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Enhancing parental reflective functioning through early dyadic interventions: A systematic review and meta-analysis

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Abstract

Parental reflective functioning (PRF) is an important predictor of infant attachment, and interventions that target parent–infant/toddler dyads who are experiencing significant problems have the potential to improve PRF. A range of dyadic interventions have been developed over the past two decades, some of which explicitly target PRF as part of their theory of change, and some that do not explicitly target PRF, but that have measured it as an outcome. However, no meta-analytic review of the impact of these interventions has been carried out to date. The aim of this review was to evaluate the effectiveness of dyadic interventions targeting parents of infant and toddlers, in improving PRF and a number of secondary outcomes. A systematic review and meta-analysis was conducted in which key electronic databases were searched up to October 2018. Eligible studies were identified and data extracted. Data were synthesised using meta-analysis and expressed as both effect sizes and risk ratios. Six studies were identified providing a total of 521 participants. The results of six meta-analyses showed a non-significant moderate improvement in PRF in the intervention group (standardised mean difference [SMD]: −0.46; 95% confidence interval [CI] [−0.97, 0.04]) and a significant reduction in disorganised attachment (risk ratio: 0.50; 95% CI [0.27, 0.90]). There was no evidence for intervention effects on attachment security (odds ratio: 0.71; 95% CI [0.19, 2.64]), parent–infant interaction (SMD: −0.10; 95% CI [−0.46, 0.26]), parental depression (SMD: −1.55; 95% CI [−3.74, 0.64]) or parental global distress (SMD: −0.19, 95% CI [−3.04, 22.65]). There were insufficient data to conduct subgroup analysis (i.e. to compare the effectiveness of mentalisation-based treatment with non-mentalization-based treatment interventions). Relational early interventions may have important benefits in improving PRF and reducing the prevalence of attachment disorganisation. The implications for future research are discussed.

KEYWORDS
dyadic interventions, meta-analysis, parental reflective functioning, systematic review

1 | BACKGROUND

1.1 | Early childhood mental health problems

Infant regulatory disturbances such as excessive crying, feeding or sleeping difficulties and bonding/attachment problems have a high prevalence in many countries. For examples, the Copenhagen Child Cohort Study ($n = 6{,}090$) found a population prevalence of 18% in regulatory problems including emotional, behavioural, eating and sleeping disorders, in children aged 1.5 years in the region of 18% (Skovgaard, 2010; Skovgaard et al., 2008). In addition, a more recent survey on the mental health of children and young people in England (Vizard et al., 2018) found that 5.5% of children aged between 2 and 4 years of age experience a mental health problem. Furthermore, some regulatory disturbances are stable over time with one study suggesting that as many as 49.9% of infants and toddlers (aged 12–40 months) show a continuity of emotional and behavioural problems 1 year after initial presentation (Briggs-Gowan, Carter, Bosson-Heenan, Guyer, & Horwitz, 2006).

Problems of this nature are significant predictors of longer term difficulties. For example, infant regulatory problems have a strong association with behavioural problems, delays in motor, language and cognitive development and continuing parent–child relational problems (DeGangi, Breinbauer, Roosevelt, Porges, & Greenspan, 2000; Hemmi, Wolke, & Schneider, 2011). Similarly, insecure and disorganised attachment patterns in infancy are significant predictors of later psychopathology (Van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999); externalizing disorders (i.e. conduct and behaviour problems) (Fearon, Bakermans-Kranenburg, & Van Ijzendoorn, 2010) and personality disorder (i.e. mental health problems characterised by enduring maladaptive patterns of emotional regulation, relating and behaviour) (Steele & Siever, 2010). Individual empirical studies have also found an association between disorganised attachment and dissociation (Dutra & Lyons-Ruth, 2005; Lyons-Ruth, 2015); post-traumatic stress disorder (PTSD) (Macdonald et al., 2008) and an increased likelihood of children experiencing symptoms that meet clinical criteria (Borelli et al., 2010).

1.2 | Aetiology of regulatory problems

Infant regulatory and attachment problems can best be understood in a relational context, with disturbances to the parent–child relationship and parental psychosocial adversity being significant risk factors for infant emotional, behavioural, eating and sleeping disorders (Skovgaard et al., 2008; Skovgaard., 2010). Infants are born without the capacity to re-establish emotional regulation when faced by distress, and thus rely on their primary carers to help them regulate when they are frightened or overwhelmed (Beebe et al., 2010; Tronick & Weinberg, 1997). The caregiver's capacity to respond sensitively to the infant's needs has long been thought to be a key factor in the development of secure attachments and infant emotional regulation (Ainsworth, 1979; Spangler, Schieche, Ilg, Maier, & Ackermann, 1994). However, one systematic review found only modest correlations between maternal sensitivity and infant attachment security (De Wolff & Van Ijzendoorn, 1997), and a later meta-analysis found only a very small effect size linking parental sensitivity and disorganised attachment (Van Ijzendoorn et al., 1999). These findings suggested that other factors may play a role in the development of attachment patterns, prompting a search for other predictive factors that may underpin attachment

Key Findings

1. The findings of this review show a moderate trend toward improvement in parental reflective functioning and a significant improvement in disorganised attachment following the provision of a dyadic intervention to high-risk parents in the postnatal period.
2. There was no evidence of a significant improvement in parent-infant interaction, parental mental health, or security of attachment, although the impact on maternal depression was large.
3. We found very few studies that had measured parental reflective functioning as part of the evaluation of early dyadic interventions, despite evidence regarding its importance in the intergenerational transmission of attachment.

Statement of relevance

This research suggests that relational early interventions may have important benefits in improving parental reflective functioning and reducing the prevalence of attachment disorganisation, and indicates the need for further research on this topic.

security and resilience. Research since then has focused on a number of other potential mechanisms including the parent's capacity for 'reflective functioning' (Slade, 2005; Fonagy, Steele, Moran, Steele, & Higgitt, 1991).

1.3 | Reflective functioning

Infants and young children depend on the parent's interest in their subjective experience, and their capacity to make the child's behaviour meaningful by interpreting it in terms of underlying mental states. This capacity has been operationalised as 'parental reflective functioning' (PRF), and can be understood as a particular manifestation of mentalizing, that is the process by which we make sense of each other and ourselves, implicitly and explicitly, in terms of subjective states and mental processes. PRF is seen as underlying sensitive responding by helping parents to mentally put themselves in the place of the infant and imagine the infant's experience (Fonagy & Target, 1997). To date, few tools have been developed to assess PRF, the most widely used being the Reflective Functioning Scale (Fonagy, Target, Steele, & Steele, 1998) applied to the Parent Development Interview (PDI-RF: Slade, Bernbach, Grienenberger, Levy, & Locker, 2004) and the Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2009). The PDI-RF scale is a coding system that is applied to semi-structured interviews with caregivers, whereas the PRFQ is a parent self-report questionnaire.

Research to date suggests that PRF is strongly associated with positive maternal parenting behaviours such as flexibility and responsiveness, and use of the mother as a secure base on the part of the infant, whereas low PRF is associated with emotionally unresponsive maternal behaviours such as withdrawal, hostility and intrusiveness (Ensink et al., 2019; Grienenberger, Kelly, & Slade, 2005). Consistent with this, the parents' reflective functioning about their attachment relationships, both past and present, has been found to be associated with a child's secure attachment at 14 months (Grienenberger, Kelly, & Slade, 2005; Suchman, DeCoste, Leigh, & Borelli, 2010). In an important study of intergenerational patterns of attachment, Fonagy et al. (1995) showed that mothers with a history of deprivation who are able to acquire a capacity for reflective functioning were more likely to have infants with a secure attachment. The value of PRF in the development of affect regulation and secure attachment in the child has been demonstrated in a number of empirical studies. For example, mothers' reflective functioning about their own early attachment relationships has been shown to be associated with secure and organised infant attachment (Ensink et al., 2015; Fonagy, Steele., & Steele., 1991), and with less externalizing difficulties in children (Ensink, Bégin, Normandin & Fonagy, 2016).

In the context of taking care of infants, reflective functioning is thought to promote sensitive parenting by helping the parent look beyond behaviours to consider what the child is feeling and to inhibit negative interactions by helping the parent regulate their own negative reactions and remain focused on the infant's needs. Even when their baby is distressed, parents with higher PRF are more likely to be able to remain relatively calm, and not take it personally when their infant is dysregulated (Schultheis, Mayes, & Rutherford, 2019). This in turn helps the infant to become regulated. Over time, these patterns of feeling secure in the belief that others will be there when in distress underlie the feeling that it is safe and rewarding to express and share feelings with others when distressed, and in turn be available and supportive of others when they are in distress (Ensink et al., 2016).

1.4 | Dyadic psychological interventions and reflective functioning

A focus on mental states is a central part of most psychological therapies, and it has as such been argued that a range of therapeutic approaches, including psychodynamic therapy, Cognitive Behavioural Therapy and Dialectical Behaviour Therapy, can improve the capacity for mentalisation (Fonagy & Adshead, 2012). This focus on promoting mentalizing as a shared feature of a range of psychological therapies has empirical support in relation to both adult (Goodman, 2013) and child therapies (Goodman, Midgley, & Schneider, 2016). Mentalisation-based treatment (MBT) was developed as a particular approach to working with adults with borderline personality disorder (BPD), based on a hypothesis that BPD could best be understood as a 'disorder of mentalizing', and that a particular therapeutic focus on promoting this capacity could ameliorate some of the well-known features of BPD, such as poor affect regulation and interpersonal relations. MBT's success in improving the mentalizing abilities of patients with BPD (Bateman & Fonagy, 2004, 2008) led to the development of mentalisation or reflective functioning–based interventions for a range of clinical populations, including children and families (Midgley & Vrouva, 2012; Midgley et al., 2017), as well as parent–infant/toddler dyads who are experiencing significant social problems (e.g. Minding the Baby [MTB]: Sadler et al., 2013) and substance dependency (the Mother and Toddler Program: Suchman, DeCoste, McMahon, Rounsaville, & Mayes, 2011). These interventions focus on enhancing mothers' capacity to make sense of the baby's thoughts, emotions and intentions, thereby

laying the foundation for sensitive responsiveness and secure attachment.

As with therapies that target adults, it seems likely that there may be many routes to developing PRF in parent–child dyadic therapies regardless of whether that is the primary aim of the intervention. For example behaviourally focused sensitivity interventions such as video feedback, which provide the mother with the opportunity to watch herself and her infant/toddler during moments of positive interaction, are used by the therapist to help the mother to develop a reflective stance by encouraging her to think about her infant's internal world (e.g. the therapist might say to the mother 'what do you think your baby was feeling at that moment'?). This is also true of other attachment and psychotherapeutic approaches; for example Watch, Wait and Wonder (Cohen et al., 1999) is an infant-led therapy that also encourages the mother to develop a reflective stance by allowing the baby to take the initiative, by watching and wondering about this activity, and also through discussion with the therapist about the feelings that this arouses in her as a person.

1.5 | Rationale for review

A range of dyadic interventions have been developed over the past two decades, some of which explicitly target PRF as part of their theory of change, and some that do not explicitly target PRF, but that have measured it as an outcome. There has to date been one review of PRF and the use of clinical interventions to improve it (Camoirano, 2017), but this included all studies irrespective of the study design and provided only a narrative summary (i.e. no meta-analysis of data).

The current review updates the existing review (i.e. in which searches were completed in July 2016), and includes only rigorously conducted studies that have made use of an RCT design and used a recognised measure of parental RF; it also provides a meta-analysis of the data, where appropriate.

2 | REVIEW STRATEGY

Published and unpublished studies were identified using searches of the following online databases: MEDLINE, PsychINFO, EMBASE CINAHL, ERIC and SSCI. The stems of the following identifiers or keywords were used to search the title or abstract either separately or in conjunction: 'mentalization', or 'mentalisation', or 'reflective functioning*' or 'mind-mindedness' or 'insightfulness' combined with terms to identify interventions and RCTs. In order to increase the sensitivity of the search, no methodological or outcome terms were used. Search terms were adapted as appropriate for the different databases. Searches were conducted for papers published in English, for the entire time periods for which the databases are available up until October 2018.

2.1 | Inclusion/exclusion criteria

Only studies that met the following criteria were included: Randomised controlled trials (RCTs) evaluating the effectiveness of early interventions targeting parents of infants or toddlers up to 36 months of age, with the aim of improving parental functioning and/or parent–infant interaction. Studies had to have measured PRF as an outcome using a standardised (i.e. interview-based or parent-report) instrument. We also extracted data for secondary outcomes – attachment security or parent–infant interaction, and parental mental health. Studies were excluded if they involved the delivery of an intervention without a standard treatment or non-intervention control group. We did not include unpublished doctoral dissertations.

Titles and abstracts were reviewed by the lead author, and final decisions about the papers to be included were made by two study authors. Two review authors conducted the 'Risk of bias' assessments using The Cochrane Collaboration 'Risk of bias' assessment tool (Higgins & Green, 2011), with each domain being assessed as at low, high or unclear (uncertain) risk of bias.

2.2 | Computation of effect sizes

Data were extracted using a standardised data extraction process. In all cases, we extracted the post-intervention data, except where the data were reported by age of the infant, in which case we selected the most immediate post-intervention point (usually 12-months of age). Effect sizes were calculated using Revman 5 (The Nordic Cochrane Centre, The Cochrane Collaboration, 2014). Distributions of scores from primary papers have been presented as odds ratios (ORs) or standardised mean differences (SMDs), depending on the nature of the primary data, with 95% confidence intervals (CIs). Data were combined using a random effects model due to the high level of heterogeneity in outcomes measured. Statistical heterogeneity was assessed using the I^2 statistic. The importance of the observed value of I^2 is dependent on the magnitude and direction of effects and strength of evidence for heterogeneity (e.g. p-value from the χ^2 test, or a CI for I^2). An I^2 greater than 50% was interpreted as evidence of substantial heterogeneity. A χ^2 test of heterogeneity was performed and a significance

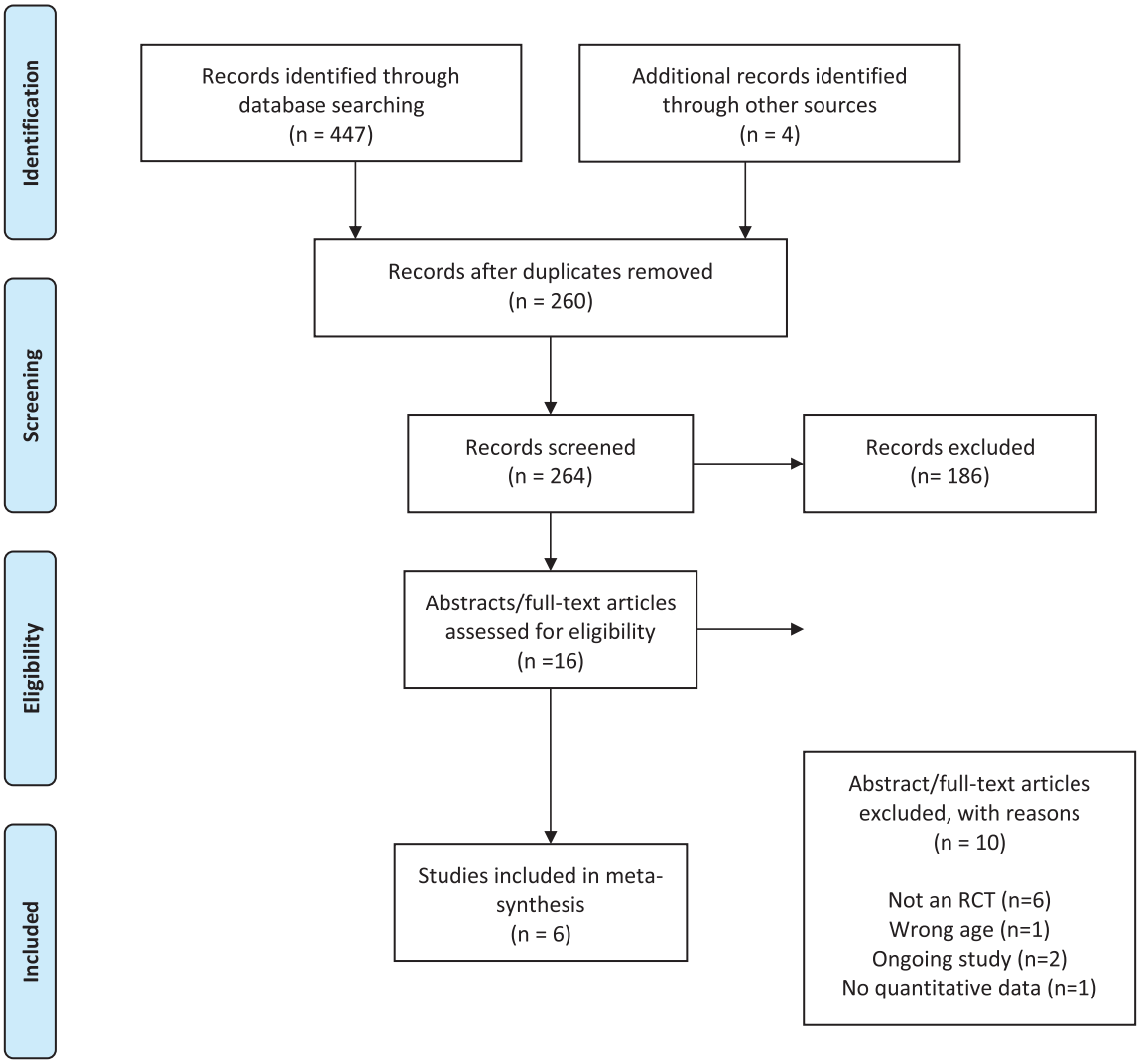

FIGURE 1 PRISMA flow chart of included studies

level <0.10 was interpreted as evidence of heterogeneity. Effect sizes were weighted according to the inverse of their variance to ensure that studies in with the more precise estimates had a greater influence on the overall effect size (Hedges & Olkin, 1985).

3 | RESULTS

The PRISMA flow chart (Figure 1) shows that a total of 260 records were identified following removal of duplicates, and that these were all screened with 17 full-text articles being assessed for suitability. A total of six studies were included (see Table 1), the remaining studies being excluded because they were not RCTs; or they provided follow-up rather than immediate post intervention data; the children were over 36 months old; they were an ongoing study; or they provided no quantitative data.

The included studies targeted a range of parents, including high-risk primiparous women with demographic risk factors (Sadler et al., 2013; Sleed, Slade, & Fonagy, 2020); mothers experiencing mental health problems and high levels of social adversity (Fonagy, Sleed, & Baradon, 2016); mother–infant dyads in prison (Fonagy et al., 2016) or those taking part in substance treatment programs (Suchman et al., 2010). Only one of the six studies included toddlers (Suchman et al., 2010), the remainder targeted babies <18 months.

A number of interventions were delivered, all of which were dyadic, relational and manualised attachment-based interventions. Four interventions were explicitly informed by concepts relating to mentalisation in terms of the underlying theory of change (Sadler et al., 2013; Sleed et al., 2020; Suchman et al., 2010, 2017), the remaining two being informed by psychoanalytic theory with a primary focus on changing maternal representations of the infant (Fonagy et al., 2016; Sleed, Baradon, & Fonagy, 2013).

TABLE 1 Included studies

Author Primary included studies	Population	Intervention and control conditions	Outcome measure used and timing	Results – Post-intervention	
				Intervention	Control
Fonagy et al., 2016	Parents with mental health problems who were also experiencing high levels of social adversity and their young infants (<12 months)	Psychoanalytic parent–infant psychotherapy (mean number of sessions 16) (PIP) ($n = 38$); Standard secondary and specialist primary care treatment ($n = 38$)	Parental representations – The Parent Development Interview (PDI) Parent–infant interaction – Emotional Availability Scale (EAS); Coding Interactive Behaviour System (CIB) Attachment – The Strange Situation Procedure (SSP) - Secure - Disorganised Depression – Centre for Epidemiological Studies Depression Scale (CES-D) Global distress – Brief Symptom Inventory (BSI) Master – Mastery Scale (MS) Mother–Object Relations Scale (MORS) - Warmth - Intrusion Parenting Stress Index (PSI) – total score Ages and Stages Questionnaire (ASQ: SE) 12 month follow-up reported (not 6 month)	4.8 (1.6) 27.3 (5.7) 47.4 (6.9) 76% ($n = 22$) 14% ($n = 4$) 15.1 (8.5) 39.7 (9.3) 32.2 (6.6) 28.9 (4.5) 11.5 (3.6) 79.1 (18.9) −0.3 (1.08)	4.3 (1.4) 28.1 (5.6) 47.7 (5.6) 68% ($n = 17$) 16% ($n = 4$) 22.4 (15.0) 45.6 (12.6) 29.0 (8.3) 27.5 (3.9) 12.9 (6.9) 88.2 (25.5) 0.04 (0.89)
Sadler et al (2013)	Primiparous pregnant women attending nurse-midwifery group prenatal care sessions.	Mentalisation-based home visiting programme (Minding the Baby - MTB) ($n = 60$)Usual care control group ($n = 45$)	Maternal reflective functioning – The Parent Development Interview (PDI) Maternal Depression Centre for Epidemiological Studies Depression Scale (CES-D) Global distress – Brief Symptom Inventory (BSI) Maternal–child relationship – Atypical Maternal Behaviour Instrument for Assessment and Classification (AMBIANCE) - Disrupted Attachment – The Strange Situation Procedure (SSP) - Secure - Disorganised AMBIANCE assessed at 4 months; all other measures at 12 months.	3.6 (0.8) 13.4 (10.9) 48.4 (11.4) (60.5% ($n = 45\%$) 61.4% ($n = 41$) 27.0% ($n = 41$)	3.7 (1.5) 11.3 (7.8) 47.3 (10.9) 73.3% ($n = 31\%$) 48.4% ($n = 30$) 43.0% ($n = 30$)
Slade et al (2018)	Young first time mothers living in underserved, poor, urban communities	Mentalisation-based home visiting programme (Minding the Baby [MTB]) ($n = 77$) Usual treatment control group ($n = 79$)	Maternal reflective functioning postnatal – Parent Development Interview – Revised (PDI) Maternal child relationship – Atypical Maternal Behaviour Instrument for Assessment and Classification (AMBIANCE) Scale (4 months) - Disrupted Attachment – The Strange Situation Procedure (SSP) - Secure - Disorganised	3.71 (0.88) 5.3 (1.1) 61.5% ($n = 32$) 21.2% ($n = 11$) 11.4 (8.7) 77.2 (17.3)	3.65 (1.12) 5.22 (1.07) 41.4 ($n = 24$) 37.9% ($n = 22$) 13.0 (8.6) 77.2 (15.6)

(Continues)

TABLE 1 (Continued)

Author Primary included studies	Population	Intervention and control conditions	Outcome measure used and timing	Results – Post-intervention	
				Intervention	Control
			Maternal Depression Centre for Epidemiological Studies Depression Scale (CES-D) Post-traumatic stress disorder (PTSD) – Mississippi Scale for the Assessment of PTSD – Civilian Form Assessed at 12 months infant age		
Sleed et al 2013	Mothers and babies in prison	Attachment-based group intervention (New Beginnings) (mean number of session 7.1) ($n = 88$); Prisoners with no intervention ($n = 75$)	Parental Reflective Functioning – Parent Development Interview (PDI) Mother-Infant Interaction – Coding Interactive Behaviour Scales (CIB) – Dyadic Attunement Mother Object Relations Scale (MORS) – Warmth Invasion Centre for Epidemiological Studies Depression Scale (CES-D) All assessed immediately post-intervention	3.54 (1.57) 34.98 (8.5) 29.5 (4.6) 7.7 (4.3) 15.3 (11.8)	3.15 (1.33) 38.06 (7.3) 27.2 (5.6) 8.3 (5.7) 13.6 (9.4)
Suchman et al (2010)	Mothers of babies/toddlers taking part in substance-treatment program	12-week attachment-based individual parenting therapy (The Mothers and Toddlers Program – MTP) ($n = 23$ Parenting education (PE) ($n = 24$)	Parental reflective functioning – Parent Development Interview (PDI) Caregiving behaviour – Nursing Child Assessment Satellite Training (NCAST) Total Contingency for Caregiving Behaviour Depression – Beck Depression Inventory (BDI) Global Distress – Brief Symptom Inventory (BSI) Substance Use Assessed immediately post-intervention	3.59 (0.65) 14.60 (1.93) 13.57 (7.30) 58.86 (6.72) 0.20 (0.36)	3.08 (0.65) 13.01 (1.93) 16.01 (7.28) 60.24 (6.71) 0.22 (0.36)
Suchman et al (2017)	Mothers caring for a child between 11 and 60 months with a history of alcohol and drug addiction	12-week mentalisation based individual therapy (Mothering from the Inside Out – MIO) ($n = 40$) Parent education (PE) ($n = 47$)	Parental reflective functioning – Parent Development Interview (PDI) Representations of the child – Working Model of the Child Interview (WMCI) Mother-Infant Interaction – Coding Interactive Behaviour Scales (CIB) – Maternal sensitivity Global distress - Brief Symptom Index (BSI) Attachment – The Strange Situation Procedure (SSP) - Secure - Insecure/Disorganised Assessed at 12 months infant age	3.25 (0.06) 2.73 (0.05) 3.51 (0.09) 58.34 (1.2) 64.3% 35.7%	3.14 (0.06) 4.48 (0.12) 3.47 (0.08) 56.62 (1.09) 58.1% 41.9%

MTB (Sadler et al., 2013) comprises a mentalisation-based home visiting program, which is delivered by a team that includes a nurse practitioner and a clinical social worker. The intervention begins in pregnancy and continues to the child's second birthday with an average of 60 sessions of 1 hr being delivered. The focus of the sessions depends on the family's needs at the time of the visit but the intervention is anchored in the development of a therapeutic relationship (e.g. support, empathy, reassurance and praise) and a reflective stance (i.e. being curious with the mother about the child's and parent's thoughts and feelings).

The Mothers and Toddlers Program (Suchman et al., 2010) and Mothering from the Inside Out (Suchman et al., 2017) consist of 12 weeks of individual parenting therapy designed as an adjunct to outpatient substance abuse treatment. The focus is on the therapeutic alliance, and the use of a mentalizing stance on the part of the therapist to help parents begin to understand the way in which their actions are influenced by thoughts, emotions and intentions.

New Beginnings (Sleed et al., 2013) and Parent Infant Psychotherapy (PIP) (Fonagy et al., 2016) are both relational interventions that focus on parents' representations (internal working models) of the parenting role and the baby, while at the same time focusing on the baby's communications, the meaning of these and parents' responses in the here and now of the sessions. Past and current relational experiences may be addressed, but in both interventions the baby is an active participant and central focus of the sessions. New Beginnings is a group-based eight-session intervention, whereas PIP is an open-ended intervention that involves a therapist, one or both parents and the baby.

Figure 2 shows the results of the critical appraisal. Overall, the included studies were of moderate quality with most meeting only three of the quality appraisal criteria.

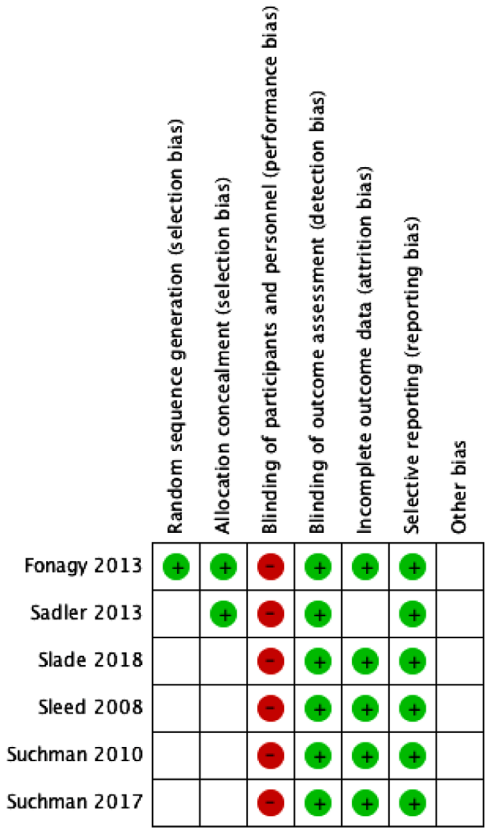

FIGURE 2 Summary of risk of bias of included studies. + Condition was met low risk; − Condition was not met (in this case because it was not possible to do so) high risk; Remainder not known unknown risk

3.1 | Reflective functioning

All six studies included an assessment of RF using the PDI (Slade et al., 2004). The meta-analysis included a total of 521 participants, and the results were not significant but show a trend favouring the intervention group: Standardised Mean Difference (SMD) −0.46 (95% CI [−0.97, 0.04], $p = .07$) but with significant heterogeneity ($\chi^2 = 38.75$, $df = 5$, $p < .001$; $I^2 = 87\%$) (see Figure 3).

3.2 | Mother–infant interaction

All studies included a measure of parental sensitivity/contingency that could be combined in a meta-analysis providing an overall sample size of 492. Three studies used the Coding Interactive Behaviour (CIB) coding (Feldman, 1998) (Fonagy et al., 2016; Sleed et al., 2013; Suchman et al., 2017); one study used the Nursing Child Assessment Teaching Scale (NCAST; Bernard & Eyers, 1979; (Suchman et al., 2010); and two studies used the Atypical Maternal Behaviour Instrument for Assessment and Classification (AMBIANCE, version 2; Bronfman, Parsons, & Lyons-Ruth, 1999; Sadler et al., 2013; Slade et al., 2018).

We combined data from the 'Total Contingency' domain of the NCAST, and the overall disruption score on the AMBIANCE. The results show no evidence of effectiveness – SMD: −0.10 (95% CI [−0.46, 0.26], $p = .60$) and high levels of heterogeneity ($\chi^2 = 19.02$, $df = 5$, $p = .002$, $I^2 = 74\%$) (see Figure 4).

3.3 | Attachment

Four studies measured attachment, all of which used using the Strange Situation Procedure (SSP) (Ainsworth, Blehar, Waters, & Wall, 1978) (Fonagy et al., 2016; Sadler et al.,

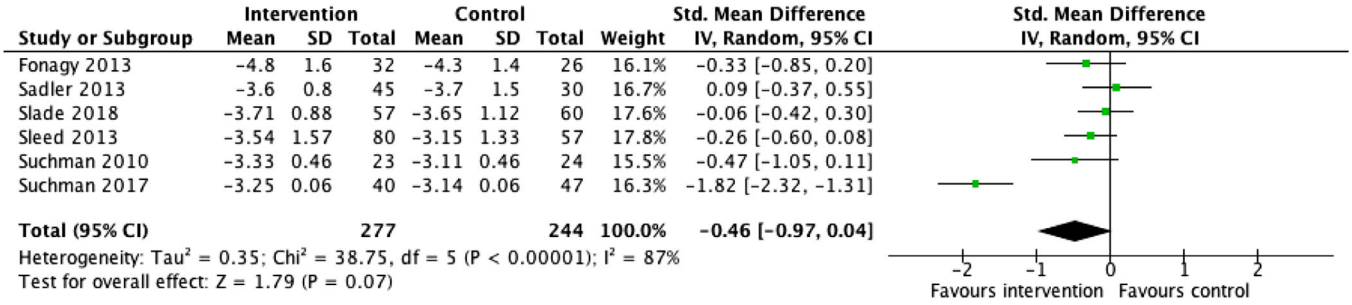

FIGURE 3 Forest plot of meta-analysis for reflective functioning

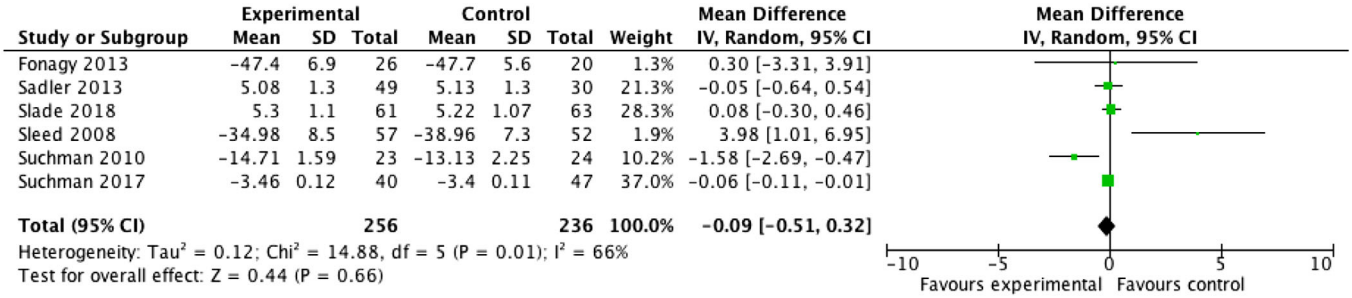

FIGURE 4 Forest plot of meta-analysis for mother–infant interaction

2013; Slade et al., 2018; Suchman et al., 2017). A total of 267 participants were included in the meta-analysis of secure attachment (see Figure 5) and 234 in the meta-analysis of disorganised attachment (see Figure 6). The results indicate that although rates of secure attachment were not higher than those of controls (OR: 0.71; 95% CI [0.19, 2.64], $p = .61$) with a high level of heterogeneity ($\chi^2 = 16.47$, $df = 3$, $p = .0009$, $I^2 = 82\%$), the rates of disorganised attachment – the most pathognomonic of attachment classifications – were significantly lower in the intervention groups (OR: 0.50; 95% CI [0.27, 0.90], $p = .02$) with low levels of heterogeneity ($\chi^2 = 0.47$, $df = 2$, $p = .79$, $I^2 = 0\%$).

3.4 | Parental depression

Five of the included studies measured parental depression. Four used the Centre for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977) (Fonagy et al., 2016; Sadler et al., 2013; Slade et al., 2018; Sleed et al., 2020); and one used the Beck Depression Inventory (BDI) (Beck, Steer, & Brown, 1996) (Suchman et al., 2010). A total of 450 participants were included, and the results show a large but non-significant difference favouring the control group (SMD: −1.55, 95% CI [−3.74, 0.64], $p = .16$) with an acceptable level of heterogeneity ($\chi^2 = 5.86$, $df = 4$, $p = .21$, $I^2 = 32\%$) (see Figure 7).

3.5 | Parental global psychiatric distress

Four of the included studies measured global distress using the Brief Symptom Inventory (Derogatis, 1993; (Fonagy et al., 2016; Sadler et al., 2013; Suchman et al., 2010, 2017). A total of 260 participants were included, and the results show a small but non-significant improvement favouring the intervention group (SMD: −0.19, 95% CI [−3.04, 22.65]). There was again a high level of heterogeneity ($\chi^2 = 7.83$, $df = 3$ $p = .05$, $I^2 = 62\%$) (see Figure 8).

4 | DISCUSSION

Although other reviews have examined the effectiveness of early dyadic interventions in improving parental sensitivity (e.g. Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003) and attachment security (e.g. Barlow, Bennett, Midgley, Larkin, & Wei, 2015), this is the first quantitative review to explicitly focus on PRF as an outcome of early dyadic interventions.

Despite the evidence regarding the importance of PRF in promoting sensitive parenting behaviours and infant attachment security, this review found only six studies that measured the effectiveness of a dyadic intervention in improving reflective functioning in parents of infants and toddlers. A meta-analysis of findings from these six studies, including 521 parent–infant/toddler dyads, found

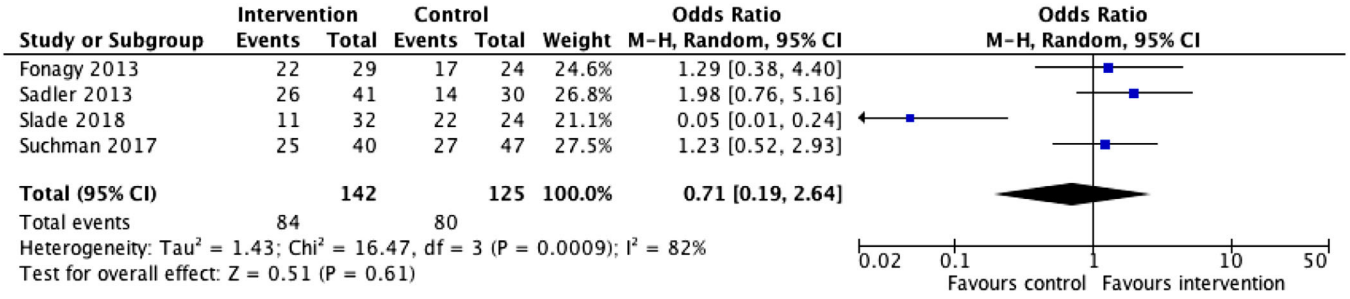

FIGURE 5 Forest plot of meta-analysis for secure attachment

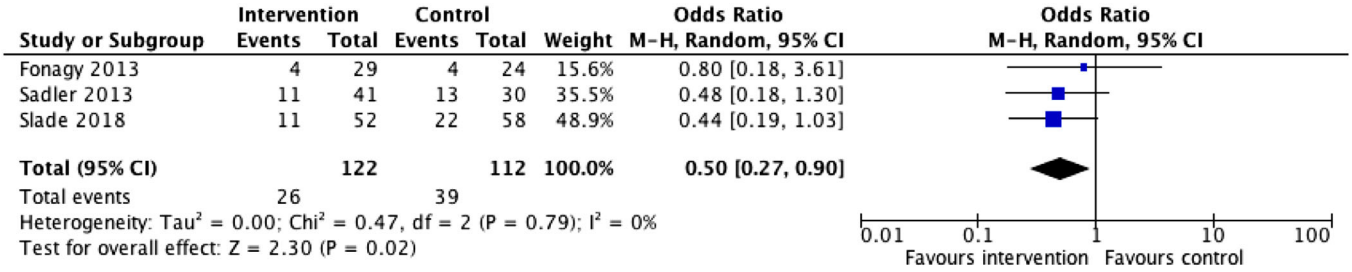

FIGURE 6 Forest plot of meta-analysis for disorganised attachment

that there was a non-significant but trend-level improvement in PRF in the intervention group, as assessed by the Reflective Functioning Scale on the Parent Development Interview. PRF is important because of its association with positive maternal parenting behaviours and infant attachment security. Furthermore, infants in the intervention group were less likely to be classified as having a disorganised attachment. These findings suggest that dyadic attachment-based interventions can have important long-term benefits for infants and toddlers.

The fact that intervention effects were found on the PDI-RF measure is encouraging because the variability on the

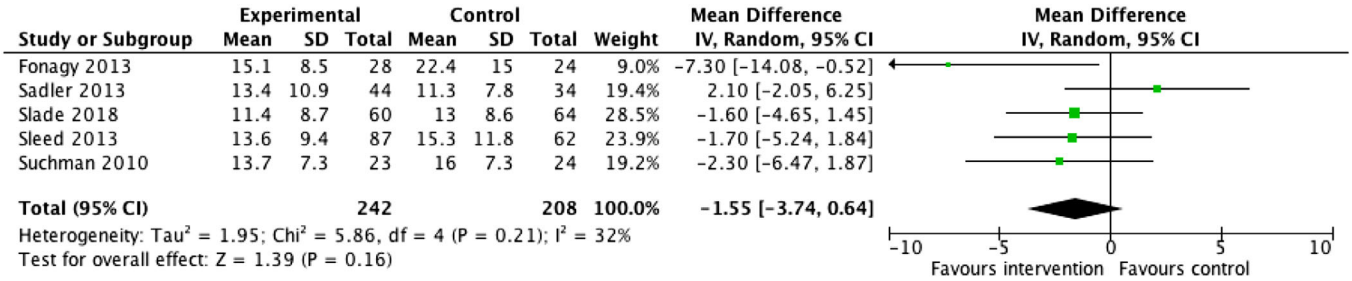

FIGURE 7 Forest plot of meta-analysis for maternal depression

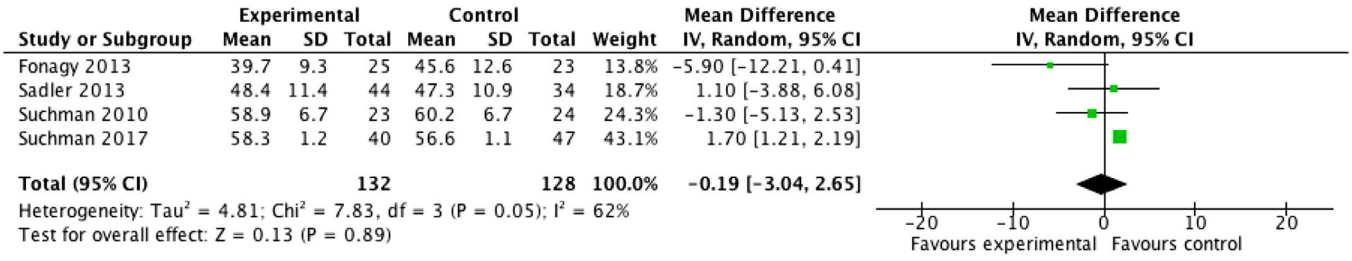

FIGURE 8 Forest plot of meta-analysis for maternal global distress

RF scale is limited, with the majority of parents in clinical populations showing RF levels only at the moderate to low end of the scale, thereby reducing the potential range and sensitivity to treatment change (Sleed et al., 2020). However, the fact that this systematic review found treatment effects on PRF in the large pooled sample suggests that this instrument may be sensitive to treatment change in sufficiently powered studies. Improvements in parental RF that are numerically small may be clinically very important.

The positive intervention effect on infant attachment disorganisation is also clinically important because this group of infants are most at risk of later psychopathology (Carlson, 1998; Holmes, 2004). Although the meta-analysis did not show any intervention effects on attachment security or parent–infant interactions, these findings may suggest that the interventions were successful in interrupting pathways to disorganisation through mediating factors other than maternal sensitivity, which only accounts for a small amount of variance in predicting attachment disorganisation (Van Ijzendoorn et al., 1999). It is now widely accepted that the pathway to disorganisation is marked by a wider range of disrupted parental behaviours, such as frightening, frightened/disoriented, role reversed and withdrawal behaviours (Madigan et al., 2006). That we were not able to detect impacts on the interaction is possibly due to the fact that this meta-analysis was conducted using combined data from three quite different measures of parent–infant interaction, only one of which (the AMBIANCE) specifically measures disrupted maternal behaviours associated with disorganisation. This may have made it difficult to detect any overall effects of the interventions on such disrupted behaviours (e.g. Sadler et al., 2013). The mechanism of change in such interventions may not therefore simply be about improving parents' sensitive responsiveness to their infants, but rather helping them to mentalise their own and their child's psychological experiences, thereby reducing disrupted behaviours that can lead to attachment disorganisation.

The results of this review did not indicate an overall intervention effect on parental mental health – depression or general psychiatric distress. This finding is likely due to the heterogeneous nature of the various samples included. The one study that explicitly targeted parents with mental health difficulties (Fonagy et al., 2016) did in fact show strong treatment effects on a range of mental health difficulties; this suggests that positive outcomes in this domain are secondary and probably only likely for parents identified as experiencing mental health difficulties in the first place.

The studies varied in the degree to which they focused on mentalisation with four being explicitly mentalisation-based interventions (Sadler et al., 2013; Slade et al., 2018; Suchman et al., 2010, 2017), and the remaining two being based on a different theory of change regarding parental internal working models (Fonagy et al., 2013; Sleed et al., 2013). Although the two studies with a different theory of change (Fonagy et al., 2013; Sleed et al., 2013) showed evidence of improved PRF albeit with only borderline significance, it is highly likely that a focus on internal working models is also effectively changing PRF.

In terms of the mentalisation-based interventions, further thought should be given to whether the way in which these have been translated into practice in terms of the program content, frequency and duration and fidelity to the program model provides the necessary mechanisms to bring about change in key outcomes such as PRF, sensitivity and child attachment status. One paper (Suchman, Decoste, Rosenberger, & McMahon, 2012) that has explicitly examined the mechanisms involved in the effective delivery of a mentalisation-based intervention for mothers and toddlers (Suchman et al., 2010, 2011) identified the core model components as being the fostering of reflective functioning, fostering of representation quality, and development of attachment-based developmental guidance. This study found that therapist fidelity to the unique and essential mentalisation-based practices associated with improved maternal reflective functioning and representation quality (RQ) led to improvement in each of these domains as well as maternal caregiving behaviour. It also found that improvement in overall RQ uniquely corresponded to improvement in caregiving behaviour, accounting for around 8% of the variance. Improvement in parental depression was also found to have unique predictive validity, accounting for around 18% of the variance. Overall, 69% of the predicated variance in caregiving behaviour was accounted for by the proposed mechanisms of change.

This review has a number of limitations. We identified only a small number of studies, most of which had low numbers of participants; thus, the resulting meta-analyses were in all likelihood underpowered as reflected by the moderate to large but nonsignificant results for some of the secondary outcomes. Furthermore, although there was significant unexplained statistical heterogeneity, it was not possible to undertake subgroup analysis to explore this further. The unexplained heterogeneity may reflect the diverse and sometimes high risk (e.g. prison population and substance-dependent women) involved in some of the included studies. It may also reflect the diverse nature of the interventions included in the meta-analysis; for example the interventions ranged from dyadic home-based programmes to dyadic clinic-based programmes, and parent only group and individual interventions. In addition, we used the immediate post-intervention follow-up data collection point, and few studies had longer term follow-up data available. This is a major limitation of studies

of very early interventions because it may take time for reductions in risk factors to translate into improved dyadic functioning as measured by standardised instruments. For example, the alleviation of maternal psychiatric symptomology is likely to increase the infant's capacity to form a secure attachment to his/her mother (Atkinson et al., 2000), but the effects of such improvements may not be seen behaviourally within the relatively short follow-up periods of most studies.

It is important that future studies include larger samples and a consistent set of measures, particularly in the assessment of variables that might explain how such interventions effectively disrupt pathways to attachment disorganisation. These could include measures of parental behaviour (such as the AMBIANCE; Bronfman et al., 1999) or multidimensional measures of parental representations (such as the Assessment of Representational Risk) that explicitly measure factors associated with attachment disorganisation. In addition, future studies should have longer follow-up periods to enable a truly developmental understanding of the impact of early interventions.

The sample of studies included in this review were also limited by the small number of studies that had included an evaluation of PRF, leaving open the possibility that other, more effective interventions, may also be impacting on PRF but without this impact being captured by research evaluation. For example, many interventions that are showing high levels of effectiveness in terms of maternal sensitivity and infant attachment security, such as video feedback, have not measured their impact on PRF (Sleed et al., 2014). Given the hypothesis that improving PRF may be a shared mechanism across a range of different intervention programmes (not only mentalisation-based interventions), it will be important for future studies of a wide range of dyadic parent–infant interventions to find ways to capture their impact on PRF.

5 | CONCLUSION

Despite the importance of PRF in terms of the aetiology of infant regulation and attachment, this review suggests that such functioning is not yet being routinely assessed when examining the effectiveness of dyadic interventions for parents and infants or toddlers. The findings also suggest that dyadic attachment-based interventions are a potentially effective method of improving PRF and reducing the chances of disorganised attachment in the infant. A range of factors were discussed with regard to the failure to show any benefit in terms of the remaining outcomes including the studies being underpowered and having diverse high-risk populations, the translation into practice of the programme mechanisms and the sensitivity of measures of change in high-risk groups.

CONFLICT OF INTEREST

One of the authors (MS) was involved in the conduct of one of the included studies.

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REFERENCES

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Ainsworth, M. S. (1979). Infant–mother attachment. *American Psychologist*, *34*(10), 932–937.

Atkinson, L., Paglia, A., Coolbear, J., Niccols, A., Parker, K. C., & Guger, S. (2000). Attachment security: A meta-analysis of maternal mental health correlates. *Clinical Psychology Review*, *20*(8), 1019–1040.

Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, *129*(2), 195–215.

Barlow, J., Bennett, C., Midgley, N., Larkin, S. K., & Wei, Y. (2015). Parent-infant psychotherapy for improving parental and infant mental health. *Cochrane Database of Systematic Reviews*, *1*, CD010534.

Barnard, K. E., & Eyres, S. J. (1979). *Child health assessment, part 2: The first year of life*. Washington, DC: Government Printing Office.

Bateman, A., & Fonagy, P. (2008). 8-year follow-up of patients treated for borderline personality disorder: Mentalization-based treatment versus treatment as usual. *American Journal of Psychiatry*, *165*, 631–638.

Bateman, A. W., & Fonagy, P. (2004). *Psychotherapy for borderline personality disorder: Mentalization based treatment*. Oxford, UK: Oxford University Press.

Beebe, B., Jaffe, J., Markese, S., Buck, K., Chen, H., …. Feldstein, S. (2010). The origins of 12-month attachment: A microanalysis of 4-month mother-infant interaction. *Attachment & Human Development*, *12*(1-2), 3–141.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck depression inventory manual* (2nd ed.). New York, NY: Psychological Corporation.

Briggs-Gowan, M. J., Carter, A. S., Bosson-Heenan, J., Guyer, A. E., & Horwitz, S. M. (2006). Are infant-toddler social-emotional and behavioural problems transient? *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*(7), 849–858.

Borelli, J. L., Crowley, M. J., David, D. H., Sbarra, D. A., Anderson, G. M., & Mayes, L. C. (2010). Attachment and emotion in school-aged children. *Emotion*, *10*, 475–485.

Bronfman, E., Parsons, E., & Lyons-Ruth, K. (1999). *Atypical maternal behaviour instrument for assessment and classification*. Boston, MA: Harvard Medical School.

Camoirano, A. (2017). Mentalizing makes parenting work: A review about parental reflective functioning and clinical interventions to improve it. *Frontiers of Psychology*, *8*, 14.

Carlson, E. A. (1998). A prospective longitudinal study of attachment disorganization/disorientation. *Child Development*, *69*(4), 1107–1128.

Cohen, N. J., Muir, E., Lojkasek, M., Muir, R., Parker, C. J., Barwick, M., & Brown, M. (1999). Watch, wait, and wonder: Testing the effectiveness of a new approach to mother–infant psychotherapy. *Infant Mental Health Journal*, *20*, 429–451.

DeGangi, G. A., Breinbauer, C., Roosevelt, J. D., Porges, S., & Greenspan, S. (2000). Prediction of childhood problems at three years in children experiencing disorders of regulation during infancy. *Infant Mental Health Journal*, *21*(3), 156–175.

Derogatis, L. R. (1993). *Brief symptom inventory: Administration, scoring, and procedures manual* (3rd ed.). Minneapolis, MN: National Computer Systems.

De Wolff, M. S., & Van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment security. *Child Development*, *68*, 604–609.

Ensink, K., Bégin, M., Normandin, L., & Fonagy, P. (2016). Maternal and child reflective functioning in the context of child sexual abuse: Pathways to depression and externalising difficulties. *European Journal of Psychotraumatology*, *7*, 30611.

Ensink, K., Normandin, L., Target, M., Fonagy, P., Sabourin, S., & Berthelot, N. (2015). Mentalization of children and mothers in the context of trauma: An initial study of the validity of the Child Reflective Functioning Scale. *British Journal of Developmental Psychology*, *33*, 203–217.

Ensink, K., Borelli, J. L., Roy, J., Normandin, L., Slade, A., & Fonagy, P. (2019). Costs of not getting to know you: Lower levels of parental reflective functioning confer risk for maternal insensitivity and insecure infant attachment. *Infancy*, *24*(2), 210–227.

Dutra, L., & Lyons-Ruth, K. (2005, April). Maltreatment, maternal and child psychopathology, and quality of early care as predictors of adolescent dissociation. In J. Borelli (Ed.), *Interrelations of attachment and trauma symptoms: A developmental perspective*. Symposium conducted at the biennial meeting of the Society for Research in Child Development, Atlanta, GA.

Fearon, R. P., Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., Lapsley, A.-M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behaviour: A meta-analytic study. *Child Development*, *81*(2), 435–456.

Feldman, R. (1998). *Coding interactive behaviour manual*. Ramat Gan, Israel: Bar-llan University.

Fonagy, P., Sleed, M., & Baradon, T. (2016). Randomized controlled trial of parent-infant psychotherapy for parents with mental health problems and young infants. *Infant Mental Health Journal*, *37*(2), 97–114.

Fonagy, P., & Adshead, G. (2012). How mentalization changes the mind. *Advances in Psychiatric Treatment*, *18*, 353–362

Fonagy, P., Sleed, M., Moran, G., Steele, H., & Higgitt, A. (1991). The capacity for understanding mental states; The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal*, *13*, 200–217.

Fonagy, P., Steele., H., & Sleed., M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development*, *62*(5), 891–905.

Fonagy, P., Sleed, M., Steele, H., Leigh, T., Kennedy, R., & Mattoon, G. (1995). Attachment, the reflective self, and borderline states: The predictive specificity of the Adult Attachment Interview and pathological emotional development. In S. Goldberg, R. Muir, & J. Kerr (Eds.), *Attachment theory: Social, developmental and clinical perspectives* (pp. 223–279). Hillsdale, NJ: Analytic Press.

Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self- organization. *Developmental Psychopathology*, *9*(4), 679–700.

Fonagy, P., Target, M., Steele, H., & Sleed, M. (1998). *Reflective-functioning manual, version 5.0, for application to adult attachment interviews*. London, UK: University College London.

Goodman, G. (2013). Is mentalization a common process factor in transference-focused psychotherapy and dialectical behaviour therapy sessions? *Journal of Psychotherapy Integration*, *23*(2), 179–192.

Goodman, G., Midgley, N., & Schneider, C. (2016). Expert clinicians' prototypes of an ideal child treatment in psychodynamic and cognitive-behavioural therapy: Is mentalization seen as a common process factor? *Psychotherapy Research*, *26*, 590–601.

Grienenberger, J., Kelly, K., & Slade, A. (2005). Maternal reflective functioning, motherinfant affective communication, and infant attachment: Exploring the link between mental states and observed caregiving behavior in the intergenerational transmission of attachment. *Attachment & Human Development*, *7*, 299–311.

Hedges, L. V., & Okin, I. (1985). *Statistical methods for meta-analysis*. Orlando FL: Academic Press.

Hemmi, M. H., Wolke, D., & Schneider, S. (2011). Associations between problems with crying, sleeping and/or feeding in infancy and long-term behavioural outcomes in childhood: A meta-analysis. *Archives of Disease in Childhood*, *96*(7), 622–629.

Higgins, J. P. T., & Green, S. (2011). *Cochrane handbook for systematic reviews of interventions version 5.1.0*. Retrieved from www.cochrane-handbook.org

Holmes, J. (2004). Disorganized attachment and Borderline Personality Disorder: A clinical perspective. *Attachment & Human Development*, *6*(2), 181–190.

Lyons-Ruth, K. (2015). Dissociation and the parent–infant dialogue: A longitudinal perspective from attachment research. *Attachment*, *9*(3), 253–276.

Luyten, P., Mayes, L. C., Sadler, L., Fonagy, P., Nicholls, S., Crowley, M., … Slade, A. (2009). *The parental reflective functioning questionnaire-1 (PRFQ-1)*. Leuven, Belgium: University of Leuven.

Macdonald, H. Z., Beeghly, M., Grant-Knight, W., Augustyn, M., Woods, R. W., Cabral, H., … Frank, D. A. (2008). Longitudinal association between infant disorganized attachment and childhood posttraumatic stress symptoms. *Development and Psychopathology*, *20*(2), 493–508.

Madigan, S., Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., Moran, G., Pederson, D. R., & Benoit, D. (2006). Unresolved states of mind, anomalous parental behavior, and disorganized attachment: A review and meta-analysis of a transmission gap. *Attachment & Human Development*, *8*(2), 89–111.

Midgley, N., Ensink, K., Lindqvist, K., Malberg, N., & Muller, N. (2017). *Mentalization-Based Treatment for Children: A Time-Limited Approach*. American Psychological Association.

Midgley, N., & Vrouva, I. (Eds.). (2012). *Minding the child: Mentalization-based interventions with children, young people and their families*. London, UK: Routledge.

Paris, R., Herriott, A., Holt, M., & Gould, K. (2015). Differential responsiveness to a parenting intervention for mothers in

substance abuse treatment. *Child Abuse and Neglect*, *50*, 206–217.

Ordway, M. R., Sadler, L. S., Dixon, J., Close, N., Mayes, L., & Slade, A. (2014). Lasting effects of an interdisciplinary home visiting program on child behaviour: Preliminary follow-up results of a randomized trial. *Journal of Pediatric Nursing*, *29*, 3–13.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for use in the general population. *Application of Psychological Measures*, *1*, 385–401.

Sadler, L. S., Slade, A., Close, N., Webb, D. L., Simpson, T., Fennie, K., … Mayes, L. C. (2013). Minding the baby: Enhancing reflectiveness to improve early health and relationship outcomes in an interdisciplinary home-visiting program. *Infant Mental Health Journal*, *34*, 391–405.

Schultheis, A. M., Mayes, L. C., & Rutherford, H. J. (2019). Associations between emotion regulation and parental reflective functioning. *Journal of Child and Family Studies*, *28*(4), 1094–1104.

Skovgaard, A. M., Olsen, E. M., Christiansen, E., Houmann, T., Landorph, S., & Jørgensen, T. (2008). Predictors (0-10 months) of psychopathology at age 11/2 years - A general population study in The Copenhagen Child Cohort CCC 2000*. *Journal of Child Psychology and Psychiatry*, *49*(5), 553–562.

Skovgaard, A. M. (2010). Mental health problems and psychopathology in infancy and early childhood. An epidemiological study. *Danish Medical Bulletin*, *57*(10), B4193.

Slade, A. (2005). Parental reflective functioning: An introduction. *Attachment & Human Development*, *7*(3), 269–281.

Slade, A., Grienenberger, J., Bernbach, E., Levy, D., & Locker, A. (2001). *Maternal reflective functioning and attachment: Considering the transmission gap*. Proceedings of the Biennial Meeting of the Society for Research on Child Development; Minneapolis, MN.

Slade, A., Bernbach, E., Grienenberger, J., Levy, D., & Locker, A. (2004). *Addendum to Fonagy, Target, Steele, & Steele reflective functioning scoring manual for use with the Parent Development Interview* (Un-published manuscript). City University of New York City College and Graduate Center, New York, NY.

Sleed, M., Baradon, T., & Fonagy, P. (2013). New beginnings for mothers and babies in prison: A cluster randomized controlled trial. *Attachment & Human Development*, *15*(4), 349–367.

Sleed, M., Slade, A., & Fonagy, P. (2020). Reflective functioning on the parent development interview: Validity and reliability in relation to socio-demographic factors. *Attachment & Human Development*, *22*(3), 310–331.

Spangler, G., Schieche, M., Ilg, U., Maier, U., & Ackermann, C. (1994). Maternal sensitivity as an external organizer for biobehavioural regulation in infancy. *Developmental Psychobiology*, *27*, 425–437.

Steele, H., & Siever, L. (2010). An Attachment perspective on borderline personality disorder: Advances in gene–environment considerations. *Current Psychiatry Reports*, *12*(1), 61–67.

Sleed, M., Steele, H., Bate, J., Knafo, H., Kinsey, M., Bonuck, K., … Murphy, A. (2014). Looking from the outside in: The use of video in attachment-based interventions. *Attachment & Human Development*, *16*(4), 402–415.

Suchman, N. E., DeCoste, C., Leigh, D., & Borelli, J. (2010). Reflective functioning in mothers with drug use disorders: Implications for dyadic interactions with infants and toddlers. *Attachment and Human Development*, *12*, 567–585.

Suchman, N. E., DeCoste, C., Castiglioni, N., McMahon, T. J., Rounsaville, B., & Mayes, L. (2010). The Mothers and Toddlers Program, an attachment-based parenting intervention for substance using women: Post-treatment results from a randomized clinical pilot. *Attachment & Human Development*, *12*(5), 483–504.

Suchman, N. E., Decoste, C., Rosenberger, P., & McMahon, T. J. (2012). Attachment- based intervention for substance-using mothers: A preliminary test of the proposed mechanisms of change. *Infant Mental Health Journal*, *33*(4), 360–371.

Suchman, N., DeCoste, C., McMahon, T., Rounsaville, B., & Mayes, L. (2011). The Mothers and Toddlers Program, an attachment-based parenting intervention for substance-using women: Results at 6-week follow up in a randomized clinical pilot. *Infant Mental Health Journal*, *32*, 427–449.

Suchman, N., DeCoste, C., McMahon, T., Dalton, R., Mayes, L., & Borelli, J. (2017). Mothering from the Inside Out: Results of a second randomized clinical trial testing a mentalization-based intervention for mothers in addiction treatment. *Development and Psychopathology*, *29*(2), 617–636.

The Nordic Cochrane Centre, The Cochrane Collaboration. (2014). *Review Manager (RevMan)* [Computer program]. Version 5.3. Copenhagen, Denmark: Author.

Tronick, E. Z., & Weinberg, M. K. (1997). Depressed mothers and infants: Failure to form dyadic states of consciousness. In L. C. P. Murray (Ed.), *Post-partum depression and child development* (pp. 54–85). New York, NY: Guilford.

Van Ijzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Developmental Psychopathology*, *11*(2), 225–249.

Vizard, T., Pearce, N., Wooding, E., Davis, J., Sadler, K., Ford, T., … McManus, S. (2018). *Mental health of children and young people in England, 2017: Preschool children*. Leeds, UK: Health and Social Care Information Centre.

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