Video feedback for parental sensitivity and attachment security in children under five years (Review)

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[Intervention Review]

Video feedback for parental sensitivity and attachment security in children under five years

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ABSTRACT

Background

Children who are securely attached to at least one parent are able to be comforted by that parent when they are distressed and explore the world confidently by using that parent as a 'secure base'. Research suggests that a secure attachment enables children to function better across all aspects of their development. Promoting secure attachment, therefore, is a goal of many early interventions. Attachment is mediated through parental sensitivity to signals of distress from the child. One means of improving parental sensitivity is through video feedback, which involves showing a parent brief moments of their interaction with their child, to strengthen their sensitivity and responsiveness to their child's signals.

Objectives

To assess the effects of video feedback on parental sensitivity and attachment security in children aged under five years who are at risk for poor attachment outcomes.

Search methods

In November 2018 we searched CENTRAL, MEDLINE, Embase, CINAHL, PsycINFO, nine other databases and two trials registers. We also handsearched the reference lists of included studies, relevant systematic reviews, and several relevant websites

Selection criteria

Randomised controlled trials (RCTs) and quasi-RCTs that assessed the effects of video feedback versus no treatment, inactive alternative intervention, or treatment as usual for parental sensitivity, parental reflective functioning, attachment security and adverse effects in children aged from birth to four years 11 months.

Data collection and analysis

We used standard methodological procedures expected by Cochrane.

Main results

This review includes 22 studies from seven countries in Europe and two countries in North America, with a total of 1889 randomised parent-child dyads or family units. Interventions targeted parents of children aged under five years, experiencing a wide range of difficulties (such as deafness or prematurity), or facing challenges that put them at risk of attachment issues (for example, parental depression). Nearly all studies reported some form of external funding, from a charitable organisation (n = 7) or public body, or both (n = 18).

We considered most studies as being at low or unclear risk of bias across the majority of domains, with the exception of blinding of participants and personnel, where we assessed all studies as being at high risk of performance bias. For outcomes where self-report measures were used, such as parental stress and anxiety, we rated all studies at high risk of bias for blinding of outcome assessors.

Parental sensitivity. A meta-analysis of 20 studies (1757 parent-child dyads) reported evidence of that video feedback improved parental sensitivity compared with a control or no intervention from postintervention to six months' follow-up (standardised mean difference (SMD) 0.34, 95% confidence interval (CI) 0.20 to 0.49, moderate-certainty evidence). The size of the observed impact compares favourably to other, similar interventions.

Parental reflective functioning. No studies reported this outcome.

Attachment security. A meta-analysis of two studies (166 parent-child dyads) indicated that video feedback increased the odds of being securely attached, measured using the Strange Situation Procedure, at postintervention (odds ratio 3.04, 95% CI 1.39 to 6.67, very low-certainty evidence). A second meta-analysis of two studies (131 parent-child dyads) that assessed attachment security using a different measure (Attachment Q-sort) found no effect of video feedback compared with the comparator groups (SMD 0.02, 95% CI −0.33 to 0.38, very low-certainty evidence).

Adverse events. Eight studies (537 parent-child dyads) contributed data at postintervention or short-term follow-up to a meta-analysis of parental stress, and two studies (311 parent-child dyads) contributed short-term follow-up data to a meta-analysis of parental anxiety. There was no difference between intervention and comparator groups for either outcome. For parental stress the SMD between video feedback and control was −0.09 (95% CI −0.26 to 0.09, low-certainty evidence), while for parental anxiety the SMD was −0.28 (95% CI −0.87 to 0.31, very low-certainty evidence).

Child behaviour. A meta-analysis of two studies (119 parent-child dyads) at long-term follow-up found no evidence of the effectiveness of video feedback on child behaviour (SMD 0.04, 95% CI −0.33 to 0.42, very low-certainty evidence).

A moderator analysis found no evidence of an effect for the three prespecified variables (intervention type, number of feedback sessions and participating carer) when jointly tested. However, parent gender (both parents versus only mothers or only fathers) potentially has a statistically significant negative moderation effect, though only at α (alpha) = 0.1

Authors' conclusions

There is moderate-certainty evidence that video feedback may improve sensitivity in parents of children who are at risk for poor attachment outcomes due to a range of difficulties. There is currently only little, very low-certainty evidence regarding the impact of video feedback on attachment security, compared with control: results differed based on the type of measure used, and follow-up was limited in duration. There is no evidence that video feedback has an impact on parental stress or anxiety (low- and very low-certainty evidence, respectively). Further evidence is needed regarding the longer-term impact of video feedback on attachment and more distal outcomes such as children's behaviour (very low-certainty evidence). Further research is needed on the impact of video-feedback on paternal sensitivity and parental reflective functioning, as no study measured these outcomes. This review is limited by the fact that the majority of included parents were mothers.

PLAIN LANGUAGE SUMMARY

Video feedback for parental sensitivity and child attachment

Background

Children who are securely attached to at least one parent are able to be comforted by that parent when they are distressed and more able to explore the world confidently by using that parent as a 'secure base'. Research suggests that a secure attachment enables children to function better across all aspects of their development. Promoting secure attachment, therefore, is a goal of many programmes that aim to support children and families in the first few years of the child's life. Video feedback involves showing a parent brief moments of videotaped interaction between them and their baby, in order to strengthen their sensitivity to signals from their baby, with the aim of improving attachment.

Review question

To assess the effects of video feedback on parental sensitivity and attachment security in children under five years old who are at risk of poor outcomes, compared to no intervention (no treatment), a mock treatment (such as a phone call) or treatment as usual.

Included studies

This review included 22 studies, made up of 1889 randomised parent-child pairs or family units. Not all of these could be combined in a meta-analysis (a statistical method of combining data from several studies to reach a single, more robust conclusion). We combined data from 20 studies (made up of 1757 parent-child pairs) to examine the effects of video feedback on parental sensitivity. We combined data from fewer studies to look at attachment security, parental stress, parental anxiety and child behaviour.

The included studies were mostly conducted in Canada, the Netherlands, UK and USA. Single studies were conducted in Italy, Germany, Lithuania, Norway and Portugal.

Almost all studies reported some form of external funding, from either a charitable organisation (n = 7) and/or public body (n = 18).

Results

The results show evidence of an improvement in parental sensitivity following the use of video feedback. The results for attachment security were mixed: one meta-analysis showed that the intervention group were more securely attached, while the second meta-analysis, which measured the strength of attachment in a different way, showed no evidence of impact. There was no evidence of impact on parental anxiety or stress. No studies measured parental reflective functioning. There was no evidence of impact on child behaviour.

Study certainty

We rated the overall certainty of the evidence (the extent to which we believe that the results are correct or adequate) as moderate for parental sensitivity, and low or very low for the other outcomes. This means that we are reasonably certain that video feedback improves parental sensitivity in the short term, but we are not very certain of its impact on our other findings.

Authors' conclusions

Video feedback may be a helpful method of improving parental sensitivity, but there is currently little or no evidence that it improves child attachment security, parental stress, parental anxiety or child behaviour. More research is needed on the effects of video feedback on other outcomes, including parental reflective functioning, and in fathers.

SUMMARY OF FINDINGS

Summary of findings for the main comparison. Video feedback versus no intervention or inactive alternative intervention for parental sensitivity and attachment

Video feedback versus no intervention or inactive alternative intervention for parental sensitivity and attachment

Patient or population: parent-child dyads (including foster or adoptive carers), where the child was aged between birth and four years 11 months (inclusive), and where problems had been identified that were impacting or might impact on the parent's sensitivity
Setting: community, hospital outpatient and hospital inpatient
Intervention: video feedback
Comparison: no intervention or inactive alternative intervention

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Number of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no intervention or inactive alternative intervention	Risk with video feedback				
Parental sensitivity Follow-up: postintervention or short-term follow-up	-	The mean parental sensitivity score in the intervention group was **0.34 standard deviations higher** (0.20 higher to 0.49 higher)	-	1757 dyads (20 RCTs)	⊕⊕⊕⊖ **Moderate**[a]	Higher scores indicate a better outcome. Effect size of 0.33 standard deviations compares favourably to other similar interventions.
Parental reflective functioning	-	-	-	-	-	No study reported this outcome.
Attachment security Measured by: Strange Situation Procedure (odds of being securely attached) Follow-up: postintervention	**Study population**		**OR 3.04** (1.39 to 6.67)	166 dyads (2 RCTs)	⊕⊖⊖⊖ **Very low**[b,c,d]	Higher scores indicate a better outcome.
	341 per 1000	**612 per 1000** (419 to 776)				
Attachment security	The mean attachment security score	The mean attachment security score in the interven-	-	131 dyads (2 RCTs)	⊕⊖⊖⊖ **Very low**[b,c,d]	Effect size of 0.02 standard deviations indicates no evidence of effectiveness.

Measured by: Attachment Q-sort Follow-up: postintervention	across control groups ranged from 0.33 to 0.37 (scores can range from + 1.00 to −1.00)	tion group was**0.02 standard deviations higher** (0.33 lower to 0.38 higher)				
Adverse events: parental stress Follow-up: postintervention or short term	-	The mean parental stress score in the intervention group was **0.09 standard deviations lower** (0.26 lower to 0.09 higher)	-	537 dyads (8 RCTs)	⊕⊕⊖⊖ **Low**[b,c]	Higher scores indicate a worse outcome. Effect size of 0.09 standard deviations indicates no evidence of effectiveness.
Adverse events: parental anxiety Follow-up: short term	-	The mean parental anxiety score in the intervention group was**0.28 standard deviations lower** (0.87 lower to 0.31 higher)	-	311 dyads (2 RCTs)	⊕⊖⊖⊖ **Very low**[c,d,e]	Higher scores indicate a worse outcome. Effect size of 0.28 compares favourably to other similar interventions.
Child behaviour Follow-up: long term	-	The mean child behaviour score in the intervention group was **0.04 standard deviations higher** (0.33 lower to 0.42 higher)	-	119 dyads (2 RCTs)	⊕⊖⊖⊖ **Very low**[b,c,d]	Higher scores indicate a worse outcome. Effect size of 0.04 standard deviations indicates no evidence of effectiveness.

*__The risk in the intervention group__ (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **OR:** odds ratio; **RCT:** randomised controlled trial

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate; the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited; the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate; the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level due to inconsistency: moderate heterogeneity, which was not explained by our subgroup analysis.
[b]Downgraded one level for risk of bias: we rated most domains in the 'Risk of bias' assessment at high or uncertain risk of bias.

[c]Downgraded one level due to imprecision: low number of participants, leading to wide confidence interval.
[d]Downgraded one level due to publication bias: few studies in this review reported this outcome.
[e]Downgraded one level due to inconsistency: high heterogeneity.

BACKGROUND

Description of the condition

Attachment

A child's relationship with his or her primary carer is the first, and arguably the most important, relationship formed following birth. The primary carer is normally, but not always, the child's birth mother or father. This emotional bond between a child and their primary caregiver is known as a 'selective attachment' relationship. Attachment is a biobehavioural system that has evolved over time. It is intended to bring about protection in the face of both perceived danger as well as the fear that comes with it (Bowlby 1969). When a child is distressed, he or she is programmed to seek and secure proximity to, and contact with, the primary caregiver (Bowlby 1969). Attachment behaviour may be activated by circumstances internal to the child such as illness, hunger or pain; by separation from the primary caregiver such as when a mother leaves the room or discourages proximity; or by external events that cause distress such as frightening events or rejection by others (Bowlby 1969). Depending on the intensity of the threat, the attachment behaviour may be terminated by the appearance of the caregiver or physical contact with them. The younger the child, or the more serious the threat, the more likely that only physical reassurance and containment will provide comfort. The attachment relationship, therefore, is a dynamic one, in which the child plays an active part (see Shin 2008). It has been described by Zeanah and colleagues as a reciprocal relationship of seeker (child) and provider (parent), the purpose of which is to comfort children when they are upset, support the development of emotional regulation, and offer security (Zeanah 1993).

Children whose caregivers provide sensitive and responsive care develop secure attachments to those carers. Children who experience insensitive, unpredictable or intrusive parenting develop attachments that are insecure, putting them at risk of adverse consequences for a range of aspects of their psychosocial development, including being more reliant on teachers; showing less positive affective expression and impaired social problem-solving skills; showing more frustration and less persistence; more negative responses to others and less overall social competence (Sroufe 2005). In addition to children being classified as either secure or insecure, they may also be classified as disorganised, when there is evidence of a conflict between wanting to approach and wanting to avoid the caregiver when the attachment system is activated (Main 1990a). Disorganised attachment occurs when children are frightened of the caregiver and have been exposed to a range of anomalous, atypical parent-child interactions (Madigan 2006). Disorganised attachment is associated with predictors of later psychopathology, including externalising behaviours (Fearon 2010), and personality disorders (Steele 2010). Many studies consider only secure and insecure attachment patterns when classifying children, as these were the attachment patterns that were first described (Weinfield 2004). These studies (carried out in the general population) typically find that approximately 60% of children are securely attached, and the remainder (40%) are insecurely attached (Moullin 2014). For insecurely attached children, 25% learn to avoid their parent when they are distressed (avoidant attachment) and 15% learn to resist the parent, often because the parent responds unpredictably or amplifies their distress (resistant attachment; Moullin 2014). In studies where disorganised attachment has been included, around 40% of disadvantaged children are classified as disorganised (Weinfield 2004), and as many as 80% of abused children receive this classification (Cyr 2010).

Although children usually have a particularly strong bond with one primary caregiver, most have more than one attachment relationship, often with fathers, siblings and grandparents as well as with mothers (see, for example, Hallers-Haalboom 2014). As such, children can be securely attached to one parent but insecurely attached to another. The role of early relationship experiences and the development of child self-regulatory skills have been linked to the child's ability to control behavioural and physiological responses such as anger (Gilliom 2002), aggression (Alink 2009), and anxiety (Hannesdottir 2007).

Caregiver sensitivity

One key predictor of child attachment status is the parent's attachment status (Van Ijzendoorn 1995). The impact of the parent's attachment status on the child's attachment appears to be mediated by parental sensitivity to child cues.

Ainsworth and colleagues defined sensitivity as a mother's ability to attend and respond to her child in ways that accurately match her child's needs (Ainsworth 1978). Sensitive and responsive parents do the following: notice a child's signals; interpret these signals correctly; and respond to signals in a timely and appropriate manner (Ainsworth 1974). The concept of sensitivity, therefore, refers not to a specific set of maternal behaviours but to something much more dynamic and relational.

Parental sensitivity can be compromised by a variety of factors. These include social influences such as social isolation (Belsky 2002; Kivijärvi 2004), or domestic violence (Levendosky 2006); psychological factors such as maternal depression (NICHD Early Child Care Research Network 1999; Karl 1995; Murray 1997), or personality disorder (Laulik 2013); maternal history of maltreatment (Pereira 2012), substance dependence (Eiden 2014), low self-esteem (Leerkes 2002; Shin 2008); or cognitive factors such as maternal preconceptions about parenting (Kiang 2004; Leerkes 2010). Child characteristics can also impact negatively on parental sensitivity, including child prematurity (Singer 1999); the presence of excessive negative child behaviour, such as general distress (Leerkes 2002); and the child's proneness to anger (Ciciolla 2013), and irritability (Van den Boom 1991). Some studies have examined father involvement as a mediator of maternal sensitivity (see, for example, Stolk 2008), whilst others have examined the role of the father as caregiver (see, for example, Pelchat 2003). Comparative research on the relative sensitivity of mothers and fathers is scarce and therefore the findings are somewhat inconclusive; some studies report fathers as less sensitive than mothers (see Hallers-Haalboom 2014; Heerman 1994; Lovas 2005), while others have found no difference (Pelchat 2003).

Although parental sensitivity has been found to be an important predictor of child attachment security, a systematic review of the antecedents to attachment security suggests that it explains around only one third of the variance (De Wolff 1997). Research has also highlighted the importance of mid-range contingency (Beebe 2010), and maternal reflective functioning (Slade 2005), or mind-mindedness (Meins 2001). Mid-range contingency refers to the ability of the parent to regulate flexibly both their own internal emotional states and their interaction with the baby,

and is characterised by moments of synchrony or attunement, followed by rupture and then repair. A study by Beebe 2010 found that interaction that occurred outside this mid-range, resulting from the parent's preoccupation either with self-regulation (e.g. depressed parents) or interactive regulation (e.g. anxious parents), was associated with an insecure or disorganised attachment).

Reflective functioning is a term that describes a parent's ability to comprehend their child's behaviour with regards to their internal mental states (Slade 2005). High reflective functioning correlates with positive maternal parenting traits, such as flexibility and responsiveness. Low reflective functioning can be seen in tandem with negative maternal behaviours, such as withdrawal and intrusiveness (Kelly 2005; Slade 2005). Similarly, mind-mindedness, which refers to the parent's ability both to understand a young child's state of mind and to respond appropriately, has been associated with behavioural sensitivity and interactive synchrony (Meins 2001), and to better predict attachment security of the child at one year of age than maternal sensitivity (Lundy 2003; Meins 2001; Meins 2012).

Other studies have identified the importance of a range of atypical or anomalous parent-child interactions characterised as 'Fr-behaviours', which are the behaviours of parents who are either frightened or frightening, or both (Jacobvitz 1997; Main 1990b), or who are hostile and helpless (Lyons-Ruth 2005). Fr-behaviours have been described as subtle (e.g. periods of being dazed and unresponsive) or more overt (deliberately frightening children; Lyons-Ruth 2005), and are strongly associated with disorganised attachment (Madigan 2006).

Description of the intervention

Video feedback is a generic term that refers to the use of videotaped interactions of the parent and child to promote parental sensitivity; it has other names, including Video Interaction Guidance (VIG), Interaction Guidance (IG), Video Home Training (VHT) and Video Feedback Intervention to Promote Positive Parenting (VIPP). Developed by Harrie Biemans and colleagues in the 1980s, video feedback is a relationship-based parenting intervention that aims to enhance maternal sensitivity at the behavioural level (Kennedy 2010). The core aspects of interventions based on video feedback are as follows.

1. Video-recording the parent-child interaction during play or aspects of daily caregiving.
2. Editing the recording to select micro-moments of interaction that demonstrate the child's contact initiatives and examples of the parent's attuned response to these signals.
3. Parent and 'guider' (the person responsible for the therapy) jointly reviewing the recordings, with the guider providing praise to the parent, not for the attunement per se but for engaging in the evaluation of the interactions being viewed.

The intervention model is underpinned by two core concepts: intersubjectivity and mediated learning. Intersubjectivity, or 'shared moments of attunement', is modelled by the therapist (or 'guider') in their relationship and interactions with the parent, as well as being identified in the video recordings of the parent-child interaction. Mediated learning, or 'scaffolding', refers to the role adults play in helping children learn how to do things that they might not otherwise manage alone. Mediated learning is also modelled by the guider in his or her relationships with the parent, as the guider helps the parent to describe what is happening in the clips being viewed, and what the parent and child in the video might be thinking or feeling, and to identify the consequences for the parent and the child (Kennedy 2011).

Video feedback may be delivered on a one-to-one (e.g. VIPP, VIG) or group (e.g. Circle of Security (CS)) basis, and has been used with first-time mothers (Klein Velderman 2006); hard-to-reach families (Kennedy 2010); parents of premature infants (Hoffenkamp 2015); parents with mental health problems, including postpartum depression (Vik 2006); parents of autistic children (Poslawsky 2015), maltreated children (Moss 2011), and adopted children (Juffer 1997); parents of children with atopic dermatitis (Cassibba 2015); ethnic-minority parents (Yagmur 2014); and parents with an eating disorder (Stein 2006). Although video feedback is usually delivered in the home environment, it has also been used in clinical settings, such as hospital environments with mothers of preterm babies (Hoffenkamp 2015), and residential treatment centres (Kennedy 2010). It is now used in over 15 countries by practitioners who work in a range of helping professions (e.g. social work, education and health; Kennedy 2010).

How the intervention might work

In terms of the underpinning theoretical model, most forms of video feedback are attachment-based in the sense that they aim to enhance maternal sensitivity, and promote optimal child social and emotional development (Klein Velderman 2006a), with the longer-term goal of promoting improved child attachment (Juffer 2008). However, the presumed mechanisms by which this is achieved vary across the different models of video feedback. All video-feedback interventions primarily target the behavioural level using video-recorded episodes of the parent-child interaction. The guider provides an opportunity for the caregiver to experience attuned interactions with a sensitively attuned adult (Kennedy 2011), and also to view themselves in interaction with their child and observe positive responses from them. Together, these are hypothesised to bring about a range of meta-cognitive changes that result from the discrepancy between their own beliefs about their ability to parent and what they can see on the video, in addition to an increase in feelings of empowerment and self-efficacy, and their ability for self-reflection (Kennedy 2011).

Some models of video-feedback intervention include additional components that may provide a more explicit focus on representational issues. For example, Video Feedback Intervention to Promote Positive Parenting with Discussions on the Representational Level (VIPP-R; Juffer 2008), involves the therapist addressing the mother's representations and attachment using discussions that may, for example, focus explicitly on the mother's own experiences of separation in early childhood and those experienced with her own child (Klein Velderman 2006a).

Other models involve the inclusion of teaching about sensitive discipline techniques, such as Video Feedback Intervention to Promote Positive Parenting - Sensitive Discipline (VIPP-SD). There is evidence that suggests the effectiveness of video feedback may vary with factors at both the level of the parent and of the child. For example, Klein Velderman 2006 reported that amongst mothers with insecure attachments, those classed as 'insecure dismissing' (who idealise their own parents or minimise the importance of attachment relationships in their own lives) benefited most from video feedback, whilst those classed as

'insecure preoccupied' benefited most when they participated in video feedback together with further discussions about their individual experiences of attachment in childhood.

Why it is important to do this review

Improvement of the health and well-being of children is part of a global agenda. While the basic needs of children (e.g. food, sanitation, health care) are paramount to survival and development, living with an adult who is responsive to their needs is also important (Jones 2003). UNICEF 2008 highlights that a loving, stable and stimulating relationship with caregivers in the earliest months and years of life are critical for every aspect of a child's development. Specifically, the empirical literature shows that maternal sensitivity is a key predictor of child attachment security (De Wolff 1997), and that a secure attachment promotes more optimal childhood development (Sroufe 2005), while an insecure or disorganised attachment predicts later behaviour problems (Fearon 2010), and psychopathology (Steele 2010). Research suggests that early, targeted interventions are potentially an effective means of increasing parental sensitivity (Bakermans-Kranenburg 2003), and although there have been a number of reviews of the impact of video feedback on a range of outcomes including maternal sensitivity (Balldin 2018; Fukkink 2008; Juffer 2018; NICE 2016; Van den Broek 2017), only two conducted meta-analyses. Fukkink 2008 concluded that video feedback was an effective means of improving parenting behaviour and attitudes, and child development. However, the report did not provide the search dates for the review, which was submitted in June 2008; did not search a wide range of databases; and was very broad in its scope, including all uses of video feedback with no age limits on the children (who ranged in age from birth to seven years, with an average age of 2.4 years (standard deviation (SD) 2.7 years). More importantly, the study authors paid little attention to the quality of included studies (that is, there were no 'Risk of bias' assessments) and included studies without random assignment. Juffer 2018 looked only at studies using one type of video feedback known as 'Video Interaction to promote Positive Parenting' (VIPP) and found that VIPP was effective in improving parental sensitivity.

This systematic review of current best evidence addresses the methodological weakness of Fukkink 2008 and has a broader scope than Juffer 2018. It will be of interest to policy makers and practitioners internationally.

OBJECTIVES

To assess the effects of video feedback on parental sensitivity and attachment security in children aged under five years who are at risk for poor attachment outcomes.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled trials (RCTs) and quasi-RCTs (in which the allocation to study arms is not truly random; for example, allocation is done through a form of alternation such as days of the week or by date of birth). We included cluster- and cross-over RCTs.

We excluded studies that had an alternative treatment but no control group. Alternative treatment controls are not appropriate when seeking to investigate the effectiveness of an intervention, which was the aim of this review (this is in accordance with advice from Cochrane Developmental, Pyschoscial and Learning Problems).

Types of participants

We included parent-child dyads (including foster or adoptive carers) or family units, where the child was aged between birth and four years 11 months (inclusive), and where problems had been identified that might impact or were impacting the parent's sensitivity (e.g. poor bonding, depression, eating disorders, maltreatment) or child attachment (e.g. behaviour problems, challenging temperament, preterm birth). The majority of studies looked at parent-child dyads.

If studies included a proportion of participants aged above four years 11 months, we endeavoured to obtain data on the sample aged up to four years 11 months; where this was not possible, we used outcome data that included children outside our target age group in the meta-analysis (e.g. Moss 2011; Poslawsky 2015).

We excluded studies in which the intervention was used with a population group where neither parents nor children had any risk factors for attachment problems.

Types of interventions

We included video-feedback interventions delivered in any setting, in which the parent and child were filmed and then feedback was provided to the parent either on a one-to-one basis or in groups, with the aim of improving the sensitivity of their interactions with the child, child attachment, or the reflective functioning of the parent.

We included interventions that**,** in addition to video feedback, also provided a small number of additional sessions related to the primary aim of the intervention; for example, VIPP-R or VIPP-SD.

We included studies in which the intervention was compared with no treatment, an inactive alternative intervention or treatment as usual. Examples of control treatment included a sequence of telephone calls with a parent (Barone 2019; Kalinauskiene 2009; Negrão 2014; Van Zeijl 2006; Yagmur 2014); a limited number of home visits with (1) video recordings between parent and child with no feedback (Benzies 2013; Koniak-Griffin 1992; Moran 2005); (2) by a play and development service (Green 2010); (3) discussions about parenting (Poslawsky 2015); standard hospital care (Hoffenkamp 2015) or routine care at well baby units (Høivik 2015).

We excluded studies comparing video feedback with other interventions, as well as:

1. interventions in which video feedback was used as part of a wider set of methods of working with the family and in which we could not differentiate the effect of video feedback, and
2. programmes that used videotape modelling or videotaped vignettes of parents and their children (e.g. Webster-Stratton 2015).

Types of outcome measures

We excluded studies that did not measure parental sensitivity or did not do so in an objective way; for example, studies relying on self-report measures, such as the Parent-Child Dysfunctional

Interaction (PCDI) subscale of the Parenting Stress Index (Abidin 1995).

Primary outcomes

1. Parental sensitivity, measured by, for example, the Ainsworth Sensitivity Scale (ASS; Ainsworth 1974), the Child-Adult Relationship Experimental Index (CARE-Index; Crittenden 2001), the Parental Sensitivity Assessment Scale (PSAS; Hoff 2004), Coding Interactive Behaviour (CIB; Feldman 1998), the Emotional Availability (EA) scales (Biringen 2000a), Global Ratings Scales (GRS) of mother-infant interaction (Murray 1996), Maternal Behaviour Q-sort (MBQS; Pederson 1999), or Nursing Child Assessment Teaching Scale (NCATS; Sumner 1994).
2. Parental reflective functioning, measured by, for example, the Parent Development Interview (PDI; unpublished manuscript by Aber 1985), or the PDI-Revised (PDI-R; unpublished manuscript by Slade 2004).
3. Attachment security, measured by, for example, the Attachment Q-sort (AQS; Waters 1985; Waters 1987), or the Strange Situation Procedure (SSP; Ainsworth 1978).
4. Adverse effects. We acknowledge that a worsening of any of our primary outcomes listed above would be considered an adverse effect. However, we also considered the effects of the intervention on parental anxiety and stress, measured by, for example, the Parenting Stress Index (PSI; Abidin 1995), or the Parenting Stress Scale (PSS; Berry 1995).

Secondary outcomes

1. Child mental health, measured by behavioural assessments of emotional disorders, hyperactivity and conduct disorders.
2. Child physical and socioemotional development, measured through, for example, the Bayley Scales of Infant and Toddler Development, Third Edition (Bayley-III; Bayley 2006), or the Strengths and Difficulties Questionnaire (SDQ; Goodman 1997).
3. Child behaviour, measured by, for example, the Child Behaviour Assessment Instrument (CBAI; Samarakkody 2010).
4. Costs, measured by direct costs stated by studies.

Timing of outcome assessment

We collected outcome data at time points provided within the included studies and grouped these as postintervention (immediately upon completion of the intervention), short term (up to six months), medium term (up to one year) and long term (over one year).

Search methods for identification of studies

We ran the first database searches in August and September 2016 (Electronic searches) followed by searches of other resources in July 2017 (Searching other resources). In November 2018 we updated the searches, including bibliography screening, and ran further searches of other resources in July 2019. We did not apply any date or language restrictions to the electronic searches and had two papers translated into English (Bovenschen 2012; Kalinauskiene 2009).

Electronic searches

We searched the electronic databases and trials registers listed below.

1. Cochrane Central Register of Controlled Trials (CENTRAL; 2018, Issue 11), in the Cochrane Library and which includes the Cochrane Developmental, Psychosocial and Learning Problems' Specialised Register (searched 10 November 2018)
2. MEDLINE Ovid (1946 to November Week 1 2018)
3. Embase Ovid (1974 to 2018 Week 44)
4. CINAHL Plus EBSCOhos (Cumulative Index to Nursing and Allied Health Literature; 1937 to 10 November 2018)
5. PsycINFO Ovid (1806 to 2018 Week 44)
6. Sociological Abstracts ProQuest (1952 to 10 November 2018)
7. Social Sciences Citation Index Web of Science (SSCI; 1970 to 10 November 2018)
8. Social Services Abstracts ProQuest (1979 to 10 November 2018)
9. Conference Proceedings Citation Index - Social Science & Humanities Web of Science (CPCI-SS&H; 1990 to 10 November 2018)
10. LILACS (Latin American and Caribbean Health Science Information database; 1985 to current; lilacs.bvsalud.org/en; searched 10 November 2018).
11. *Cochrane Database of Systematic Reviews* (CDSR; 2018; Issue 11), part of the Cochrane Library (searched 10 November 2018)
12. Database of Abstracts of Reviews of Effects (DARE; 2015; Issue 2. Final issue), part of the Cochrane Library (searched 10 November 2018)
13. Networked Digital Library of Theses and Dissertations (NDLTD; www.ndltd.org; searched 10 November 2018)
14. WorldCat (limited to dissertations and theses; www.worldcat.org; searched 10 November 2018)
15. Clinicaltrials.gov (Clinicaltrials.gov; searched 10 November 2018)
16. World Health Organization International Clinical Trials Registry Platform (WHO ICTRP; www.who.int/ictrp/en; searched 10 November 2018)

Searching other resources

Two review authors (ES and LOH) screened the bibliographies of included studies (Barlow 2016; Barone 2019; Benzies 2013; Bovenschen 2012; Green 2010; Green 2015; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Kalinauskiene 2009; Klein Velderman 2006; Koniak-Griffin 1992; Lam-Cassettari 2015; Moran 2005; Moss 2011; Negrão 2014; Platje 2018; Poslawsky 2015; Seifer 1991; Stein 2006; Van Zeijl 2006; Yagmur 2014) and relevant reviews (Balldin 2018; Fukkink 2008; Juffer 2018; NICE 2015; Van den Broek 2017), to identify any additional relevant publications. They also searched the websites of the following relevant organisations and government departments: United Nations International Children's Emergency Fund (UNICEF) Global Evaluation Database (unicef.org/evaldatabase); National Society for the Prevention of Cruelty to Children (NSPCC) Impact and Evidence Hub (nspcc.org.uk/services-and-resources/impact-evidence-evaluation-child-protection); and the Association for Video Interaction Guidance UK (AVigUK; videointeractionguidance.net) (see Appendix 1). One review author (ES) visited the websites of research groups we knew to be conducting work in this area to screen their listed publications (see Appendix 1). Another review author (LOH) also used Google Scholar to search the internet for unpublished work (see Appendix 1).

Although originally planned (O'Hara 2016), we did not contact experts to enquire about other published work or unpublished work (Table 1).

Data collection and analysis

For this section, we only report those methods used in this review. Other methods that were not relevant to the available data, or that we could not use for other reasons, are summarised in Table 1. One of the review authors (JB) is an author of an included study (Barlow 2016). JB was not involved in data extraction or assessment of risk of bias; the review authors involved in this did not need to seek any further advice on either of these areas with regards to this particular study.

Selection of studies

At least two review authors (from ES, LOH and NH) independently screened titles and abstracts yielded by the searches against the inclusion criteria for the review (Criteria for considering studies for this review). The review authors retrieved the full-text reports of all studies selected for potential inclusion, or those where there was some uncertainty, and assessed the reports for eligibility. Where review authors could not agree, they further discussed the papers with JB or GM. In one case, Mendelsohn 2005, we wrote to the study authors for the purposes of clarifying whether or not the study met our inclusion criteria (Table 2). We list excluded studies in the Characteristics of excluded studies tables, together with the reason for their exclusion. We report the flow of studies in a PRISMA diagram (Liberati 2009).

Data extraction and management

Two review authors (from NH, LOH, ES) independently extracted data from each included study and recorded the following information on a pre-piloted data extraction form.

1. Participant characteristics (age, gender, ethnicity, location)
2. Intervention characteristics (including delivery, duration, outcomes and measures, and within-intervention variability)
3. Comparison characteristics (including whether the study used an active or inactive comparison)
4. Study characteristics (study design, sample size, length of follow-up, attrition or dropout, handling of missing data, methods of analysis, dates of study, funding sources, conflicts of interest)
5. Outcome data (relevant details on all primary and secondary outcome measures used, and summary data, including means, standard deviations (SDs), confidence intervals (CIs) and significance levels for continuous data and proportions for dichotomous data)

Review authors resolved disagreements through discussion. Where clarity was needed over whether an outcome in a study was relevant, the reviewer authors sought advice from JB.

Assessment of risk of bias in included studies

Two review authors (ES for all studies, with either LOH or NH) independently assessed the risk of bias of each included study using the Cochrane 'Risk of bias' tool (Higgins 2017). They assigned judgements of low, high or unclear risk of bias for each of the following domains, using the criteria set out in Appendix 2: sequence generation; allocation concealment; blinding of participants and personnel; blinding of outcome assessment; incomplete outcome data; selective reporting and other bias. Where review authors did not agree after discussion, they discussed further with another author (JB or NL). We recorded the judgements in 'Risk of bias' tables.

Measures of treatment effect

We calculated unadjusted treatment effects using Review Manager 5 (RevMan 5) (Review Manager 2014).

Dichotomous outcome data

We calculated the odds ratio (OR) with 95% CI for dichotomous outcomes. For dichotomous outcomes that we included in the 'Summary of findings' tables, we expressed the results as absolute risks and used high and low observed risks among the control groups as reference points.

Continuous outcome data

For continuous outcomes, we calculated the mean difference (MD) if all included studies used the same measurement scale, or the standardised mean difference (SMD) if studies used different measurement scales, and 95% CIs. We calculated SMD using Hedge's g. In one instance, we converted an SMD from Cohen's d to Hedge's g.

Economics issues

We reviewed studies for data on the costs of programmes within the included studies.

Unit of analysis issues

Studies with multiple treatment groups

In the primary analysis, we combined results across all eligible intervention groups and compared them with the combined results across all eligible control groups, and made single pair-wise comparisons. Where studies compared more than one form of video interaction with a control group or groups, such that combining them prevented investigation of potential sources of heterogeneity, we analysed each video interaction group separately (against a common control group) but divided the sample size for common comparator groups proportionately across each comparison (Higgins 2011; Section 16.5.5). This simple approach allows the use of standard software and prevents inappropriate double counting of individuals. We applied this latter approach to three studies (Benzies 2013; Hoffenkamp 2015; Klein Velderman 2006).

Dealing with missing data

Where necessary, one review author (LOH or ES) contacted the authors of included studies requesting them to supply any unreported data such as missing outcome data (e.g. group means and SDs and details of number of dropouts). Details of which study authors we contacted and why are in the Characteristics of included studies tables and Table 2.

If we were not able to obtain unreported outcome data, we followed the recommendations in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011, Section 16.1) and did the following:

1. Analysed the data available, as we assumed the data were missing at random.

Two studies had unreported outcome data on parental sensitivity that the study authors were unable to provide: Koniak-Griffin 1992 reported a result for a scale with parental sensitivity as a subdomain, but did not report the subdomains; and Moran 2005 reported means but not SDs or standard errors (SE). We did not impute this unreported data, as we assumed the data were missing at random.

Assessment of heterogeneity

We assessed clinical heterogeneity across included studies by examining the distribution of important participant factors (e.g. age) and intervention characteristics (e.g. style, setting, personnel, context of delivery) among studies. The details of this information are included in the Characteristics of included studies tables, and discussed in the Results section.

We assessed methodological heterogeneity across included studies by comparing the distribution of study factors (e.g. allocation concealment, blinding of outcome assessment, losses to follow-up, treatment type, cointerventions). This information is contained in the Characteristics of included studies tables and 'Risk of bias' tables, and considered in the Discussion.

We described statistical heterogeneity by computing the I^2 statistic (Higgins 2002), which describes approximately the proportion of variation in point estimates that is due to heterogeneity rather than sampling error. In addition, we used the Chi^2 test ($P < 0.10$) of homogeneity to detect the strength of evidence that heterogeneity is genuine (Deeks 2017).

Assessment of reporting biases

We drew a funnel plot (estimating differences in treatment effects against their standard error (SE)) when we identified 10 or more studies that provided data on an outcome; in this case, parental sensitivity. We assessed the funnel plot by visual inspection and also by Egger's regression test (Egger 1997). We redrew the funnel plot without an outlying study (Green 2010), to better assess the asymmetry.

We considered the reasons for any asymmetry. Asymmetry might be due to publication bias, but might also reflect a relationship between study size and effect size, such as when larger studies have lower compliance, and compliance is positively related to effect size. It may also be due to clinical variation between the studies (Sterne 2017, Section 10.4), for example the study population, reflecting true heterogeneity.

As a direct test for publication bias, we compared results extracted from published journal reports with results obtained from other sources for the two outcomes for which this was possible, parental sensitivity and parental stress. In these cases we obtained some outcome data directly from study authors that were not reported in the published papers (see Table 2).

Data synthesis

Where interventions were similar in terms of (1) the age of the child(ren), (2) parent gender and (3) intensity, frequency and duration of video feedback, we synthesised results in a meta-analysis.

We used both fixed-effect and random-effects models and compared the results to assess the impact of statistical heterogeneity. Except where the model was contraindicated (e.g. if there was funnel plot asymmetry), we present the results from the random-effects model. When we report the results of the random-effects model, we include an estimate of the between-study variance (Tau^2).

We calculated all overall effects using inverse variance methods.

Where some primary studies reported an outcome as a dichotomous measure and others used a continuous measure of the same construct (as in the case of attachment security), we performed two separate analyses rather than converting the OR to a SMD. This was because we could not assume that the underlying measure had a normal or logistic distribution, as the nature of the populations in the two relevant studies means that the distribution of attachment patterns is likely to be skewed (teenage mothers in Moran 2005 and families where children had been subjected to maltreatment in Moss 2011).

Where a trial reported two outcomes within a time period covered by the same meta-analysis, we combined the data from the time point nearest the end of the intervention. Where possible, we tried to combine outcomes measured at similar time points in the follow-up period.

'Summary of findings' table

We created a 'Summary of findings' table for the following comparison: video feedback versus no intervention or inactive alternative intervention.

We followed the guidelines in the *Cochrane Handbook for Systematic Reviews of Interventions* (Schünemann 2017), and included the following six elements in these tables.

1. A list of all outcomes
2. A measure of the typical burden of these outcomes
3. Absolute and relative magnitude of effect
4. Numbers of participants and studies that address these outcomes
5. A rating of the overall certainty of evidence for each outcome
6. Additional comments

Two review authors (LOH, ES) independently assessed the certainty of the evidence, using the following five GRADE considerations (Schünemann 2017).

1. Limitations in study design and implementation: for RCTs, for example, these included lack of allocation concealment, lack of blinding and large loss to follow-up.
2. Indirectness of evidence: for example, if findings were restricted to indirect comparisons between two interventions. RCTs that met the eligibility criteria but that addressed a restricted version of the main review questions in terms of population, intervention, comparator or outcomes are another example of this and would also have been downgraded.
3. Unexplained heterogeneity or inconsistency of results: we looked for robust explanations for heterogeneity in studies that yielded widely differing estimates of effect.

4. Imprecision of results: we downgraded the certainty of evidence for those studies that included few participants and few events and thus had wide CIs.
5. Publication bias: we downgraded the certainty of evidence level if investigators failed to report studies or outcomes on the basis of results.

We downgraded the ratings (from high to very low), depending on the presence of the five factors.

We used GRADEpro GDT to prepare the 'Summary of findings' table, and specifically, to enable us to produce relative effects and absolute risks associated with the interventions (GRADEpro GDT). We used all primary outcomes and one secondary outcome of interest to populate the 'Summary of findings' table (primary outcomes: parental sensitivity at postintervention to six months; reflective functioning; attachment security measured by Strange Situation Procedure at postintervention; attachment security measured by Attachment Q-sort at postintervention; parental stress measured at postintervention and short-term follow-up; and parental anxiety at short-term follow-up; secondary outcome: child behaviour measured at long-term follow-up). We also used Ryan 2016 to guide our judgements.

Subgroup analysis and investigation of heterogeneity

We investigated heterogeneity by conducting moderator analyses for the outcome of 'parental sensitivity'. To perform this analysis, we used a random-effects meta-analysis with a Sidik-Jonkman estimator, which is robust for small numbers of studies and provides improved CI (Veroniki 2019). We considered the following factors, some of which we decided post hoc.

Prespecified factors

1. Intervention dose: defined by number of video feedback sessions (zero to five versus six to 10 versus more than 10; grouping this factor in this way was a post hoc decision).
2. Participating carer: all mothers versus all fathers versus mix of mothers and fathers (we made a post hoc decision to include studies with a mix of parental genders along side those who were all fathers or all mothers).
3. Type of video feedback (VIPP versus non-VIPP; grouping types of video feedback in this way was a post hoc decision).

Factors specified post hoc

1. Age of child (children under one year old versus children aged one year or older; using age of child as a factor was a post hoc decision).
2. Disability status of children (disability versus no disability; using disability status of the child was a post hoc decision).

In the first step, we assessed the moderators individually and reported their overall contribution to the reduction of heterogeneity (Q-between). To assess whether moderation effects for study characteristics existed, we conducted a moderator analysis in which we included the three prespecified moderators (type of video feedback, duration of video feedback and participating carer) simultaneously, this accounts for potential correlations between moderators. Given the small number of studies, this analysis should be treated with caution, due to the relatively low power. Predicted values are reported alongside regression results. We did not impute missing data in line with the main analyses.

We conducted the moderator analyses in R version 3.6.1 (R 2018), using the metafor-package 2.1.0 (Viechtbauer 2010); analysis syntax and data are available from the review authors on request.

Sensitivity analysis

We assessed the robustness of findings to decisions made in obtaining them by conducting the following sensitivity analyses (Deeks 2017).

1. Reanalysis excluding studies at high or unclear risk of bias
2. Reanalysis using different statistical approaches (comparing the use of a random-effects model with a fixed-effect model).

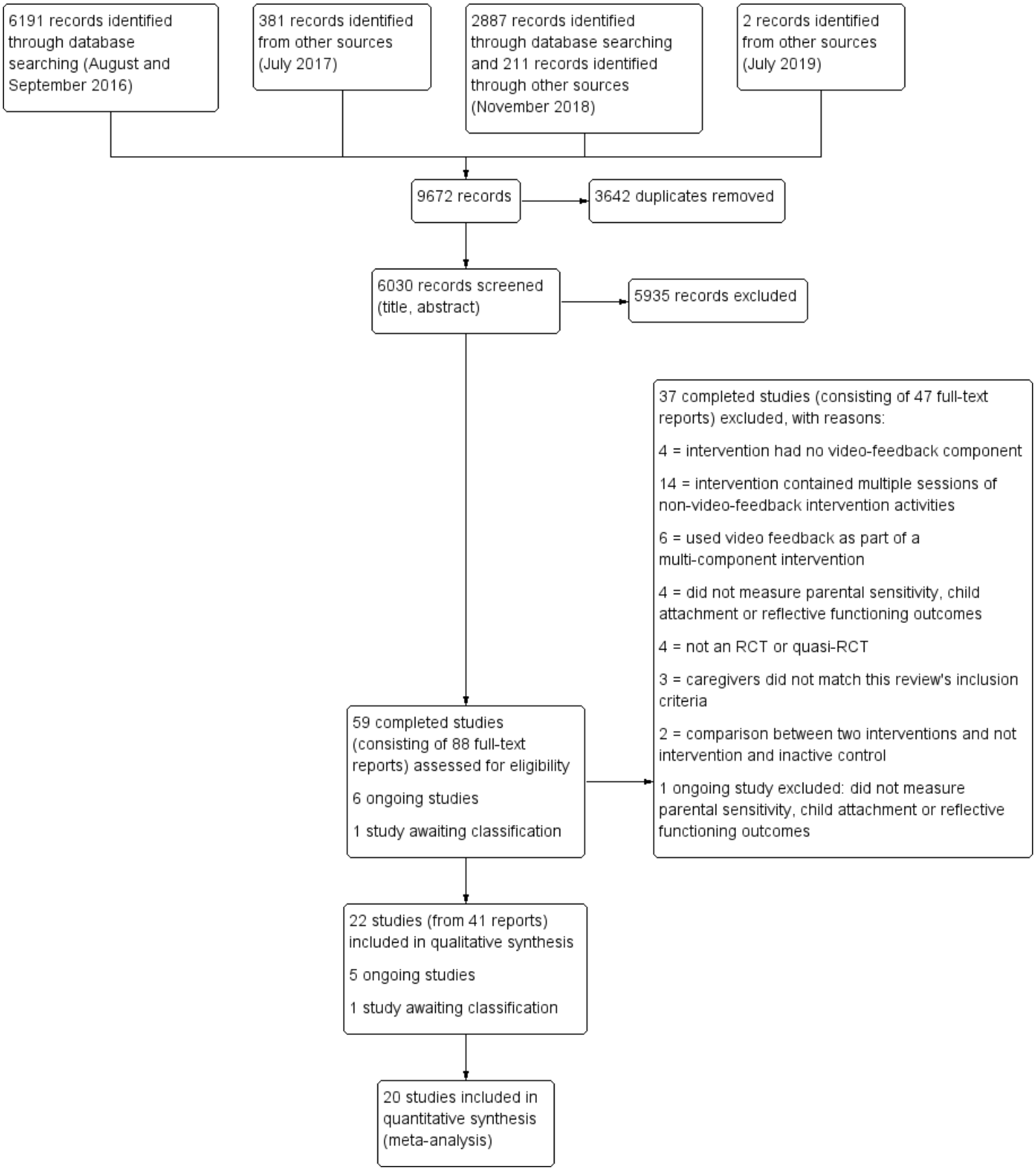
RESULTS

Description of studies

Results of the search

Our initial electronic searches (August to September 2016 and July 2017) identified 6191 records (see Figure 1). We identified an additional 381 records from other sources. After the removal of duplicates, we screened the titles and abstracts of 4368 records. We obtained and scrutinised 81 full-text reports for eligibility, 47 of which (37 studies) did not meet the inclusion criteria and were excluded from the review with reasons (see Characteristics of excluded studies), and 34 (19 studies) that did and were included in the review.

Figure 1. 95 Study flow diagram



Our updated electronic searches (November 2018) identified 2887 records. We identified an additional 211 records through other sources in November 2018, and an additional two records in July 2019. After the removal of duplicates, we screened the titles and abstracts of 1662 records. During the title and abstract screening, we identified six ongoing studies, one of which we excluded, leaving five ongoing studies (Euser 2016; Firk 2015; ISRCTN92360616; NCT03052374; Schoemaker 2018), and one study awaiting classification (Mendelsohn 2008). We reviewed seven full-text reports and added six reports pertaining to three new studies (Barone 2019; Platje 2018; Seifer 1991) and one report of a study identified during our initial search (Hodes 2017), to the review (see Figure 1).

Included studies

This review includes 22 studies (see Characteristics of included studies tables and Table 3), comprising a total of 41 reports and 1889 randomised parent-child dyads or family units.

Location

Seven studies were conducted in the Netherlands (Hodes 2017; Hoffenkamp 2015; Klein Velderman 2006; Platje 2018; Poslawsky 2015; Van Zeijl 2006; Yagmur 2014), five in the UK (Barlow 2016; Green 2010; Green 2015; Lam-Cassettari 2015; Stein 2006), three in Canada (Benzies 2013; Moran 2005; Moss 2011), and two in the USA (Koniak-Griffin 1992; Seifer 1991). One study apiece was conducted in Germany (Bovenschen 2012), Italy (Barone 2019), Lithuania (Kalinauskiene 2009), Norway (Høivik 2015), and Portugal (Negrão 2014).

Design

All but two studies were RCTs (Bovenschen 2012; Seifer 1991). Bovenschen 2012 was originally designed as an RCT but some mothers only agreed to take part if they could participate in the intervention, thereby undermining the randomisation. Seifer 1991 was a quasi-RCT, with participants allocated based on the day of the week they attended a linked treatment programme.

Two of the 22 included RCTs employed a three-arm design (Benzies 2013; Klein Velderman 2006). Klein Velderman 2006 allocated parents to either a video-feedback group, a video-feedback and discussion group, or a control group. In Benzies 2013, one group was allocated two visits with a video-feedback intervention, the second group was allocated four visits with a video-feedback intervention and the final group was allocated to a control condition.

The other studies employed a two-arm design with parents allocated either to a video-feedback intervention or control group (see Table 3).

Sample size

The number of dyads randomised in each trial ranged from 14 (Lam-Cassettari 2015), to 237 (Van Zeijl 2006).

Recruitment

Two studies recruited participants from an inpatient hospital setting (Barlow 2016; Hoffenkamp 2015). The other 20 studies recruited participants from a community setting, including primary care, and hospital outpatient clinics.

Participants

The majority of studies (n = 14) randomised only mother-child dyads. Seven studies randomised male as well as female caregiver and child dyads (Barlow 2016; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Moss 2011; Platje 2018; Poslawsky 2015). Only one study randomised father-child dyads (Benzies 2013).

The average age of carers, when reported, ranged from 17.16 years (Koniak-Griffin 1992), to 42.6 years (Barone 2019).

Twelve studies had a mean age of participant children that was under one year at baseline (Barlow 2016; Benzies 2013; Bovenschen 2012; Green 2015; Hoffenkamp 2015; Høivik 2015; Kalinauskiene 2009; Klein Velderman 2006; Koniak-Griffin 1992; Moran 2005; Seifer 1991; Stein 2006); the remaining 10 studies had a mean age of participant children that was over one year at baseline (Barone 2019; Green 2010; Hodes 2017; Lam-Cassettari 2015; Moss 2011; Negrão 2014; Platje 2018; Poslawsky 2015; Van Zeijl 2006; Yagmur 2014). Many studies specified in their inclusion criteria that they were either recruiting babies (children aged under one year) or children (children aged one year or over); however, in some studies, their inclusion criteria included children both under and over one year of age.

Participants were recruited for a range of reasons including: child behaviour problems; parental diagnosis of an eating disorder; adverse family circumstances; parental depression; sensitivity problems; insecure attachment; parental intellectual disability; teenage or single parenthood (or both); migration status; preterm baby; adopted child; deaf children; parents who were being monitored by social services for child maltreatment; parents of children with a visual or visual and intellectual disability; and autistic children or children considered at risk of autism.

It is difficult to summarise the ethnicities of participants as different studies categorised this variable in different ways. Six studies did not report ethnicity (Bovenschen 2012; Hodes 2017; Hoffenkamp 2015; Klein Velderman 2006; Moss 2011; Poslawsky 2015). In 12 studies the majority of participants appeared to be from white European backgrounds (see Characteristics of included studies tables). One study recruited internationally adopted children (Barone 2019), and in one study the majority of participants were from African American or Hispanic backgrounds (Koniak-Griffin 1992). Two studies used ethnicity as part of their inclusion or exclusion criteria (Negrão 2014; Yagmur 2014).

Type of video-feedback intervention

Table 3 provides an overview of type of video-feedback interventions that the included studies evaluated, organised by type. In summary:

1. 10 studies implemented Video-feedback Intervention to promote Positive Parenting (VIPP) or a variation of VIPP (VIPP with a representational component (VIPP-R), VIPP and sensitive discipline (VIPP-SD), VIPP adapted to autism (VIPP-AUTI), VIPP adapted for Turkish mothers (VIPP-TM), VIPP-visual (VIPP-V), VIPP adapted for fostered or adopted children (VIPP-FC/A)): (Barone 2019; Green 2015; Hodes 2017; Kalinauskiene 2009; Klein Velderman 2006; Negrão 2014; Platje 2018; Poslawsky 2015; Van Zeijl 2006; Yagmur 2014);
2. Three studies included Video Interaction Guidance (VIG; Barlow 2016; Hoffenkamp 2015; Lam-Cassettari 2015);

3. One study implemented Video-feedback of Infant-Parent Interaction (VIPI; Høivik 2015);
4. One study implemented video self-modelling with feedback (Benzies 2013); and
5. Six studies implemented a non-specified type of video feedback or another type not named above (Bovenschen 2012; Green 2010; Koniak-Griffin 1992; Moran 2005; Moss 2011; Seifer 1991; Stein 2006).

Treatment intensity

Six studies had between one and five sessions of video feedback (Barlow 2016; Benzies 2013; Kalinauskiene 2009; Klein Velderman 2006; Koniak-Griffin 1992; Poslawsky 2015); 12 studies had six to 10 sessions of video feedback (Barone 2019; Bovenschen 2012; Hoffenkamp 2015; Høivik 2015; Lam-Cassettari 2015; Moran 2005; Moss 2011; Negrão 2014; Platje 2018; Seifer 1991; Van Zeijl 2006; Yagmur 2014); and four studies offered more than 10 sessions of video feedback (Green 2010; Green 2015; Hodes 2017; Stein 2006).

Monitoring of treatment fidelity

Two studies reported a quantitative measure of treatment fidelity (Green 2010; Green 2015). Ten studies reported having a process in place to monitor treatment fidelity, although they did not report a quantitative measure of treatment fidelity (Hodes 2017; Hoffenkamp 2015; Høivik 2015; Moran 2005; Moss 2011; Platje 2018; Poslawsky 2015; Stein 2006; Van Zeijl 2006; Yagmur 2014). The 10 remaining studies did not report any monitoring of treatment fidelity.

Comparisons

Eleven studies used either usual care (such as routine visits from community health staff or play support programmes) or no additional intervention for their control group (Barlow 2016; Bovenschen 2012; Green 2010; Green 2015; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Klein Velderman 2006; Lam-Cassettari 2015; Moss 2011; Platje 2018). The other 11 studies used some sort of inactive alternative treatment, such as telephone calls or videoing the parent-child dyads, without providing any feedback.

Outcomes and outcome measures

Parental sensitivity

All studies measured parental sensitivity or used a measure that could act as a proxy.

1. Seven studies (Barone 2019; Høivik 2015; Klein Velderman 2006; Lam-Cassettari 2015; Negrão 2014; Poslawsky 2015; Yagmur 2014), used the Emotional Availability Scale (Biringen 2000b; Biringen 2008).
2. Three studies (Bovenschen 2012, Kalinauskiene 2009; Klein Velderman 2006), used the Ainsworth Rating Scale (Ainsworth 1974; Ainsworth 1978), and one (Stein 2006), used an adapted version of this scale.
3. Two studies (Moran 2005; Moss 2011), used the Maternal Behaviour Q-sort (Pederson 1999; Pederson 1995).
4. Six other studies used the following scales:
   a. Barlow 2016 used the CARE-Index (Crittenden 2001);
   b. Benzies 2013 used the Parent Child Interaction Teach Scale (Sumner 1994);
   c. Green 2015 used the Manchester Assessment of Caregiver-Infant Interaction (Wan 2017);
   d. Hoffenkamp 2015 used an adapted measure based on a coding scale from NICHD Early Child Care Research Network 2005;
   e. Koniak-Griffin 1992 used the Nursing Child Assessment Teaching Scale (Barnard 1978);
   f. Platje 2018 used an adapted version of the National Institute of Child Health and Human Development Scales (Egeland and Heister 1993); and
   g. Van Zeijl 2006 used measures for parental sensitivity that were taken from Egeland 1990.

Three studies relied on proxy measures (Green 2010; Hodes 2017; Seifer 1991).

1. Green 2010 used the proportion of parental communications with the child that were synchronous based on observation.
2. Hodes 2017 assessed harmonious parent-child interaction (measured using the three-bag procedure; NIHCD Early Child Care Research Network 2003).
3. Seifer 1991 used an observer to measure maternal responsive behaviour, but the report does not specify the type of scale used to code observations.

Fourteen studies measured parental sensitivity immediately postintervention (Barone 2019; Bovenschen 2012; Green 2015; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Kalinauskiene 2009; Koniak-Griffin 1992; Lam-Cassettari 2015; Moran 2005; Moss 2011 Platje 2018; Poslawsky 2015; Seifer 1991), and 17 measured it in the short term (Barlow 2016; Barone 2019; Benzies 2013; Bovenschen 2012; Green 2010; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Klein Velderman 2006; Koniak-Griffin 1992; Lam-Cassettari 2015; Negrão 2014; Platje 2018; Poslawsky 2015; Stein 2006; Van Zeijl 2006; Yagmur 2014). None of the studies measured it in the medium term, and just three studies measured it in the long term (Kalinauskiene 2009; Klein Velderman 2006; Moss 2011).

Parental reflective functioning

No study measured this outcome.

Attachment security

Four studies measured child attachment security (Kalinauskiene 2009; Klein Velderman 2006; Moran 2005; Moss 2011), and all but one study, Klein Velderman 2006, measured this outcome postintervention. Klein Velderman 2006 assessed attachment security in both the short and long term.

Three studies, Klein Velderman 2006, Moran 2005 and Moss 2011, used the Strange Situation Procedure (Ainsworth 1978) to measure attachment security, and two studies, Kalinauskiene 2009 and Klein Velderman 2006, used the Attachment Q-sort (Waters 1985; Waters 1987).

Adverse effects

Parental stress

Eight studies measured parental stress (Barlow 2016; Benzies 2013; Hodes 2017; Kalinauskiene 2009; Klein Velderman 2006; Negrão 2014; Platje 2018; Poslawsky 2015). Four studies measured the outcome postintervention (Hodes 2017; Kalinauskiene 2009; Platje 2018; Poslawsky 2015). Six studies measured this outcome in the short term (Barlow 2016; Benzies 2013; Klein Velderman 2006; Negrão 2014; Platje 2018; Poslawsky 2015). One study measured this outcome at an unspecified follow-up time point (Hodes 2017).

Two studies, Barlow 2016 and Benzies 2013, used a version of the Parenting Stress Index (full or short form; Abidin 1995; Terry 1991). Three studies, Kalinauskiene 2009, Negrão 2014 and Poslawsky 2015, used the Parenting Daily Hassles or Daily Hassles Questionnaire (Crnic and Greenberg 1990; Kanner 1981). One study, Klein Velderman 2006, used the Support and Stress Questionnaire (Van den Boom 1988). Two studies, Platje 2018 and Hodes 2017, used the Nijmeegse Ouderlijke Stress Index - Dutch version of the Parenting Stress Index (Abidin 1983; De Brock 1992).

Parental anxiety

Only two studies measured parental anxiety. Barlow 2016 measured parental anxiety in the short term using the Hospital Anxiety and Depresssion Scale (Zigmond 1983); and Hoffenkamp 2015 measured parental anxiety in the short and medium term using the State-Trait Anxiety Inventory (Spielberger 1983).

Child mental health

One study, Green 2010, measured child mental health in the long term, using the Development and Well-being Assessment (Goodman 2011).

Child physical and socioemotional development

Seifer 1991 measured child psychomotor development at postintervention using the Uzgiris and Hunt Ordinal Scales of Development (Uzgiris 1975); all seven subscales were measured individually.

Five studies measured aspects of children's socioemotional development (Green 2010; Green 2015; Høivik 2015; Poslawsky 2015; Seifer 1991). Høivik 2015 measured this immediately postintervention and in the medium term using the Ages and Stages Questionnaire (Squires 2002). Poslawsky 2015 measured it at both postintervention and in the short term using the Early Social Communication Scales (Mundy 2003). Green 2010 assessed this in the short term using the Vineland Adaptive Behaviour Scales (VABS; Sparrow 2005), and in the long term using the Strengths and Difficulties Questionnaire (Goodman 1997). Green 2015 used the VABS to measure this outcome in the short and long term (Sparrow 2005). Seifer 1991 measured child mental development using the Bayley Scales of Infant Development at postintervention (Bayley 1969).

Child behaviour

Five studies measured child behaviour at different time points, using various versions of the Child Behaviour Checklist (CBCL; Achenbach 1992; Achenbach 2000). Moss 2011 and Barone 2019 measured children's behaviour postintervention; and Van Zeijl 2006 and Barone 2019 did so in the short term. Two studies measured it in the long term (Kalinauskiene 2009; Klein Velderman 2006).

Three studies reported externalising behaviour, which is a domain of child behaviour (Barone 2019; Moss 2011; Van Zeijl 2006), using the CBCL (Achenbach 2000). Two studies reported it at postintervention (Barone 2019; Moss 2011), and two reported it at short-term follow-up (Barone 2019; Van Zeijl 2006). No study measured it at long-term follow-up.

Costs

None of the studies reported data on costs.

Funding sources

These are listed in the Characteristics of included studies tables. Almost all studies reported some sort of external funding, from a charitable organisation (n = 7) and/or public body (n = 18). No studies reported commercial funding.

Excluded studies

We formally excluded 37 completed studies, consisting of 47 reports, and one ongoing study, details of which can be found in the Characteristics of excluded studies tables.

We excluded completed studies for the following reasons: intervention had no video-feedback component (4 studies); intervention contained multiple sessions of non-video-feedback intervention activities (14 studies); used video feedback as part of a multicomponent intervention (6 studies); study did not measure parental sensitivity, child attachment or reflective functioning outcomes (4 studies); study was not an RCT or quasi RCT (4 studies); caregivers did not match this review's inclusion criteria (3 studies); study was a comparison between two active interventions rather than an intervention and inactive alternative intervention (2 studies).

We excluded one ongoing study because it does not measure parental sensitivity, child attachment or reflective functioning outcomes.

Ongoing studies

We identified five ongoing studies, described in further detail here: Characteristics of ongoing studies. All five studies are RCTs. Three of the studies include parent-child dyads (Firk 2015; ISRCTN92360616; NCT03052374), one study includes parents and twins (Euser 2016), and one includes foster parents and foster children (Schoemaker 2018). Two studies are being conducted in the Netherlands (Euser 2016; Schoemaker 2018), one study in Germany (Firk 2015), one in Ireland (ISRCTN92360616), and one in Canada (NCT03397719).

Three of the studies include a component of video feedback (Firk 2015; ISRCTN92360616; NCT03052374), and two include an adaptation of VIPP (Positve Parenting and Sensitive Discipline in twin families (VIPP-twin; Euser 2016); Positive Parenting for Foster Care (VIPP-FC; Schoemaker 2018)). Three studies used standard care as their control intervention (Firk 2015; ISRCTN92360616; NCT03052374), and two studies used phone calls as their control intervention (Euser 2016; Schoemaker 2018).

Of these studies, two were funded through public sector funding sources (Euser 2016; Firk 2015); two were funded through

charitable sources (ISRCTN92360616; Schoemaker 2018), and one did not declare a source of funding (NCT03052374).

Studies awaiting classification

There was one report that we could not obtain in full (Mendelsohn 2008), despite a request to the first author (Smith 2018i [pers comm]). This is listed under Characteristics of studies awaiting classification.

Risk of bias in included studies

We present the 'Risk of bias' tables for each included study beneath the Characteristics of included studies tables. Figure 2 summarises the 'Risk of bias' assessments across all outcomes, and Figure 3 summarises these assessments across all included studies.

Figure 2. 'Risk of bias' graph: review authors' judgements about each 'Risk of bias' item presented as percentages across all included studies

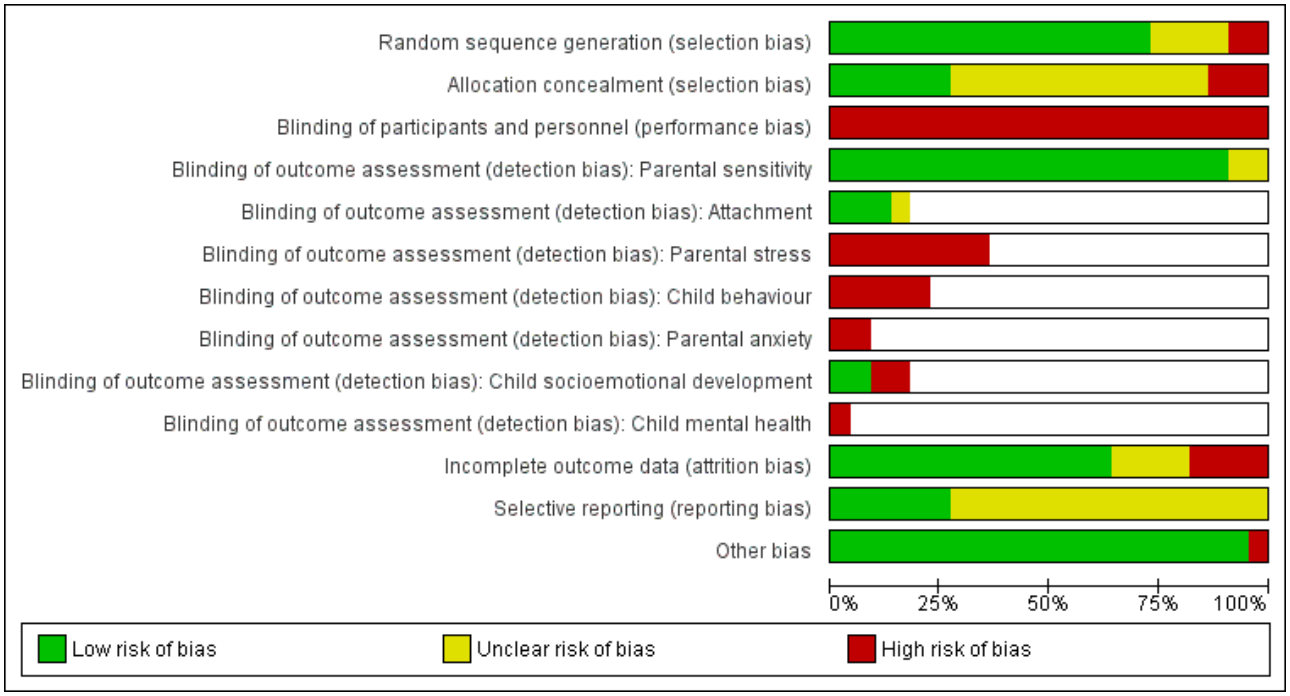


Figure 3. 'Risk of bias' summary: review authors' judgements about each 'Risk of bias' item for each included study

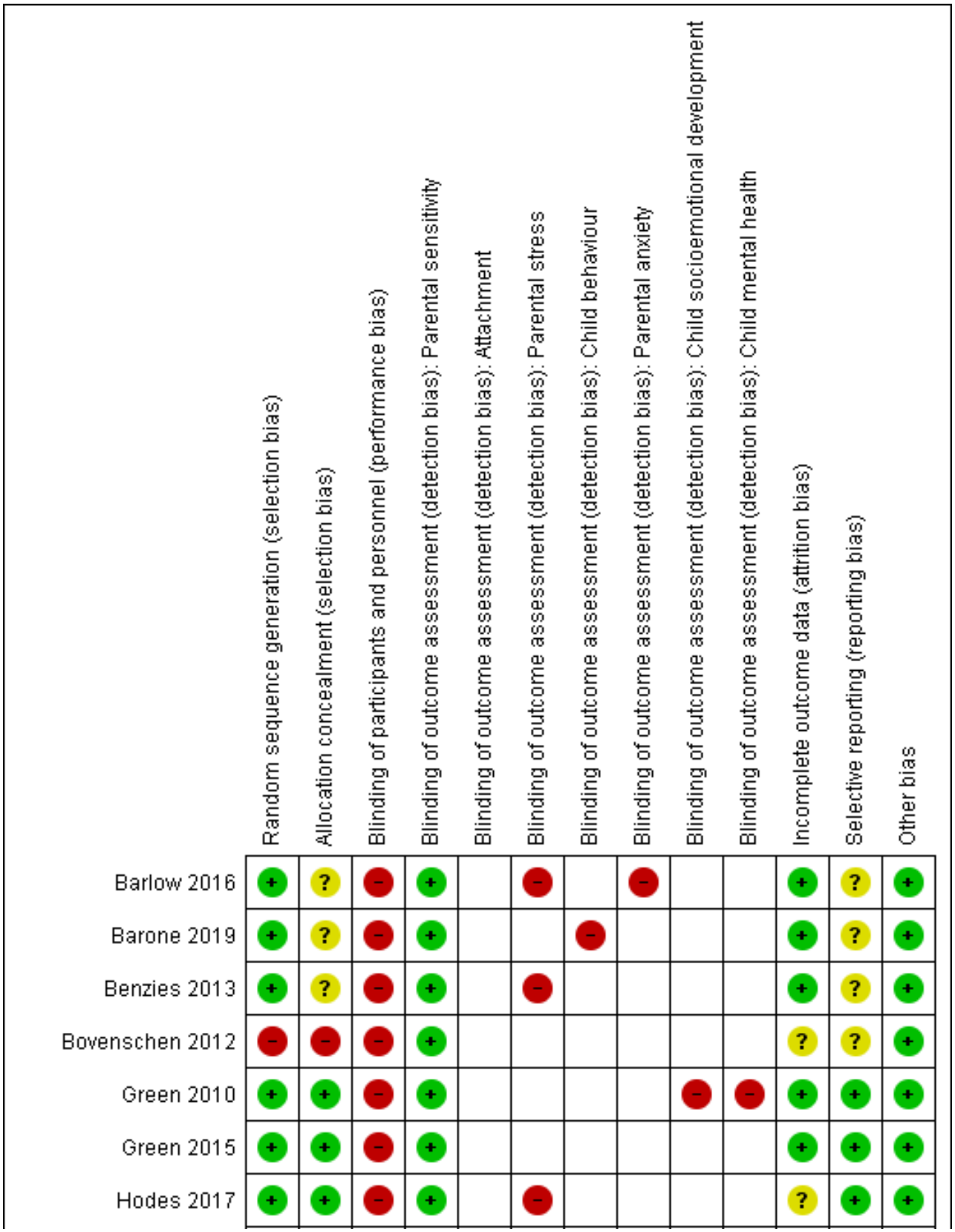
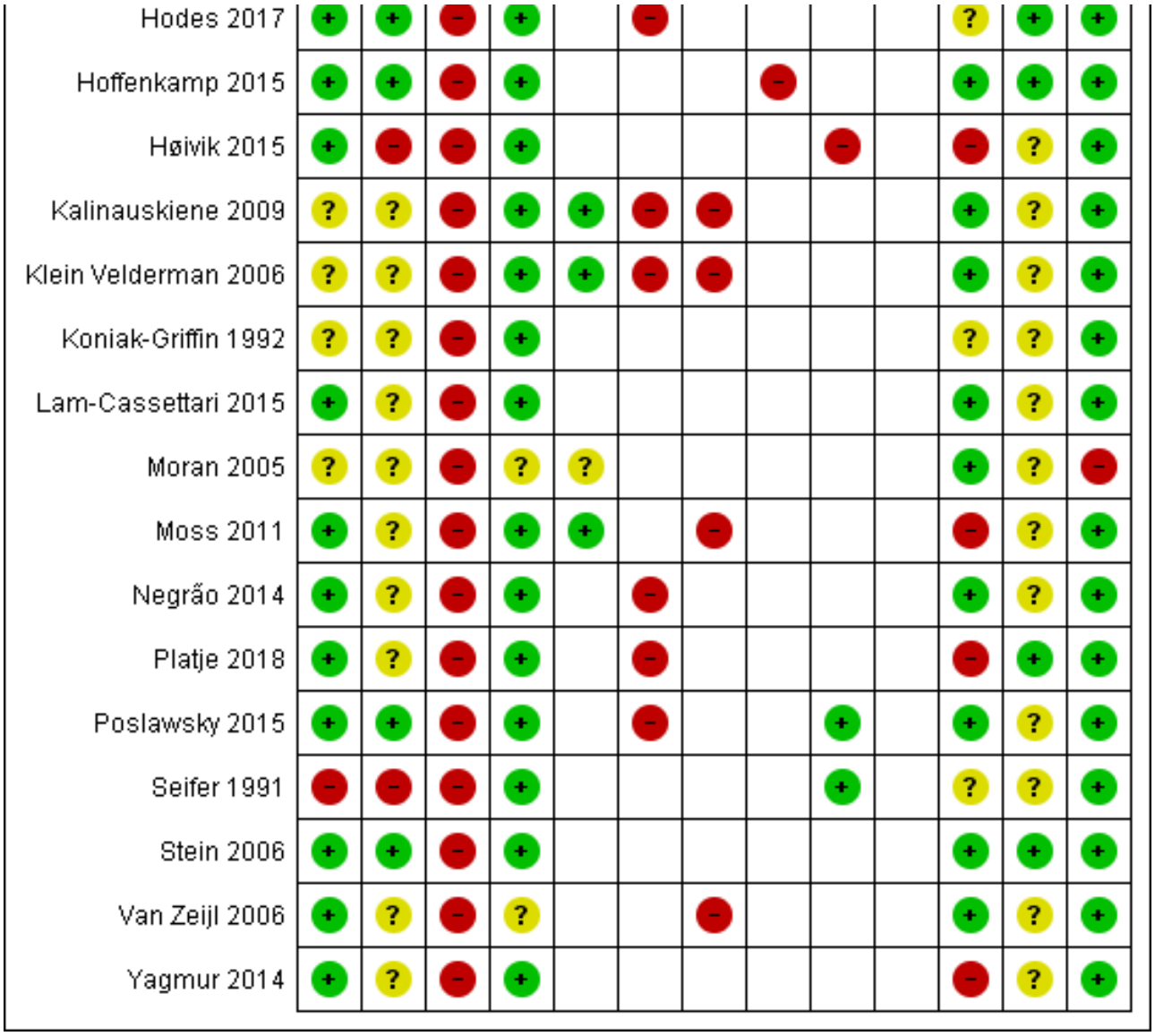


Figure 3. (Continued)



Allocation

Random sequence generation

We assessed the risk of selection bias from randomisation to be low in 16 studies (Barlow 2016; Barone 2019; Benzies 2013; Green 2010; Green 2015; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Lam-Cassettari 2015; Moss 2011; Negrão 2014; Platje 2018; Poslawsky 2015; Stein 2006; Van Zeijl 2006; Yagmur 2014). We assessed two studies as having a high risk of selection bias from poor randomisation (Bovenschen 2012; Seifer 1991); for instance due to randomisation based on the day of the week. Four studies stated that participants were randomised, but did not state how this was carried out (Kalinauskiene 2009; Klein Velderman 2006; Koniak-Griffin 1992; Moran 2005), so we assessed them as at unclear risk of bias.

Allocation concealment

We assessed the risk of selection bias to be low in six included studies across allocation concealment (Green 2010; Green 2015; Hodes 2017; Hoffenkamp 2015; Poslawsky 2015; Stein 2006). We assessed 13 studies as having an unclear risk of allocation bias, as they did not give sufficient information on how allocation took place (Barlow 2016; Barone 2019; Benzies 2013; Kalinauskiene 2009; Klein Velderman 2006; Koniak-Griffin 1992; Lam-Cassettari 2015; Moran 2005; Moss 2011 Negrão 2014; Platje 2018; Van Zeijl 2006; Yagmur 2014). We rated three studies at high risk of selection bias: Bovenschen 2012, as the study authors stated that some participants only agreed to take part if they were allocated to a specific arm of the study; Høivik 2015 due to the use of consecutive randomisation; and Seifer 1991 as allocation was based on presentation on a certain day of the week.

Blinding

Given the nature of the intervention, we judged it impossible to truly blind any of the participants, so we rated all studies at high risk of performance bias. Two studies did attempt to address this issue by giving participants limited information about the purpose of the

study (Benzies 2013; Moran 2005); however, in our judgement, this was not sufficient to blind participants.

We judged detection bias relating to outcomes that were relevant to this review only. We rated each outcome separately. The results are presented below.

Primary outcomes

Parental sensitivity

All 22 included studies measured this outcome or proxy domain. All except two studies, Moran 2005 and Van Zeijl 2006, were able to adequately blind the outcome assessor(s), so we rated them at low risk of detection bias. As Moran 2005 and Van Zeijl 2006 did not describe the blinding in sufficient detail, we rated them as having an unclear risk of detection bias.

Parental reflective functioning

None of the included studies measured this outcome.

Attachment security

Four studies measured this outcome (Kalinauskiene 2009; Klein Velderman 2006; Moran 2005; Moss 2011). We rated one study, Moran 2005 at unclear risk of detection bias, and the other three studies at low risk of detection bias, as they blinded assessors.

Adverse effects

We examined parental stress and parental anxiety. Eight studies reported parental stress (Barlow 2016; Benzies 2013; Hodes 2017; Kalinauskiene 2009; Klein Velderman 2006; Negrão 2014; Platje 2018; Poslawsky 2015). All of these studies used self-report scales, so we rated all at high risk of detection bias.

Two studies reported parental anxiety (Barlow 2016; Hoffenkamp 2015). Again, both of these studies used self-report scales, so we rated them at high risk of detection bias.

Secondary outcomes

Child mental health

A single study measured child mental health (Green 2010). They used the Development and Well-Being Assessment (DAWBA), which uses a parental assessment of their children. Consequently, we rated it at high risk of detection bias.

Child physical and socioemotional development

Four studies measured children's socioemotional development (Green 2010; Høivik 2015; Poslawsky 2015; Seifer 1991). Green 2010 and Høivik 2015 used scales based on parental assessments of their children, so we rated these studies at high risk of detection bias. Poslawsky 2015 and Seifer 1991 used blinded raters so we rated these studies at low risk of detection bias.

Child behaviour

Five studies measured child behaviour (Barone 2019; Kalinauskiene 2009; Klein Velderman 2006; Moss 2011; Van Zeijl 2006). All of these studies used scales based on parental ratings of their child's behaviour, so we rated all as being at high risk of detection bias.

Incomplete outcome data

Of the 22 included studies, we assessed 14 as being at low risk of attrition bias, due to either appropriate methods of imputation by the study authors, very low or no attrition, or attrition that was balanced across all arms of the study (Barlow 2016; Barone 2019; Benzies 2013; Green 2010; Green 2015; Hoffenkamp 2015; Kalinauskiene 2009; Klein Velderman 2006; Lam-Cassettari 2015; Moran 2005; Negrão 2014; Poslawsky 2015; Stein 2006; Van Zeijl 2006); four as unclear risk of attrition bias because there was unclear reporting of number of, or reason for, dropouts (Bovenschen 2012; Hodes 2017; Koniak-Griffin 1992; Seifer 1991); and four as high risk of attrition bias due to unequal attrition across arms that could have been for reasons related to the intervention (Høivik 2015; Moss 2011; Platje 2018; Yagmur 2014).

Selective reporting

The majority of studies did not have protocols, making it difficult to judge whether there was reporting bias. We judged 16 studies as having an unclear risk of reporting bias because they appeared to report all outcomes in their Methods section but did not have a protocol available (Barlow 2016; Barone 2019; Benzies 2013; Bovenschen 2012; Høivik 2015; Kalinauskiene 2009; Klein Velderman 2006; Koniak-Griffin 1992; Lam-Cassettari 2015; Moran 2005; Moss 2011; Negrão 2014; Poslawsky 2015; Seifer 1991; Van Zeijl 2006; Yagmur 2014). We rated six studies at low risk of reporting bias because they reported all prespecified outcomes from their published protocols (Green 2010; Green 2015; Hodes 2017; Hoffenkamp 2015; Platje 2018; Stein 2006).

For parental sensitivity, we compared published results with unpublished results, to test for publication bias in the three studies where this was possible (Barone 2019; Hoffenkamp 2015; Klein Velderman 2006). There was no evidence of a difference between the two groups of studies.

For parental stress, we compared published results with unpublished results, to test for publication bias in two studies (Klein Velderman 2006; Negrão 2014). We found no difference; neither group showed evidence of a difference between intervention and control groups.

Other potential sources of bias

We rated Moran 2005 at high risk of other bias as they did not report the maternal sensitivity outcome data completely (data were missing SDs or SEs).

Effects of interventions

See: **Summary of findings for the main comparison** Video feedback versus no intervention or inactive alternative intervention for parental sensitivity and attachment

We summarise the results of our meta-analyses below. We also report the results from single studies that we did not combine in a meta-analysis because: not enough studies reported that outcome; data were missing and we were unable to obtain them from the study authors; the outcome was measured at a different time point to other studies reporting that outcome, or the study measured the outcome at multiple similar time points, meaning that we selected a single time point for the meta-analysis. In addition, we present the results of a moderator analysis for the outcome parental sensitivity;

we decided post hoc to undertake this analysis (see Differences between protocol and review).

We have organised results for the main comparison under headings corresponding to the primary and secondary outcomes outlined in the Types of outcome measures section.

Numbers given are the total number of participants randomised. Where it has been possible to calculate an effect size, we have reported this with 95% CI. Where the calculated effect size had a P value less than 0.05, we have stated whether or not the result favours the intervention group.

Summary of findings for the main comparison summarises the main results of our meta-analyses.

Video feedback versus no intervention or inactive alternative intervention

Primary outcomes

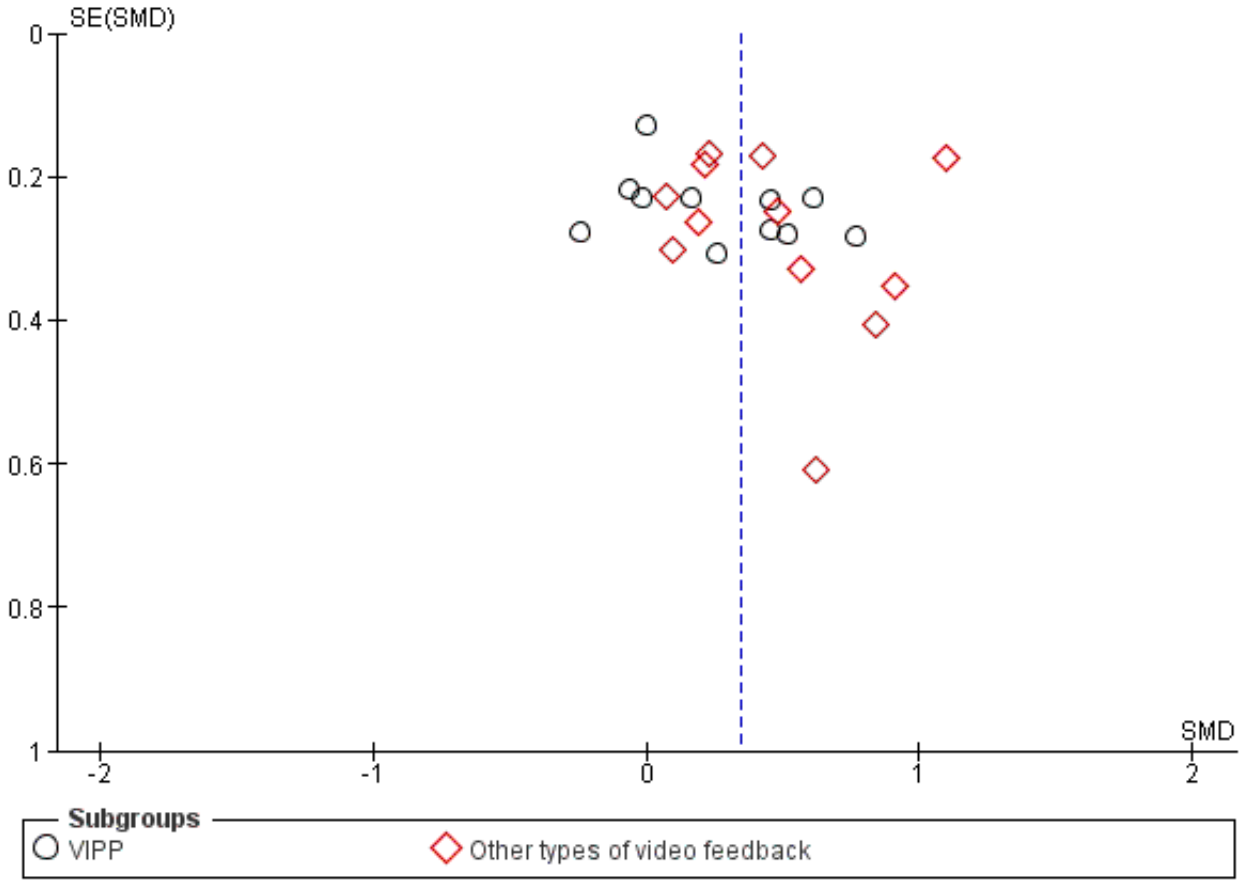
Parental sensitivity

Using a random-effects model, we conducted a meta-analysis of data from 20 studies (1757 parent-child dyads) that measured the effects of video-feedback on parental sensitivity from postintervention to six months' follow-up (Barlow 2016; Barone 2019; Benzies 2013; Bovenschen 2012; Green 2010; Green 2015; Hodes 2017; Hoffenkamp 2015; Høivik 2015; Kalinauskiene 2009; Klein Velderman 2006; Lam-Cassettari 2015; Moss 2011; Negrão 2014; Platje 2018; Poslawsky 2015; Seifer 1991; Stein 2006; Van Zeijl 2006; Yagmur 2014). We have presented data for mothers and fathers from Hoffenkamp 2015 separately as this is how the data were provided to us by the study authors. We have presented data for Benzies 2013 and Klein Velderman 2006 with two treatment groups, as these were three-armed studies where both treatment groups in the study met our inclusion criteria. Details of how we managed unit of analysis issues are described in Unit of analysis issues.

The results suggest evidence favouring video feedback compared with the control group (SMD 0.34, 95% CI 0.20 to 0.49, Analysis 1.1). There was evidence of moderate heterogeneity, meaning that the observed variation is likely to be due to statistical heterogeneity (Tau^2 = 0.07; Chi^2 = 49.21, df = 22 (P = 0.0008); I^2 = 55%). The GRADE certainty rating for this meta-analysis was moderate; we downgraded due to inconsistency (moderate heterogeneity that was not explained by the subgroup analyses).

We drew a funnel plot (estimating differences in treatment effects against their SE) for the outcome 'parental sensitivity' as this was the only outcome with 10 or more studies that provided data. Figure 4 shows no major asymmetry for this comparison when all studies were included. We ran Egger's regression test for assessing funnel plot asymmetry; there was no evidence for funnel plot asymmetry (P = 0.281). However, when we removed Green 2010, Egger's regression test provided evidence for funnel plot asymmetry (P value = 0.022). The appearance of the funnel plot suggests that the asymmetry might be due to small study effects.

Figure 4. Funnel plot of comparison: 1. Primary outcomes, outcome: 1.1 parental sensitivity (postintervention - 6 months)



Single study results (follow-up only)

It should be noted that we included postintervention data from all of the following studies in the meta-analysis for parental sensitivity, except Koniak-Griffin 1992 and Moran 2005. The following data represent results for later follow-up time points from these studies, and the single study results are all for later time periods.

1. Barone 2019 measured maternal sensitivity at six months' follow-up. The six-month results were not reported in the study, but the study authors provided us with unpublished means, number of participants (n) and SDs (intervention group: mean = 25.88, SD = 2.8, n = 42; control group: mean = 22.13, SD = 4.13, n = 37). We used these to calculate an SMD of 1.07 (95% CI 0.59 to 1.54), suggesting evidence of a difference between groups.
2. Bovenschen 2012 reported no evidence of an effect of the intervention at three months' follow-up. The study authors provided the following unpublished data to us: intervention group: mean = 2.91, SD = 1.89, n = 17; control group: mean = 2.36, SD = 1.36, n = 19). A P value is not reported for this comparison; we used the data reported to calculate an SMD of 0.33 (95% CI −0.33 to 0.99), suggesting no evidence of a difference between groups.
3. Green 2010 reported the impact on maternal sensitivity 5.75 years after the end of the trial. At 5.75 years there was not strong evidence of a difference between the groups (video-feedback group: mean = 44.4%, SD = 16.1%, n = 59; comparator group: mean = 43.1%, SD = 15.7%, n = 62; log OR of parent synchrony in video-feedback group versus comparator group: 0.02 (bootstrap 95% CI −0.30 to 0.36)).
4. Hodes 2017 reported the impact on maternal sensitivity at three months' follow-up. At three months' follow-up there was not strong evidence of a difference between the groups (video-feedback group: mean = 4.80, SD = 0.63, n = 43; comparator group: mean = 4.84, SD = 0.71, n = 42; repeated measures analysis of variance (ANOVA): F (2, 166) = 0.49, P = 0.61).
5. Hoffenkamp 2015 reported medium-term (six months) outcomes for fathers and mothers. At six months' follow-up there was no evidence of a difference between the two groups (mothers: MD = 0.29, SD = 0.22, P = 0.19; fathers: MD = 0.12, SD = 0.23, P = 0.60). We did not include six-month follow-up outcomes in the meta-analysis as this would have meant two time points from a single trial in the same meta-analysis.
6. Koniak-Griffin 1992 measured maternal sensitivity as part of the NCATS (Nursing Child Assessment Teaching Scale) assessment. We were unable to obtain a breakdown of the data from the study authors, and so could not include them in the meta-analysis.
7. Lam-Cassettari 2015 reported results at three months' follow-up, but by this time participants in the waiting-list control group

had received the intervention, so the comparison does not fit with the review question.

8. Moran 2005 measured maternal sensitivity at postintervention and at 12 months' follow-up and reported that, "none of the t-tests comparing the Intervention and Comparison group means at each age were significant". The data were not reported and the study author was unable to provide them when requested.
9. Platje 2018 reported parental sensitivity at three months' follow-up. The study authors found no strong evidence of a difference between groups with regards to parental sensitivity at three months postintervention (video-feedback group: mean = 16.39, SD = 1.96, n = 37; comparator group: mean = 16.42, SD = 2.33, n = 40). Repeated measures ANOVA showed no evidence of an interaction between time and condition (Time × Condition interaction F (1, 75) = 0.13, P = 0.715).

Parental reflective functioning

None of our included studies measured or reported data on this outcome.

Attachment security

As described in Measures of treatment effect, we combined data from studies that measured OR separately to those that measured means.

Two studies (Moran 2005; Moss 2011; 166 parent-child dyads) measured this outcome using the Strange Situation Procedure (Ainsworth 1974), at postintervention. The pooled analysis of these studies using OR under a random-effects assumption resulted in evidence favouring the intervention (OR 3.04, 95% CI 1.39 to 6.67, Analysis 1.2). We did not assess heterogeneity due to the small number of studies included in this meta-analysis. We rated the certainty of this evidence as very low using GRADE, due to risk of bias (we rated most domains in the 'Risk of bias' assessment at high or uncertain risk of bias), imprecision (low number of participants, leading to wide CI) and publication bias (few studies in this review reported this outcome).

Two other studies (Kalinauskiene 2009; Klein Velderman 2006; 131 parent-child dyads) measured this outcome using the Attachment Q-sort, with scores ranging from +1.00 for the perfectly secure child to −1.00 for the most insecure child (Waters 1985; Waters 1987). The time points of the data combined were quite different (one study reported data at postintervention and the other study at 12 months postintervention). The pooled analysis of these studies using SMD under a random-effects assumption found no evidence of a difference between intervention and control groups (SMD 0.02, 95% CI −0.33 to 0.38, Analysis 1.3). We did not assess heterogeneity due to the small number of studies included in this meta-analysis. We rated the certainty of this evidence as very low using GRADE: we downgraded one level for risk of bias (we rated most domains in the 'Risk of bias' assessment at high or uncertain risk of bias); one level due to imprecision (low number of participants, leading to wide CI); and one level due to publication bias (few studies in this review report this outcome).

Single study results

One study, Klein Velderman 2006, did not report data in a way that we could use in the meta-analysis. The study found that there was no evidence that attachment security was different between the intervention and control group in the short term (VIPP group compared to control group: d = 0.33, P = 0.11 (one-tailed), n = 55; VIPP-R group compared to control group: d = 0.12, P = 0.33 (one-tailed), n = 53).

Adverse effects

Parental stress

We pooled data from eight studies (537 parent-child dyads) reporting data at postintervention or short-term follow-up (Barlow 2016; Benzies 2013; Hodes 2017; Kalinauskiene 2009; Klein Velderman 2006; Negrão 2014; Platje 2018; Poslawsky 2015). A random-effects meta-analysis did not show any strong evidence of a difference between intervention and control groups (SMD −0.09, 95% CI −0.26 to 0.09, Analysis 1.4). Heterogeneity was low (Tau^2 = 0.00; Chi^2 = 6.36, df = 8 (P = 0.61); I^2 = 0%). We rated the certainty of this evidence as low using GRADE. We downgraded one level for risk of bias (we rated most domains in the 'Risk of bias' assessment at high or uncertain risk of bias) and one level due to imprecision (low number of participants, leading to wide CI).

Single study results: three studies reported the impact of video feedback on parental stress in ways that we could not include in the meta-analysis (Hodes 2017; Platje 2018; Poslawsky 2015).

1. Hodes 2017 measured the impact of video-feedback at an unspecified follow-up time point, reporting no evidence of a difference between intervention and control groups on a repeated measures multivariate ANOVA (MANOVA) (video-feedback group: mean = 70.4, SD = 24.87, n= 43; comparator group: mean = 72.14, SD = 24.75, n = 42; F (1.57, 130, 6) = 4.39, P = 0.02). We did not include these data in the meta-analysis as we used data provided by the same study at postintervention.
2. Platje 2018 reported the impact on parents' stress levels at postintervention and six months' follow-up. The postintervention data are included in the meta-analysis. The study found no evidence of a difference between intervention and control groups at six months' follow-up using a repeated measures ANOVA (video-feedback group: mean = 2.36, SD = 0.94, n = 37; control group: mean = 2.58, SD = 0.90, n = 40; F (1, 75) = 3.52, P = 0.07, $\eta 2$ = 0.05).
3. Poslawsky 2015 measured parental stress at three months, but did not report it and were not able to provide the data when requested.

Parental anxiety

We combined data from two studies (311 parent-child dyads), measured at short-term follow-up, using a random-effects model (Barlow 2016; Hoffenkamp 2015). Data for mothers and fathers in Hoffenkamp 2015 are included separately, as this is how the data were provided to us. The meta-analysis found no strong evidence of a difference between the intervention group and the control group (SMD −0.28, 95% −0.87 to 0.31, Analysis 1.5). We did not assess heterogeneity due to the small number of studies included in this meta-analysis. We rated the evidence as very low certainty using GRADE. We downgraded one level due to imprecision (low number of participants, leading to wide CI), one level due to publication bias (few studies in this review reported this outcome) and one level due to inconsistency (high heterogeneity).

Secondary outcomes

Child mental health

Only one study, Green 2010, measured the rate of child mental illness at long-term follow-up, and found no strong evidence of a difference between intervention and control group (log odds of depression in video-feedback group (n = 50) versus comparator group (n = 44): 0.07 (bootstrap CI −0.85 to 1.03); log odds of conduct/oppositional disorder in video-feedback group (n = 50) versus comparator group (n = 44): −0.13 (bootstrap CI −1.08 to 0.72); log odds of hyperkinesis in video-feedback group (n = 50) versus comparator group (n = 44): 0.11 (bootstrap CI −0.70 to 0.93); log odds of anxiety/OCD in video-feedback group (n = 50) versus comparator group (n = 46): 0.51 (bootstrap CI −0.33 to 1.51).

Child physical and socioemotional development

Four studies measured elements of child socioemotional development in ways that were too clinically different for meta-analysis to be appropriate (Green 2010; Høivik 2015; Poslawsky 2015; Seifer 1991).

1. Green 2010 found no strong evidence of a difference between intervention and control groups with regards to prosocial behaviour (log odds of prosocial behavior in video-feedback group (n = 59) versus control group (n = 62): 0.73 (bootstrap 95% CI −0.08 to 1.64) or peer problems (log odds of peer problems in video-feedback group (n = 59) versus control group (n = 61): 0.64 (bootstrap 95% CI −0.21 to 1.62)).
2. Høivik 2015 reported no strong evidence of a difference postintervention between intervention and control groups with regards to their score on the socioemotional element of the Ages and Stages Questionnaire (video-feedback group: mean = 26.21, SD = 19.61, n = 37; comparator group: mean = 25.74, SD = 17.02, n = 27; P = 0.17). At six months postintervention there was evidence that the intervention group had fewer concerns regarding their child's socioemotional development than the control group (video-feedback group: mean = 20.44, SD = 13.45, n = 22; comparator group: mean = 25, SD = 16.53, n = 27; P = 0.02).
3. Poslawsky 2015, after controlling for school attendance, reported evidence that the video-feedback group (n = 38) had better scores than the comparator group (n = 34) on measures of initiating joint attention (f = 2.35, df = 8, P = 0.03, η^2 = i) but not reciprocating joint attention.
4. Seifer 1991 measured child mental development (measured by Bayley Scales of Infant Development) and child psychomotor development (measured by the Uzgiris and Hunt Ordinal Scales of Development - the study authors report measuring all seven subscales individually) at postintervention. However, they did not report these data did not respond to our request for the data (Smith 2019b [pers comm]).

Child behaviour

We pooled data from two studies (119 parent-child dyads) looking at child behaviour in the long term (Kalinauskiene 2009; Klein Velderman 2006). A random-effects meta-analysis found no strong evidence of a difference between intervention and control groups (SMD 0.04, 95% CI −0.33 to 0.42, Analysis 1.6). We did not assess heterogeneity due to the small number of studies included in this meta-analysis. The GRADE certainty rating was very low: we downgraded one level for risk of bias (we rated most domains in the 'Risk of bias' assessment at high or uncertain risk of bias); one level due to imprecision (low number of participants, leading to wide CI) and one level due to publication bias (few studies in this review reported this outcome).

Single study results

Three studies measured aspects of child behaviour that we could not include in a meta-analysis: one study reported the data at a different time point to other studies reporting this outcome (Barone 2019); and the other studies reported elements of child behaviour at two very different time points (Moss 2011; Van Zeijl 2006).

1. Barone 2019 measured child behaviour at postintervention and six months' follow-up. They reported results for externalising behaviour in their published report. The study authors reported that there was no evidence of an effect of the intervention at either time point for any of the outcomes measured, although they did not report a P value. The data reported at postintervention were as follows: video-feedback group: mean = 16.6, SD = 9.5, n = 44; control group: mean = 14.2, SD = 10.4, n = 39. We used these data to calculate an SMD of 0.24 (95% CI −0.19 to 0.67). The data they reported at six months' follow-up were as follows: video-feedback group: mean = 16.1, SD = 10.9, n = 44; control group: mean = 12.7, SD = 10.6, n = 39. We used these data to calculate an SMD of 0.31 (95% CI −0.12 to 0.75). There is no evidence of an effect at either time point.
2. Moss 2011 reported no strong evidence of a difference between intervention and control groups at postintervention for internalising behaviour (video-feedback group: mean = 54.43, SD = 7.44, n = 35; comparator group: mean = 55.56, SD =11.45, n = 32) or externalising behaviour (video-feedback group: mean = 57.85, SD = 9.84, n = 35; comparator group: mean = 57.54, SD = 12.61, n = 32). P values were not reported by the review authors. We used the data reported to calculate an SMD for internalising behaviour of −0.12 (95% CI −0.60 to 0.36), showing no evidence of a difference between groups. For externalising behaviour, we calculated an SMD of 0.03 (95% CI −0.45 to 0.51), again showing no evidence of a difference between groups.
3. Van Zeijl 2006 reported no strong evidence of a difference between intervention and control groups for externalising behaviour at long-term follow-up (video-feedback group: mean = 21.55, SD = 9.08, n = 83; comparator group: mean = 21.36, SD 8.62, n = 74). P values were not reported. We used the data reported to calculate an SMD of 0.02 (95% CI −0.29 to 0.33), demonstrating no evidence of a difference between groups.

Moderator analysis for parental sensitivity

Moderator analysis

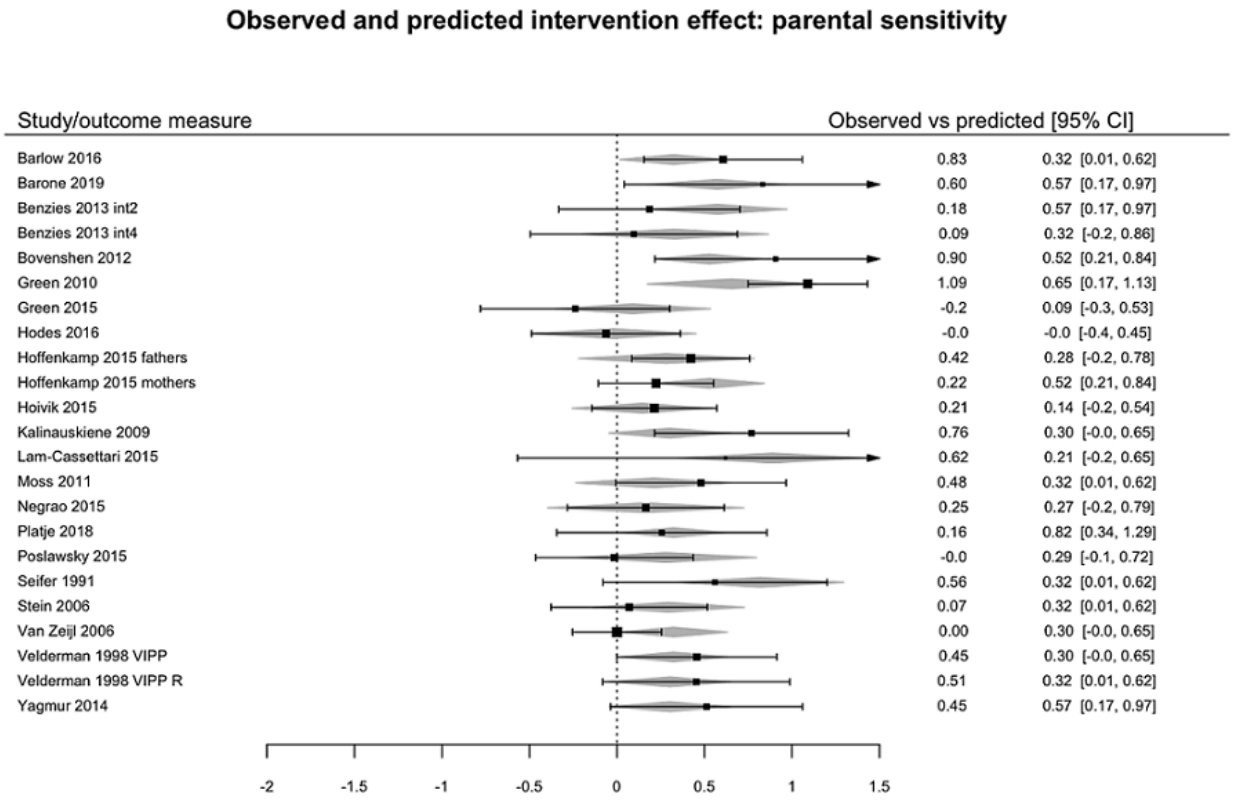
Appendix 3 reports the overall effects by individual moderator. Three studies contained in this moderator analysis have two separate intervention groups (Benzies 2013; Hoffenkamp 2015; Klein Velderman 2006), meaning that for this part of the analysis, k (number of studies) = 23 studies, rather than 20 studies. Adding these as individual studies potentially biases the test statistic, as these intervention groups are not statistically independent. The usual solution to this problem is to conduct a multilevel meta-analysis; however, the small number of related studies makes this unviable.

Notably, all subgroups except 'more than 10 sessions of video feedback' and studies with ‘only fathers’ and 'both parents' show evidence of an overall treatment effect, measured as SMDs (d).

Substantively, the disability subgroup had the largest effect size (d = 0.49**, 95% CI 0.16 to 0.82). This suggests that some moderator effects may exist for some study characteristics when considered individually. For all moderators, heterogeneity is I^2 greater than 50%, with evidence of residual heterogeneity (Q_E).

Figure 5 reports the results from the meta-regression with all three prespecified moderators for k = 23 studies. There is no evidence that jointly the type of intervention, intervention duration, or gender of the participating carer reduce heterogeneity ($Q_{between}$ ($F(df1_{moderators} = 7, df2_{studies} = 17) = 1.008$, P = 0.4429; $R^2 < 0.01\%$)), and substantial between-study heterogeneity still exists (Q_E (df = 17) = 39.77, P = 0.014; though I^2 = 55.6%, see Appendix 4). In addition, none of the three moderators in the meta-regression are statistically significant (at α (alpha) = 0.05). Parent gender (both parents versus only mothers or only fathers) potentially has a statistically significant negative moderation effect, though only at α = 0.1. This suggests that, when we consider the three prespecified moderators simultaneously rather than as individual subgroups, no moderation effect exists for any specific study characteristics. In other words, we are not able to say that any particular characteristic accounts for the between-study heterogeneity when controlling for other characteristics. Figure 5 reports the predicted study effect sizes controlling for the moderator variables. As the grey-shaded polygons indicate, no consistent and strong moderation can be observed.

Figure 5. Observed versus predicted intervention effects following moderator analysis



Sensitivity analyses

Reanalysis excluding studies at high or unclear risk of bias

Only two meta-analyses included data from more than two studies (Analysis 2.1; Analysis 1.4). For these analyses, we explored the effects of excluding studies at a high risk of bias.

Parental sensitivity

For Analysis 2.1, we first considered the effect of excluding four studies classed at high risk of attrition bias (Høivik 2015; Moss 2011; Platje 2018; Yagmur 2014). This had no effect on the results, which continued to show evidence of a difference between groups (16 studies, 1414 dyads; SMD 0.35, 95% CI 0.17 to 0.53). When we removed the two studies at high risk of selection bias (Bovenschen 2012; Seifer 1991), the analysis continued to show evidence of a difference between groups (14 studies, 1338 dyads; SMD 0.32, 95% CI 0.13 to 0.51). When we further removed the two remaining studies at unclear risk of selection bias (Kalinauskiene 2009; Klein Velderman 2006), the analysis still also showed evidence of a difference between groups (12 studies, 1203 dyads; SMD 0.27, 95% CI 0.06 to 0.48).

Adverse effects: parental stress

For Analysis 1.4, we considered the effect of excluding the two studies at high or unclear risk of attrition bias (Hodes 2017; Platje 2018). This had no effect on the analysis, which continued to show

no difference between groups (6 studies, 375 dyads; SMD −0.07, 95% CI −0.28 to 0.14). This remained the case when we additionally excluded the two studies (Kalinauskiene 2009; Klein Velderman 2006) at unclear risk of selection bias (4 studies, 240 dyads; SMD −0.09, 95% −0.35 to 0.17).

Reanalysis using different statistical approaches

In the preceding sections, we have presented the results from meta-analyses conducted using a random-effects model. We repeated all analyses using a fixed-effect model. There was no difference in overall outcomes for any of the meta-analyses other than Analysis 1.5. Under a random-effects assumption, there was no strong evidence of a difference in parental anxiety between intervention and control groups (311 dyads; SMD −0.28, 95% CI −0.87 to 0.31, Analysis 1.5). Under a fixed-effect assumption, there was evidence of a reduction in parental anxiety in the short term in the intervention group compared to the comparison group (311 dyads; SMD −0.25, 95% −0.47 to −0.02). The two studies pooled in this meta-analysis, Barlow 2016 and Hoffenkamp 2015, are clinically very similar: both studies are with parents of preterm children, using three sessions of VIG. This might explain why the fixed-effect model produces some evidence of an effect; however, given the very high heterogeneity (82%), we chose to present the results of the random-effects model.

DISCUSSION

Summary of main results

Twenty-two studies, enrolling 1889 parent-child dyads or family units, met the inclusion criteria for this review. Parents who participated in the studies were experiencing a variety of problems that might impede their ability to respond sensitively to the cues and needs of their children, and that might therefore also undermine their children's ability to form secure attachments. The evidence suggests that video feedback may help to promote parents' sensitivity (moderate-certainty evidence). An effect size of 0.34 means that if 10,000 parents were to receive a video-feedback intervention, around 1100 of them would benefit (Magnusson 2014). Furthermore, although the standard system of rating such effect sizes suggests that this finding is small (Higgins 2017), it is highly favourable when compared with that for other parenting interventions such as home visiting programmes, which show evidence of much smaller overall effect sizes (see for example, Michalopoulos 2019).

There is currently only little, very low-certainty evidence regarding the impact of video feedback on attachment security, compared with control: results differed based on the type of measure used, and follow-up was limited in duration. There is no evidence of adverse impacts on parental stress (low-certainty evidence) or anxiety (very low-certainty evidence). No study measured parental reflective functioning.

There was also no evidence of a moderator effect for the three prespecified variables (intervention type, number of feedback sessions and participating carer) when jointly tested, although parent gender (both parents versus only mothers or only fathers) potentially has a statistically significant, negative moderation effect.

Overall completeness and applicability of evidence

We set out to evaluate the effectiveness of video feedback for improving parental sensitivity and promoting attachment security in children aged under five years old. In terms of completeness, although some RCTs did not provide data in a form that we could incorporate in a meta-analysis (e.g. Koniak-Griffin 1992; Moran 2005), and our attempts to obtain such data from the study authors were not always successful, we are confident that we have identified all of the available published evidence.

In terms of applicability, we identified studies targeting parents and children experiencing a range of difficulties or problems that put them at risk of poor parenting (e.g. parental depression; sensitivity problems; intellectual disability; insecure attachment; first-time teen or immigrant parent; preterm babies; children with autism). The studies were conducted across a range of countries and with widely diverging ethnic groups, in one of three settings: the home; the community, such as a family centre; and inpatient settings, such as hospitals. We also included a comprehensive range of video-feedback interventions. Most of the studies included mother-child dyads or primary caregiver-child dyads where the primary caregiver was the mother, while few studies had more than 10% of participants who were fathers. There were some meta-analyses (e.g. for child behaviour or parental anxiety) that contain studies primarily with children under 1 year of age, potentially limiting their generalisability.

However, while the results of these studies should not, as such, be extended to fathers, for whom further research is needed, the findings of the current review regarding parental sensitivity appear to be widely applicable and the findings will be useful to both policymakers and health professionals across a range of contexts.

Quality of the evidence

Using the GRADE approach, we rated the overall certainty of the body of evidence between moderate and very low (see Summary of findings for the main comparison). We did not downgrade any outcome more than once for any of the five domains.

Limitations in study design and implementation

We downgraded two outcomes for limitations in study design and implementation (attachment security at postintervention and parental stress at postintervention or short-term follow-up), and one outcome (child behaviour) for risk of bias.

Indirectness of evidence

We did not downgrade any outcomes for indirectness of evidence.

Unexplained heterogeneity or inconsistency of results

We downgraded two outcomes because of heterogeneity: parental sensitivity at postintervention or short-term follow-up due to unexplained moderate heterogeneity and parental anxiety at short-term follow-up due to high heterogeneity.

Imprecision of results

We downgraded all outcomes except parental sensitivity at postintervention or short-term follow-up for imprecision (wide confidence intervals).

Publication bias

We downgraded all outcomes except parental sensitivity at postintervention or short-term follow-up and parental stress at postintervention or short-term follow-up for publication bias (most studies in this review did not report these outcomes).

Potential biases in the review process

Our literature searches and screening process conformed strictly to Cochrane criteria, as defined by our Methods. We conducted systematic searches across a large number of highly relevant databases, including trials registers, to identify both completed and ongoing trials. Two review authors independently screened potentially eligible studies for inclusion, extracted data, assessed risk of bias in included studies, and rated the certainty of the evidence. Therefore, any reviewer bias was very limited.

For a small number of studies (Hodes 2017; Moss 2011; Poslawsky 2015), we used outcomes data that included children aged five years and over, as the study authors either did not respond to our request for outcomes data with those children who were outside of our included age range excluded, or were not able to provide it. We judged that the number of children aged five years and over from those studies were likely to be very small, and the benefits of including the outcomes data outweighed any negatives.

In terms of conflict of interest, it should be noted that one of the review authors (JB) was the lead author on one of the included studies (Barlow 2016). However, JB was not involved in study selection, data extraction, assessment of risk of bias or GRADE ratings for this study.

We did not prespecify which time point we would use if there were two time points that could be combined in the same meta-analysis. We have chosen the time point closest to the end of the intervention for consistency; however, in a number of these studies, there was a diminution of effect over time, so we may have found a different result had we chosen later time points.

We assumed that missing data were missing at random, but this may have been an incorrect assumption. Unexplained attrition was quite high in some studies and this also may have impacted the validity of some results.

Agreements and disagreements with other studies or reviews

There have been a number of reviews of different types of video feedback. At the time the protocol for this review was published (O'Hara 2016), only one quantitative review of the effectiveness of video feedback had been conducted: Fukkink 2008. That review concluded that video feedback was effective in improving a range of outcomes when used with parents of children up to seven years of age. However, it also had a number of limitations, perhaps the most important of all being that it included uncontrolled studies and did not rate the quality of the included studies.

Since the publication of our protocol (O'Hara 2016), we have identified other systematic reviews on this topic. Balldin 2018 undertook a systematic review of RCTs and quasi-RCTs of video feedback; that review focused on describing the components of video-feedback programmes and the outcomes from individual studies. However, the authors did not undertake a meta-analysis of results, and their methods state that they searched only a small number of databases together with Google Scholar. Their list of included studies differs from ours, largely because they included studies that used video feedback alongside other interventions, which we excluded. They concluded that video feedback seems effective in improving parental sensitivity, parent behaviour and child behaviour, which is a broader conclusion than we have reached in this review.

Van den Broek 2017 conducted a systematic review of studies examining issues that should be considered when delivering video feedback for children with visual impairments. They included a wider range of study designs than we have here, and they did not identify any RCTs or quasi-RCTs. They also searched a smaller number of databases than this review. They concluded by highlighting the themes and issues that are important to consider when adapting video feedback for children with visual impairments.

NICE 2016 recommended that video feedback is one of a small number of interventions for which there is low-quality evidence of effectiveness in improving maternal attachment for children on the edge of care. This was based on evidence gathered through their own systematic search process for the corresponding NICE guideline (NICE 2015). Our findings were more mixed, although our population of interest was broader.

Finally, the authors of VIPP recently published a book chapter summarising the results of a review of 12 RCTs of VIPP, reporting an effect size of 0.47 (95% CI 0.34 to 0.60) for sensitivity (Juffer 2018). They included two studies that we excluded from this review because they did not have an appropriate control group or were not published, and they reported the data differently. For example, in our review, we report that Poslawsky 2015 shows no evidence of impact on parents at risk for autism, which is consistent with the findings reported in the original paper; Juffer 2018 presents the non-intrusiveness subdomain of the Emotional Avaliability Scale, which shows evidence of effectiveness, while we use the sensitivity subdomain, which shows no evidence of effectiveness. Qualitatively, however, our findings of the impact of a range of types of video feedback on sensitivity are similar.

Overall, therefore, the results of the current review are consistent with those of other reviews.

AUTHORS' CONCLUSIONS

Implications for practice

The findings of this review point to moderate-certainty evidence that video feedback may be an effective method of improving maternal sensitivity in a range of mother-infant dyads. Although we aimed to identify evidence for all children aged 4 years 11 months or under, most included studies focused on infants. The results appear to be consistent across study populations with the exception of two studies (Green 2015; Hodes 2017), which targeted parents of children at high risk of autism and parents with intellectual disabilities respectively. There was also limited evidence of its use with fathers. There was, in addition, high consistency across the different settings in which video feedback was delivered (e.g. home; community settings such as family centres; and hospital or residential settings).

In terms of practice, these findings suggest that video feedback can be provided to parents with wide-ranging challenges and in almost any setting. The findings do not currently support the use of video feedback to improve any other outcomes (e.g. parental reflective functioning, child behaviour or attachment). The moderator analysis did not find any evidence that some types of video feedback (e.g. Video Feedback Intervention to Promote Positive Parenting (VIPP)) are more effective than others, and this may reflect the fact that the core content of such programmes in terms of parental sensitivity is similar (e.g. guided viewing of interaction with feedback). Although this review did not assess the effectiveness of video-feedback programmes in terms of different programme components, such programmes nevertheless vary in terms of the extent to which they are standardised (for example, VIPP is one of the most standardised programmes). Practitioners need to address which type of video feedback fits best within their own clinical context.

Implications for research

The findings of this research suggest that, although there is evidence of an impact of video feedback on maternal sensitivity, the evidence of its impact on child attachment security and other outcomes for both parents (e.g. parental reflective functioning) and children (e.g. emotional and behavioural adjustment) is limited. Future research should ensure that such outcomes are assessed using validated measures, in both the short- and the longer-term (i.e. after 12 months). There is also a need for research that examines the effectiveness of video feedback with fathers and with specific groups of parents. There is, for example, currently limited research regarding the effectiveness of video feedback with parents experiencing perinatal mental health problems. Qualitative research is also needed to assess whether parents have a preference in terms of setting or delivery methods.

The review included different types of video feedback, some of which are more standardised (e.g. VIPP) than others. Future reviews might directly compare the different types of video feedback, including the benefits of additional components where these are included.

None of the included studies measured the cost of delivering video feedback, and no studies conducted a cost-effectiveness analysis or compared the costs of different modes of delivery. There is, as such, also a need to include information on costs in trial reports, to help inform decision-makers.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Barlow 2016

Methods	**Design:** parallel-group RCT **Unit of allocation:** parent-child dyad. Data were collected on both parents where the family included parents who were a couple; however, only data on primary carers were presented. **Dates of recruitment to trial:** 1 January 2012-31 December 2012
Participants	**Number randomised:** 31 **Number randomised to each group:** intervention = 16, control = 15 **Participants:** primary carers and preterm babies; children of both sexes included. Over 90% of primary carers were mothers. **Mean age:** primary carers = 32 years (SD = 6.1 years); preterm babies: "Just over one-third of the sample was less than 10 weeks premature, the remainder being 11 weeks or more (range 5–16)" (quote) **Ethnicity:** 67% of mothers participating were of white British ethnicity, the rest of mixed ethnic origin **Inclusion criteria:** babies on neonatal intensive care unit that was participating in the RCT; babies born at 32 weeks' gestation or earlier **Exclusion criteria:** none **Country:** UK **Setting:** community, recruited from neonatal intensive care unit
Interventions	**Duration of intervention:** not reported **Number of sessions and frequency:** 3 home visits; duration not specified **Intervention:** VIG, which follows a model of videoing normal interactions between mother and child, selecting short sections and jointly reviewing with feedback, taking a strengths-based approach, plus usual care **Control:** usual care
Outcomes	**Timing of outcome assessment:** up to 6 weeks after final session **Outcome(s) of interest:** 1. Parental sensitivity (measured by CARE-Index) 2. Parental stress (measured by Parenting Stress Index) 3. Maternal anxiety (measured by Hospital Anxiety and Depresssion Scale) **Outcome(s) included in meta-analysis:** parental sensitivity, parental stress and maternal anxiety
Notes	**Source(s) of funding:** The Grace Fund **Conflict(s) of interest:** one of the authors is a supervisor for the Association for Video Interaction Guidance, UK. Another author is an author of this review.

Barlow 2016 *(Continued)*

Comment(s): none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "Telephone randomisation to the intervention or control group was implemented using a computer-generated number table".
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "the primary outcome [sensitivity from CARE index] was coded by independent researchers who were blind to the study group"
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of the effect of the intervention.
Blinding of outcome assessment (detection bias) Parental anxiety	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of the effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** there was low attrition, with reasons given, and it was equal in size across both arms. An ITT analysis was conducted. Therefore, the impact of attrition on the final study results is likely to be limited.
Selective reporting (reporting bias)	Unclear risk	**Comment:** protocol available, but retrospectively registered **Quote:** "Thirty-one dyads were randomised to the study, of whom 16 were allocated to the intervention group and 15 to the control group. Although data were collected from both parents, only data for primary carers has been analysed (mothers n = 29, fathers n = 2) because secondary carers were not always present during the VIG sessions (fathers n = 15; mothers n = 1)." **Comment:** we did not request these additional data.
Other bias	Low risk	**Comment:** none

Barone 2019

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyads **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 83 **Number randomised to each group:** intervention = 44, control = 39 **Participants:** mothers and their adoptive children aged 14-75 months

Barone 2019 *(Continued)*

	Mean age: mothers = 42.6 years (SD = 3.9 years); children = 43.3 months (SD = 15.9 months) at initial assessment **Ethnicity:** mothers were all white; children were from a range of different countries (29% Asian, 42% European, 12% American, 17% African) **Inclusion criteria:** mothers and internationally adopted children **Exclusion criteria:** none **Country:** Italy **Setting:** community, recruited from adoption services
Interventions	**Duration of intervention:** not reported **Number of sessions and frequency:** 7 home visits **Intervention:** based on VIPP, with some tailoring for the specific needs of adopted children **Control:** 6 phone calls with general discussion about child development
Outcomes	**Timing of outcome assessment:** post-test and 6 months postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Emotional Availablity Scales) 2. Child emotional and behavioural problems (measured by CBCL for Ages 1.5–5) **Outcome(s) included in meta-analysis:** maternal sensitivity at postintervention
Notes	**Source(s) of funding:** none stated **Conflict(s) of interest:** none stated **Comment(s):** maternal sensitivity outcome data and child behaviour data were not reported in the published report. We obtained these data directly from the study author, with children aged ≥ 5 years excluded (Barone 2019 [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "Randomization was performed as block randomization with 1:1 allocation using a computerized random number generator".
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "The coders were unaware of the experimental condition and of the timing of assessment, and time points were coded independently".
Blinding of outcome assessment (detection bias) Child behaviour	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.

Barone 2019 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	**Quote:** "Because these missing values were randomly distributed across participants, we performed an intention-to-treat analyses, using the last observation carried forward (LOCF) method, whereby the last available measurement for each individual at the time point prior to withdrawal from the study was retained in the analysis". **Comment:** the use of the ITT analysis means that the impact of attrition on the final study results is likely to be limited.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol was available, so it was not possible to assess this area.
Other bias	Low risk	**Comment:** none

Benzies 2013

Methods	**Design:** parallel-group RCT **Unit of allocation:** father-child dyads **Dates of recruitment to trial:** December 2008-June 2011
Participants	**Number randomised:** 113 **Number randomised to each group:** 3 groups: intervention with 2 visits (Int-2) = 46; intervention with 4 visits (Int-4) = 23; control = 44 **Participants:** fathers; children of both sexes included **Mean age:** fathers: Int-2 = 33.7 years (SD = 6.44 years), Int-4 = 34.28 years (SD = 4.24 years), control = 34.47 years (SD = 6.01 years); children: Int-2 = 250 days (SD = 6.27 days), Int-4 = 248 days (SD = 4.24 days), control = 249 days (SD = 6.61 days) **Ethnicity:** 75.7% of fathers were European Canadian, 5.4% South Asian, 3.6% North American First Nation. Other groups were not specified. **Inclusion criteria:** "1. First time biological father of a healthy, singleton, late preterm infant; b) age 18 years or older; c) speaking English to infant at least 50% of interactions; d) cohabiting with infant's mother; and e) living within 100km of the universities." (quote) **Exclusion criteria:** none **Country:** Canada **Setting:** community
Interventions	**Duration of intervention:** 2-3 months (depending on which intervention group) **Number of sessions and frequency:** home visits lasted 1 h; first home visit carried out when the child was 4 months old. Int-2 received visits when the child was 4 months and 6 months of age; Int-4 received 2 additional visits when the child was 5 and 7 months of age **Intervention:** fathers were video recorded at home, without the mother present, in a structured play interaction when the child was 4 months old. Father and home visitor immediately reviewed the video (with feedback). Int-2 visits: play and feedback was repeated when child was 6 months old. Int-4 visits: an additional 2 visits were carried out when the child was 5 and 7 months old. Handouts were given at each session.

Benzies 2013 *(Continued)*

	Control: only 1 home visit at 4 months. Fathers were video recorded, without the mother, in a structured play interaction with the child. Video was not viewed. Home visitor discussed information. Most fathers received a phone call when children were 6 months old
Outcomes	**Timing of outcome assessment:** when children were 8 months old **Outcome(s) of interest:** 1. Parental sensitivity (measured by Parent Child Interaction Teaching Scale) 2. Parental stress (measured by Parenting Stress Index - 3 domain scores) **Outcome(s) included in meta-analysis:** parental sensitivity and parental stress
Notes	**Source(s) of funding:** Alberta Centre for Child, Family and Community Research; Preterm Birth and Healthy Outcomes Team (PreHOT); Alberta Innovates Health Solutions Interdisciplinary Team Grant (#200700595) **Conflict(s) of interest:** none **Comment(s):** both Int-2 and Int-4 interventions met the inclusion criteria for this review, so we used data from both groups in the meta-analysis.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "fathers were assigned to a group following a randomized allocation sequence generated by a biostatistician"
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** the outcome was measured by "outcome assessors (video coders) who were also blind to group assessment" (quote)
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** only 2 families (1.8%) withdrew after the initial, 4-month home visit in the control group. Reasons were given and were unlikely to be related to the intervention. There is no reference to an ITT analysis, but the study authors state that they replaced missing values according to each measure's procedure. Therefore, the impact of missing data on the final study results is likely to be limited.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Bovenschen 2012

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 39 **Number randomised to each group:** not reported; 3 mothers dropped out, but unclear which group they were originally randomised to. Results presented for 36 participants: intervention = 17, control = 19 **Participants:** mothers **Mean age:** mothers = 22 years (SD = 6.6 years); children = started intervention from birth **Ethnicity:** not reported **Inclusion criteria:** "1 of these: 1) teen mother until the age of 20; 2) mother with migration background; 3) mother with mental illness or 4) mother with high 'psychosocial' burden (e.g. financial burden, restricted living space, being a single parent)" (quote) **Exclusion criteria:** none **Country:** Germany **Setting:** community
Interventions	**Duration of intervention:** 3 months **Number of sessions and frequency:** 7 sessions over 3-month period **Intervention:** form of developmental counselling using video feedback to film interactions that form the basis of the counselling sessions; interactions from previous sessions form the basis of the next session **Control:** care as usual
Outcomes	**Timing of outcome assessment:** postintervention and 3 months postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Ainsworth Rating Scale) **Outcome(s) included in meta-analysis:** maternal sensitivity at postintervention
Notes	**Source(s) of funding:** the evaluation was funded by the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ) and the National Centre for Early Support ("Nationale Zentrum Frühe Hilfen"). **Conflict(s) of interest:** none **Comment(s)** 1. This paper was translated from German into English for the purposes of this review. 2. Data reported were not labelled sufficiently clearly in the published paper to be used in the meta analysis. We requested clarification from the study authors who provided the data for this meta-analysis (Bovenschen 2019 [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement

Bovenschen 2012 *(Continued)*

Random sequence generation (selection bias)	High risk	**Comment:** study authors state that some women only participated if they could get a certain treatment. They do not report how many women were affected in this way.
Allocation concealment (selection bias)	High risk	**Comment:** see above
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** study authors state that raters were unaware of other data assessed through this project
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	**Comment:** dropout was low (3/39 mothers dropped out). However, it is not possible to work out from which arm they dropped out, as initial numbers randomised to each arm were not stated. Reasons for dropout were not given. Therefore, it is not possible to assess the impact of missing data on the final study results.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Green 2010

Methods	**Design:** parallel-group, RCT **Unit of allocation:** mother-child dyads **Dates of recruitment to trial:** 13 February 2006-12 October 2009
Participants	**Number randomised:** 152 **Number randomised to each group:** intervention = 77, control = 75 **Participants:** mothers **Mean age:** mothers: intervention = 33 years, control = 34 years, at baseline; children: 45 months at baseline in both groups **Ethnicity:** intervention = 60% both parents white, 34% both parents non-white, 6% mixed ethnicity parents; control = 55% both parents white, 33% both parents non-white, 12% mixed ethnicity parents **Inclusion criteria:** "Families with a child aged 2 years to 4 years and 11 months, and meeting criteria for core autism according to the international standard diagnostic tests (social and communication domains of the ADOS-G,and two of three domains of the Autism Diagnostic Interview Revised [ADI-R] algorithm) were included in the study" (quote) **Exclusion criteria:** "children with a twin with autism; a non-verbal age equivalent to 12 months or younger on the Mullen Early Learning Scales; epilepsy requiring medication; severe hearing or visual impairment in a parent or the child; or a parent with a severe psychiatric disorder requiring treatment. At home, participating parents spoke English with their child" (quote) **Country:** UK

Green 2010 *(Continued)*

	Setting: outpatient clinic
Interventions	**Duration of intervention:** 12 months **Number of sessions and frequency:** 45-min sessions; fortnightly for 6 months then monthly for 6 months **Intervention:** parent-mediated, communication-focused treatment in children with autism (PACT). Manualised intervention, consisting of video feedback to promote parent-child interaction, then promotion of communication strategies to encourage language development. Home practice encouraged **Control:** care as usual - Portage (a weekly or fortnightly home-based play and development service)
Outcomes	**Timing of outcome assessment:** 1 month after the trial and 5.75 years after the end of the trial **Outcome(s) of interest:** 1. Parent-child interaction: parental synchrony (measured by proportion of parental communications with the child that were synchronous based on observation at 1 month postintervention) 2. Socioemotional development (measured by Vineland Adaptive Behaviour Scale at 1 month postintervention Strengths and Difficulties Questionnaire at 5.75 years postintervention) 3. Child mental health (measured by Development and Well-Being Assessment at 5.75 years postintervention) **Outcome(s) included in meta-analysis:** parental synchrony at 1-month follow-up
Notes	**Source(s) of funding:** Medical Research Council (MR/K005863/1), with additional funding from the UK Department of Health, the NIHR Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and King's College London **Conflict(s) of interest:** none **Comment(s):** none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "PACT manager allocated a sequential identification number and provided a statistician at the independent Christie Clinical Trials Unit in Manchester with the child's number, treatment centre, age and autism severity. This statistician ran an allocation schedule that was computer-generated by use of probabilistic minimisation of imbalance in the marginal distribution of treatment centre, age (≤42 months or >42 months), and autism severity (ADOS-G algorithm score 12–17 or 18–24)."
Allocation concealment (selection bias)	Low risk	**Comment:** as above - allocation was performed by a statistician at a separate centre through a sequential process.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** the study authors state that the raters were blind to group status.
Blinding of outcome assessment (detection bias)	High risk	**Comment:** the outcome was measured using a self-report scale. As the participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.

Green 2010 *(Continued)*

Child socioemotional development		
Blinding of outcome assessment (detection bias) Child mental health	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** relatively low attrition that seems relatively balanced between groups. Missing data were imputed as follows: "Multiple imputation, with the iterative-chained-equation method (ice procedure25), was used to complete the small amount of missing data." (quote). Therefore, the impact of missing data on the final study results is likely to be limited.
Selective reporting (reporting bias)	Low risk	**Comment:** protocol available (ISRCTN 58133827); all prespecified outcomes reported
Other bias	Low risk	**Comment:** none

Green 2015

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyads **Dates of recruitment to trial:** 01 May 2011-01 April 2013
Participants	**Number randomised:** 54 **Number randomised to each group:** intervention = 28, control = 26 **Participants:** mothers **Mean age:** parents: not reported; children: intervention = 267.14 days (SD = 20.93 days), control = 276.58 days (SD = 24.25 days), at baseline **Ethnicity:** intervention = 64% white, 36% other; control = 85% white, 15% other **Inclusion criteria:** "siblings of autistic probands sampled within the context of the prospective longitudinal observational British Autism Study of Infant Siblings (BASIS), age 7–10 months at baseline" (quote) **Exclusion criteria:** "any substantial medical disorder in the infant, being a twin, prematurity of less than 34 weeks, or a birthweight of less than 5 lbs (2.27 kg)" (quote) **Country:** UK **Setting:** home
Interventions	**Duration of intervention:** 5 months **Number of sessions and frequency:** 12 sessions, each lasting 2 h **Intervention:** adapted VIPP (iBASIS-VIPP). Manualised intervention. Therapist videos parent-child interactions during everyday interactions then gives feedback **Control:** no treatment
Outcomes	**Timing of outcome assessment:** postintervention, and at age 27 months and 39 months **Outcome(s) of interest:**

Green 2015 *(Continued)*

	1. Maternal sensitivity (measured by Manchester Assessment of Caregiver-Infant Interaction at postintervention) **Outcome(s) included in meta-analysis:** maternal sensitivity measured postintervention
Notes	**Source(s) of funding:** BASIS funding consortium led by Autistica (No: 7267), The Waterloo Foundation and Autism Speaks, USA, Medical Research Council (G0701484 and MR/K021389/1), the NIHR Biomedical Research Centre for Mental Health at the South London and Maudsley NHS Foundation Trust and King's College London, UK **Conflict(s) of interest:** none **Comment(s):** none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "using a permuted block approach within the two strata with random block sizes of four or six generated by the Clinical Trials Unit statistician. The statistician informed the trial office and clinical teams of allocation by telephone and email."
Allocation concealment (selection bias)	Low risk	**Comment:** as above
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants or personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "Assessors and supervising research staff were independent from therapists, housed in different buildings, and were unaware of treatment allocation and the method of randomisation".
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** attrition is relatively balanced across the two arms of the study, with reasons stated for dropouts. Missing data imputed "estimated by maximum likelihood using the sem procedure so as to include data from all 54 participants, including those with incomplete records" (quote). Analysis undertaken on an ITT basis. Therefore, the impact of missing data on the final study results is likely to be limited.
Selective reporting (reporting bias)	Low risk	**Comment:** protocol available (ISRCTN 87373263); all prespecified outcomes reported
Other bias	Low risk	**Comment:** none

Hodes 2017

Methods	**Design:** parallel-group, RCT **Unit of allocation:** parent-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 85 **Number randomised to each group:** intervention = 43, control = 42

Hodes 2017 *(Continued)*

	Participants: mothers and fathers (97.5% mothers) **Mean age:** parents: 30.3 years (SD = 6.7 years) at baseline; children: intervention = 3.32 years (SD = 1.33 years), control 2.92 years (SD = 1.5 years), at baseline **Ethnicity:** 24% were immigrants (25% from Suriname, 25% from Curacao, 50% from 8 other countries). It was not stated where other parents came from. **Inclusion criteria:** parents living in rented housing or residential family home, with a mild intellectual disability, who are being supported by 1 of the 10 organisations involved in recruitment; parents who were primary caregiver (at least 4 days a week) of their child aged 1-7 years and scored ≥ 62nd percentile on parenting stress score **Exclusion criteria:** parents whose child had an autistic spectrum disorder; those who had received a video-based intervention in the last 6 months **Country:** CBCL **Setting:** home
Interventions	**Duration of intervention:** 3 months **Number of sessions and frequency:** 15 sessions **Intervention**: VIPP-LD. Adaptation of VIPP-SD to meet needs of parents with a learning disability. 7 sessions with video recording, 7 sessions where videos were watched with feedback given and a closing session. Parents given a book with pictures from videos to act as an aide memoire **Control:** care as usual
Outcomes	**Timing of outcome assessment:** post-test and 3 months' follow-up **Outcome(s) of interest:** 1. Harmonious parent-child interaction (measured by the semi-structured three-bag procedure) 2. Parenting stress (measured by Nijmeegse Ouderlijke Stress Index – Kort, a Dutch version of the Parenting Stress Index) **Outcome(s) included in meta-analysis:** harmonious parent-child interaction and parenting stress at postintervention
Notes	**Source(s) of funding:** grant 57000006 of ZonMw (The Netherlands Organisation for Health Research and Development) **Conflict(s) of interest:** none **Comment(s):** we requested data with children > 4 years 11 months excluded, but the study authors did not reply to our request (Smith 2017a [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "sequential block randomization was used to assign parents to the experimental group or the control group. Randomization was executed by an independent third party using a computer programme every time there were five or six parents available with a subclinical level of parenting stress".
Allocation concealment (selection bias)	Low risk	**Comment:** the allocators were not blinded, but they were independent of the trial process.

Hodes 2017 *(Continued)*

Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants or personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** the study authors state that coders were blind to the treatment group, timing of evaluation and any other information about the participants.
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	**Comment:** relatively low attrition, but not specified which arm dropouts came from. Missing data imputed using previous values. Analysis undertaken on an ITT basis. No reasons given for dropouts, so not possible to assess if this was related to the intervention.
Selective reporting (reporting bias)	Low risk	**Comment:** trial protocol registered (NL31934.029.10 with CCMO - Dutch language version). All prespecified outcomes appear to be reported.
Other bias	Low risk	**Comment:** none

Hoffenkamp 2015

Methods	**Design:** parallel-group, RCT **Unit of allocation:** family unit (mother or father, or both, plus child) **Dates of recruitment to trial:** study does not report precise recruitment dates. Dates of study: September 2009-September 2012
Participants	**Number randomised:** 150 (150 children with 150 mothers and 144 fathers, 6 mothers were living without a partner) **Number randomised to each group:** intervention = 75, control = 75 **Participants:** families (mother, father and child) **Mean age:** mothers: intervention = 31.1 years (SD = 4.9 years), control = 30.8 years (SD = 5.4 years), at baseline; fathers: intervention = 34.1 years (SD = 5.4 years), control = 33.6 years (SD = 5.5 years), at baseline; children: not reported (range = 0-7 days at recruitment) **Ethnicity:** not reported **Inclusion criteria:** hospital pre-term delivery at 1 of 7 hospital wards; children born at < 37 weeks **Exclusion criteria:** Dutch language poorly understood; previous experience of video-feedback intervention **Country:** CBCL **Setting:** inpatient ward
Interventions	**Duration of intervention:** 6 days **Number of sessions and frequency:** 6 sessions (3 videoing, 3 feedback)

Hoffenkamp 2015 *(Continued)*

	Intervention: carried out according to VIG protocol whilst families were on the ward in the postpartum period. Each session had a 15-min video followed by feedback. Consisted of 3 sessions during the 1st week after birth; videotaped at 1st, 3rd and 6th day postpartum and feedback on the day after the recordings were made. Both parents were present. **Control:** standard hospital care
Outcomes	**Timing of outcome assessment:** 1 month and 6 months postpartum **Outcome(s) of interest:** 1. Parental sensitivity (measured by 15-min video recordings capturing behavioural observations of daily dyadic parent-child interaction, which were then coded) 2. Anxiety in parents (measured by State-Trait Anxiety Inventory) **Outcome(s) included in meta-analysis:** parental sensitivity and anxiety in parents measured at 1 month postpartum
Notes	**Source(s) of funding:** Achmea Foundation Victim and Society (Stichting Achmea Slachtoffer en Samenleving) **Conflict(s) of interest:** none stated **Comment(s):** 1. We obtained the data for outcomes used in the meta-analysis directly from the study author (Van Bakel 2017 [pers comm]). 2. Outcomes for fathers and mothers are presented separately as this is how the data were provided by the study author.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Comment:** study authors state that random assignment was undertaken using "computerized random numbers" (quote)
Allocation concealment (selection bias)	Low risk	**Quote:** "pre-specified allocation sequence was concealed from the nurses involved in participant enrollment…a VIG nurse opened one of the sequentially number, sealed envelopes to reveal the treatment assignment"
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants or personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** independent coders, who were blind to each participant's group affiliation, assessed the videotapes.
Blinding of outcome assessment (detection bias) Parental anxiety	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** the proportion of families lost to follow-up was similar across both arms, and reasons for dropout were largely similar across the two arms. Analysis was undertaken on an ITT basis, so attrition is unlikely to have impacted the final study results.

Hoffenkamp 2015 *(Continued)*

Selective reporting (reporting bias)	Low risk	**Comment:** trial registered at the Nederlands Trial Register (NTR3423). All primary outcomes reported; secondary outcomes not reported
Other bias	Low risk	**Comment:** none

Høivik 2015

Methods	**Design:** parallel-group, RCT **Unit of allocation:** parent-child dyad **Dates of recruitment to trial:** March 2008-September 2012
Participants	**Number randomised:** 158 **Number randomised to each group:** intervention = 88, control = 70 **Participants:** either mother or father. In 23 families both parents took part in the intervention but only one of the parents was included in the study. In most families mothers (98.7%) chose to participate due to practical reasons. **Mean age:** mothers = 29.7 years (SD = 5.6 years), fathers = 32.8 years (SD = 7.0 years) at baseline; children = 7.3 months (SD = 5.1 months) at baseline **Ethnicity:** mothers: 82.6% Norwegian, 6.5% other European, 3.3% African, 5.4% Asian, 2.2% South American; fathers: 89.8% Norwegian, 6.8% other European; 2.3% African; 1.1% North American **Inclusion criteria:** "parent–child interaction problems and children aged 0 to 24 months at the time of inclusion" (quote) **Exclusion criteria:** "Parents with ongoing psychosis, developmental disorders or substance abuse and parents with insufficient proficiency to fill out the questionnaires" (quote) **Country:** Norway **Setting**: community
Interventions	**Duration of intervention:** 4-5 months **Number of sessions and frequency:** 8 sessions **Intervention:** "Video feedback of infant-parent interaction (VIPI) group received eight video feedback sessions, with the last two sessions being tailored to meet individual family needs regarding any of the six topics in the VIPI manual. If both parents were included in the intervention, separate videotapes were obtained and individual feedback was given to each parent. VIPI parents were also free to visit other health professionals for routine care." (quote) **Control:** treatment as usual; parents received routine care at the well-baby units, but they were also free to seek help from others. No form of video feedback given
Outcomes	**Timing of outcome assessment:** immediately post-treatment and 6 months post-treatment **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Emotional Availability Scales) 2. Socioemotional development (measured by the Ages and Stages Questionnaire: Social Emotional (ASQ:SE), to identify children who might be at risk for social and emotional difficulties)

Høivik 2015 *(Continued)*

	Outcome(s) included in meta-analysis: maternal sensitivity. We did not include socioemotional development in the meta-analysis as the ASQ:SE measured different domains of this outcome to the other study reporting this outcome.
Notes	**Source(s) of funding:** Norwegian Extra Foundation for Health and Rehabilitation with extra funds through The Norwegian Council of Mental Health (reference number 2010/2/0303) and the Liaison Committee between the Central Norway Regional Health Authority and Norges Teknisk-Naturvitenskaplige Universitet **Conflict(s) of interest:** no competing interests **Comment(s):** study authors provided the data for the maternal sensitivity outcomes as they were not included in the published results (Hoivik 2018 [pers comm])

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "the families were consecutively randomised to either a treatment group (VIPI) or a control group (TAU [treatment as usual]) in a 1-2-1-2 allocation ratio"
Allocation concealment (selection bias)	High risk	**Comment:** consecutive randomisation in this way would mean that the allocator would know to which group the parent-child dyad was being allocated.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants or personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "all raters were blind to the randomization"
Blinding of outcome assessment (detection bias) Child socioemotional development	High risk	**Comment:** the outcome was measured using self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	High risk	**Comment:** at the final stage of analysis, attrition was higher in the control arm. It is possible that treatment allocation affected the dropout rate. Missing values were excluded rather than imputed. The reasons given for dropout are not clear. Therefore, it is possible that attrition may have led to an overestimate of the effect of the intervention.
Selective reporting (reporting bias)	Unclear risk	**Comment:** study protocol registered (ISRCTN 99793905), but appears to have been registered after the study was published
Other bias	Low risk	**Comment:** none

Kalinauskiene 2009

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated

Kalinauskiene 2009 *(Continued)*

Participants	**Number randomised:** 54 **Number randomised to each group:** intervention = 26, control = 28 **Participants:** mothers **Mean age:** mothers = 26.4 years (SD = 2.94 years); children: intervention = 6.12 months (SD = 0.07 months), control = 6.11 months (SD = 0.06 months), at pre-test **Ethnicity:** 77.8% Lithuanian; the ethnicity of remaining mothers was not stated **Inclusion criteria:** "Mothers scoring low in assessment of maternal sensitivity in ratings by 2 coders; from intact families, who were primary caregivers to their infants, did not work until their children reached 12 months of age, and had at least high school education, were included in the intervention study. Mothers and infants were free of serious health problems." (quote). Firstborn children only **Exclusion criteria:** none stated **Country:** Lithuania **Setting:** home
Interventions	**Duration of intervention:** 4 months **Number of sessions and frequency:** 5 monthly sessions lasting 90 min **Intervention:** 4 sessions with mothers only and 1 booster session for mother and father together. During these sessions mother-child interactions were videotaped. VIPP applied according to manualised protocol **Control:** contacted by phone for 5 months and asked for information on their child's development. No advice about sensitive parenting or attachment was given
Outcomes	**Timing of outcome assessment:** immediately postintervention and 12 months postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Ainsworth's 9-point rating scale for sensitivity at postintervention) 2. Child-mother attachment security (measured by Attachment Q-sort at postintervention) 3. Maternal stress (measured by Parental Daily Hassles Scale at postintervention) 4. Child behaviour (measured by CBCL at 12 months follow-up) **Outcome(s) included in meta-analysis:** maternal sensitivity, child-mother attachment security and maternal stress at postintervention, and child behaviour at 12 months postintervention. While two separate scales were reported for Parental Daily Hassles Scale, we only used the Frequency of Hassles Scale in the meta-analysis.
Notes	**Source(s) of funding:** Nederlandse Organisatie voor Wetenschappelijk Onderzoek Spinoza prize and Nederlandse Organisatie voor Wetenschappelijk Onderzoek Vidi grant; additional financial support received from Wereldkinderen **Conflict(s) of interest:** none stated **Comment(s):** an English translation was made of the paper written in Lithuanian for the purposes of this review.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	**Comment:** mothers were randomly assigned to the intervention and control groups, but the study authors do not state how this was done.

Kalinauskiene 2009 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants or personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** the study authors state that observers were blinded.
Blinding of outcome assessment (detection bias) Attachment	Low risk	**Comment:** the study authors state that observers were blinded.
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Blinding of outcome assessment (detection bias) Child behaviour	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** no missing data
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Klein Velderman 2006

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 84 **Number randomised to each group:** not reported. Results analysed for 81 dyads. 3 groups: VIPP = 28; VIPP-R = 26; control = 27 **Participants:** mothers; children of both sexes included **Mean age:** mothers = 27.8 years (SD = 3.63 years); children = not reported (aged 4 months at recruitment and 7-10 months when the intervention took place) **Ethnicity:** not reported **Inclusion criteria:** mothers with firstborn, with > 8 but < 14 years of formal education, with insecure classification according to Adult Attachment Interview **Exclusion criteria:** none

Klein Velderman 2006 *(Continued)*

	Country: CBCL **Setting:** community
Interventions	**Duration of intervention:** approximately 4 months **Number of sessions and frequency:** 4 home visits, each lasting 90 min, 3-4 weeks apart **Intervention:** VIPP consisted of 4 home visits. Each session started out with making a videotape of mother-child interactions that would be used during the next intervention session. Then, feedback was given on the videotape from the previous session. Sessions follow a set theme according to a standardised VIPP protocol. VIPP-R was similar to VIPP, but contained an additional focus on improving maternal representations. **Control:** not clearly stated but seems to be no video feedback
Outcomes	**Timing of outcome assessment:** 2 outcome time points: 1-3 months postintervention and (30 months postintervention) **Outcome(s) of interest:** 1-3 months postintervention 1. Maternal sensitivity (measured by Ainsworth's Maternal Sensitivity Scale) 2. Child-mother attachment (measured by Strange Situation Procedure) 3. Maternal stress (measured by Support and Stress Questionnaire) 30 months postintervention 1. Child-mother attachment (measured by Attachment Q-sort) 2. Child behaviour (measured by CBCL for children aged 2-3 years) 3. Maternal sensitivity (measured by Emotional Availability Scales) **Outcome(s) included in meta-analysis:** maternal sensitivity at 1-3 months, child-mother attachment at 30 months (as earlier data not presented numerically), and child behaviour at 30 months
Notes	**Source(s) of funding:** Pioneer Award from the Netherlands Organization for Scientific Research NWO (grant PGS 59-256) and the NWO/Spinoza Prize **Conflict(s) of interests:** none reported **Comment(s):** study did not include the outcome data for maternal stress in the published papers. The corresponding author provided us with the missing data for the purposes of meta-analysis (Bakermans-Kranenburg 2018 [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	**Comment:** study authors state that "Mothers were randomly assigned to one of three groups" (quote), but they provide no information on how this was done
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.

Klein Velderman 2006 *(Continued)*

Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "Two coders, blind to other data concerning the dyads, independently assigned scores to the mothers".
Blinding of outcome assessment (detection bias) Attachment	Low risk	**Quote:** "two coders who were unaware of other information of the dyads sorted the cards"
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect.
Blinding of outcome assessment (detection bias) Child behaviour	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** reasons given by study authors for missing data; attrition is roughly even between groups. Missing values were substituted using a reasonable method of imputation. Therefore, the impact of missing values on the final study results is likely to be low. **Quote:** "In case of missing values for a respondent who did complete a questionnaire, these were substituted by the mean or mode".
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Koniak-Griffin 1992

Methods	**Design:** parallel-group, RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 31 **Number randomised to each group:** intervention = 15, control = 16 **Participants:** mothers **Mean age:** mothers = 17.16 years (SD = 1.51 years) at baseline; children = not reported (range = 4-6 weeks at baseline) **Ethnicity:** intervention = 40% black, 20% Hispanic, 40% white; control = 43.8% black, 56.2% Hispanic **Inclusion criteria:** mothers aged ≤ 20 years; primiparous; completion of normal pregnancy and delivery of healthy, full-term child; able to speak and read English **Exclusion criteria:** none **Country:** USA **Setting:** residential maternity home
Interventions	**Duration of intervention:** single visit

Koniak-Griffin 1992 *(Continued)*

	Number of sessions and frequency: 1 session **Intervention:** 2 structured teaching tasks at 4-6 weeks were carried out by adolescent mothers with their 4-6-week-old children using the NCATS. The episodes were videotaped and feedback provided **Control:** mothers received 2 home visits at comparable time intervals. NCATS protocols were similarly applied, and the episodes video recorded, but no instruction or feedback was provided
Outcomes	**Timing of outcome assessment:** post-test and 1 month postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by NCATS) **Outcome(s) included in meta-analysis:** we did not include maternal sensitivity in the meta-analysis. The study did not report a breakdown of the NCATS score for maternal sensitivity. We requested this information from the study authors (Smith 2018d [pers comm]), but unfortunately did not receive a response.
Notes	**Source(s) of funding:** UCLA (University of California, Los Angeles) School of Nursing **Conflict(s) of interest:** none stated **Comment(s):** none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	**Quote:** "subjects were randomly assigned" **Comment:** does not specify how participants were randomly assigned to experimental and control conditions
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** the videotapes of maternal-child interactions were reviewed and scored by a NCATS-certified instructor who was blind to participants' experimental conditions.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	**Comment:** although the study did not report the maternal sensitivity subdomain of the NCATS scale, they did report the full-scale outcome. They did not state final numbers for outcomes, so it is not possible to assess whether any dropouts occurred. There is no mention of missing data or ITT analysis.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Lam-Cassettari 2015

Methods	**Design:** RCT with waiting-list control **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 14 **Number randomised to each group:** intervention = 7; control = 7 **Participants:** mothers **Mean age:** mothers = not reported; children: intervention = 3 years 4 months (SD = 2.6 years), control = 1 year 4 months (SD 1.10 years), at recruitment **Ethnicity:** all participants of British origin except for one family of Latvian origin **Inclusion criteria:** hearing mothers; congenitally deaf and prelingual children **Exclusion criteria:** children who were not at prelinguistic stage of development and who could produce > 50 signed/spoken words **Country:** UK **Setting:** home
Interventions	**Duration of intervention:** about 6 months **Number of sessions and frequency:** monthly sessions lasting 30-45 min **Intervention:** "It involved (a) a goal setting session, (b) three film sessions of parent-child interaction in the family home and (c) three shared review sessions in which three short video clips (demonstrating attuned responses linked to the family's goal) were played so families could microanalyze and discuss the behaviours that facilitated successful communication with their child. Video Interaction Guidance (VIG) contact principles were used to analyze the interactive behaviours." (quote) **Control:** waiting list
Outcomes	**Timing of outcome assessment:** for intervention group, 2 weeks after the intervention and 3 months after the intervention; for control group, after waiting for the control group and then postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Emotional Availability Scales) **Outcome(s) included in meta-analysis:** maternal sensitivity, measured at two weeks for the intervention group and at preintervention after waiting for the control group
Notes	**Source(s) of funding:** NIHR, UK **Conflict(s) of interest:** none **Comment(s):** we requested data excluding children aged 5 years and over from the corresponding author of the study, who provided these data for maternal sensitivity (Lam-Cassettari 2018 [pers comm]). We used these data in the meta-analysis in preference to the published data.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "Families were randomly stratified to the intervention group (IG) or waiting-list before intervention group (WG) using a minimization software pro-

Lam-Cassettari 2015 *(Continued)*

		gram (Altman & Bland, 2005) based on child age, sex, level of hearing loss, and additional needs."
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants or personnel to this type of study.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** assessments of primary outcomes in this study were blinded **Quote:** "all videos were coded by a single coder who was blind to the assessment session for each video…Inter-rater reliability was obtained by a second coder also blind to the assessment session."
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** no missing data
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Moran 2005

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 100 **Number randomised to each group:** intervention = 50, control = 50 **Participants:** mothers **Mean age:** mothers = 18.42 years (SD = 1.01 years); children = not reported (aged 5 months at recruitment) **Ethnicity:** 81% white, 5% Native American, 5% Middle Eastern, 4% Latin American, 1% Caribbean, 1% Asian (ethnicity of remaining 3% was not reported) **Inclusion criteria:** mothers aged < 20 years and with uneventful delivery; children born full term with no medical complications **Exclusion criteria:** none stated **Country:** Canada **Setting:** hospital
Interventions	**Duration of intervention:** around 5 months **Number of sessions and frequency:** 8 home visits from 7 months of age until 12 months of age. First 3 visits were carried out within 1 week of each other and subsequent 5 visits were spaced about 3-4 weeks apart. Each visit lasted 1 h.

Moran 2005 *(Continued)*

	Intervention: mother and child were videotaped for about 5 min while playing with age-appropriate toys and the videotape was played back for the mother to observe and discuss **Control:** received 1 visit when children were 9 months old. They were interviewed about their current relationships and a videotape was made of child-mother play, feeding and other activities of the mother's choice.
Outcomes	**Timing of outcome assessment:** 12 and 24 months of age **Outcome(s) of interest:** 1. Infant attachment security (measured by Strange Situation Procedure at 12 months only) 2. Maternal sensitivity (measured by Maternal Behaviour Q-sort) **Outcome(s) included in meta-analysis:** infant attachment security at 12 months of age
Notes	**Source(s) of funding:** research grant from the Social Sciences and Humanities Research Council and Health Canada **Conflict(s) of interest:** none stated **Comment(s):** maternal sensitivity outcomes were reported as means without standard deviations. The corresponding author was unable to provide the required information to be able to include them in a meta-analysis (Moran 2017 [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	**Quote:** "mothers were randomly assigned to an intervention or comparison group" **Comment:** does not state how mothers were randomly assigned
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Unclear risk	**Comment:** it is not clear whether the assessors were blinded or not.
Blinding of outcome assessment (detection bias) Attachment	Unclear risk	**Comment:** it is not clear whether the assessors were blinded or not.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** reasons for dropout are not stated, and there is no mention of how missing data were handled. However, there was very low attrition (only 1 dyad across both arms), and therefore the impact on the final study results was likely to be low.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	High risk	**Comment:** maternal sensitivity outcomes were not reported fully (missing SD/SE)

Moss 2011

Methods	**Design:** parallel-group, RCT **Unit of allocation:** parent-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 79 **Number randomised to each group:** intervention = 40, control = 39 **Participants:** parents (i.e. either mother or father; 94% mothers) **Mean age:** parents = 27.82 years (SD = 7.61 years) at baseline; children = 3.35 years (SD = 1.38 years) at baseline **Ethnicity:** not reported **Inclusion criteria:** primary caregiver of child aged 12-71 months and living with child; French speaking; being monitored for child maltreatment **Exclusion criteria:** none **Country:** Canada **Setting:** home
Interventions	**Duration of intervention:** 8 weeks **Number of sessions and frequency:** 8 weekly home visits lasting 90 min **Intervention:** in addition to standard agency services, all intervention sessions were primarily focused on reinforcing parental sensitive behaviour. This was carried out by means of personalised parent-child interaction, video feedback, and discussion of attachment or emotion regulation-related themes. **Control:** standard agency services (monthly home-monitoring visits)
Outcomes	**Timing of outcome assessment:** immediately postintervention **Outcome(s) of interest:** 1. Child behaviour problems (measured by CBCL) 2. Parental sensitivity (measured by Maternal Behaviour Q-Sort) 3. Child attachment (measured by Ainsworth Strange Situation Procedure) **Outcome(s) included in meta-analysis:** parental sensitivity and child attachment. We did not include child behaviour in the meta-analysis as it was reported at a different time point to other studies reporting this outcome.
Notes	**Source(s) of funding:** grant from the Public Safety Canada's National Crime Prevention Centre (NCPC) in collaboration with the Quebec Minister of Public Security **Conflict(s) of interest:** none stated **Comment(s):** we contacted the study authors to request data excluding children aged ≥ 5 years, but these were not provided (Smith 2018h [pers comm], so we used published outcomes that included children outside of our target age group in the meta-analysis.

Risk of bias

Bias	Authors' judgement	Support for judgement

Moss 2011 *(Continued)*

Random sequence generation (selection bias)	Low risk	**Quote:** "families were randomly assigned to the intervention or control group using a simple 1:1 block allocation sequence".
Allocation concealment (selection bias)	Unclear risk	**Comment:** if allocators were aware of the size of the block, then bias could have been introduced. Study did not state if allocators were blinded.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** blinding is not possible in these types of studies.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Coomment:** research assistants conducting the assessments were blinded to assignment of dyads.
Blinding of outcome assessment (detection bias) Attachment	Low risk	**Comment:** research assistants conducting the assessments were blinded to assignment of dyads.
Blinding of outcome assessment (detection bias) Child behaviour	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	High risk	**Comment:** attrition is balanced between both arms. However, 4/5 who dropped out in the intervention group dropped out because the child was placed into foster care; this did not happen to any families in the control arm, suggesting that the groups potentially were unbalanced in level of risk, despite randomisation. There is no mention of an ITT analysis.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Negrão 2014

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 55 **Number randomised to each group:** intervention = 29, control = 26 **Participants:** mothers **Mean age:** mothers = 29.98 years (SD = 6.19 years) at baseline; children = 29.07 months (SD = 10.49 months) at baseline **Ethnicity:** 100% Portuguese **Inclusion criteria:** families with children aged 1-4 years; on families' Risks and Strengths profile, the presence of at least 1 out of the 23 risk items related to quality of family relations or quality of parenting; living with biological mother as primary caregiver; Portuguese **Exclusion criteria:** children with severe medical conditions; families from ethnic minorities

Negrão 2014 *(Continued)*

	Country: Portugal **Setting:** community
Interventions	**Duration of intervention:** about 4 months **Number of sessions and frequency:** 6 visits. First 4 visits at 2-week intervals and the last 2 sessions at 1 month apart **Intervention:** VIPP-SD. Manualised programme with series of topics to be covered. Each session included videotaping interactions and reviewing video from the previous session. Fathers were invited to participate in last 2 sessions. Booklet with summary information given at end **Control:** parallel in timing, received 6 telephone calls. Each telephone call revolved around a standard topic regarding child development.
Outcomes	**Timing of outcome assessment:** 1 month postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Emotional Availability Scales) 2. Parenting stress (measured by Daily Hassles Questionnaire) **Outcome(s) included in meta-analysis:** maternal sensitivity and parenting stress at 1-month follow-up
Notes	**Source(s) of funding:** Fundação Ciência e Tecnologia (grant numbers: SFRH/BD/45273/2008 and SFRH/BD/48411/2008) **Conflict(s) of interest:** none stated **Comment(s):** we obtained the data on parental stress outcomes, which were used in the meta-analysis, directly from the study authors for the purposes of this review only (Pereira 2018 [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "researchers randomly assigned families...based on a computer-generated list, stratified by child's age group, gender, and temperament (considering Portuguese clinical cutoff scores of difficult temperament for the Infant Characteristics Questionnaire)".
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "A team of raters, unaware of experimental condition and other data concerning the participants, independently coded the mother and child scales."
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** The outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias)	Low risk	**Comment:** missing data were not imputed, and families who did not have complete data were excluded from the final analysis. However, attrition was

Negrão 2014 *(Continued)*

All outcomes		reasonably balanced between groups, with similar reasons for dropout across groups, so attrition is likely to have had a low impact on the study results.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Platje 2018

Methods	**Design:** parallel-group RCT **Unit of allocation:** parent-child dyad **Dates of recruitment to trial:** not reported. Dates of trial: 01 September 2009-01 May 2016
Participants	**Number randomised:** 86 **Number randomised to each group:** intervention = 44, control = 42 **Participants:** mothers and fathers (85% of parents in the intervention group were mothers, 89% of parents in the control group were mothers) **Mean age:** parents: intervention = 34.5 years (SD = 5.5 years), control = 35.65 years (SD = 4.88 years), at baseline; children: intervention = 3.36 years (SD = 1.2 years), control = 3.22 years (SD = 1.02 years), at baseline **Ethnicity:** intervention = 91% Dutch, control = 86% Dutch; the ethnicity of the other parents was not reported **Inclusion criteria:** "parents of children aged 1-5 years with visual or visual and intellectual disability" (quote) **Exclusion criteria:** none **Country:** CBCL **Setting:** community
Interventions	**Duration of intervention:** 9 months **Number of sessions and frequency:** 7 sessions, each lasting 90 min. The first 5 sessions occurred every 2-3 weeks and the last 2 sessions took place every 2 months. **Intervention:** VIPP-V. Based on original VIPP programme, with "an added component each session addressing specific skills which (parents of) children with visual or visual-and-intellectual disabilities often experience difficulties with" (quote) **Control:** care as usual, with varying frequency of support offered
Outcomes	**Timing of outcome assessment:** all at post-test and at 6 months postintervention **Outcome(s) of interest:** 1. Parental sensitivity (measured by National Institute of Child Health and Human Development Scales) 2. Parental stress (measured by the Nijmeegse Ouderlijke Stress Index - Dutch version of the Parenting Stress Index) **Outcome(s) included in meta-analysis:** parental sensitivity and parent stress, assessed at postintervention

Platje 2018 *(Continued)*

Notes	**Source(s) of funding:** ZonMW-Inzicht (grant number 60-00635-98-126) **Conflict(s) of interest:** none stated **Comment(s):** none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "Randomization was performed as stratified (on age and organization) block randomization with a 1:1 allocation using a computerized random number generator."
Allocation concealment (selection bias)	Unclear risk	**Comment:** if allocators were aware of the size of the block, then bias could have been introduced. No information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind parents or personnel from allocation in this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "Videotapes were randomly assigned to a pool of three trained coders, who were blind to condition and assessment".
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	High risk	**Comment:** ITT analysis undertaken. However, there was greater attrition in the intervention arm, potentially because of factors relating to the outcomes, suggesting that participants in the two arms were not comparable at baseline despite randomisation.
Selective reporting (reporting bias)	Low risk	**Comment:** trial protocol registered at Nederlands Trial Register (NTR4306). Reported on all outcomes in published protocol
Other bias	Low risk	**Comment:** none

Poslawsky 2015

Methods	**Design:** parallel-group, RCT **Unit of allocation:** parent-child dyad **Dates of recruitment to trial:** June 2008-April 2012
Participants	**Number randomised:** 78 **Number randomised to each group:** intervention = 40, control = 38 **Participants:** primary caregivers (90% mothers, 10% other) of children with autism spectrum disorder (ASD) **Mean age:** primary caregivers = 36.6 years (SD = 5.04 years) at baseline; children = 43 months (SD = 9.96 months) at baseline

Poslawsky 2015 *(Continued)*

	Ethnicity: not reported **Inclusion criteria:** children aged 0-5 years, diagnosed with ASD at the university hospital, and their primary caregiver; child and primary caregiver lived at same address; a permanent residence; both parents consented **Exclusion criteria:** primary caregiver who did not speak Dutch; primary caregivers who did not care for the child; children with interfering comorbid medical problems **Country:** CBCL **Setting:** home
Interventions	**Duration of intervention:** around 2 months **Number of sessions and frequency:** 5 fortnightly visits lasting 60-90 min **Intervention:** VIPP-AUTI. During the home visits, video feedback was provided using film fragments of parent-child interactions videotaped in the previous session. **Control:** 5 home visits of 1.5 h, 1-4 weeks apart, with discussions about parenting, plus usual care
Outcomes	**Timing of outcome assessment:** immediately postintervention and 3 months postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Emotional Availability Scales at immediately postintervention) 2. Parenting stress (measured by Parenting Daily Hassles scale at immediately postintervention and 3 months postintervention) 3. Social development - joint attention skills (measured by Early Social and Communication Scales at immediately postintervention and 3 months postintervention) **Outcome(s) included in meta-analysis:** maternal sensitivity and parenting stress, assessed at immediately postintervention. We did not include social development in the meta-analysis as the scale used measured different domains of that outcome to the other study reporting this outcome.
Notes	**Source(s) of funding:** Netherlands Organization for Scientific Research **Conflict(s) of interest:** none stated **Comment(s):** we excluded outcome data with children aged > 4 years 11 months at baseline. We requested data for parental stress at 3 months' follow-up, but the corresponding author was not able to provide the data (Poswlawsky 2018 [pers comm]), so we used reported outcomes that included children outside of our target age group in the meta-analysis.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "randomization by computer generated tables"
Allocation concealment (selection bias)	Low risk	**Comment:** randomization by computer-generated tables by a staff manager, who was not involved in the research project. Randomly assigned to 2 groups indicated by number. Staff manager did not know which number belonged to which group
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.

Poslawsky 2015 *(Continued)*

Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "The play sessions were coded by five trained observers...who were unaware of the intervention type parents received."
Blinding of outcome assessment (detection bias) Parental stress	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Blinding of outcome assessment (detection bias) Child socioemotional development	Low risk	**Quote:** "The play sessions were coded by five trained observers who were unaware of the intervention type parents received."
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** no mention of ITT analysis. However, there was low attrition; reasons for loss to follow-up were clearly stated and unlikely to be relevant to outcomes. Therefore, the impact of attrition on the final study results is likely to be low.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Seifer 1991

Methods	**Design:** quasi-RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not reported
Participants	**Number randomised:** not reported **Number randomised to each group:** not reported. Number in each group: intervention = 23, control = 17 **Participants:** mothers **Mean age:** mothers: intervention = 28 years (SD = 4.6 years), control = 30 years (SD = 5.5 years) at baseline; children: 8.5 months (SD = 5.6 months) at baseline, after correction for prematurity **Ethnicity:** intervention = 30% from BME backgrounds, control = 58% from BME backgrounds. Across both groups, 24 mothers were white, 13 were black and 3 were Hispanic **Inclusion criteria:** participants from a "comprehensive early intervention program for children with developmental disability" (quote) **Exclusion criteria:** none stated **Country:** USA **Setting:** clinic
Interventions	**Duration of intervention:** 8 months **Number of sessions and frequency:** up to 6 sessions, weekly **Intervention:** interaction coaching. Videotaping of mother-child interactions, followed by reviewing, with suggestions from therapists about how to improve the interaction

Seifer 1991 *(Continued)*

	Control: no treatment. Mothers watched videotapes of their interactions with their child, but did not receive any feedback. Both groups also received the early intervention programme.
Outcomes	**Timing of outcome assessment:** postintervention **Outcome(s) of interest:** 1. Maternal responsive behaviour (measured by maternal behaviour types coded by independent coder) 2. Child mental development (measured by Bayley Scales of Infant Development) 3. Child psychomotor development (measured by the Uzgiris and Hunt Ordinal Scales of Development) **Outcome(s) included in meta-analysis:** maternal responsive behaviour at postintervention
Notes	**Source(s) of funding:** US Department of Education's Special Education Programs, Handicapped Children's Early Education Programs and National Institute of Handicapped Research **Conflict(s) of interest:** none stated **Comment(s):** none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	**Comment:** quasi-randomised trial. Sequence generation was based on the day of attendance at the early intervention programme from which participants were recruited.
Allocation concealment (selection bias)	High risk	**Comment:** allocation was based on day of attendance at the early intervention programme from which participants were recruited.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Comment:** videotape coders were blinded to the study hypothesis.
Blinding of outcome assessment (detection bias) Child socioemotional development	Low risk	**Comment:** videotape coders were blinded to the study hypothesis.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	**Comment:** not reported. The study authors report that the participants in each arm were those who had completed all assessments, but it is not clear whether there were others who had partially completed assessments who were excluded.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no trial protocol available
Other bias	Low risk	**Comment:** none

Stein 2006

Methods	**Design:** parallel-group, RCT **Unit of allocation:** mother-child dyads **Dates of recruitment to trial:** 08 December 2004-01 January 2006
Participants	**Number randomised:** 80 **Number randomised to each group:** intervention = 40, control = 40 **Participants:** mothers **Mean age:** mothers = not reported (median age: intervention = 31 years, control = 29 years, at baseline); children = not reported (range = 4-6 months) **Ethnicity:** 70% white, 30% other **Inclusion criteria:** "women ages 18–45 years with children between 4 and 6 months old. The women met the DSM-IV diagnostic criteria for an eating disorder, either bulimia nervosa or a similar form of eating disorder of clinical severity, i.e., a bulimic subtype of eating disorder not otherwise specified (4). The inclusion criteria were 1) overevaluation of body shape or weight to a degree reaching clinical severity, 2) recurrent episodes of loss of control over eating (i.e., subjective or objective bulimic episodes), and 3) secondary social impairment." (quote) **Exclusion criteria:** "Mothers with severe comorbid psychiatric disorders" (quote) **Country:** UK **Setting:** home
Interventions	**Duration of intervention:** 6-8 months **Number of sessions and frequency:** 13 sessions, each lasting 1 h **Intervention:** video feedback focused around mother-child conflict at mealtimes **Control:** supportive counselling "Both groups also received guided cognitive behavior self-help for eating disorders" (quote)
Outcomes	**Timing of outcome measurement:** 1 month postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (observed and rated against scales designed specifically for this trial) **Outcome(s) included in meta-analysis:** maternal sensitivity. There were multiple domains of maternal sensitivity reported. After discussion, we felt that "verbal responses to infant cues" was the most appropriate to combine in the meta-analysis.
Notes	**Source(s) of funding:** Wellcome Trust (grant number 050892) and funding from the North Central London Research Consortium for the recruitment process in primary care **Conflict(s) of interest:** none reported **Comment(s):** we obtained the maternal sensitivity outcomes directly from the study authors as they were reported as medians in the original published paper, which were not suitable for the meta-analysis. We obtained the means and standard deviations for use in the meta-analysis (Stein 2018 [pers comm]).

Risk of bias

Bias	Authors' judgement	Support for judgement

Stein 2006 *(Continued)*

Random sequence generation (selection bias)	Low risk	**Quote:** "mothers were randomly assigned to the two interventions by using block randomization with fixed blocks of size 6, computer generated by an independent statistician and stratified according to eating disorder diagnosis (bulimia nervosa or bulimic type of eating disorder not otherwise specified)"
Allocation concealment (selection bias)	Low risk	**Quote:** "Allocation concealment was facilitated by using sequentially numbered opaque sealed envelopes for consecutive and eligible study participants."
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of study.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "All videotapes were rated by independent raters blind to group assignment."
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Comment:** there is no mention of an ITT analysis or a strategy to impute missing data. However, there was very low attrition and reasons for dropout do not seem to be related to factors linked to outcomes. Therefore, the impact of attrition on the final study results is likely to be low.
Selective reporting (reporting bias)	Low risk	**Comment:** study protocol registered (ISRCTN 95026274) and all protocol outcomes reported.
Other bias	Low risk	**Comment:** none

Van Zeijl 2006

Methods	**Design:** parallel-group, RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** May 2001-December 2002
Participants	**Number randomised:** 237 **Number randomised to each group:** intervention = 120, control = 117 **Participants:** mothers **Mean age:** mothers = 33.15 years (SD 4.22 years), children = 26.99 months (SD = 9.98 months) at pretest **Ethnicity:** 100% Dutch **Inclusion criteria:** participants of Dutch cultural background; children living with 2 parents (biological mother as the primary caregiver and biological or stepfather as the second caregiver); children with scores > 75th percentile on the CBCL for ages 1.5-5; externalising problem scale scores ≥ 13 for those aged 1 year ≥ 19 for those aged 2 years, and ≥ 20 for those aged 3 years **Exclusion criteria:** mothers with serious medical conditions; twins and children with serious medical conditions **Country:** the Netherlands **Setting:** home

Van Zeijl 2006 *(Continued)*

Interventions	**Duration of intervention:** 8 months **Number of sessions and frequency:** 6 sessions. First 4 intervention sessions took place every month and the last 2 sessions took place every other month; each session lasted 1.5 h **Intervention:** adhered to VIPP-SD protocol; intervener provided personal feedback on parenting, using videotaped mother-child interaction in each session **Control:** mothers in the control group were given 6 telephone calls with a general discussion about their child. Minimal advice and information given
Outcomes	**Timing of outcome assessment:** 4 months postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (rated on 7-point scale) 2. Child behaviour problems (measured by CBCL/1.5-5) **Outcome(s) included in meta-analysis:** maternal sensitivity. We did not include child behaviour problems in the meta-analysis as they were measured at a different time point to other studies reporting this outcome.
Notes	**Source(s) of funding:** ZorgOnderzoek Nederland (Netherlands Organization for Health Research and Development; grant number 2200.0097) **Conflict(s) of interest:** none stated **Comment(s):** none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "a computer generated list randomly assigned families stratified by age"
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Unclear risk	**Comment:** no information given
Blinding of outcome assessment (detection bias) Child behaviour	High risk	**Comment:** the outcome was measured using a self-report scale. As participants were not blinded to the intervention, this may have biased their responses, leading to an overestimate of effect of the intervention.
Incomplete outcome data (attrition bias) All outcomes	Low risk	**Quote:** "Missing values seem to be randomly distributed across items and participants and therefore they were substituted with the mean score on the variable for children with the same sex, age, parental education level, and experimental condition, as a conservative imputation method to uniformly include the total set of 237 in the analyses." **Comment:** therefore, the impact of missing data on the final study results is likely to be low

Van Zeijl 2006 *(Continued)*

Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

Yagmur 2014

Methods	**Design:** parallel-group RCT **Unit of allocation:** mother-child dyad **Dates of recruitment to trial:** not stated
Participants	**Number randomised:** 86 **Number randomised to each group:** intervention = 44, control = 42 **Participants:** mothers **Mean age:** mothers = 29.96 years (SD = 3.45 years) at baseline; children = 30.83 months (SD = 6.44 months) at baseline **Ethnicity:** 100% Turkish **Inclusion criteria:** child aged 18 months-3 years; 2nd generation Turkish mothers born in the Netherlands (who have at least 1 parent born in Turkey); CBCL 1.5-5; externalising problem scale > 75th percentile **Exclusion criteria:** severe mental or physical health problems of mother or child **Country:** CBCL **Setting:** home
Interventions	**Duration of intervention:** 3 months **Number of sessions and frequency:** 6 visits every two weeks, lasting 2.5-3 h **Intervention:** used VIPP-SD adapted to Turkish minority families (VIPP-TM) protocol. Intervention sessions took place every 2 weeks. All participants received 6 home visits and completed all steps. Duration of each home visit was 2.5-3 h. **Control:** parallel to the intervention sessions, the mothers in the control group received 6 telephone calls, lasting 15-30 min.
Outcomes	**Timing of outcome assessment:** 6 months postintervention **Outcome(s) of interest:** 1. Maternal sensitivity (measured by Emotional Availability Scales) **Outcome(s) included in meta-analysis:** maternal sensitivity, assessed at 6 months postintervention
Notes	**Source(s) of funding:** ZorgOnderzoek Nederland (Netherlands Organization for Health Research and Development; grant number 15700.1011); NORFACE (New Opportunities for Research Funding Co-operation Agency in Europe) research programme on Migration in Europe - Social, Economic, Cultural and Policy Dynamics; Netherlands Organization for Scientific Research **Conflict(s) of interest:** none stated

Yagmur 2014 *(Continued)*

Comment(s): none

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	**Quote:** "[dyads] randomly allocated to the intervention or control group (dummy intervention), stratified for age group, gender, and the presence of siblings…after the pretest, a computer-generated list randomly assigned families"
Allocation concealment (selection bias)	Unclear risk	**Comment:** no information was reported on whether allocation after randomisation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	**Comment:** it is not possible to blind participants and personnel to this type of intervention.
Blinding of outcome assessment (detection bias) Parental sensitivity	Low risk	**Quote:** "The three coders were unaware of the experimental condition".
Incomplete outcome data (attrition bias) All outcomes	High risk	**Comment:** dropout is unbalanced across the 2 arms, and some of the reasons for dropout seem related to the intervention (e.g. objection to video recording). There is no mention of an ITT analysis. Therefore, it is possible that attrition might result in an overestimate of the impact of the intervention on the final study results.
Selective reporting (reporting bias)	Unclear risk	**Comment:** no protocol available
Other bias	Low risk	**Comment:** none

ADOS-G: Autism Diagnostic Observation Schedule - Generic;**BASIS:** British Autism Study of Infant Siblings; **BME:** black and minority ethnic; **CARE-Index:** Child-Adult Relationship Experimental Index**; CBCL:** Child Behaviour Checklist; **CCMO:** Centrale Commissie Mensgebonden Onderzoek**; DSM-IV:** *Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition;* **iBASIS-VIPP:** Intervention in the British Autism Study of Infant Siblings - Video Interaction for promoting Positive Parenting); **ITT:** intention-to-treat **NCATS:** Nursing Child Assessment Teaching Scale**; NIHR:** National Institute for Health Research; **PACT:** Preshool Autism Communication Trial; **RCT:** randomised controlled trial; **SD:** standard deviation**; SE** standard error**; VIG:** Video Interaction Guidance**; VIPI:** Video-feedback of Infant-Parent Interaction; **VIPP:** Video-feedback Intervention to promote Positive Parenting;**VIPP-AUTI:** Video-feedback Intervention to promote Positive Parenting adapted to Autism; **VIPP-LD:** Video-feedback Intervention to promote Positive Parenting - Learning Disabilities; **VIPP-R:** Video-feedback Intervention to promote Positive Parenting - Representational level; **VIPP-SD:** Video-feedback Intervention to promote Positive Parenting - Sensitive Discipline; **VIPP-V:** Video-feedback Interaction to promote Positive Parenting - Visual or visual-intellectual disability.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Akai 2008	Intervention has no video-feedback component
Aldred 2001	Intervention contained multiple sessions of non-video-feedback intervention activities
Aldred 2004	Intervention contained multiple sessions of non-video-feedback intervention activities
Bernard 2012	Video interaction sessions were part of a multi-component intervention

Study	Reason for exclusion
Bilszta 2012	Does not measure parental sensitivity, child attachment or reflective functioning outcomes
Borghini 2014	Intervention contained multiple sessions of non-video-feedback intervention activities
Brisch 2003	Video interaction sessions were part of a multi-component intervention
Bunder 2011	Not an RCT or quasi-RCT
Cassiba 2015	Not an RCT or quasi-RCT
Cates 2012	Does not measure parental sensitivity, child attachment or reflective functioning outcomes
Dozier 2006	Intervention contained multiple sessions of non-video-feedback intervention activities
Durett 1984	Intervention contained multiple sessions of non-video-feedback intervention activities
Feeley 2012	Intervention contained multiple sessions of non-video-feedback intervention activities
Glanemann 2013	Intervention contained multiple sessions of non-video-feedback intervention activities
Groeneveld 2011	Caregivers do not match this review's inclusion criteria (Criteria for considering studies for this review)
Groeneveld 2016	Caregivers do not match this review's inclusion criteria (Criteria for considering studies for this review)
Guttentag 2014	Intervention contained multiple sessions of non-video-feedback intervention activities
Huber 2016	Intervention contained multiple sessions of non-video-feedback intervention activities
Juffer 1997	Comparison between two intervention programmes rather than intervention and inactive alternative intervention
Juffer 2005	Intervention contained multiple sessions of non-video-feedback intervention activities
Kim 2005	Intervention contained multiple sessions of non-video-feedback intervention activities
Krupka 1995	Intervention contained multiple sessions of non-video-feedback intervention activities
Lambermon 1989	Intervention has no video-feedback component
Landry 2006	Intervention has no video-feedback component
Lindheim 2009	Intervention contained multiple sessions of non-video-feedback intervention activities
Magill-Evans 2007	Caregivers do not match this review's inclusion criteria (Criteria for considering studies for this review)
Mendelsohn 2005	Does not measure parental sensitivity, child attachment or reflective functioning outcomes
NCT03397719	Does not measure parental sensitivity, child attachment or reflective functioning outcomes
Sheese 2007	Intervention has no video-feedback component
Smith 2013	Intervention contained multiple sessions of non-video-feedback intervention activities

Study	Reason for exclusion
Solomon 2014	Video interaction sessions were part of a multi-component intervention
Spieker 2012	Video interaction sessions were part of a multi-component intervention
Sprang 2009	Video interaction sessions were part of a multi-component intervention
Svanberg 2010	Not an RCT or quasi-RCT
Van Balkom 2010	Comparison between 2 intervention programmes, rather than intervention and inactive alternative intervention
Van Doesum 2008	Video interaction sessions were part of a multi-component intervention
Weiner 1994	Not an RCT or quasi-RCT

RCT: randomised controlled trial

Characteristics of studies awaiting assessment *[ordered by study ID]*

Mendelsohn 2008

Methods	RCT
Participants	Families
Interventions	Video interaction
Outcomes	Not known
Notes	We believe this to be a report of Mendelsohn 2005, but the web link retrieved during searches is no longer active. We contacted the study author but did not receive a reply (Smith 2018a [pers comm]).

RCT: randomised controlled trial.

Characteristics of ongoing studies *[ordered by study ID]*

Euser 2016

Trial name or title	Efficacy of the video-feedback intervention to promote Positive Parenting and Sensitive Discipline in Twin families (VIPP-Twins)
Methods	Parallel-group RCT
Participants	**Inclusion criteria:** parents of twins of the same gender who are fluent in Dutch. Parents and grandparents of the twins must be born in Europe. **Exclusion criteria:** "Children with a congenital disability, psychological disorder, chronic illness, hereditary disease, or a visual or hearing impairment were excluded if the disorder will likely disable the child from performing the behavioral tasks or participating in the intervention. Also, children with a previously diagnosed intellectual disability (IQ < 70) were excluded from participation." (quote) **Country:** CBCL

Euser 2016 *(Continued)*

	Setting: the community
Interventions	**Intervention:** VIPP-Twins; adapted form of VIPP, consisting of five 2-weekly sessions with a female facilitator **Control:** 6 phone calls to parents where they are asked to talk about their children's development
Outcomes	**Timing of outcome assessment:** 1 month and 2 years postintervention **Outcome(s) of interest:** 1. Parental sensitivity
Starting date	20 July 2015
Contact information	**Email:** s.euser@fsw.leidenuniv.nl
Notes	**Trial registry number:** NTR5312 **Source(s) of funding:** Gravitation program of the Dutch Ministry of Education, Culture, and Science and The Netherlands Organization for Scientific Research (NWO grant number 024.001.003). Additional funding was provided by The Netherlands Organization for Scientific Research (MJBK: VICI Grant no. 453-09-003; MHvIJ: NWO Spinoza prize). **Conflict(s) of interest:** none stated

Firk 2015

Trial name or title	A mother-child intervention program in adolescent mothers and their children to improve maternal sensitivity, child responsiveness and child development (the TeeMo study): study protocol for a randomized controlled trial
Methods	Parallel-group RCT
Participants	**Inclusion criteria:** "Maternal criteria: 21 years old or younger at the beginning of pregnancy; Mother and child live together; Sufficient verbal and intellectual abilities to participate in a verbal training program; Caucasian; Written informed consent of the mother and, if <18 years old, of the caregiver of the mother. Child criteria: Between 3 and 6 months old; Written informed consent of the caregiver" (quote) **Exclusion criteria:** "Maternal criteria: Current substance abuse; Current suicidal ideation; Psychotic disorders; Separation from the child (>3 months)". Child criteria: Preterm birth (<36 weeks gestation); Serious medical problems; Genetic syndromes" (quote) **Country:** Germany **Setting:** community
Interventions	**Intervention:** "STEEP-b was designed to be relatively brief, completed in 12 to 18 sessions, and started when the children are between 3 and 6 months of age...Adolescent mothers are visited at home every 2 to 3 weeks by the same adviser for 9 months. Furthermore, an optional group meeting is offered every second month that mothers can attend. The exact number of sessions will depend on clinical appropriateness in the 9-month window." (quote) **Control:** treatment as usual
Outcomes	**Timing of outcome assessment:** postintervention and 6 months postintervention **Outcome(s) of interest:**

Firk 2015 *(Continued)*

1. Maternal sensitivity
2. Socioemotional development
3. Child attachment
4. Maternal stress and depression

Starting date	October 2012
Contact information	**Email:** rschwarte@ukaachen.de
Notes	**Trial registry number:** DRKS00004409 **Source(s) of funding:** German Ministry for Research and Education (BMBF) **Conflict(s) of interest:** none stated

ISRCTN92360616

Trial name or title	Preterm infant parent programme for attachment (PIPPA study)
Methods	Parallel-group RCT
Participants	**Inclusion criteria:** "Babies who are born at or less than 32 weeks in the National Maternity Hospital, Dublin and their parents, who are from the area which the hospital serves can take part." (quote) **Exclusion criteria:** "1. Known major congenital anomaly incompatible with life; 2. Parents' level of English will make completion of the semi-structured interview difficult; 3. Family does not live within the catchment area of National Maternity Hospital (NMH)." (quote) **Country:** Ireland **Setting:** hospital
Interventions	**Intervention:** PIPPA programme, offered as 3 sessions during an inpatient admission. The first 2 sessions explore the experience of preterm birth, then the baby's cues. The third session involves reviewing a 5-min video made during the previous session. **Control:** routine care
Outcomes	**Timing of outcome assessment:** 6 months postintervention, with the exception of 3 outcomes; social-emotional development, follow-up period not specified, and infant biomarkers and MRI, measured at 2 years postintervention **Outcome(s) of interest:** 1. Attachment (primary outcome) 2. Social-emotional development (secondary outcome) 3. Parental depression (secondary outcome) 4. Parental anxiety (secondary outcome) 5. Parental stress (secondary outcomes) 6. Infant development (secondary outcome) 7. Infant biomarkers (secondary outcome) 8. MRI (secondary outcome)
Starting date	Enrolment began May 2012

ISRCTN92360616 *(Continued)*

Contact information	**Email:** atwohig@nmh.ie
Notes	**Trial registry number:** ISRCTN92360616 **Source(s) of funding:** National Children's Research Centre, Ireland **Conflict(s) of interest:** none

NCT03052374

Trial name or title	Video-feedback interaction guidance for improving interactions between depressed mothers and their infants ("VID-KIDS")
Methods	Parallel-group RCT
Participants	**Inclusion criteria:** new mothers > 16 years of age with an Edinburgh Postnatal Depression score of > 12 **Exclusion criteria:** none **Country:** Canada **Setting:** home
Interventions	**Intervention:** video feedback tailored to mothers in this group; offered as 3 sessions in the home. Each session involves recording the mother-child interaction and reviewing the recording multiple times. **Control:** standard care
Outcomes	**Timing of outcome assessment:** measured at study completion **Outcome(s) of interest:** 1. Mother-child interaction (primary outcome)
Starting date	01 May 2017
Contact information	**Email:** andrea.deane@ahs.ca
Notes	**Trial registry number:** NCT03052374 **Source(s) of funding:** none stated **Conflict(s) of interest:** none

Schoemaker 2018

Trial name or title	The effectiveness of Video-feedback Intervention to promote Positive Parenting for Foster Care (VIPP-FC)
Methods	Parallel-group RCT
Participants	**Inclusion criteria:** "foster families with a foster child of 1 to 6 years of age" (quote)

Schoemaker 2018 *(Continued)*

	Exclusion criteria: "part time or short-term crisis placements...Children with severe physical disabilities, diagnosed intellectual disability (IQ < 70) and/or diagnosed autism spectrum disorder...Twins who were placed in the same foster family" (quote) **Country:** CBCL **Setting:** home
Interventions	**Intervention:** "The intervention consists of six home visits: The first four sessions are biweekly and there is an interval of approximately 3 weeks between sessions four and five and sessions five and six. During each home visit, the participating foster parent (primary caregiver) and child are filmed during daily situations for 10 to 30 min, such as playing, mealtime or reading a book together." (quote) **Control:** 6 dummy phone calls
Outcomes	**Timing of outcome assessment:** post-test and 3 months postintervention **Outcome(s) of interest:** 1. Parental sensitivity (primary outcome) 2. Parental discipline (primary outcome) 3. Parental attitudes to parental sensitivity and discipline (primary outcome) 4. Child behaviour and emotional problems (secondary outcome) 5. Child indiscriminate friendliness (secondary outcome) 6. Attachment (secondary outcome) 7. Indiscriminate friendliness (secondary outcome) 8. Cortisol (secondary outcome) 9. Oxytocin (secondary outcome) 10. Salivary alpha amylase (secondary outcome)
Starting date	01 August 2013
Contact information	**Email:** alinklra@fsw.leidenuniv.nl
Notes	**Trial registry number:** NTR3899 **Source(s) of funding:** Stichting Kinderpostzegels Nederland; The Netherlands Organization for Scientific Research (Vidi grant: 016.145.360 Meerwaarde grant: 475–11-002) **Conflict(s) of interest:** none

CBCL: Child Behaviour Checklist; **IQ:** Intelligence quotient; **MRI:** magnetic resonance imaging**; NWO:** Netherlands Organisation for Scientific Research; **PIPPA:** Preterm Infant Parent Programme for Attachment; **RCT:** randomised controlled trial; **STEEP-b:** Steps Towards Effective and Enjoyable Parenting - b; **VIPP:** Video-feedback Intervention to promote Positive Parenting.

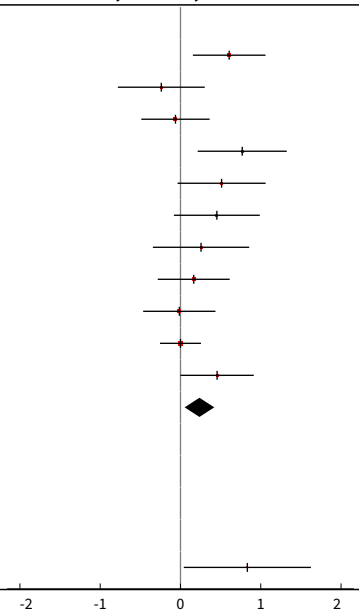
DATA AND ANALYSES

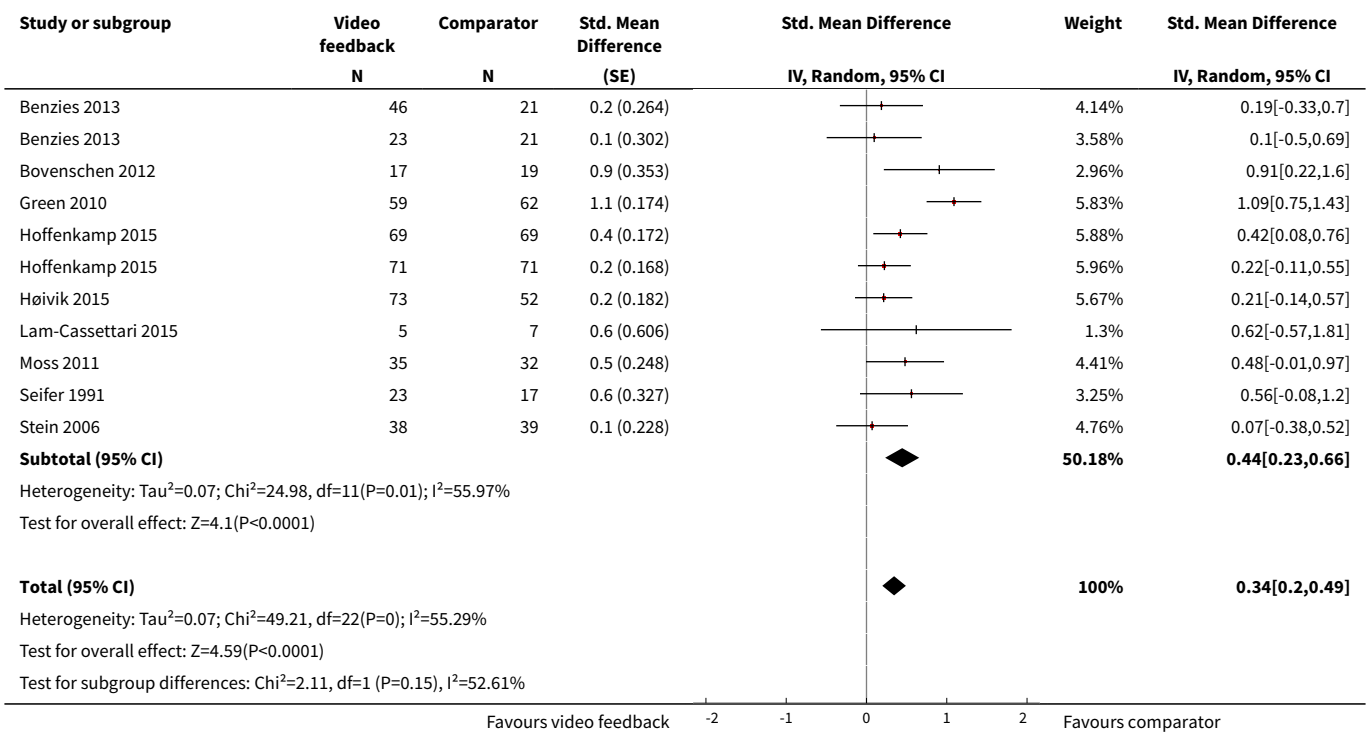
Comparison 1. Video feedback versus no intervention or inactive comparator

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Parental sensitivity (postintervention - 6 months)	20	1757	Std. Mean Difference (Random, 95% CI)	0.34 [0.20, 0.49]
1.1 VIPP	10	861	Std. Mean Difference (Random, 95% CI)	0.24 [0.05, 0.42]
1.2 Other types of video feedback	10	896	Std. Mean Difference (Random, 95% CI)	0.44 [0.23, 0.66]
2 Attachment security, measured by Strange Situation Procedure (odds of being securely attached) (postintervention)	2	166	Odds Ratio (M-H, Random, 95% CI)	3.04 [1.39, 6.67]
3 Attachment security, measured by Attachment Q-sort (any duration of follow-up)	2	131	Std. Mean Difference (IV, Random, 95% CI)	0.02 [-0.33, 0.38]
4 Adverse events: parental stress (postintervention or short-term follow-up)	8	537	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.26, 0.09]
5 Adverse events: parental anxiety (short-term follow-up)	2	311	Std. Mean Difference (IV, Random, 95% CI)	-0.28 [-0.87, 0.31]
6 Child behaviour (long-term follow-up)	2	119	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.33, 0.42]

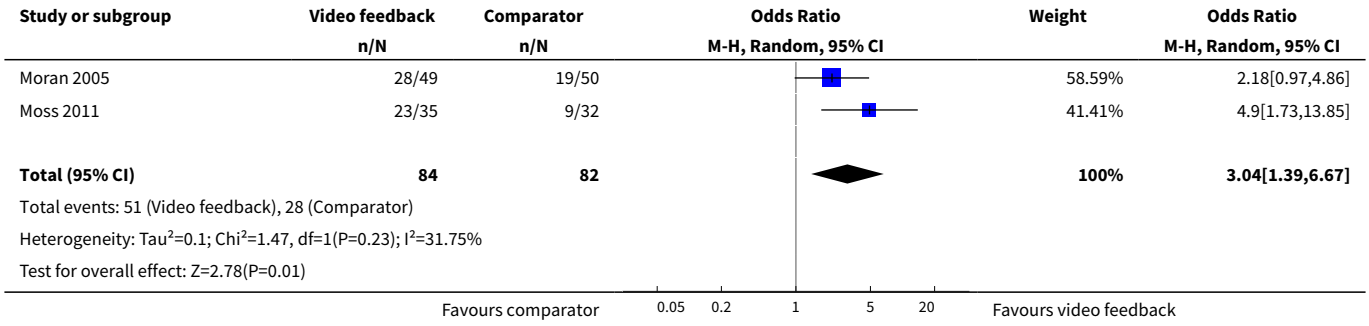
Analysis 1.1. Comparison 1 Video feedback versus no intervention or inactive comparator, Outcome 1 Parental sensitivity (postintervention - 6 months).

Study or subgroup	Video feedback N	Comparator N	Std. Mean Difference (SE)	Std. Mean Difference IV, Random, 95% CI	Weight	Std. Mean Difference IV, Random, 95% CI
1.1.1 VIPP						
Barone 2019	42	37	0.6 (0.231)		4.71%	0.61[0.15,1.06]
Green 2015	27	26	-0.2 (0.276)		3.95%	-0.24[-0.78,0.3]
Hodes 2017	43	42	-0.1 (0.217)		4.97%	-0.06[-0.49,0.36]
Kalinauskiene 2009	26	28	0.8 (0.283)		3.85%	0.77[0.21,1.32]
Klein Velderman 2006	26	13	0.5 (0.28)		3.89%	0.51[-0.04,1.06]
Klein Velderman 2006	28	14	0.5 (0.273)		4%	0.45[-0.08,0.99]
Negrão 2014	22	21	0.3 (0.306)		3.52%	0.26[-0.34,0.86]
Platje 2018	37	40	0.2 (0.229)		4.75%	0.16[-0.28,0.61]
Poslawsky 2015	40	36	-0 (0.23)		4.73%	-0.01[-0.46,0.44]
Van Zeijl 2006	120	117	0 (0.13)		6.77%	0[-0.25,0.25]
Yagmur 2014	36	40	0.5 (0.233)		4.67%	0.46[-0,0.91]
Subtotal (95% CI)					**49.82%**	**0.24[0.05,0.42]**
Heterogeneity: Tau^2=0.04; Chi^2=17.74, df=10(P=0.06); I^2=43.64%						
Test for overall effect: Z=2.51(P=0.01)						
1.1.2 Other types of video feedback						
Barlow 2016	14	13	0.8 (0.404)		2.45%	0.83[0.04,1.62]

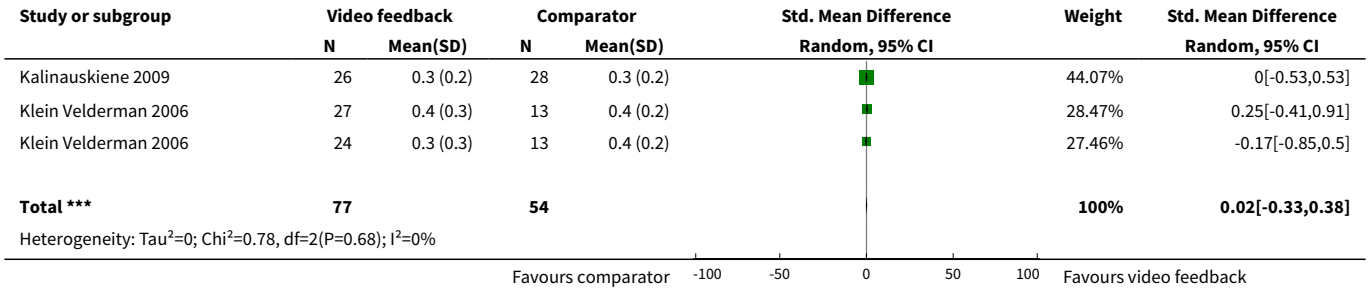




Analysis 1.2. Comparison 1 Video feedback versus no intervention or inactive comparator, Outcome 2 Attachment security, measured by Strange Situation Procedure (odds of being securely attached) (postintervention).



Analysis 1.3. Comparison 1 Video feedback versus no intervention or inactive comparator, Outcome 3 Attachment security, measured by Attachment Q-sort (any duration of follow-up).

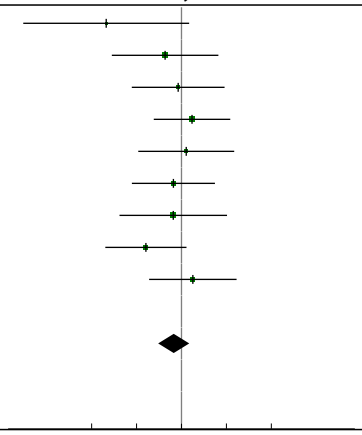


Study or subgroup	Video feedback N	Mean(SD)	Comparator N	Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
Test for overall effect: Z=0.13(P=0.9)							

Favours comparator — Favours video feedback

Analysis 1.4. Comparison 1 Video feedback versus no intervention or inactive comparator, Outcome 4 Adverse events: parental stress (postintervention or short-term follow-up).

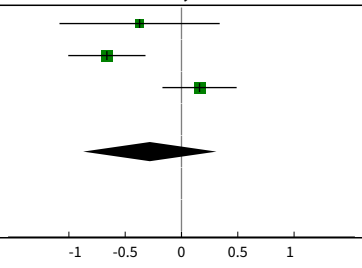
Study or subgroup	Video feedback N	Mean(SD)	Comparator N	Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
Barlow 2016	10	41.7 (5.2)	10	48.5 (9.7)		3.51%	-0.84[-1.76,0.09]
Benzies 2013	23	103.5 (18.4)	21	107.1 (20.5)		8.52%	-0.18[-0.78,0.41]
Benzies 2013	46	106.5 (15.5)	21	107.1 (20.5)		11.24%	-0.04[-0.55,0.48]
Hodes 2017	43	72 (23.1)	42	69.3 (22.4)		16.53%	0.12[-0.31,0.54]
Kalinauskiene 2009	26	50.5 (9.8)	28	49.9 (10.3)		10.5%	0.05[-0.48,0.59]
Klein Velderman 2006	54	1.1 (1.5)	27	1.2 (1.3)		14.02%	-0.09[-0.55,0.37]
Negrão 2014	21	5.9 (6.1)	22	6.4 (4)		8.36%	-0.09[-0.69,0.51]
Platje 2018	37	2.3 (0.8)	40	2.6 (0.8)		14.68%	-0.4[-0.85,0.06]
Poslawsky 2015	37	24.8 (12.3)	29	23.2 (11.7)		12.64%	0.13[-0.36,0.61]
Total ***	**297**		**240**			**100%**	**-0.09[-0.26,0.09]**
Heterogeneity: Tau^2=0; Chi^2=6.36, df=8(P=0.61); I^2=0%							
Test for overall effect: Z=0.98(P=0.33)							



Favours video feedback — Favours comparator

Analysis 1.5. Comparison 1 Video feedback versus no intervention or inactive comparator, Outcome 5 Adverse events: parental anxiety (short-term follow-up).

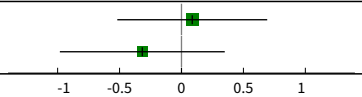
Study or subgroup	Video feedback N	Mean(SD)	Comparator N	Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
Barlow 2016	16	5.4 (3.9)	15	6.7 (3.1)		26.13%	-0.37[-1.08,0.34]
Hoffenkamp 2015	69	31.4 (1.2)	69	32.2 (1.2)		36.76%	-0.66[-1.01,-0.32]
Hoffenkamp 2015	71	32 (1.2)	71	31.8 (1.3)		37.11%	0.16[-0.17,0.49]
Total ***	**156**		**155**			**100%**	**-0.28[-0.87,0.31]**
Heterogeneity: Tau^2=0.22; Chi^2=11.63, df=2(P=0); I^2=82.81%							
Test for overall effect: Z=0.93(P=0.35)							



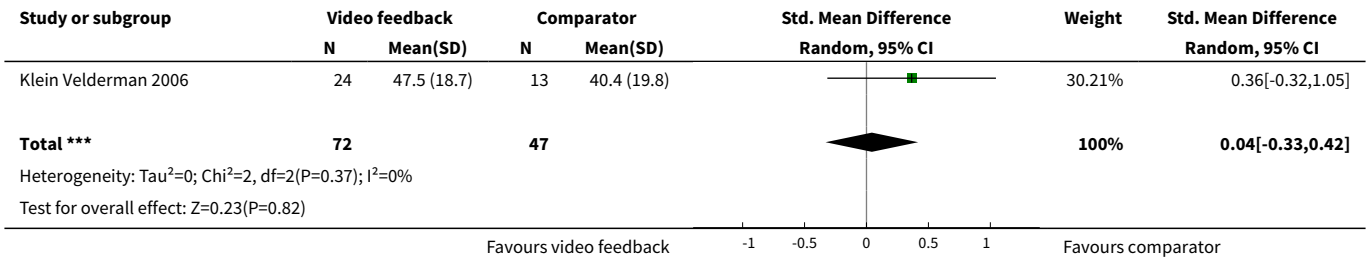
Favours video feedback — Favours comparator

Analysis 1.6. Comparison 1 Video feedback versus no intervention or inactive comparator, Outcome 6 Child behaviour (long-term follow-up).

Study or subgroup	Video feedback N	Mean(SD)	Comparator N	Mean(SD)	Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
Kalinauskiene 2009	21	50.9 (18)	21	49.3 (17.5)		38.21%	0.09[-0.52,0.69]
Klein Velderman 2006	27	35.1 (14.5)	13	40.4 (19.8)		31.58%	-0.32[-0.98,0.35]



Favours video feedback — Favours comparator



ADDITIONAL TABLES

Table 1. Methods for use in future updates of this review

Issue	Method
Searching other resources	We will draft a list of included studies to send to experts in the field and ask them to forward to us any published, unpublished or ongoing work that we may have missed.
Measures of treatment effect	**Continuous outcome data** If necessary, we will compute effect estimates from P values, T statistics, analysis of variance (ANOVA) tables or other statistics, as appropriate.
Measures of treatment effect	**Multiple outcomes** When a study provides multiple, interchangeable measures of the same construct at the same point in time (e.g. multiple measures of maternal sensitivity), we will calculate the average SMD across these outcomes and the average of their estimated variances. This strategy aims to avoid the need to select a single measure and to avoid inflated precision in meta-analyses (i.e. preventing studies that report on more outcome measures receiving more weight in the analysis than comparable studies that report on a single outcome measure).
Unit of analysis issue	**Cluster-RCTs** In the event that we identify relevant cluster-RCTs that meet the inclusion criteria of the review, we will deploy appropriate statistical methods based on the guidance provided in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). Where study authors have dealt appropriately with the clustered design in their analyses, we will try to obtain direct estimates of the effect (e.g. an OR with its CI). Where study authors have not dealt appropriately with the cluster design in their analyses, we will extract or calculate effect estimates and their SEs as for a parallel-group trial, and adjust the SEs to account for the clustering (Donner 1980). To do this, we will need to identify an appropriate ICC, which describes the relative variability in outcome within and between clusters (Donner 1980). Where available, we will look for this information in the reports of relevant trials. If this is unavailable, we will try to obtain the information from the study authors. If this proves unsuccessful, we will use external estimates obtained from similar studies. We will find closest-matching scenarios (regarding both outcome measures and types of clusters) from existing databases of ICCs. If we are unable to identify any matches, we will perform sensitivity analyses using a high ICC of 0.1, a moderate ICC of 0.01 and a small ICC or 0.001, to cover a broader range of plausible values while still allowing for strong design effects for smaller studies (see Sensitivity analysis). Furthermore, we will combine these estimates and their corrected SEs from the cluster-RCTs with those from parallel designs using the generic inverse variance method in Review Manager 5 (Review Manager 2014).
Dealing with missing data	**Data imputation** Where it has not been possible to obtain any unreported data from authors of included studies, and there is reason to believe that it is not missing at random, we will follow the recommendations

Table 1. Methods for use in future updates of this review *(Continued)*

	in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011, Section16.1), and we will do the following: 1. Where appropriate, develop a strategy for data imputation (if we assume the data to be not missing at random). In the case of data imputation, we will specify the methods used in the 'Characteristics of included studies' tables. We will describe other missing data and dropouts/attrition for each included study in the 'Risk of bias' tables, and we will discuss the extent to which these missing data could alter the results or conclusions of the review.
	Meta-regression We will assess the sensitivity of any primary meta-analyses to missing data using meta-regression to test for any effect of missingness on the summary estimates (Higgins 2011, Section 16.1.2).
Data synthesis	In the occurrence of severe funnel plot asymmetry, we will present both fixed-effect and random-effects analyses under the assumption that asymmetry suggests that neither model is appropriate. If both indicate a presence (or absence) of effect we will be reassured; if they do not agree we will report this.
Subgroup analyses	We will investigate heterogeneity using subgroup analyses or meta-regression, if appropriate. We will group the included studies and analyse them according to the intervention approach, including the following. 1. Delivery method (i.e. group-based versus individual delivery) 2. Participating child (e.g. pre-birth or highly temperamental babies)
Sensitivity analysis	We will assess the robustness of findings to decisions made in obtaining them by conducting sensitivity analyses. We will perform sensitivity analyses by conducting the following reanalysis. 1. Reanalysis excluding studies with imputed data

CI: confidence interval; **ICC:** intra-class correlation coefficient; **OR:** odds ratio; **RCT:** randomised controlled trial; **SD:** standard deviation; **SMD:** standardised mean difference; **VIG:** Video Interaction Guidance**; VIPP-R:** Video-feedback to promote Positive Parenting - Representational level**; VIPP-SD:** Video-feedback to promote Positive Parenting - Sensitive Discipline

Table 2. Summary of contact with study authors

Study	Date contact initiated	Reason for contacting study authors	Response received
Barone 2019	9 July 2019 (Smith 2019a [pers comm])	The study data for maternal sensitivity were reported in the published paper as part of a composite measure. We requested maternal sensitivity subscore. We also requested study data for overall child behaviour, as the published report only contained externalising behaviour.	The study author provided the maternal sensitivity and child behaviour data for inclusion in the meta-analysis (Barone 2019 [pers comm]). They excluded children aged 5 years and over from the data sent over, as the original study did include these children.
Bovenschen 2012	12 January 2018 (Smith 2018b [pers comm])	The reported data were not labelled sufficiently clearly in the published paper to be used in the meta-analysis. We requested clarification from the study authors.	The study author provided the necessary, additional study data, so they could be included in meta-analysis (Bovenschen 2019 [pers comm]).
Hodes 2017	2 June 2017 (Smith 2017a [pers comm])	We requested study data relating to parental stress outcomes, reanalysed for children within included age range.	We received no response. As a result, we did not subsequently request the study data on Harmonious Parent-Child Interaction to be analysed for children within included age range.

Table 2. Summary of contact with study authors *(Continued)*

Hoffenkamp 2015	16 January 2017 (O'Hara 2017a [pers comm])	We requested missing study data relating to parental sensitivity outcomes.	The study author provided the missing data so they could be included in the meta-analysis (Van Bakel 2017 [pers comm]).
Høivik 2015	8 February 2018 (Smith 2018c [pers comm])	The study data for maternal sensitivity were reported in the published paper as part of a composite measure. We requested maternal sensitivity subscore.	The study author provided maternal sensitivity data for inclusion in the meta-analysis (Hoivik 2018 [pers comm]).
Klein Velderman 2006	21 February 2018 (Smith 2018g [pers comm])	The outcomes data for maternal stress were not included in published studies.	The corresponding author provided us with the missing data for the purposes of meta-analysis (Bakermans-Kranenburg 2018 [pers comm]).
Koniak-Griffin 1992	8 February 2018 (Smith 2018d [pers comm])	The study data for maternal sensitivity were reported in the published paper as part of a composite measure. We requested maternal sensitivity subscore.	We received no response.
Lam-Cassettari 2015	2 June 2017 (Smith 2017b [pers comm])	The published study data for maternal sensitivity outcomes included children aged 5 years and over. We requested outcomes data with those children excluded.	The study author provided the data with those children aged 5 years and over excluded (Lam-Cassettari 2018 [pers comm]).
Mendelsohn 2008	1 February 2018 (Smith 2018i [pers comm]	We requested a copy of the conference abstract.	We received no response.
Moran 2005	3 June 2017 (O'Hara 2017b [pers comm])	The maternal sensitivity outcomes were reported as means without standard deviations or standard errors. We requested these data so they could be used in the meta-analysis.	The corresponding author no longer had access to the data due to retirement, so could not provide the information (Moran 2017 [pers comm]).
Moss 2011	12 January 2018 Smith 2018h [pers comm]	The published study data for maternal sensitivity outcomes included children aged 5 years and over, We requested outcomes data with those children excluded.	We received an initial response from the study authors but they did not subsequently provide the data (Dubois-Comtois 2018 [pers comm]).
Negrão 2014	12 January 2018 (Smith 2018e [pers comm])	The maternal stress outcomes data were not reported in the published paper, so we requested this information for the purposes of the meta-analysis.	The study author provided these data for the purposes of meta-analysis (Pereira 2018 [pers comm]).
Poslawsky 2015	12 January 2018 (Smith 2018f [pers comm])	The reported outcomes included children aged 5 years or older. We requested outcomes data with those children excluded. We also requested means and standard deviations for the relevant 3-month follow-up outcome (daily hassles).	The corresponding author was unable to provide the requested data (Poswlawsky 2018 [pers comm]).
Seifer 1991	22 July 2019 (Smith 2019b [pers comm])	We requested outcomes data for mental and psychomotor development	We received no response.

Table 2. Summary of contact with study authors *(Continued)*

Stein 2006	22 May 2018 (Barlow 2018 [pers comm])	The outcomes data for 'Verbal responses to infant cues' were reported as medians, so we requested the means and standard deviations.	The study authors provided us with these data for the purposes of meta-analysis (Stein 2018 [pers comm]).

Table 3. Type of video-feedback intervention

Study	Aim	Content/delivery
Video-feedback Intervention to promote Positive Parenting (VIPP; Juffer 2008)		
Green 2015	To test the effect of a parent-mediated intervention for children at high risk of autism spectrum disorder	Video Interaction for promoting Positive Parenting (iBASIS-VIPP), a modification for the autism prodome of the VIPP infancy programme. The intervention consisted of 12 sessions (an additional 6 booster sessions compared with VIPP).The intervention uses video feedback "to help parents understand and adapt to their infants' individual communication style to promote optimal social and communicative development" (quote). The study authors describe that "The therapist uses excerpts of parent-child interactions in a series of developmentally sequenced home-sessions focusing on interpreting the infant's behaviour and recognising their intentions; enhancing sensitive responding; emotional attunement and patterns of verbal and non-verbal interaction." (quote)
Hodes 2017	To test if a video-feedback intervention to promote positive parenting and sensitive discipline reduces child-related parental stress in parents with mild learning disabilities in comparison with care as usual	A Video-feedback Intervention for Positive Parenting and Learning Difficulties (VIPP-LD) where the original protocol of VIPP-SD (Juffer 2008) was adapted for mild intellectual disabilities. For VIPP-LD, in each session, the parent is videoed interacting with their child. The coach and parent review the footage together, drawing attention to instances of sensitive responsiveness and sensitive discipline, and the coach helps the parent look at the child from the child's perspective. The adaptation included shortening of each session, shorter video recordings and more real-life practice. The study authors describe how "Parents also received a personal scrapbook with skills taken from video recordings and quotes from the parents representing the theme of the session." (quote)
Kalinauskiene 2009	To evaluate the effectiveness of a short-term, interaction-focused video-feedback intervention implemented in families with mothers rated low in maternal responsiveness	A Video-feedback Intervention to promote Positive Parenting (VIPP). The intervention was applied as per protocol with the main goal "to reinforce mothers' sensitive responsiveness to their infants' signals focusing on different aspects of mother-infant interactions" (quote). Mothers were also "provided with information on attachment-related issues by giving them brochures about sensitive parenting." (quote)
Klein Velderman 2006	To explore if a combination of attention to parental sensitivity and parental attachment representations might lead to firmer and more enduring changes in both parenting behaviour and children's attachment security	A Video-feedback Intervention to promote Positive Parenting (VIPP). VIPP programs consisted of four home visits lasting 1.5 hours each, with 3-4 weeks in between. Each session was focused around a specific theme. VIPP-R included additional discussions on parental representations.
Negrão 2014	To test the effectiveness of a video-feedback intervention to promote positive parenting and sensitive discipline in a sample of poor Portuguese	A sensitive discipline video-feedback intervention to promote positive parenting (VIPP-SD). The study authors state that "VIPP-SD is a short term intervention programme that relies on video-feedback technique to enhance parental sensitivity and positive discipline strategies. The intervention was applied through standardised protocols of six home visits...The VIPP-SD working method is divided into three steps: (1) Sessions 1 and 2 main goals are building

Table 3. Type of video-feedback intervention *(Continued)*

	mothers and their 1-4-year old children	a relationship with the mother, focusing on child behaviour and emphasizing positive interactions in the video feedback; (2) Sessions 3 and 4 actively work on improving parenting behaviours by showing the mother when her parenting strategies work and to what other situations she could apply these strategies; and (3) Sessions 5 and 6 (booster) aim to review feedback and information from the previous sessions in order to strengthen intervention effectiveness." (quote)
Platje 2018	To evaluate a video-feedback intervention aimed at improving parent-child interaction for parents of children with a visual or visual and intellectual disability	A Video-feedback Intervention to promote Positive Parenting adapted to parents of children with a visual or visual and intellectual disability (VIPP-V). The study authors state that the intervention was based on VIPP, but "this new intervention [is] applicable for use in families with a young child with a visual or visual-and-intellectual disability. Particular attention was devoted to increasing (safe) exploration, joint attention, and parent's abilities to recognize and understand the signals and emotions of their child" (quote). The intervention consists of 7 home visits (5 primary visits plus 2 booster sessions).
Poslawsky 2015	To evaluate the early intervention programme, video-feedback intervention to promote positive parenting adapted to autism, with primary caregivers and their child with autism spectrum disorder	VIPP adapted to autism (VIPP-AUTI). The intervention comprised 5 home visits lasting 60-90 minutes every 2 weeks. Sessions included: (1) "Attachment and Exploration" (quote); (2) "Speaking for the Child" (quote); (3) "Sensitivity Chain" (quote); (4) "Sharing Emotions" (quote); (5) "Booster session" (quote).
Van Zeijl 2006	To test the video-feedback intervention to promote positive parenting and sensitive discipline in "a large sample of families screened for their children's relatively high scores on externalizing behaviour." (quote)	The study applied VIPP-SD, aimed at parental sensitivity and sensitive parental discipline. The first four intervention sessions each had their own themes, (1) "exploration versus attachment" (quote); (2) "centered around speaking for the child" (quote); (3) "the intervener stressed the importance of adequate and prompt responses to the child's signals" (quote); (4) "the importance of sharing—both positive and negative—emotions (sensitivity) and promoting empathy for the child" (quote); (5 & 6) "aimed at consolidating intervention effects by integrating—in video feed-back and discussion—all tips and feedback given in the previous sessions" (quote).
Yagmur 2014	"To test the effectiveness of the video feedback intervention to promote positive parenting and sensitive discipline adapted to the specific child-rearing context of Turkish families (VIPP-TM) in the Netherlands" (quote), including second-generation Turkish immigrant families with toddlers at risk for the development of externalising problems	"The VIPP-TM program is a culturally sensitive adaptation of the VIPP-SD program for Turkish minority families in the Netherlands, but follows the general procedures of the original program...The VIPP-SD program is described in a detailed protocol and consists of six home visits. The first four visits each have their own themes regarding sensitivity and discipline, and the last two sessions are booster sessions in which the themes from previous sessions are reviewed once more." (quote)
Video Interaction Guidance (VIG)		
Barlow 2016	"To assess the potential of video interaction guidance to increase sensitivity in parents of preterm infants." (quote)	The study authors report that "VIG is a strengths-based form of video feedback in which parents are invited to jointly observe and reflect on their own successful interactions with their baby...The core aspects of the model involve three home visits comprising (a) video recording the parent-infant interaction during play or other aspects of care giving, (b) editing of the recording to select micro-moments of interaction that demonstrate the infant's contact initiatives

Table 3. Type of video-feedback intervention *(Continued)*

		and the parents attuned response to these signals and (c) joint reviewing of the recordings with the parent." (quote)
Hoffenkamp 2015	To evaluate the effectiveness of hospital-based video interaction guidance in parents with moderately and very preterm babies	"Video recordings of parent-infant interactions and the feedback from a VIG professional provide an opportunity for parents to observe, analyse and discuss the infant's behaviour and contact initiatives" (quote). In this study "VIG consisted of three sessions during the first week after birth" (quote), and included "(1) video-recording parent-infant interaction; (2) editing the video recordings; (3) reviewing the edited recordings with parents." (quote)
Lam-Cassettari 2015	To examine "the effect of a family-focused psychosocial video intervention program on parent-child communication in the context of childhood hearing loss" (quote)	Parents completed three sessions: "(a) a goal setting session; (b) three filming sessions of parent–child interaction in the family home, and (c) three shared review sessions in which three short video clips (demonstrating attuned responses linked to the family's goal) were played so families could microanalyze and discuss." (quote)
Video feedback of Infant-Parent Interaction (VIPI)		
Høivik 2015	To investigate "in a heterogenic community sample of families with interactional problems, whether VIPI would be more effective than standard care (TAU) received in the community" (quote)	VIPI involves at least 6 consultation sessions over a maximum period of 3 months focusing on (1) "Initiative of the infants to contact caregivers and initiate pauses in the dyadic exchange" (quote); (2) "Responses of caregivers" (quote); (3) "Following the child" (quote); (4) "Naming" (quote); (5) "Step-by-step guidance" (quote); (6) "Directing attention towards social interaction and exploration" (quote). In this study, "families in the VIPI group received eight video feedback sessions, with the last two sessions tailored to meet the individual family needs regarding any of the six topics in the manual" (quote).
Video self-modelling with feedback		
Benzies 2013	To explore if fathers of late, preterm children who received video self-modelling with feedback intervention would have better father-child interaction skills when the child was 8 months old than fathers who received information only	Self-modelling "involves the father's active participation that increases his cognitive awareness of specific behaviours such as infant cues and how to stimulate development" (quote). The intervention involved video recording a father-infant play interaction and providing positive feedback and suggestions to enhance the interaction and language development.
Video feedback (non-specified or other)		
Bovenschen 2012	To assess "the effectiveness of an attachment-based short term intervention using video-feedback" (quote)	Up to 10 sessions of home-based video feedback
Green 2010	To test a parent-child communication-focused intervention in children with core autism	A parent-mediated communication-focused intervention: "The intervention consisted of one-to-one clinic sessions between therapist and parent with the child present. The aim of the intervention was first to increase parental sensitivity and responsiveness to child communication and reduce mistimed parental responses by working with the parent and using video-feedback methods to address parent-child interaction... incremental development of the child's communication was helped by the promotion of a range of strategies such as action routines, familiar repetitive language and pauses...After an initial orientation meeting, families attended biweekly 2 hour clinic sessions for 6 months followed by booster sessions for 6 months (total 18). Between sessions families were also asked to do 30 mins of daily home practice." (quote)

Table 3. Type of video-feedback intervention *(Continued)*

Koniak-Griffin 1992	To evaluate "the effects of video tape instruction and feedback (video-therapy) on mothering behaviours" (quote)	The intervention group received two home visits. Participants were "video taped during structured mother-infant teaching episodes in their homes at 1 and 2 months postpartum" (quote). Participants "reviewed the video tapes with feedback from a professionally trained nurse who emphasised positive aspects of maternal behaviour" (quote)
Moran 2005	To evaluate "the effectiveness of a brief intervention program designed to support adolescent mothers' sensitivity to their infants attachment signals" (quote)	A brief intervention programme (eight home visits) designed to support the mother's sensitivity to her child. The home visits (lasting approximately one hour) were "designed to provide mutually beneficial play interactions and the mother's enjoyment of her infant" (quote). The four goals of the programme included "to affirm parenting strengths already present in the mother...increase the mother's awareness of how her behaviour influenced her child's behaviour...look for ways to augment the mother's awareness of her infant's signals and for ways to establish positive experiences for both the mother and infant" (quote).
Moss 2011	To evaluate the "efficacy of a short-term attachment-based intervention for changing risk outcomes for children of maltreating families" (quote)	The intervention consisted of "8 weekly home visits directed at the caregiver–child dyad and focused on improving caregiver sensitivity" (quote). The study authors describe that "All intervention sessions were primarily focused on reinforcing parental sensitive behavior by means of personalized parent–child interaction, video feedback, and discussion of attachment/emotion regulation-related themes" (quote).
Seifer 1991	To examine the effects of easy-to-use interaction coaching techniques on interaction style and developmental status of a population of mothers and their young children with developmental disabilities	"Interaction coaching" (quote; 10-month programme). "Sessions lasted six minutes and parents were asked to play with their children as they would during a short break at home...After the initial taping session the video record was viewed by the mother and an interaction coach. Suggestions were then provided by the therapist for the mother to employ during interaction with her child...Another 6 minute interaction was then recorded that was reviewed by the intervener and could be used during the next week's session. The procedure was repeated for a maximum of 6 sessions." (quote)
Stein 2006	To test "whether video-feedback treatment especially targeting mother-child interaction would be superior to counselling in improving mother-child interaction, especially mealtime conflict and infant weight and autonomy" (quote)	"Thirteen 1-hour treatment sessions were offered in the mothers' homes beginning when the infants were between 4 and 6 months old and completed by the time the infants were 12 months old. The intervention group received video-feedback interactional treatment that was a modification of that developed by [Juffer et al]" (quote). Treatment consisted of three stages: "The first concentrated on the infant's perspective, focusing on his or her signals...The second stage included the mother's perspective...Third, as treatment progressed, the videotapes were used to help the mother identify and address potential triggers of mealtime conflict" (quote).

IBASIS-VIPP: Intervention within the British Autsim Study of Infant Siblings - Video-feedback Interaction to promote Positive Parenting; **Mins:** Minutes; **TAU:** Treatment as usual; **VIG:** Video Interaction Guidance**; VIPI:** Video-feedback of Infant-Parent Interaction; **VIPP:** Video-feedback Interaction to promote Positive Parenting; **VIPP-AUTI:** Video-feedback Interaction to promote Positive Parenting - Autism;**VIPP-LD:** Video-feedback Interaction to promote Positive Parenting - Learning Difficulties; **VIPP-R:** Video-feedback Interaction to promote Positive Parenting - Representational level**; VIPP-SD:** Video-feedback Interaction to promote Positive Parenting - Sensitive Discipline**; VIPP-TM:** Video-feedback Interaction to promote Positive Parenting - Turkish Minorities; **VIPP-V:** Video-feedback Interaction to promote Positive Parenting - Visual or visual and intellectual disability.

APPENDICES

Appendix 1. Search strategies

Cochrane Central Register of Controlled Studies, in the Cochrane Library

Search dates: 6 September 2016 (523 records); 10 November 2018 (945 additional records)

#1 [mh "Video recording"]
#2 VIG
#3 video*
#4 VIPP
#5 VHT
#6 "INTERACTION GUIDANCE"
#7 {or #1-#6}
#8 MeSH descriptor: [Parent-Child Relations] 1 tree(s) exploded
#9 [mh Parenting]
#10 [mh "paternal behavior"]
#11 [mh "maternal behavior"]
#12 [mh "object attachment"]
#13 [mh "reactive attachment disorder"]
#14 Insecure near/3 attachment*
#15 secure near/3 attachment*
#16 attachment near/3 disorder*
#17 parent* near/3 sensitiv*
#18 ((mother* or maternal*) near/3 sensitiv*)
#19 ((father* or paternal*) near/3 sensitiv*)
#20 parent near/3 competenc*
#21 ((mother* or maternal) near/3 competenc*)
#22 ((father* or paternal) near/3 competenc*)
#23 parent near/3 responsiv*
#24 parent near/3 positive*
#25 ((mother* or maternal) near/3 responsiv*)
#26 ((father* or paternal) near/3 responsiv*)
#27 disorgani*ed near/3 attachment*
#28 (parent* near/3 (interaction or inter next action*))
#29 ((mother* or maternal) near/3 (interaction or inter next action*))
#30 ((father* or paternal) near/3 (interaction or inter next action*))
#31 ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near/3 (attachment* or bond* or relationship* or dyad* or triad*))
#32 (parent* near/3 (intervention* or skill* or train* or educat* or program*))
#33 [mh Caregivers]
#34 (carer* or care next giver* or caregiver*)
#35 {or #8-#34}
#36#7 and #35 in Trials

MEDLINE Ovid

Search dates: 1 August 2016 (793 records); 10 November 2018 (304 additional records)

1 exp Video Recording/
2 VIG.tw.
3 video$.tw.
4 VIPP$.tw.
5 VHT.tw.
6 interaction guidance.tw.
7 or/1-6
8 exp Parent-Child Relations/
9 Parenting/
10 Paternal Behavior/
11 maternal behavior/
12 Object Attachment/
13 Reactive Attachment Disorder/
14 (insecure adj3 attachment$).tw.
15 (secure adj3 attachment$).tw.
16 (attachment adj3 disorder$).tw.
17 (parent$ adj3 sensitiv$).tw.
18 ((mother$ or maternal$) adj3 sensitiv$).tw.
19 ((father$ or paternal$) adj3 sensitiv$).tw.
20 (parent$ adj3 competenc$).tw.
21 ((mother$ or maternal$) adj3 competenc$).tw.

22 ((father$ or paternal$) adj3 competenc$).tw.
23 (parent$ adj3 responsiv$).tw.
24 (parent$ adj3 positive).tw.
25 ((mother$ or maternal$) adj3 responsiv$).tw.
26 ((father$ or paternal$) adj3 responsiv$).tw.
27 (disorgani#ed adj3 attachment$).tw.
28 (parent$ adj3 (inter-action$ or interaction$)).tw.
29 ((mother$ or maternal$) adj3 (interaction or inter-action$)).tw.
30 ((father$ or paternal$) adj3 (interaction or inter-action$)).tw.
31 ((parent$ or mother$ or maternal$ or father$ or paternal$ or infant$ or child$) adj3 (attachment$ or bond$ or relationship$ or dyad $ or triad$)).tw.
32 (parent$ adj3 (intervention$ or skill$ or train$ or educat$ or program$)).tw.
33 Caregivers/
34 (carer$ or caregiver$ or care giver$).tw.
35 or/8-34
36 randomized controlled trial.pt.
37 controlled clinical trial.pt.
38 randomi#ed.ab.
39 placebo$.ab.
40 drug therapy.fs.
41 randomly.ab.
42 trial.ab.
43 groups.ab.
44 or/36-43
45 exp animals/ not humans.sh.
46 44 not 45
47 7 and 35 and 46

Embase Ovid

Search dates: 11 August 2016 (809 records); 10 November 2018 (272 additional records)

1 videorecording/
2 VIG.tw.
3 video$.tw.
4 VHT.tw.
5 VIPP$.tw.
6 interaction guidance.tw.
7 or/1-6
8 exp child parent relation/
9 parenting.tw.
10 paternal behavior/
11 maternal behavior/
12 object relation/
13 psychosocial disorder/
14 (insecure adj3 attachment$).tw.
15 (secure adj3 attachment$).tw.
16 (attachment adj3 disorder$).tw.
17 (parent$ adj3 sensitiv$).tw.
18 ((mother$ or maternal$) adj3 sensitiv$).tw.
19 ((father$ or paternal$) adj3 sensitiv$).tw.
20 (parent$ adj3 competenc$).tw.
21 ((mother$ or maternal$) adj3 competenc$).tw.
22 ((father$ or paternal$) adj3 competenc$).tw.
23 (parent$ adj3 responsiv$).tw.
24 (parent$ adj3 positive).tw.
25 ((mother$ or maternal$) adj3 responsiv$).tw.
26 ((father$ or paternal$) adj3 responsiv$).tw.
27 (disorgani#ed adj3 attachment$).tw.
28 (parent$ adj3 (inter-action$ or interaction$)).tw.
29 ((mother$ or maternal$) adj3 (interaction or inter-action$)).tw.
30 ((father$ or paternal$) adj3 (interaction or inter-action$)).tw.

31 ((parent$ or mother$ or maternal$ or father$ or paternal$ or infant$ or child$) adj3 (attachment$ or bond$ or relationship$ or dyad$ or triad$)).tw.
32 (parent$ adj3 (intervention$ or skill$ or train$ or educat$ or program$)).tw.
33 caregiver/
34 (carer$ or caregiver$ or care giver$).tw.
35 or/8-34
36 7 and 35
37 Randomized controlled trial/
38 controlled clinical trial/
39 Single blind procedure/
40 Double blind procedure/
41 triple blind procedure/
42 Crossover procedure/
43 (crossover or cross-over).tw.
44 ((singl$ or doubl$ or tripl$ or trebl$) adj1 (blind$ or mask$)).tw.
45 Placebo/
46 placebo.tw.
47 prospective.tw.
48 factorial$.tw.
49 random$.tw.
50 assign$.ab.
51 allocat$.tw.
52 volunteer$.ab.
53 or/37-52
54 7 and 36 and 53

CINAHL Plus EBSCOhost

Search dates: 11 August 2016 (1072 records); 10 November 2018 (88 additional records)

S55 S7 AND S36 AND S54
S54 S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53
S53 random*
S52 TI ((tripl* N2 mask*) or (tripl* N2 blind*)) or ((trebl* N2 mask*) or (trebl* N2 blind*)) OR AB((tripl* N2 mask*) or (tripl* N2 blind*)) or ((trebl* N2 mask*) or (trebl* N2 blind*)S51 TI((doubl* N2 mask*) or (doubl* N2 blind*)) OR AB((doubl* N2 mask*) or (doubl* N2 blind*))
S50 TI(single N2 mask* or single N2 blind*) OR AB(single N2 mask* or single N2 blind*)
S49 (MH "Treatment Outcomes")
S48 (MH "Program Evaluation")
S47 (evaluat* N2 study or evaluat* N2 research)
S46 (prospectiv* study or prospectiv* research)
S45 ("follow-up study" or "follow-up research")
S44 (clinical trial*) or (control* N2 trial*)
S43 PT Clinical trial
S42 PT randomized controlled trial
S41 (MH "Quantitative Studies")
S40 (MH "Crossover Design")
S39 (MH "Meta Analysis")
S38 MH random assignment
S37 (MH "Clinical Trials+")1
S36 S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35
S35 (carer* or caregiver* or care giver*)
S34 (MH "Caregivers")
S33 (parent* N3 (intervention* or skill* or train* or educat* or program*))
S32 ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) N3 (attachment* or bond* or relationship* or dyad* or triad*))
S31 ((father* or paternal*) N3 (interaction or inter-action*))
S30 ((mother* or maternal*) N3 (interaction or inter-action*))
S29 (parent* N3 (inter-action* or interaction*))
S28(disorgani#ed N3 attachment*)
S27((father* or paternal*) N3 responsiv*)
S26((mother* or maternal*) N3 responsiv*)
S25(parent N3 positive)

S24(parent* N3 responsiv*)
S23((father* or paternal*) N3 competenc*)
S22((mother* or maternal*) N3 competenc*)
S21(parent* N3 competenc*)
S20((father* or paternal*) N3 sensitiv*)
S19((mother* or maternal*) N3 sensitiv*)
S18(parent* N3 sensitiv*)
S17(attachment N3 disorder*)
S16(secure N3 attachment*)
S15(insecure N3 attachment*)
S14(MH "Reactive Attachment Disorder")
S13object attachment
S12(MH "Attachment Behavior+")
S11(MH "Maternal Behavior")
S10 (MH "Paternal Behavior")
S9 (MH "Parenting")
S8 (MH "Parent-Child Relations+")
S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6
S6 interaction guidance
S5 VHT*
S4 VIPP*
S3 video*
S2 VIG
S1(MH "Videorecording")

PsycINFO Ovid

Search dates: 11 August 2016 (1922 records); 10 November 2018 (1236 additional records)

1 Videotapes/
2 Videotape Recorders/
3 exp Digital Video/
4 exp Videotape Instruction/
5 VIG.tw.
6 video$.tw.
7 VIPP$.tw.
8 VHT.tw.
9 interaction guidance.tw.
10 or/1-9
11 exp Parent Child Relations/
12 Parenting/
13 paternal behaviour.mp.
14 exp Fathers/ or exp Father Child Relations/
15 mother child relations/
16 maternal behaviour.mp.
17 object attachment.mp.
18 attachment behavior/
19 attachment disorders/
20 (insecure adj3 attachment$).tw.
21 (secure adj3 attachment$).tw.
22 (attachment adj3 disorder$).tw.
23 (parent$ adj3 sensitiv$).tw.
24 ((mother$ or maternal$) adj3 sensitiv$).tw.
25 ((father$ or paternal$) adj3 sensitiv$).tw.
26 (parent$ adj3 competenc$).tw.
27 ((mother$ or maternal$) adj3 competenc$).tw.
28 ((father$ or paternal$) adj3 competenc$).tw.
29 (parent$ adj3 responsiv$).tw.
30 (parent$ adj3 positive).tw.
31 ((mother$ or maternal$) adj3 responsiv$).tw.
32 ((father$ or paternal$) adj3 responsiv$).tw.
33 (disorgani#ed adj3 attachment$).tw.
34 (parent$ adj3 (inter-action$ or interaction$)).tw.

35 ((mother$ or maternal$) adj3 (interaction or inter-action$)).tw.
36 ((father$ or paternal$) adj3 (interaction or inter-action$)).tw.
37 ((parent$ or mother$ or maternal$ or father$ or paternal$ or infant$ or child$) adj3 (attachment$ or bond$ or relationship$ or dyad $ or triad$)).tw.
38 (parent$ adj3 (intervention$ or skill$ or train$ or educat$ or program$)).tw.
39 CAREGIVERS/
40 (carer$ or caregiver$ or care giver$).tw.
41 or/11-40
42 random$.tw.
43 ((singl$ or doubl$ or trebl$ or tripl$) adj (blind$ or mask$)).tw.
44 (crossover$ or "cross over$").tw.
45 trial$.tw.
46 group$.ab.
47 control.ab.
48 exp program evaluation/
49 treatment effectiveness evaluation/
50 treatment outcome clinical trial.md.
51 ((effectiveness or evaluat$) adj3 (stud$ or research$)).tw.
52 (allocat$ or assign$).tw.
53 placebo.ab.
54 or/42-53
55 10 and 41 and 54

Sociological Abstracts ProQuest

Search dates: 8 September 2016 (17 records); 10 November 2018 (0 additional records)

(“video recording” or VIG or video* or VIPP* or VHT or “interaction guidance”) AND ("parent-child relations" OR parenting OR "paternal behavior" OR "maternal behavior" OR "object attachment" OR "Reactive Attachment Disorder" OR Insecure NEAR/3 attachment* OR secure NEAR/3 attachment* OR attachment NEAR/3 disorder* OR parent* NEAR/3 sensitiv* OR mother* OR maternal* NEAR/3 "sensitiv* or father* or paternal* near/3 sensitiv* or parent" NEAR/3 competenc* OR mother* OR maternal* NEAR/3 competenc* OR father* OR paternal* NEAR/3 competenc* OR parent* NEAR/3 responsiv* OR parent* NEAR/3 positive OR mother* OR maternal* NEAR/3 responsiv* OR father* OR paternal* NEAR/3 responsiv* OR disorgani*ed NEAR/3 attachment* OR parent* NEAR/3 inter-action* OR interaction* OR mother* OR maternal* NEAR/3 interaction* OR maternal* inter-action* OR father* NEAR/3 interaction* OR paternal* NEAR/3 interaction* OR paternal* NEAR/3 inter-action* OR father* NEAR/3 inter-action* OR parent* NEAR/3 inter-action*or parent* NEAR/3 interaction*or mother* NEAR/3 inter-action* OR mother NEAR/3 interaction* OR maternal* NEAR/3 inter-action* OR maternal NEAR/3 interaction* OR father* NEAR/3 interaction* OR father NEAR/3 inter-action* OR paternal* NEAR/3 interaction* OR paternal* NEAR/3 inter-action* OR parent* NEAR/3 attachment* OR parent* NEAR/3 bond* OR parent* NEAR/3 relationship* OR parent* NEAR/3 dyad* OR parent* NEAR/3 triad*or mother* NEAR/3 attachment* OR mother* NEAR/3 bond* OR mother* NEAR/3 relationship* OR mother* NEAR/3 dyad* OR mother* NEAR/3 triad* OR maternal* NEAR/3 attachment* OR maternal* NEAR/3 bond* OR maternal* NEAR/3 relationship* OR maternal* NEAR/3 dyad* OR maternal* NEAR/3 triad* OR father* NEAR/3 attachment* OR father* NEAR/3 bond* OR father* NEAR/3 relationship* OR father* NEAR/3 dyad* OR father* NEAR/3 triad* OR paternal* NEAR/3 attachment* OR paternal* NEAR/3 bond* OR paternal* NEAR/3 relationship* OR paternal* NEAR/3 dyad* OR paternal* NEAR/3 triad* OR infant* NEAR/3 attachment* OR infant* NEAR/3 bond* OR infant* NEAR/3 relationship* OR infant* NEAR/3 dyad* OR infant* NEAR/3 triad* OR child* NEAR/3 attachment* OR child* NEAR/3 bond* OR child* NEAR/3 relationship* OR child* NEAR/3 dyad* OR child* NEAR/3 triad* OR parent* NEAR/3 intervention* OR parent* NEAR/3 skill* OR parent* NEAR/3 train* OR parent* NEAR/3 educat* OR parent* NEAR/3 program* OR caregivers OR carer* OR caregiver* OR care giver*) AND (randomi*ed NEXT controlled NEXT trial OR "controlled clinical trial" OR random*ied OR placebo* OR "drug therapy" OR randomly OR trial OR groups)

Social Sciences Citation Index Web of Science (SSCI)

Search dates: 15 August 2016 (23 records); 10 November (11 additional records)

(“video recording” or VIG or video* or VIPP* or VHT or “interaction guidance”) AND ("parent-child relations" or parenting or "paternal behavior" or "maternal behavior" or "object attachment" or "Reactive Attachment Disorder" or insecure near/3 attachment* or secure near/3 attachment* or attachment near/3 disorder* or parent* near/3 sensitiv* or mother* or maternal* near/3 sensitiv* or father* or paternal* near/3 sensitiv* or parent near/3 competenc* or mother* or maternal* near/3 competenc* or father* or paternal* near/3 competenc* or parent* near/3 responsiv* or parent* near/3 positive or mother* or maternal* near/3 responsiv* or father* or paternal* near/3 responsiv* or disorgani*ed near/3 attachment* or parent* near/3 inter-action* or parent* near/3 interaction* or mother* or maternal* near/3 interaction* or maternal* near/3 inter-action* or father* near/3 interaction* or paternal* near/3 interaction* or paternal* near/3 inter-action* or father* near/3 inter-action* or parent* near/3 inter-action* or parent* near/3 interaction* or mother* near/3 inter-action* or mother* near/3 interaction* or maternal* near/3 inter-action* or maternal near/3 interaction* or father* near/3 interaction* or father* near/3 inter-action* or paternal* near/3 interaction* or paternal* near/3 inter-action* or parent* near/3 attachment* or parent* near/3 bond* or parent* near/3 relationship* or parent* near/3 dyad* or parent* near/3 triad* or mother* near/3 attachment* or mother* near/3 bond* or mother* near/3 relationship* or mother* near/3 dyad* or mother* near/3 triad* or maternal* near/3 attachment*

or maternal* near/3 bond* or maternal* near/3 relationship* or maternal* near/3 dyad* or maternal* near/3 triad* or father* near/3 attachment* or father* near/3 bond* or father* near/3 relationship* or father* near/3 dyad* or father* near/3 triad* or paternal* near/3 attachment* or paternal* near/3 bond* or paternal* near/3 relationship* or paternal* near/3 dyad* or paternal* near/3 triad* or infant* near/3 attachment* or infant* near/3 bond* or infant* near/3 relationship* or infant* near/3 dyad* or infant* near/3 triad* or child* near/3 attachment* or child* near/3 bond* or child* near/3 relationship* or child* near/3 dyad* or child* near/3 triad* or parent* near/3 intervention* or parent* near/3 skill* or parent* near/3 train* or parent* near/3 educat* or parent* near/3 program* or caregivers or carer* or caregiver* or care giver*) AND (randomi*ed NEXT controlled NEXT trial or "controlled clinical trial" or random*ied or placebo* or "drug therapy" or randomly or trial or groups)

Social Services Abstracts ProQuest

Search dates: 8 September 2016 (48 records); 10 November 2018 (0 additional records)

("video recording" or VIG or video* or VIPP* or VHT or "interaction guidance") AND ("parent-child relations" or parenting or "paternal behavior" or "maternal behavior" or "object attachment" or "Reactive Attachment Disorder" or insecure near/3 attachment* or secure near/3 attachment* or attachment near/3 disorder* or parent* near/3 sensitiv* or mother* or maternal* near/3 sensitiv* or father* or paternal* near/3 sensitiv* or parent near/3 competenc* or mother* or maternal* near/3 competenc* or father* or paternal* near/3 competenc* or parent* near/3 responsiv* or parent* near/3 positive or mother* or maternal* near/3 responsiv* or father* or paternal* near/3 responsiv* or disorgani*ed near/3 attachment* or parent* near/3 inter-action* or parent* near/3 interaction* or mother* or maternal* near/3 interaction* or maternal* near/3 inter-action* or father* near/3 interaction* or paternal* near/3 interaction* or paternal* near/3 inter-action* or father* near/3 inter-action* or parent* near/3 inter-action* or parent* near/3 interaction* or mother* near/3 inter-action* or mother* near/3 interaction* or maternal* near/3 inter-action* or maternal near/3 interaction* or father* near/3 interaction* or father* near/3 inter-action* or paternal* near/3 interaction* or paternal* near/3 inter-action* or parent* near/3 attachment* or parent* near/3 bond* or parent* near/3 relationship* or parent* near/3 dyad* or parent* near/3 triad* or mother* near/3 attachment* or mother* near/3 bond* or mother* near/3 relationship* or mother* near/3 dyad* or mother* near/3 triad* or maternal* near/3 attachment* or maternal* near/3 bond* or maternal* near/3 relationship* or maternal* near/3 dyad* or maternal* near/3 triad* or father* near/3 attachment* or father* near/3 bond* or father* near/3 relationship* or father* near/3 dyad* or father* near/3 triad* or paternal* near/3 attachment* or paternal* near/3 bond* or paternal* near/3 relationship* or paternal* near/3 dyad* or paternal* near/3 triad* or infant* near/3 attachment* or infant* near/3 bond* or infant* near/3 relationship* or infant* near/3 dyad* or infant* near/3 triad* or child* near/3 attachment* or child* near/3 bond* or child* near/3 relationship* or child* near/3 dyad* or child* near/3 triad* or parent* near/3 intervention* or parent* near/3 skill* or parent* near/3 train* or parent* near/3 educat* or parent* near/3 program* or caregivers or carer* or caregiver* or care giver*) AND (randomi*ed NEXT controlled NEXT trial or "controlled clinical trial" or random*ied or placebo* or "drug therapy" or randomly or trial or groups)

Conference Proceedings Citation Index - Social Science & Humanities Web of Science (CPCI-SS&H)

Search dates: 15 August 2016 (1 record); 10 November 2018 (0 additional records)

("video recording" or VIG or video* or VIPP* or VHT or "interaction guidance") AND ("parent-child relations" or parenting or "paternal behavior" or "maternal behavior" or "object attachment" or "Reactive Attachment Disorder" or insecure near/3 attachment* or secure near/3 attachment* or attachment near/3 disorder* or parent* near/3 sensitiv* or mother* or maternal* near/3 sensitiv* or father* or paternal* near/3 sensitiv* or parent near/3 competenc* or mother* or maternal* near/3 competenc* or father* or paternal* near/3 competenc* or parent* near/3 responsiv* or parent* near/3 positive or mother* or maternal* near/3 responsiv* or father* or paternal* near/3 responsiv* or disorgani*ed near/3 attachment* or parent* near/3 inter-action* or parent* near/3 interaction* or mother* or maternal* near/3 interaction* or maternal* near/3 inter-action* or father* near/3 interaction* or paternal* near/3 interaction* or paternal* near/3 inter-action* or father* near/3 inter-action* or parent* near/3 inter-action* or parent* near/3 interaction* or mother* near/3 inter-action* or mother* near/3 interaction* or maternal* near/3 inter-action* or maternal near/3 interaction* or father* near/3 interaction* or father* near/3 inter-action* or paternal* near/3 interaction* or paternal* near/3 inter-action* or parent* near/3 attachment* or parent* near/3 bond* or parent* near/3 relationship* or parent* near/3 dyad* or parent* near/3 triad* or mother* near/3 attachment* or mother* near/3 bond* or mother* near/3 relationship* or mother* near/3 dyad* or mother* near/3 triad* or maternal* near/3 attachment* or maternal* near/3 bond* or maternal* near/3 relationship* or maternal* near/3 dyad* or maternal* near/3 triad* or father* near/3 attachment* or father* near/3 bond* or father* near/3 relationship* or father* near/3 dyad* or father* near/3 triad* or paternal* near/3 attachment* or paternal* near/3 bond* or paternal* near/3 relationship* or paternal* near/3 dyad* or paternal* near/3 triad* or infant* near/3 attachment* or infant* near/3 bond* or infant* near/3 relationship* or infant* near/3 dyad* or infant* near/3 triad* or child* near/3 attachment* or child* near/3 bond* or child* near/3 relationship* or child* near/3 dyad* or child* near/3 triad* or parent* near/3 intervention* or parent* near/3 skill* or parent* near/3 train* or parent* near/3 educat* or parent* near/3 program* or caregivers or carer* or caregiver* or care giver*) AND (randomi*ed NEXT controlled NEXT trial or "controlled clinical trial" or random*ied or placebo* or "drug therapy" or randomly or trial or groups)

LILACS (Latin American and Caribbean Health Science Information database; www.lilacs.bvsalud.org/en/)

Search dates: 16 August 2016 (0 records); 10 November 2018 (3 additional records)

recording or VIG or video or VIPP or VHT or interaction guidance and parent* or paternal or maternal or father or mother or infant or child and randomized controlled trial or controlled clinical trial or randomzied or placebo or drug therapy or randomly or trial or groups

Cochrane Database of Systematic Reviews (CDSR), part of the Cochrane Library

Search dates: 11 August 2016 (47 records); 10 November 2018 (23 additional records)

("video recording" or VIG or video* or VIPP* or VHT or "interaction guidance") in Title, Abstract, Keywords and ("parent-child relations" or parenting or "paternal behavior" or "maternal behavior" or "object attachment" or "Reactive Attachment Disorder" or Insecure near/3 attachment* or secure near/3 attachment* or attachment near/3 disorder* or parent* near/3 sensitiv* or mother* or maternal* near/3 "sensitiv* or father* or paternal* near/3 sensitiv* or parent" near/3 "competenc* or mother* or maternal* near/3 competenc* or father* or paternal* near/3 "competenc* or parent* near/3 "responsiv* or parent* near/3 positive or mother* or maternal* near/3 responsiv* or father* or "paternal* near/3 responsiv* or disorgani*ed near/3 attachment* or parent* near/3 inter-action* or interaction* or mother* or maternal* near/3 interaction* or maternal* inter-action* or father* near/3 interaction* or paternal* near/3 interaction* or paternal* near/3 inter-action* or father* near/3 inter-action* or parent* near/3 inter-action*or parent* near/3 interaction*or mother* near/3 inter-action* or mother near/3 interaction* or maternal* near/3 inter-action* or maternal near/3 interaction* or father* near/3 interaction* or father near/3 inter-action* or paternal* near/3 interaction* or paternal* near/3 inter-action* or parent* near/3 attachment* or parent* near/3 bond* or parent* near/3 relationship* or parent* near/3 dyad* or parent* near/3 triad*or mother* near/3 attachment* or mother* near/3 bond* or mother* near/3 relationship* or mother* near/3 dyad* or mother* near/3 triad* or maternal* near/3 attachment* or maternal* near/3 bond* or maternal* near/3 relationship* or maternal* near/3 dyad* or maternal* near/3 triad* or father* near/3 attachment* or father* near/3 bond* or father* near/3 relationship* or father* near/3 dyad* or father* near/3 triad* or paternal* near/3 attachment* or paternal* near/3 bond* or paternal* near/3 relationship* or paternal* near/3 dyad* or paternal* near/3 triad* or infant* near/3 attachment* or infant* near/3 bond* or infant* near/3 relationship* or infant* near/3 dyad* or infant* near/3 triad* or child* near/3 attachment* or child* near/3 bond* or child* near/3 relationship* or child* near/3 dyad* or child* near/3 triad* or parent* near/3 intervention* or parent* near/3 skill* or parent* near/3 train* or parent* near/3 educat* or parent* near/3 program* or caregivers or carer* or caregiver* or care giver*) and (randomi*ed NEXT controlled NEXT trial or "controlled clinical trial" or random*ied or placebo* or "drug therapy" or randomly or trial or groups) in Cochrane Reviews'

Database of Abstracts of Reviews of Effects (DARE), part of the Cochrane Library

Search dates: 8 September 2016 (4 records); 10 November 2018 (0 additional records)

("video recording" or VIG or video* or VIPP* or VHT or "interaction guidance") in Title, Abstract, Keywords and ("parent-child relations" or parenting or "paternal behavior" or "maternal behavior" or "object attachment" or "Reactive Attachment Disorder" or Insecure near/3 attachment* or secure near/3 attachment* or attachment near/3 disorder* or parent* near/3 sensitiv* or mother* or maternal* near/3 "sensitiv* or father* or paternal* near/3 sensitiv* or parent" near/3 "competenc* or mother* or maternal* near/3 competenc* or father* or paternal* near/3 "competenc* or parent* near/3 "responsiv* or parent* near/3 positive or mother* or maternal* near/3 responsiv* or father* or "paternal* near/3 responsiv* or disorgani*ed near/3 attachment* or parent* near/3 inter-action* or interaction* or mother* or maternal* near/3 interaction* or maternal* inter-action* or father* near/3 interaction* or paternal* near/3 interaction* or paternal* near/3 inter-action* or father* near/3 inter-action* or parent* near/3 inter-action*or parent* near/3 interaction*or mother* near/3 inter-action* or mother near/3 interaction* or maternal* near/3 inter-action* or maternal near/3 interaction* or father* near/3 interaction* or father near/3 inter-action* or paternal* near/3 interaction* or paternal* near/3 inter-action* or parent* near/3 attachment* or parent* near/3 bond* or parent* near/3 relationship* or parent* near/3 dyad* or parent* near/3 triad*or mother* near/3 attachment* or mother* near/3 bond* or mother* near/3 relationship* or mother* near/3 dyad* or mother* near/3 triad* or maternal* near/3 attachment* or maternal* near/3 bond* or maternal* near/3 relationship* or maternal* near/3 dyad* or maternal* near/3 triad* or father* near/3 attachment* or father* near/3 bond* or father* near/3 relationship* or father* near/3 dyad* or father* near/3 triad* or paternal* near/3 attachment* or paternal* near/3 bond* or paternal* near/3 relationship* or paternal* near/3 dyad* or paternal* near/3 triad* or infant* near/3 attachment* or infant* near/3 bond* or infant* near/3 relationship* or infant* near/3 dyad* or infant* near/3 triad* or child* near/3 attachment* or child* near/3 bond* or child* near/3 relationship* or child* near/3 dyad* or child* near/3 triad* or parent* near/3 intervention* or parent* near/3 skill* or parent* near/3 train* or parent* near/3 educat* or parent* near/3 program* or caregivers or carer* or caregiver* or care giver*) and (randomi*ed NEXT controlled NEXT trial or "controlled clinical trial" or random*ied or placebo* or "drug therapy" or randomly or trial or groups)

Networked Digital Library of Theses and Dissertations (NDLTD; www.ndltd.org)

Search dates: August 2016 (344 records); 10 November 2018 (0 additional records)

"video feedback and attachment and random*"

WorldCat (limited to dissertations and theses; www.worldcat.org)

Search dates: August 2016 (1 record); 10 November 2018 (1 additional record)

kw:video feedback kw:sensitivity or attachment kw:random*

Clinicaltrials.gov (www.clinicaltrials.gov)

Search dates: August 2016 (31 records); 10 November 2018 (2 additional records)

parent | video feedback

World Health Organization International Clinical Trials Registry Platform (WHO ICTRP; www.who.int/ictrp/en)

Search dates: August 2016 (5 records); 10 November 2018 (2 additional records)

Video feedback

UNICEF Global Evaluation Database (www.unicef.org)

Search dates: August 2016 (169 records); July 2017 (0 additional records); 10 November 2018 (0 additional records)

video+feedback+parent+random*

NSPCC Impact and Evidence Hub (www.nspcc.org.uk)

Search dates: July 2017 (218 records); 10 November 2018 (199 additional records)

video+feedback

Association for Video Interaction Guidance UK (AVigUK; www.videointeractionguidance.net)

Search dates: July 2017 (162 records); 10 November 2018 (1 additional record)

video feedback parent* random*

Google Scholar

Search dates: July 2017 (2 records); 10 November 2018 (0 additional records)

"Randomised Controlled Trial" AND "parenting" AND ("video feedback" or "VIP" or "VIG" or "VIPP")

VIPP Training and Resource Centre (www.vippleiden.com/en/professionals/publications)

Accessed: July 2017 (0 records) and 9 July 2019 (1 record); all publications listed screened.

Video Interaction Project (www.videointeractionproject.org/publications.html)

Accessed July 2017 (1 record) and 9 July 2019 (0 records); all publications listed screened.

Appendix 2. 'Risk of bias' assessment

(Continued)

Domain	Criteria for judgement		
	Low risk of bias	**High risk of bias**	**Unclear risk of bias**
Sequence generation	"Unpredictable: random number table, stratified or block randomisation, computer random number generator"	"Predictable: non-random (e.g. choice of practitioner, availability), quasi-random (e.g. ID, day of visit, date of birth)"	"Lack of information or partial information on sequence generation to make a judgement of low or high risk of bias"
Allocation concealment	"Unpredictable: sequentially numbered sealed opaque envelopes, central allocation (e.g. phone, internet)"	"Predictable: random sequence known to personnel in advance, envelopes without safeguards"	"Lack of information or partial information on allocation concealment to make a judgement of low or high risk of bias"
Blinding of participants or personnel	"Blinding and unlikely that the blinding would have been broken, no blinding or incomplete blinding but outcome unlikely to be influenced"	"No blinding, incomplete blinding and outcome likely to be influenced"	"Insufficient evidence of participant or personnel blinding to make a judgement of low or high risk of bias"

(Continued)

Blinding of outcome assessors	"Blinding and unlikely that the blinding would have been broken, no blinding or incomplete blinding but measurement unlikely to be influenced"	"No blinding, incomplete blinding and measurement likely to be influenced"	"Insufficient evidence of blinding of outcome assessors to make a judgement of low or high risk of bias"
Incomplete outcome data	"No missing data, reasons for missing data not related to the outcome, missing data balanced across groups and reasons similar, proportion missing or plausible effect size not enough to have a clinically-relevant effect"	"Reasons related to outcome and imbalance in numbers or reasons, inappropriate use of imputation, 'as treated' analysis with substantial departure from allocation, proportion missing or plausible effect size enough to have a clinically-relevant effect"	"Lack of information on reasons for missing data, insufficient evidence of effect of missing data on outcome, lack of information on imputation methods or insufficient detail on intention-to-treat and participant departure from allocation to make a judgement of low or high risk of bias"
Selective outcome reporting	"Protocol is available and all prespecified outcomes of interest to the review reported in the prespecified way, protocol is unavailable but all prespecified outcomes of interest are reported"	"Outcomes not reported as prespecified or expected (e.g. missing, added, unexpected measurements), outcomes reported incompletely"	"Insufficient evidence of selective outcome reporting to make a judgement of low or high risk of bias"

Footnotes

Information in table taken directly from Cates 2016 [pers comm].

ID: identifier.

Appendix 3. Results from individual moderator meta-analyses, with Knapp/Hartung confidence intervals

	k	N	d	SE	95% CI	Q
Total	23	1767	0.34[a]	0.070	0.196 to 0.490	-
-					I^2 = 54.0%	Qe (22) = 49.2[a]
Age of child						
Infant	15	889	0.37[b]	0.09	0.171 to 0.575	-
No infant	10	878	0.30[c]	0.10	0.084 to 0.532	-
-					I^2 = 55.4%	Qbetween: F (2, 21) = 11.5[a]
						Qe (21) = 49.0[a]
Type of intervention						
VIPP	10	801	0.27[c]	0.10	0.055 to 0.497	-
No VIPP	15	966	0.39[a]	0.09	0.199 to 0.597	-
-					I^2 = 53.8%	Qbetween: F (2, 21) = 12.0[a]

(Continued)

						Qe (2!) = 46.0[b]
Presence of disability in participating child						
Disability	5	357	0.49[b]	0.15	0.160 to 0.819	-
No disability	20	1410	0.30[b]	0.07	0.142 to 0.470	-
-					I^2 = 52.2%	Qbetween: F (2, 21) = 12.3[a]
						Qe (21) = 43.7[b]
Number of video feedback sessions						
0-5	8	330	0.37[c]	0.14	0.075 to 0.667	-
6-10	13	1070	0.35[b]	0.10	0.148 to 0.567	-
> 10	4	367	0.27	0.16	−0.07 to 0.622	-
-					I^2 = 57.9%	Qbetween: F (3, 20) = 7.39[b]
						Qe (19) = 48.6[a]
Participating carer in study						
All mothers	18	1134	0.42[a]	0.08	0.242 to 0.599	-
All fathers	2	203	0.29	0.22	−0.17 to 0.771	-
Both	5	430	0.15	0.14	−0.14 to 0.444	-
-					I^2 = 53.2%	Qbetween: F (3, 20) = 9.04[b]
						Qe (19) = 45.1[a]

CI: confidence intervals; **d:** average effect sizes per moderator subgroup; **k: n**umber of studies; **N: n**umber of participants; **Q:** test statistics for heterogeneity; **Qbetween:** test for moderators; **Qe:** test for residual heterogeneity; **SE:** standard error; **VIPP:** Video-feedback to promote Positive Parenting

Footnotes

[a]P < 0.001
[b]P < 0.01
[c]P < 0.5

Appendix 4. Mixed-effects meta-regression for joint moderation, with Knapp/Hartung confidence intervals

Moderators	b	SE	Z score	P value	95% CI	
Intercept	0.376	0.151	2.491	0.023	0.058	0.695

(Continued)

Intervention type						
VIPP	ref.					
No VIPP	0.228	0.159	1.432	0.17	−0.108	0.564
Duration						
Sessions: 0-5	ref.					
Sessions: 6-10	−0.029	0.17	−0.169	0.868	−0.387	0.33
Sessions: > 10	−0.205	0.226	−0.907	0.377	−0.683	0.272
Participating carer						
All mothers	ref.					
All fathers	−0.29	0.268	−1.082	0.294	−0.856	0.275
Both fathers and mothers	−0.305	0.169	−1.801	0.089	−0.662	0.052
Tau² (SE)	0.073	(0.045)	-	-	-	-
I²	55.56%	-	-	-	-	-
R²	< 0.001	-	-	-	-	-
Qbetween F(5,17)	1.0080	P ≥ 0.4429				
N studies	23	-	-	-	-	-

b: beta; **CI:** confidence intervals; **N:** number; **ref.:** reference category for the categorical moderator variables; **SE:** standard error; **Qbetween:** test for moderators; **VIPP:** Video-feedback to promote Positive Parenting

Footnotes

CONTRIBUTIONS OF AUTHORS

Leeanne O'Hara (LOH), Nadeeja Herath (NH), Jane Barlow (JB), Nuala Livingstone (NL) and Geraldine Macdonald (GM) contributed to developing the protocol and methods for this review. LOH conducted the searches. LOH, Emily Smith (ES) and NH contributed to screening searches and data extraction. LOH and ES carried out 'Risk of bias' assessments and GRADE ratings. JB, NL and GM provided guidance and support in resolving disagreements between reviewer authors' opinions during these processes; JB did not arbitrate in cases of dispute of studies in which she was involved. ES conducted the meta-analysis with statistical support from Yinghui Wei. Thees Speckelsen (TS) conducted the moderator analysis. JB, NL and GM contributed to decisions about which analyses to undertake. LOH, ES, JB, NL, TS and GM contributed to writing up the results of the review. LOH is the guarantor for the review.

DECLARATIONS OF INTEREST

Leeanne O'Hara received a Cochrane Fellowship Award from the Health and Social Care Research and Development Division of the Public Health Agency, Belfast, to cover salary expenses, travel, training and research expenses.

Jane Barlow (JB) is the lead author of one of the included studies (Barlow 2016), which was funded by the Grace Fund to evaluate VIG with mothers of preterm infants; she is also in the process of resubmitting an application to NIHR to evaluate the effectiveness of VIG with women experiencing perinatal mental health problems. JB did not extract data from this study, nor did she assess the study for eligibility, assess its potential risk of bias or grade the certainty of its evidence. JB is a coapplicant on a recently funded National Institute for Health Research (NIHR), Health Technology Assessment (HTA) feasibility study of the use of Video-feedback Intervention to promote Positive

Parenting (VIPP) with young children with reactive attachment disorder living in foster care. JB began a training programme to learn how to deliver Video Interaction Guidance but discontinued this and therefore did not receive any accreditation. JB is an Editor with Cochrane Developmental, Psychosocial and Learning Problems (CDPLP).

Nuala Livingstone is an Editor with CDPLP and the Cochrane Editorial and Methods Department.

Geraldine Macdonald is the Co-ordinating Editor of CDPLP.

Emily Smith (ES) held an NIHR-funded Academic Clinical Fellowship at the University of Warwick and undertook work for this review whilst on placement. This funding covered her salary, training and travel expenses for the purpose of this review. ES was previously employed by Walsall Healthcare NHS Trust, who granted her study leave to undertake training to carry out this review, and is currently employed by St Helens and Knowsley Teaching Hospitals NHS Trust.

Nadeeja Herath - none known.

Yinghui Wei is a Statistical Editor with CDPLP.

Thees F Spreckelsen (TS) is an Associate Editor (quantitative methods) for the journal *Child and Adolescent Mental Health* for which he receives an honorarium. TS has worked previously as a quantitative analyst on two industry-funded (DSM (Dutch State Mines - 'De Nederlandse Staatsmijnen')) randomised controlled trials on omega-3 DHA (docosahexaenoic acid) supplementation as an intervention for child learning and behaviour (DOLAB study (**D**HA **O**xford **L**earning **a**nd **B**ehaviour) I and II). TS has undertaken paid analyses of clinical records of children and adolescents living with HIV in Nigeria for the International Catholic Relief Services and received an honorarium for teaching introductions to R at the Department of Education's Advanced Quantitative Methods Summer School at the University of Oxford. TS declares that these activities do not relate directly to the content of this review.

Disclaimer: The views expressed in this article are those of the authors, and not of NIHR, the NHS or the Department of Health.

SOURCES OF SUPPORT

Internal sources

- Queen's University Belfast, UK.

  Salary costs for LOH
- St Helens and Knowsley Teaching Hospitals NHS Trust, UK.

  ES is employed by this Trust.
- Walsall Healthcare NHS Trust, UK.

  ES was employed by this Trust for part of the time period she has been involved in this review.
- University of Warwick, UK.

  ES held an NIHR (National Institute for Health Research) Academic Clinical Fellowship that was hosted by the University of Warwick. She completed her work on the review whilst on placement at the University as part of this Fellowship (the views expressed in this review are those of the authors and do not represent those of NIHR, the Department of Health or the NHS).
- University of Oxford, UK.

  Salary costs for TS as a departmental lecturer.

External sources

- Health and Social Care Research and Development Division, Public Health Agency, UK.

  Cochrane Fellowship Award to LOH
- NIHR Academic Clinical Fellowship, UK.

  Salary and study expenses to attend Cochrane Review Author Training for ES (the views expressed in this review are those of the authors and do not represent those of NIHR, the Department of Health or the NHS).

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

1. **Title.** We changed the title of the review from 'Video feedback for improving parental sensitivity and attachment' (O'Hara 2016) to 'Video feedback for parental sensitivity and attachment security in children under five years' following feedback, as we felt that the original title somewhat pre-empted the results of the review.

2. **Additional authors.** The following authors have been added to the review since the publication of the protocol (O'Hara 2016): Emily Smith, Yinghui Wei and Thees Spreckelsen.
3. Objectives. We added in the qualifier "at risk for poor attachment outcomes" to the description of our population group of interest for clarity.
4. Types of participants. We clarified our intention to look only at interventions used with high-risk parent-child dyads, as this was not clearly stated in the protocol (O'Hara 2016).
5. Types of interventions.
   a. We amended the types of interventions included from those "with the aim of improving the sensitivity of their [the parents'] interactions with the child or the mental representations of the parent" to those "with the aim of improving the sensitivity of their [the parents'] interactions with the child, child attachment, or the reflective functioning of the parent", because these were our primary outcomes.
   b. In addition to including studies where the comparison group was treatment as usual or no treatment, we also included studies where the comparison group received an attention placebo, because these are standard control conditions.
   c. We excluded studies that did not measure parental sensitivity, child attachment or parental reflective functioning, or did not do so in an objective way, because these were our primary outcomes.
6. Secondary outcomes. Although we stated in the Measures of treatment effect section of our protocol that we would collect information on costs, we did not list it as an outcome. We have added costs to the list of secondary outcomes.
7. Searching other resources. We did not contact experts in the field to ask about any published, unpublished or ongoing work that we might have missed, due to limitations of time.
8. Data collection and analysis. We removed methods that we were unable to use from the main text and reported them in Table 1.
9. Data extraction and management. We extracted data on the dates of the studies, in addition to the other information prespecified in our protocol (O'Hara 2016), at the request of our Editor.
10. Data synthesis. In our original protocol we specified that we would collect outcomes data grouped "as postintervention (immediately upon completion of the intervention), short term (up to six months), medium term (up to one year) and long term (over one year)". In our meta-analysis, we grouped postintervention and short-term follow up for the outcomes ‘parental sensitivity’ and ‘parental stress’. This was for two reasons: firstly, we found that the 'postintervention' time point was not always clearly specified by studies, and in some cases may possibly overlap with time points described as 'short term' in other studies; secondly, we wanted to maximise our use of available data. We felt that combining postintervention and short-term follow-up time points was clinically justifiable.
11. Assessment of reporting biases. We made a post hoc decision to undertake Egger's regression test (Egger 1997), to assist our assessment of funnel plot asymmetry, in addition to purely visual inspection. We made this decision to strengthen our assessment of the asymmetry.
12. Summary of findings for the main comparison.
   a. The protocol, O'Hara 2016, stated we would use the following comparisons in our 'Summary of findings' table: 'Video feedback versus no intervention' and 'Video feedback versus alternative intervention'. We amended this for clarity, to make it clear that the comparison would be video feedback versus no intervention or inactive intervention only, as our protocol also stated that we would exclude studies that had an active alternative treatment.
   b. The protocol, O'Hara 2016, stated that we would include a rating of the quality of evidence in our 'Summary of findings' table. However, the version of GRADE that we used rated certainty, not quality.
13. Subgroup analysis and investigation of heterogeneity. We made a post hoc decision to undertake a moderator analysis of the impact of five moderating factors on parental sensitivity in response to a comment from our Editor. We have included the methods and results from this analysis in the review. Three of the factors were based on prespecified factors (intensity of video feedback, defined by the number of sessions; type of video feedback, based on whether it was Video Feedback Intervention to Promote Positive Parenting (VIPP) or not; participating carers, based on whether carers were mothers, fathers or both mothers and fathers). Groupings of these three factors were decided post hoc. Two factors were based on post hoc decisions (child disability; age of child).