly on parent-child interactions drawing on different theoretical traditions, and almost all (apart from the home visiting programmes) building in the use of video feedback.

There is also considerable divergence in terms of the frequency and duration of interventions with home visiting programmes such as Minding the Baby involving intensive visits over a prolonged period of time, and most other types of programme involving intensive work over brief periods of time (typically a few months – e.g. Video-feedback and parent-infant psychotherapy). The limited evidence available regarding the comparative effectiveness of these interventions shows that there is little difference between them (Barlow et al., 2015), and increasing evidence supporting the use of brief, sensitivity-focused interventions (cf. Bakermans-Kranenburg et al., 2003).

A number of implementation issues were identified. The Mortensen and MasterGeorge (2014) review of interventions that targeted low-income mother-

child dyads found that the most effective programmes were shorter in duration, provided direct services to the parent–child dyad, used intervenors with professional qualifications, and assessed parent-child interactions with free-play tasks.

Although some of these interventions require to be delivered by specialist practitioners (e.g. psychologists and parent-child psychotherapists), many of the remaining interventions are manualised (e.g. ABC, VIPP), and some can arguably be delivered effectively by health visitors as part of the Healthy Child Programme (HCP) (Shribman and Billingham, 2009) following appropriate training (e.g. video-feedback). There is a high prevalence of disorganised attachment, particularly in disadvantaged populations, and the strong association between such attachment patterns and later problems suggests the need for specialist CAMHS practitioners to have the necessary skills to deliver some of these methods of working.

The current review is limited in terms of the fact that we did not search for studies prior to 2008, or for primary studies other than those that were not included in existing reviews. We were, as such, reliant on the findings of systematic reviews, some of which had methodological limitations in terms of the inclusion of less rigorous studies, and the comprehensiveness of their searches. We also adopted wide inclusion criteria (e.g. parent-infant interaction and parental mental health problems), which may have resulted in the inclusion of studies that have less focus on attachment.



## **Conclusion**

This review has identified some interventions that appear to be effective in improving attachment but the evidence is limited, and most studies have predominantly focused on attachment related outcomes. Despite the fact that both insecure and disorganised attachment have a high prevalence in disadvantaged populations in particular, and that both are strongly associated with a range of later problems including externalising and personality disorders, many of the methods of working identified by this review are not yet routinely available to preschool children in the UK. Practitioners working within a range of CAMHS settings should have the skills to deliver some of the identified methods of working with parent-child dyads, including video feedback and mentalisation-based techniques.

## **Summary**

- Insecure and disorganised attachment are associated with later psychopathology;
- Both types of attachment have a high prevalence, particularly in disadvantaged and maltreated children;
- A number of methods of working show promise in terms of improving attachment security and reducing insecure and disorganised attachment in a range of high-risk parent-child dyads, including parent-infant psychotherapy, programmes involving the use of video feedback, and mentalisation-based programmes.

- These interventions should be provided by practitioners working in child and adolescent mental health services, to parents and children under five years of age, where children are experiencing problems that may be underpinned by attachment difficulties.

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Table 1: Summary of included interventions

Intervention type	Study design	Population	Outcomes measured	Conclusions
<b>Studies assessing attachment</b>				
Parent-infant psychotherapy	1 systematic review of 8 RCTs (Barlow et al 2015)	Diverse high risk populations including maltreating and imprisoned women	Attachment; parental interaction; parental mental health	Two studies that measured attachment showed an improvement; little evidence of impact across other outcomes
Includes video feedback	1 RCT (Bernard et al 2012)	Parents at risk of maltreatment as indicated by recent contact with child protection services	Attachment	A lower proportion of children in the ABC group (32%) were classified as having a disorganised attachment compared with children in the control group (57%) (excluding children over 24 months old at the time of assessment); a higher proportion of children in the ABC group were classified as securely attached (52%) compared with children in the control group (33%).
	1 RCT (Moss et al 2012)	Maltreating parents	Attachment; parental sensitivity; child behaviour problems	Significant more children securely attached (reduction in insecure and disorganized attachment); significant improvements in parental sensitivity; reduction in internalizing and

				externalizing problems of older children
	1 RCT – Individually administered Circle of Security (Cassidy et al 2011)	Parents of irritable infants	Attachment	Improvements in highly but not moderately irritable infants; maternal attachment status was an important modifying factor
	1 RCT - VIPP (Kalinauskiene et al 2009)	Mothers low in Sensitive responsiveness	Attachment and sensitivity	Statistically significant and large effect on mothers' sensitive responsiveness ( $d=0.78$ ), but no effect on attachment security.
Mentalisation-based programme (Minding the Baby)	1 RCT (Sadler et al 2013)	First-time mothers aged 14-25 experiencing a range of problems – including child protection issues, depression, homelessness, poverty or violent relationships	Attachment; maternal reflective functioning; maternal mental health; subsequent childbearing; mother-infant affective communication	Higher rates of secure attachment in the intervention group (64% cf 48%); and lower rates of disorganised attachment (27% cf 43%). Also reduced rapid subsequent childbearing; trend toward fewer open cases with child protection (0% cf 5%). No differences for reflective functioning or depression/psychological distress, but trend for improved communication.
<b>Studies assessing attachment-related outcomes only</b>				
Infant massage	1 systematic	Healthy parent-infant	Parent-infant interaction;	No evidence of effectiveness with low-

	review of 34 RCTS (Bennett, Underdown and Barlow 2013)	dyads – infants less than 6 months of age	mental health; infant temperament; infant emotional and social development; infant physical and mental development	risk populations
Includes video feedback	1 systematic review of 29 studies (13 RCTs, 8 QEDs, 8 pre-post design) (Fukkink 2008)	Parents and children, only 23 focusing on parents of children under 5	Parental behaviours - sensitivity, responsiveness, verbal and non-verbal communication; and child problem behaviours	Statistically significant impact on parenting behaviours, particularly with parents in high-risk groups; small to moderate effect on child behaviours
	1 RCT – VIPP (Negrao et al 2014)	Parents of children aged 1 – 4 years living in poverty	Maternal emotional availability; child behaviour; family environment	Significant improvements in maternal emotional availability; child behaviour and family environment
	1 RCT (Lind et al 2014)	Parents of children under two years of age following allegations of maltreatment	Child negative affect	Lower levels of child negative affect expression, including lower overall levels of anger, lower levels of anger toward parent, and lower levels of global anger/sadness.
	1 RCT – VIPP (Yagmur et al 2013)	Turkish minority mother-infant dyads	Sensitivity; discipline	Significant improvements in sensitive parenting and non-intrusiveness; no effect on maternal discipline.
Home visiting	1 systematic review of 35 controlled studies Nievar et al 2010)	A range of targeted populations	Parental sensitivity	Moderately successful ( $d = .37$ ) at improving maternal behaviours, as measured by a combination of survey and observational measures that assessed the home learning

				environment and maternal sensitivity
Mentalisation-based intervention (Mother and Toddlers Programme)	1 RCT (Suchman et al 2011)	Substance dependent mothers of toddlers	Maternal reflective functioning; parent-child interaction; caregiving behaviour; maternal mental health	Moderately higher mean reflective functioning scores for the MTP group, and slightly higher scores for coherence, sensitivity, and quality of representation subscales for the MTP group, when compared with the comparison intervention; improved caregiving behaviour, and improved maternal depression and global distress.
Parent-child psychotherapy	1 RCT (Ghosh-Ippen et al 2011)	Parent-child dyads (3-5 yrs) who had experienced multiple traumatic life events	Parental mental health; child PTSD, depression and behaviour problems	Significant improvements in child PTSD (5% cf 53%), depression, co-occurring diagnoses, and behaviour. Significant improvements in maternal PTSD and depression.
Group-based parenting programme (Mellow Babies)	1 RCT (Puckering et al 2011)	Depressed mothers of infants	Parental mental health; parent-infant interaction	Significant improvements in maternal depression and in some but not all aspects of parent-infant interaction, including positive anticipation, positive responsiveness, negative autonomy and negative control.
Preventive interventions (e.g. including interpersonal psychotherapy, non-	1 systematic review including 13 controlled studies	Depressed mothers	Maternal sensitivity	Small-to-medium effect overall on sensitivity ( $g=.32$ ).

directive counseling, CBT, infant massage, home-based interaction coaching, parent training, support group, and mother-infant therapy)	(Kersten-Alvarez et al 2011)			
Relationship-based programmes (e.g. home visiting, VIPP, Parent-Infant Programme, Family Check-Up, and pregnancy programmes focusing on alcohol use)	1 systematic review of 18 interventions – 15 RCTs (Mortensen and MasterGeorge 2014)	Low-income mother-child dyads	Parenting behaviours – parent-infant interaction	Limited evidence of effectiveness across all interventions; programmes that were shorter in duration, provided direct services to the parent-child dyad used intervenors with professional qualifications, and assessed parent-child interactions with free-play tasks