ANNUAL REVIEWS

Annual Review of Developmental Psychology

Intervening Early: Socioemotional Interventions Targeting the Parent–Infant Relationship

Mary Dozier[1] and Kristin Bernard[2]

[1]Department of Psychological and Brain Sciences, University of Delaware, Newark, Delaware, USA; email: mdozier@udel.edu

[2]Department of Psychology, Stony Brook University, Stony Brook, New York, USA; email: kristin.bernard@stonybrook.edu

Annu. Rev. Dev. Psychol. 2023. 5:115–35

First published as a Review in Advance on July 17, 2023

The *Annual Review of Developmental Psychology* is online at devpsych.annualreviews.org

https://doi.org/10.1146/annurev-devpsych-120621-043254

Keywords

early intervention, parent–infant, sensitivity, attachment, socioemotional

Abstract

Responsive, nurturing parenting helps infants and young children develop secure, organized attachments as well as adequate self-regulatory capabilities. However, when parents experience challenges, they often have difficulty providing responsive, nurturing care. In this article, we provide an overview of interventions that have been developed to enhance parental responsiveness, and we discuss in detail three interventions that have particularly strong evidence of effectiveness. For each intervention, we describe the intervention's purported mechanism and the evidence supporting its engagement as well as proximal and distal intervention outcomes. The three interventions described vary in duration from 6 to 32 sessions on average and are variously implemented in the home or office. Nonetheless, all three interventions have strong evidence of effectiveness in engaging the intervention mechanism of parental responsiveness and show impressive effects on children's attachment and self-regulatory capabilities. We also discuss challenges in disseminating interventions in the community.

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INTRODUCTION

Infancy represents a period of rapid brain and behavioral development. The availability of parents or other caregivers who can protect and interact responsively is key to infants' optimal development, whereas unresponsive, insensitive, or frightening interactions interfere with optimal development. For this reason, intervening early to enhance parents' capacity for providing adequate care makes sense. Various programs have been developed that target early parent–infant interactions. In this article, we provide a rationale for intervening early and discuss approaches to early intervention. We go into depth regarding three interventions with strong evidence bases that specifically target parent–infant interactions, providing an overview of the theory of change, active ingredient(s), intervention mechanism, and outcomes. Finally, we discuss similarities and differences among these models, the limited evidence regarding what works for whom, and future directions.

RATIONALE FOR INTERVENING EARLY

Infants are born fully dependent on parents or other caregivers. Parents are needed to help the infant regulate temperature, physiology, behavior, and emotions (Hofer 1994, Shonkoff et al. 2012), with young children gradually taking over regulatory functions themselves following many successful experiences of coregulation. In addition to genetic influence and aspects of the physical

environment (e.g., adequate nutrition, toxin exposure), experiences in the context of relationships are important for the infant's developing brain architecture (Knudsen 2004, Natl. Sci. Counc. Dev. Child 2007, Weaver et al. 2004). During sensitive periods early in development, stimulating early environments characterized by responsive parental care can support the formation of neural circuits that are essential for healthy brain development; in contrast, environments characterized by deprivation, threat, or unpredictability can alter early brain development in ways that may have lasting consequences on cognitive, emotional, and behavioral well-being (McLaughlin et al. 2021, Nelson 2007).

Responsive, Sensitive Care

Providing responsive care to infants and young children supports the development of their self-regulatory capabilities (Calkins 2008, Kopp 1982). In the context of ongoing parent–child interactions, parental responses that are timely, appropriate, and well-matched to children's signals serve to maintain the child's perspective and goals, support sustained attention, and promote physiological regulation. This pattern of contingent responsiveness (Blehar et al. 1977) has multiple labels in the early child development literature. Shonkoff & Bales (2011) refer to this responsive care as "serve and return" with the child "serving" and parent "returning" the serve rather than initiating a new interaction. Dozier & Bernard (2019) refer to these interactions as "following the child's lead," and McNeil and colleagues (Eyberg et al. 2001, McNeil & Hembree-Kigin 2010) refer to these as "child directed interactions" as coached in Parent–Child Interaction Therapy (PCIT). Importantly, parental responsiveness, as conceptualized in these ways, refers to active parental behaviors (e.g., imitating the child's behavior, commenting on the child's focus of attention, showing positive affect in response to a child's smile) that are aligned with the child's behavior, attention, and emotions.

Children whose parents are well attuned to them tend to develop a better ability to regulate behavior (Feldman et al. 1999, Raver 1996) and attention (Bornstein & Tamis-LeMonda 1997) than children whose parents are not well attuned to them. For example, Raver (1996) found that when parents were more attuned to children's cues, that is, when they followed their child's lead more, their children showed better behavioral self-regulation (e.g., distracting attention away from the source of distress) than when parents were not as well attuned to cues. Furthermore, sensitive behaviors that follow the child's lead have been found to support children's ability to regulate their autonomic nervous system (Bosquet Enlow et al. 2014, Conradt & Ablow 2010) and their neuroendocrine system (Bernard et al. 2010).

When children have parents who are not responsive to cues, developing adequate regulatory capabilities is more challenging. Intrusive parental behavior that disrupts an infant's exploration or sense of autonomy (e.g., overstimulating the infant, interrupting the infant's focus of attention) has been linked with less optimal neurophysiological and behavioral attention processes (e.g., Swingler et al. 2017). Given that attentional processes set the foundation for strong executive functioning, insensitive caregiving may undermine children's development of inhibitory control, cognitive flexibility, and working memory in early childhood (Johansson et al. 2015, Posner & Rothbart 2007, Whedon et al. 2016). At the extreme end of the continuum of inadequate care are children living without dedicated caregivers, as often seen in orphanage or institutional care. The most detrimental consequences are seen among such children who experience the absence of a committed caregiver. These children typically show severe impairments in physical, cognitive, and socioemotional development, with these outcomes likely mediated by alterations in brain circuitry and stress system functioning (Gunnar et al. 2009, Marshall et al. 2004, Tarullo et al. 2011).

Nurturance

Attachment theory suggests that parental sensitivity to infant distress, referred to here as parental nurturance, may be uniquely important in promoting secure attachment relationships (Bowlby 1982). When parents respond in nurturing ways to children's bids for reassurance (e.g., offering physical soothing, verbally comforting), children learn that their parents are available and responsive to them and that they are effective at eliciting support. Indeed, parental nurturance to infant distress, but not sensitivity in nondistress contexts, is associated with an increased likelihood of developing a secure attachment (Leerkes 2011, McElwain & Booth-LaForce 2006). Children with secure attachments seek out their parents when they are distressed, confident in the availability of the parent (Ainsworth et al. 1978). Having a secure attachment is predictive of a host of positive developmental outcomes across domains, including social competence with peers (Groh et al. 2014), academic achievement (Raby et al. 2015), and physical health (Anderson & Whitaker 2011).

However, when parents are unavailable or inconsistent in their responsiveness to children's distress, or behave in harsh or frightening ways, children adopt strategies that are well suited to maximizing their parents' availability but that have problematic consequences for other relationships. Insecure attachments, including avoidant attachment (characterized by minimizing distress, e.g., turning away from parents) and resistant attachment (characterized by maximizing distress, e.g., being fussy and difficult to soothe), reflect children's lack of confidence in their parents' availability. Whereas these avoidant and resistant attachments reflect organized strategies that make sense in the context of insensitive care, children most often develop disorganized attachments when parents behave in frightening or frightened ways (Lyons-Ruth & Jacobvitz 1999, Schuengel et al. 1999). Presumably, these disorganized attachments reflect a quandary experienced by the child in which he or she needs the parent but is frightened of them (Main & Solomon 1986). Children with disorganized attachments show odd behaviors upon reunions with their parents, such as appearing dissociated (e.g., wandering around the room) or frightened of the parent (e.g., backing off from the parent). Disorganized attachments are associated with the most problematic outcomes for children, including externalizing behaviors, such as aggression and oppositional behaviors (Fearon et al. 2010), and dissociative symptoms (Carlson 1998).

INTERVENTIONS TARGETING INFANT AND CHILD OUTCOMES

Given that infancy represents a sensitive period in terms of brain and behavioral development and that input from parents is key to this development, intervening early to enhance parental care has immense potential to alter children's developmental trajectories. Although the particular ways in which parent–infant interventions seek to enhance child outcomes vary, most focus in some way on change to the parent or caregiver as the intervention mechanism—that is, on the proximal outcome through which effects on the child's outcomes are seen.

This article focuses primarily on parent–child interventions that are designed to enhance responsive, nurturing parenting. Although not the focus of this review, we acknowledge the many influences and interventions that go beyond those discussed here, some of which have powerful effects. These include changing the child's caregiving environment (e.g., moving into or out of orphanage care, foster care, or a birth parent's home) and intervening with respect to issues such as housing, poverty, substance use, and mental health. We discuss these issues briefly below.

Orphanage Care

For many decades the problematic effects of orphanage care have been recognized, with Rene Spitz (1946) addressing the issue in the 1940s and John Bowlby (1952) in the 1950s. Findings from the Bucharest Early Intervention Project provide compelling experimental evidence of the adverse

effects of orphanage care and remediating effects of sensitive foster parents (Nelson et al. 2014). Orphanage care is considered problematic primarily because children lack a dedicated parental figure who interacts with the child responsively (Dozier et al. 2013). Orphanage care is often characterized by limited opportunities for interactions with caregivers; perfunctory, scheduled interactions when infants and caregivers do interact; and shift work for staff such that caregivers change (Dozier et al. 2013). Given that the human infant is biologically prepared to have an involved caregiver, humans have not evolved in ways that promote adequate coping strategies for dealing with the absence of dedicated caregivers. Thus, development is often arrested or perturbed, with even physical growth stunted under conditions of greatest neglect.

Moving children out of orphanages into the home of responsive parents represents a powerful intervention (e.g., van IJzendoorn & Juffer 2006). Across studies, impressive gains have been seen when children are placed into loving foster or adoptive homes following orphanage care (e.g., Garvin et al. 2012, Nelson et al. 2014, van IJzendoorn & Juffer 2006). These gains are seen across domains, with observed improvements in executive functioning and physiological regulation and decreases in stereotypies and indiscriminate friendliness (Chisholm 1998, Fox et al. 2011, McLaughlin et al. 2015). Nonetheless, some challenges persist for some children, with age of adoption being an important factor. Although the particular time point identified as critical for the move from orphanage care has varied from one study to another (e.g., Nelson et al. 2014, Rutter 1998), the earlier the move from orphanage to family care the better the outcome.

Foster Care and Placement Instability

As with adoptive care, removal of children from the care of neglecting parents and placement into foster care can enhance children's regulatory capabilities. These positive effects include higher rates of secure attachments and better behavioral and biological regulation for young children in foster care versus neglecting birth parent care (e.g., Bernard et al. 2010, Labella et al. 2020). Nonetheless, foster care involves removal of children from birth parents' homes and often subsequent replacement of children back with their birth parents. Instability in placements has problematic consequences, although disentangling child effects from placement instability is difficult (Lewis et al. 2007).

Interventions Affecting Parents' Functioning in Domains Other Than Parental Sensitivity

Substance abuse, mental health challenges, housing instability, and poverty are among a host of factors that interfere with parents' ability to provide optimal care to their children. Home visiting programs often provide support to parents who are struggling with one or more of these issues. Over the past two decades, home visiting programs have become widely available to parents in the United States to reduce the incidence of maltreatment and improve family functioning. Home visiting in the United States and internationally has a long history at an informal level (see **https://www.homevisiting.org/**). Such programs often assess families' needs for substance abuse and mental health services, for help with financial needs, and for parenting issues.

Some home visiting programs are universal whereas others target families with identified needs. Family Connects International (**https://familyconnects.org/**) is the most widely implemented universal program in the United States, meeting with each mother in their catchment area at birth to determine needs. The Family Connects model holds that many mothers might need referrals for help with depression, breastfeeding, and so on, and might not otherwise be identified as needing services if income or known risk factors were the only inclusion criteria. In addition, Dodge and colleagues (2019) reason that the stigma associated with receiving services is reduced

if services are provided universally. Family Connects works primarily through referring parents to needed services rather than providing services itself. In randomized clinical trials, families who were assigned to receive Family Connects services had lower rates of Child Protective Services involvement, less postpartum depression, and more community connections than those who were not assigned to receive Family Connects (Dodge et al. 2019).

Targeted home visiting programs are used much more widely than universal programs, however, with parents identified on the basis of certain identified risk factors. Among the most widely used targeted home visiting programs are Nurse-Family Partnership (**https://www.nursefamilypartnership.org**) and Parents as Teachers (**https://parentsasteachers.org/**). Nurse-Family Partnership (Olds 2008) enrolls first-time mothers who have known risk factors early in pregnancy and works with them through their child's second birthday. Services are provided that include enhancing prenatal care, helping parents provide adequate care postnatally, and improving economic self-sufficiency. Through randomized clinical trials, Nurse-Family Partnership has been found to improve maternal outcomes during pregnancy, reduce maltreatment reports, and improve child behavioral outcomes (e.g., Olds et al. 2004).

PARENT–INFANT INTERVENTIONS

We look in depth in this section at interventions that seek to change parenting behavior as the intervention mechanism with the goal of enhancing child outcomes (see **Figure 1**). We do not include interventions that also target other needs, such as housing, substance use, and income.

Active Ingredients

The active ingredient of a psychological intervention is the technique or process that effects change in the intervention mechanism. Interventions vary in how precisely they have specified active ingredients and the extent to which empirical evidence exists to support the specified or inferred active ingredients. Talking through parents' early experiences, talking about parent–infant interactions, commenting on parent–infant interactions, and video presentation of other parents and of the parents themselves in interactions with their children are among the processes we have identified as likely to be active ingredients of various parent–infant interventions. We discuss the evidence for these active ingredients as we discuss individual models.

Purported Intervention Mechanisms

The intervention mechanism is defined as the proximal outcome through which the intervention has its effects on primary outcomes of interest. Therefore, the active ingredient (e.g., discussing videos) is expected to engage the intervention mechanism (e.g., parent responsiveness), which then affects child outcomes (e.g., child behavior regulation). As with active ingredients, intervention mechanisms are defined and tested to varying degrees by different models. Among the purported intervention mechanisms are changes in parental behavior (e.g., responsiveness, management of child behavior), parent representations (e.g., representations of attachment experiences, mentalizing), or parental capacities (e.g., executive functioning, emotion regulation). We highlight parental behavior mechanisms that are commonly targeted in parent–child interventions in **Table 1**.

Expected Intervention Outcomes

Parent–infant interventions are usually expected to enhance child outcomes. Given our focus here on parent–infant interventions designed to enhance parental responsiveness, children's attachment quality is often a key outcome of the interventions covered. In addition, given that parents serve in

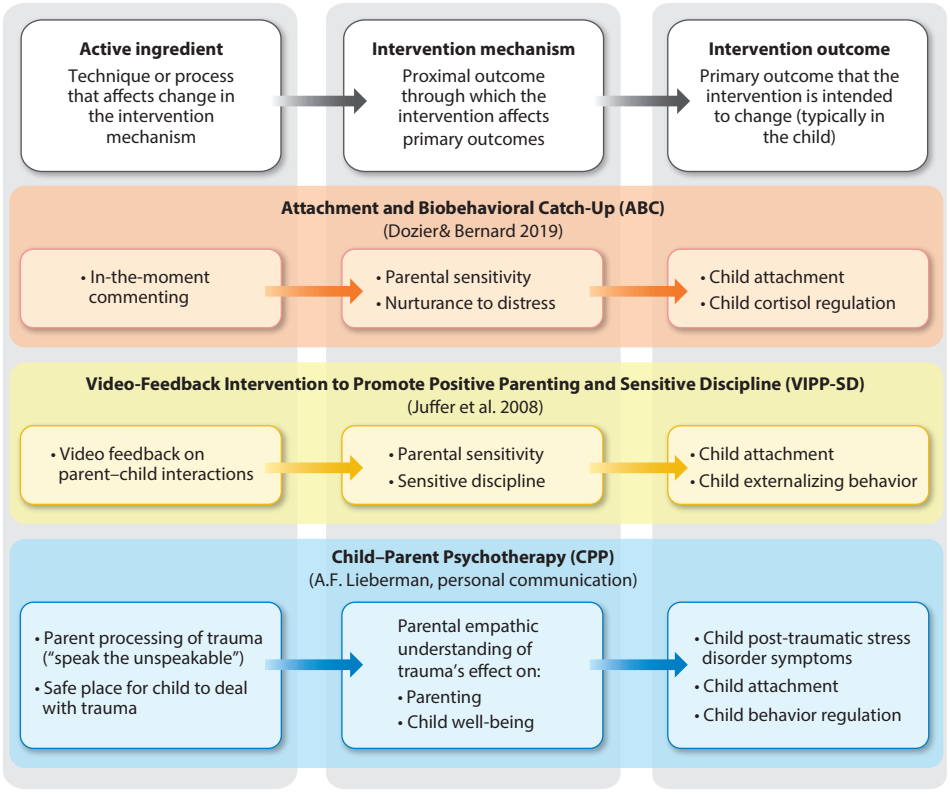

Figure 1

Overview of active ingredients, purported intervention mechanisms, and expected intervention outcomes for Attachment and Biobehavioral Catch-Up, Video-Feedback Intervention to Promote Positive Parenting and Sensitive Discipline, and Child–Parent Psychotherapy intervention models.

key roles as coregulators of infant emotions, behaviors, and physiology, effects on child regulation of physiology (e.g., cortisol production), emotions, and behaviors are also often key outcomes.

INTERVENTIONS

Attachment and Biobehavioral Catch-Up

Attachment and Biobehavioral Catch-Up (ABC) (Dozier & Bernard 2019) is a 10-session home visiting program designed to enhance parental nurturance when the infant is distressed, enhance sensitivity when the infant is not distressed, and decrease frightening and harsh behaviors at all times. The intervention is implemented in the home because generalization of behaviors learned is most successful when behaviors are learned and practiced in the environment in which they will be implemented (e.g., Hawkins et al. 2020). In addition, giving feedback regarding behaviors in the moment provides parents with repeated practice in intervention target behaviors; such feedback has been demonstrated to increase these target behaviors (Lieneman et al. 2017).

Attachment theory and stress physiology serve as the theoretical bases for ABC. Each of the three ABC targets was developed on the basis of research findings demonstrating its importance. The first intervention target, nurturance, was chosen on the basis of early work suggesting that children who had experienced adversity especially needed nurturing care if they were to develop

Table 1 Overview of common parent–infant intervention parent behavior mechanisms

Parent behavior mechanism	Description	Alternative labels	Example parent behaviors	Expected child outcome
Responsive, sensitive care	Responding in ways that are well-matched to children's signals, attention, and behavior and that serve to maintain the child's perspective and goals	Following the lead Serve-and-return interactions Sensitivity to nondistress Contingent responsiveness Child-directed interactions Supporting child's exploration	Commenting on child's focus of attention Imitating child's behavior Showing positive affect in response to child's smile Reflecting child's vocalization	Commenting on child's focus of attention Imitating child's behavior Showing positive affect in response to child's smile Reflecting child's vocalization
Nurturance	Recognizing and responding to child distress in ways that are timely and supportive	Sensitivity to distress	Verbally soothing or reassuring child Offering physical comfort (e.g., picking up, holding close)	Supports the development of secure attachment
Sensitive discipline	Consistently applying behavioral strategies to encourage child compliance and address challenging behaviors	Parent-directed interaction	Giving firm and developmentally appropriate commands Using sensitive time-out Active ignoring Using positive reinforcement	Helps children's development of behavior regulation and compliance

organized attachments (Dozier et al. 2001). Second, children who had experienced the most severe adversity showed the most extreme perturbations to the hypothalamic-pituitary-adrenal axis (Bernard et al. 2010) and the greatest difficulty regulating behavior and emotions (Miu et al. 2022). Given that responsive, sensitive parenting enhances children's self-regulatory capacities (e.g., Raver 1996), we incorporated helping the parent follow the child's lead as the second intervention component. Third, we observed that some parents behave in frightening or harsh ways. Frightening behavior has problematic consequences for young children (Main & Hesse 1990), interfering with children being able to develop organized attachments and adequate self-regulation. Therefore, the third component of ABC was designed to help parents avoid frightening behaviors.

Intervention mechanism. ABC's primary purported intervention mechanism is parental responsiveness. Extensive evidence indicates that ABC engages this intervention mechanism (e.g., Garnett et al. 2020, Schein et al. 2023). Intervention effects on responsiveness are seen immediately after the intervention and three years following the intervention (e.g., Garnett et al. 2020, Raby et al. 2019, Schein et al. 2023) both through randomized clinical trials and in community settings in pre- and postintervention designs (Roben et al. 2017, Schein et al. 2023).

Intervention outcomes. A number of randomized clinical trials testing ABC's efficacy have been conducted in our labs as well as in others' (e.g., Hepworth et al. 2021). The primary intended outcomes of ABC were initially infant attachment and cortisol production. As predicted, infants whose parents received the ABC intervention developed secure and organized attachments more often than infants whose parents received a control intervention of the same duration and structure (Bernard et al. 2012). Infants in the ABC condition also showed more normative patterns of diurnal cortisol production (i.e., steeper slopes) than infants in the control intervention, with these effects sustained three years and eight years after the intervention (Bernard et al. 2015a,b; Garnett et al. 2020). A range of other positive outcomes of the intervention include better receptive vocabulary (Bernard et al. 2017), more optimal DNA methylation (Hoye et al. 2019), and better behavioral regulation (Lind et al. 2020) in early childhood and more trusting relationships with their parents,

more optimal brain development (Valadez et al. 2020), and more mature neural development (Bick et al. 2019) in middle childhood. Parental sensitivity mediates intervention effects on some key outcomes, including child language, cortisol production, and behavioral regulation (Garnett et al. 2020, Lind et al. 2020, Raby et al. 2019).

Active ingredient. An identified active ingredient of ABC is making in-the-moment comments. Parent coaches are expected to make in-the-moment comments at a very high pace (at least one per minute), with each comment including one of the following three components:

1. description of the behavior (e.g., "He looked scared, and you said, 'are you scared of the doggy, buddy?'");
2. link to intervention target (e.g., "You're providing nurturance when you do that"); and
3. link to child outcome (e.g., "That will help him know he can trust you when he needs you").

These comments direct parents' attention to intervention target behaviors and give them repeated practice in engaging in the behaviors during sessions. Caron and colleagues (2018) designed a system for coding these behaviors. During each week of the 6-month supervision period, both a supervisor and the parent coach code a 5-min clip from a session. Self-coding has proven critical in helping parent coaches learn to make comments regularly, with the frequency of comments increasing dramatically after parent coaches begin to self-code (Caron & Dozier 2019, 2022). The frequency of in-the-moment comments and the number of components included in comments (i.e., the active ingredient) have been linked with changes in parental responsiveness (i.e., the intervention mechanism) (Caron et al. 2018).

Commonalities with other intervention models. Many parent–infant interventions share ABC's focus on responsiveness and nurturance as primary intervention mechanisms (see **Table 2**), including Video-Feedback Intervention to Promote Positive Parenting and Sensitive Discipline (VIPP-SD) and Child–Parent Psychotherapy (CPP), as discussed next, as well as Circle of Security (COS). COS is a widely disseminated intervention with several very different iterations. The original COS program was individualized to parent–infant needs with regard to whether parents struggled supporting their children as they moved away from them to explore (i.e., responsiveness) or whether parents struggled in supporting their children when they needed their parents for reassurance (i.e., nurturance). The version now used most widely focuses on these same targets but through eight sessions of video presentations and discussion. Although COS has some empirical support in enhancing attachment in a pre- to postintervention design (Hoffman et al. 2006), randomized clinical trials of COS-Parenting (COS-P) have not demonstrated enhancements in attachment quality (e.g., Cassidy et al. 2017) or parental responsiveness (Ramsauer et al. 2020). Nonetheless, a meta-analysis that combined COS and COS-P found support for the program's improving parental responsiveness and child attachment (Yaholkoski et al. 2016).

While ABC and PCIT (Eyberg & Funderburk 2011) differ in fundamental ways, the active ingredients are somewhat similar. ABC and PCIT focus parents' attention on their behaviors as these behaviors occur. Rather than making comments directly to parents in person, PCIT clinicians make comments to parents through a "bug in the ear," headphones that allow clinicians to communicate with parents from the other side of a one-way mirror. Strategies of showing videos [as in VIPP-SD and Filming Interactions to Nurture Development (FIND)] and commenting in the moment (as in ABC and PCIT) are addressing the same goal of enhancing parental responsiveness but doing so in different ways. Making comments in the moment (as in ABC and PCIT) is powerful (e.g., Caron et al. 2018) but also more challenging than preparing videos for presentation between sessions.

Table 2 Overview of common parent behavior mechanisms in parent–infant interventions

Intervention	Parent Behavior Mechanism (Target)			Evidence Base	
	Responsive, sensitive care	Nurturance (to distress)	Sensitive discipline	CEBC scientific rating	MIECHV approval
Attachment and Biobehavioral Catch-Up (ABC)	Yes	Yes	No	Well-supported (1)	Yes
ABC: Early Childhood	Yes	Yes	Yes	Not reviewed	No
Circle of Security Parenting	Yes	Yes	No	Not able to be rated	No
CPP	Yes	No	No	Supported (2)	No[a]
Filming Interactions to Nurture Development	Yes	No	No	Not reviewed	No
Minding the Baby	Yes	Yes	No	Not reviewed	Yes
Mothering from the Inside Out	Yes	Yes	No	Not reviewed	No
Parent–Child Interaction Therapy	Yes	No	Yes	Well-supported (1)	No
VIPP-SD	Yes	Yes	Yes	Not reviewed[b]	No

Shaded rows highlight interventions discussed in depth in this review. For CEBC ratings, "not able to be rated" is assigned by the CEBC when the research evidence for the program could not be established because there was no research evidence available on its effectiveness that met the criteria for any other level on the CEBC Scientific Rating Scale. "Well-supported (1)" is the highest CEBC rating, which is assigned to programs with at least two RCTs and evidence of sustained effects for at least one year beyond treatment. "Supported (2)" is the second-highest CEBC rating, which is assigned to programs with at least one RCT and evidence of sustained effects for at least 6 months postintervention. "Not reviewed" is a label that we have provided for programs that have not been reviewed by the CEBC. Abbreviations: CEBC, California Evidence-Based Clearinghouse for Child Welfare; CPP, Child–Parent Psychotherapy; MIECHV, Maternal, Infant, and Early Childhood Home Visiting; RCT, randomized controlled trial; VIPP-SD, Video-Feedback Intervention to Promote Positive Parenting and Sensitive Discipline.

[a]Although CPP is not MIECHV-approved, Child First, which uses CPP as their primary intervention, is approved.

[b]Given that VIPP-SD is based in the Netherlands, developers may not have sought approval from United States–based clearinghouses.

Video-Feedback Intervention to Promote Positive Parenting and Sensitive Discipline

VIPP-SD (Juffer et al. 2008) is a six-session home visiting intervention for parents of children from newborn through age 6 designed to enhance parental sensitivity and sensitive discipline. The home setting is considered ideal for implementation given that the intervention involves recording and reviewing parent–child interactions in everyday situations; additionally, the home context may reduce potential barriers related to engagement (e.g., travel burden), thereby increasing the likelihood of program completion. Its short duration is consistent with findings from a meta-analysis demonstrating that briefer interventions were more effective at changing parental sensitivity than longer interventions (Bakermans-Kranenburg et al. 2003).

The theoretical basis of VIPP-SD reflects an integration of attachment theory and coercion theory (Patterson 1982). With the goal of enhancing the quality of parent–child relationships, attachment theory motivates the target of enhancing parental sensitivity. Coercion theory suggests that ineffective discipline strategies (e.g., rewarding children's problematic behaviors by giving in) result in a coercive cycle that ultimately exacerbates children's oppositional, defiant, and aggressive behaviors. Thus, VIPP-SD aims to enhance sensitive and effective discipline in order to improve child compliance and reduce behavior problems.

Each session of VIPP-SD is guided by core themes that focus on sensitive parenting and sensitive discipline, with both targeted in each session. For example, in the first session, the sensitive parenting theme highlights the difference between attachment and exploration behavior, helping

parents distinguish between opportunities to respond in nurturing ways when children are distressed and opportunities to support their children's exploration. The sensitive discipline theme in session one highlights strategies of inductive discipline (i.e., explaining the rationale behind a command such that children will experience predictability around rules and develop empathy with others' perspectives) and distraction (e.g., suggesting an alternative or shifting activities) in order to promote children's behavioral compliance. The other sensitive parenting themes covered during VIPP-SD include speaking for the child, sensitivity chains (i.e., reciprocal effects between parent behavior and child behavior), and sharing emotions. The other sensitive discipline themes include positive reinforcement and active ignoring, sensitive time-out, and empathy. Following coverage of these themes in the first four sessions, the final two sessions serve as booster sessions for review and integration.

Intervention mechanism. The purported intervention mechanism in VIPP-SD is change in the parents' provision of sensitive care and sensitive discipline, and there is strong evidence that this mechanism is engaged by the intervention. A multilevel meta-analysis of 24 randomized clinical trials found that participation in VIPP-SD was associated with a significant change in positive parenting behavior (combined effect on parental sensitivity and sensitive discipline, $r = 0.18$) (van IJzendoorn et al. 2022). When comparing effectiveness on changing parental sensitivity versus sensitive discipline as unique parenting outcomes, no significant differences were found. Among a subset of studies that tested VIPP-SD effectiveness on both parental sensitivity and child attachment, the meta-analytic association between the effect size for parental sensitivity was correlated with the effect size for child attachment ($r = 0.50$), albeit not statistically significantly. That higher effect sizes for sensitivity were generally associated with higher effect sizes for attachment may provide preliminary support for sensitivity as the hypothesized intervention mechanism.

Outcomes. The primary outcomes examined for VIPP-SD include child attachment and child externalizing behaviors. The impressive research base for VIPP-SD (i.e., 25 randomized clinical trials involving over 2,000 parent–child dyads) offers a rigorous test of its effectiveness on these outcomes, especially when examined meta-analytically. Across 11 studies (16 effect sizes), VIPP-SD was found to significantly enhance children's attachment quality ($r = 0.23$), with slightly larger effects for older than younger children. The meta-analytic effect of VIPP-SD on externalizing behavior was nonsignificant ($r = 0.07$ based on 13 effect sizes from nine studies), although some studies have shown effects on reducing child externalizing behavior (e.g., O'Farrelly et al. 2021).

Active ingredient. Video feedback is considered the main active ingredient of VIPP-SD. Showing the video provides the opportunity to focus on infant cues (that were or were not responded to sensitively) and on parent responses. At the beginning of each session, the intervener records 10 to 30 min of the parent and child interacting during everyday tasks (e.g., playing, mealtime). Between sessions, the intervener reviews the recording and identifies moments that relate to the theme of the upcoming session and creates a script of comments that they can make while reviewing the video with the parent. During the session, the intervener plays the video, pausing often to review specific interactions and link the video content to the relevant theme. For example, a clip of a child crying and the parent soothing the child would provide a positive example of nurturing a child's attachment need in a time of distress. The intervener mostly focuses on positive interactions during which the parent responded in sensitive ways. During later sessions, the intervener may provide corrective feedback, with suggestions and support regarding interactions that were insensitive. In addition to VIPP-SD's core strategy of video feedback, the trusting relationship formed between the intervener and parent (through building a supportive alliance, recognizing

the parent as an expert, and utilizing a strengths-based focus) is considered key to empowering parents and effecting change in parent–child interactions.

Video feedback has been tested as an active ingredient on a meta-analytic level, examining the extent to which attachment-based interventions that involve video feedback are more effective than those that do not. Bakermans-Kranenburg et al. (2003) found that interventions that included video feedback were more effective in increasing parental sensitivity than those that did not include this ingredient. van IJzendoorn et al. (2022) hypothesized that specific components of the video feedback approach (e.g., focusing on the positive, repeating video clips, considering alternative responses) may increase sensitive parenting through multiple mediators, such as enhancing parents' ability to recognize child cues, increasing parental efficacy, enhancing parents' perspective taking, and improving parents' reflective functioning. Further research is needed to examine the specific processes by which video feedback may indeed change parenting behavior.

Commonalities with other intervention models. The approach of using video feedback is common among several parent–child interventions. The FIND video coaching program (Fisher et al. 2016), for example, aims to promote serve-and-return interactions by showing and reviewing video recordings of brief moments of parent–child interaction. The developers of FIND hypothesize that the video feedback process enhances parents' own cognitive control abilities that are important for sensitive responding (e.g., attentional control, self-monitoring) (Fisher et al. 2016).

Sensitive discipline is a key mechanism of VIPP-SD, a focus it shares with PCIT (see **Table 2**). Both VIPP-SD and PCIT are used primarily with children in early childhood rather than infancy. In infancy, issues of discipline are less relevant or salient than in early childhood when children may become dysregulated when thwarted. PCIT moves from child-directed interactions to parent-directed interactions and from there to helping parents learn how to use active ignoring, developmentally appropriate commands, and time-out effectively with children. VIPP-SD, while having a stronger emphasis on nurturance and on maintaining the child–parent relationship without ruptures than PCIT, also uses sensitive time-out. An early childhood version of ABC has been developed that is designed to help parents remain nurturing and responsive during early childhood when children are prone to behavioral and emotional dysregulation. ABC-Early Childhood (ABC-EC) emphasizes helping the parent remain psychologically and physically available when the child is dysregulated. This emphasis on helping parents deal with dysregulated children, seen in VIPP-SD, PCIT, and ABC-EC, makes sense when considering the developmental tasks of young children who are developing self-regulatory capabilities.

Child–Parent Psychotherapy

CPP (Lieberman & Van Horn 2008) is an intensive intervention developed for children (from birth to 5 years old) and their parents who have experienced trauma. Parents of children who have experienced trauma, such as death, separations, or violence, have often experienced trauma themselves as the result of their child's trauma or their own experiences as children or adults. Therefore, these parents often have difficulty helping their children cope effectively with their own trauma. CPP is designed to help parents process their trauma in ways that allow them to provide a safe, protective environment for their children to cope effectively with their trauma.

The parent is first helped to "speak the unspeakable," acknowledging the traumatic event(s) and the impact on the child and parent. As the parent becomes better able to cope with the experience of the traumatic event(s), they are assisted in helping the child process the event(s) as well and to provide nurturing, sensitive care. Often the parent and child construct a narrative of the traumatic incident(s) as a way of working through and understanding the trauma and its effects.

The intervention is delivered weekly over the course of a number of weeks (the average in randomized trials is 33 sessions). The child and the parent attend intervention sessions together, although sessions for the parent alone occur as needed to allow open discussions of trauma. The setting for these sessions is flexible, with homes, offices, or child care facilities being typical.

The theoretical bases of CPP involve attachment, trauma, and social learning theories, among others. As with VIPP-SD and ABC, attachment theory is involved in focusing on sensitive parental behavior as a key to enhancing child outcomes. Trauma theory is also central in understanding the mother's challenges with parenting in the context of traumatic events that have occurred to herself and her child. Healing from the trauma involves the behavioral approach of exposure, with the parent asked to experience the avoided traumatic experience.

Intervention mechanisms. A.F. Lieberman (personal communication) has indicated that two important CPP intervention mechanisms (among others) are enhancing parental empathic understanding of the effects of trauma on their own parenting and their understanding of the effects of trauma on child functioning. In randomized clinical trials (e.g., Lieberman et al. 2005; Toth et al. 2002, 2006), CPP has been found to result in lowered levels of post-traumatic stress symptoms, which could be seen as reflecting improvement in parents' understanding of and working through trauma. Greater parent improvement in post-traumatic stress symptoms was associated with greater reductions in child avoidance and hyperarousal in an open treatment study (Hagan et al. 2017), providing support for parental change in trauma symptoms functioning as an intervention mechanism.

Outcomes. Some proximal outcomes of CPP could also be seen as downstream mediators or mechanisms of the intervention's effects. Included among these proximal outcomes are parents' and children's emotion regulation, children's trauma symptoms, children's trust in the parent, and children's negative self-attributions. Randomized clinical trials and open trials conducted by Lieberman and others provide strong support for CPP leading to improvement in many of these proximal outcomes. Lieberman et al. (2005) found that children randomized to CPP showed greater reductions in parent-reported traumatic stress symptoms, and fewer of the CPP children met criteria for post-traumatic stress disorder than children randomized to receive community services. Toth et al. (2002) found that children randomized to CPP had greater reductions in negative self-representations (as assessed through a story stem protocol) than children randomized to an alternate intervention.

More distal outcomes include children's attachments to their mothers and behavioral regulation. Cicchetti et al. (2006) found that children randomized to CPP did not differ significantly from those assigned to a psychoeducational intervention but did show significantly lower rates of disorganized attachment than children assigned to treatment as usual. In a separate study by this same research group that targeted depressed mothers (Toth et al. 2006), children of depressed mothers who received CPP showed significantly lower rates of disorganized attachment and higher rates of secure attachment than children of depressed mothers who did not receive CPP. Better behavior regulation, as reported by mothers, has also been seen as a positive intervention outcome across several studies (Lieberman et al. 2005).

Active ingredients. A.F. Lieberman (personal communication) identified two primary active ingredients of CPP: helping parents speak the unspeakable and providing the child a safe place for dealing with the trauma. Speaking the unspeakable refers to helping the parent process the traumatic event fully. Although there does not appear to be evidence indicating that specific components of CPP (in this case, the exposure component) lead to predicted outcomes, extensive evidence exists to support exposure as an effective treatment for trauma exposure (Eftekhari

et al. 2013). Likewise, there does not appear to be specific evidence regarding the second active ingredient, providing a safe place for the child to deal with the trauma. The lack of evidence supporting the active ingredients reflects the difficulty in dismantling an intensive intervention such as CPP. We emphasize that the broader literature supports these active ingredients and evidence from CPP studies indicates that the predicted intervention mechanisms are engaged.

Commonalities with other intervention models. CPP differs from ABC and VIPP-SD in seeking to change parental attachment and trauma representations rather than primarily to change parental behaviors. Accompanying this difference is a more intensive intervention of a much longer duration (33 sessions rather than 6–10 sessions). ABC asks parents to consider "voices from the past" that may affect their parenting, but this does not involve the intensive processing of memories seen in CPP. CPP's focus on enhancing parents' reflective functioning is shared by other interventions, such as Minding the Baby (Slade et al. 2018) and Mothering from the Inside Out (Suchman & Bers 2015). Although Minding the Baby and Mothering from the Inside Out (as well as ABC and VIPP-SD) have been shown to be effective with parents who have experienced adversity (Slade et al. 2018, Suchman & Bers 2015), CPP's focus squarely on helping parents cope with trauma distinguishes it from these interventions.

CHALLENGES FOR THE FIELD

What Works for Whom?

We know relatively little about what works for whom, that is, whether particular parent–infant intervention programs work better for some parents and other programs work better for others. One could speculate that more-intensive services would be more appropriate for parents with the greatest need whereas less-intensive services might be more appropriate for those with less need. However, one could also make the argument that a targeted, brief intervention would best serve those who live the most challenging lives and who have the greatest difficulty regularly attending sessions. Indeed, meta-analytic results from Bakermans-Kranenburg et al. (2003) suggested that briefer interventions were more effective at enhancing parental sensitivity than longer interventions, with this effect holding even for families with multiple indicators of elevated risk. However, a more recent meta-analysis conducted by Facompré et al. (2018) found that intervention length did not moderate effectiveness for changing disorganized attachment.

The question of what works for whom is empirical and must be addressed using research designs that test moderation effects systematically. Some limited evidence suggests that VIPP-SD is most effective for parents of infants with insecure attachments, but differential effects for ABC and CPP have not yet been demonstrated convincingly. Rarely are multiple parent–infant interventions tested through comparative effectiveness trials, but doing so would best allow us to address the question of whether families with differing characteristics differentially benefit from one intervention versus another.

The Home Visiting Applied Research Collaboration has proposed a model of precision home visiting to address the question of what works for whom and in what contexts. Although relatively little progress has yet been made toward this goal, it represents an important next step.

Measuring Key Constructs

Responsiveness and nurturance are proposed as primary mechanisms or proximal outcomes for many interventions. Whereas responsiveness has been widely assessed as a proximal outcome, nurturance has received too little attention. Nurturance is more difficult to assess than responsiveness because base rates for nurturance opportunities (i.e., times when the child is distressed)

are relatively low. Extended observations or contexts known to elicit distress among young children would allow assessments of this important construct.

Ensuring Model Fidelity

When interventions are moved into the community, their effectiveness often drops well below the effectiveness levels seen in the lab (Breitenstein et al. 2010). One of the key culprits for this drop in effectiveness is that it is often difficult to ensure adequate fidelity to the model. Thus, in developing and testing parent–infant interventions, it is critical that model developers attend to issues of model fidelity that will allow the effective dissemination of models when the interventions are implemented in the community. For ABC, the quality and quantity of in-the-moment comments are tracked as clinicians implement ABC in the community and are accompanied by constructive feedback. This focus on measuring the active ingredient ensures adequate fidelity to the model. VIPP-SD appears to use an adherence checklist to ensure the critical issues are covered within sessions rather than attempts to assess how well they are covered. Perhaps related to this, implementation outcomes for both interventions show moderate to large effect sizes when implemented in the field (e.g., Roben et al. 2017).

Reach of Effective Interventions

A recent comprehensive report (Wright et al. 2023) regarding interventions used in the United Kingdom to improve attachment among young children concluded that the interventions that are widely used have a weak evidence base and the interventions that are used the least have the strongest evidence base. The two interventions indicated as having the strongest evidence base, but with the least reach, were VIPP-SD and ABC, with CPP indicated as being intermediate on evidence base and reach.

This disconnect between the evidence base and uptake is concerning. Plausibly, researchers who develop interventions and test through randomized trials may fail to engage in marketing that would lead to broader implementation, perhaps because of values (e.g., marketing may seem crass or not aligned with academic pursuits) or limited bandwidth. As model developers ourselves, we have experienced this challenge.

In the United States, several clearinghouses have been established, including the California Evidence-Based Clearinghouse for Child Welfare (CEBC) (**https://www.cebc4cw.org/**) and the Maternal, Infant, and Early Childhood Home Visiting Program (MIECHV), that provide ratings of the quality of evidence supporting interventions. Federal legislation was passed in 2016 that would require states to use evidence-based programs in order to receive federal funding for programs, but the implementation of this program has not aligned well with previous clearinghouse criteria. Based on CEBC criteria, ABC is considered well-supported due to multiple randomized clinical trials and evidence of sustained effects at least one year postintervention; CPP is considered supported, reflecting evidence from at least one randomized clinical trial and sustained effects at least 6 months postintervention (see **Table 2**). Given the nature of populations included in ABC and CPP research, both are rated by the CEBC as having high relevance for child welfare–involved populations. ABC and VIPP-SD are also approved as models eligible for MIECHV funding, as is Child First, which is an integrative home-visiting model that uses CPP as its main intervention approach.

SUMMARY

Despite the challenges of conducting research on parent–infant interventions, impressive research has been carried out that demonstrates intervention effectiveness, with effects seen years after the

completion of the interventions (e.g., Cicchetti et al. 2006, Garnett et al. 2020, van IJzendoorn et al. 2022). In addition to demonstrating the power of early interventions to enhance developmental outcomes, these results obtained through randomized clinical trials provide experimental evidence that parental sensitivity is a key driver of optimal child development. Such causal statements cannot be made without randomized trials, even with strong evidence through longitudinal studies. Many questions remain regarding what works for whom under what conditions, how to disseminate interventions with fidelity, and how to widely disseminate those interventions with the strongest evidence base. With attention directed to these important questions, research in the coming years will be fruitful.

DISCLOSURE STATEMENT

M.D. is the President and Board Chair of ABC Parenting Institute. She is the Principal Investigator for the National Institutes of Health awards R01 MH074374 and R01 HD098525 as well as Multiple Principal Investigator of award R01 MH119310. K.B. is Principal Investigator for the National Institutes of Health award R01 MH119310.

ACKNOWLEDGMENTS

This article was supported by the National Institutes of Health R01 grants MH074374 and HD098525 awarded to M.D. and R01 grant MHMH0119310 to K.B.

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