Randomized trial of *Promoting First Relationships*: Effects on maltreated toddlers' separation distress and sleep regulation after reunification ☆

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ABSTRACT

This study investigates the impact of an attachment focused intervention, *Promoting First Relationships* (PFR), on sleep problems among toddlers in child welfare recently reunified with their birth parent. Recently reunified parent–toddler dyads (n = 43) were drawn from a larger random control trial. Toddlers (11–36 months) and their parents were assessed in two-hour research home visits at enrollment (baseline), and a 6-month post-intervention follow-up. Measures included parental report of sleep problems and research visitor observation of separation distress (using the *Toddler Attachment Sort-45*). The PFR intervention predicted fewer sleep problems, adjusting for a baseline measure of sleep problems and other covariates. A path model showed evidence of an indirect effect of PFR on sleep problems through declines in separation distress. An attachment focused intervention like PFR that reduces infant separation distress can lead to reductions in sleep problems.

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1. Introduction

In early childhood, sleep is an essential regulatory process that allows for periods of physical renewal, and is critical for consolidation of memory, regulation of the stress response system, and brain development (Dahl, 2007; Rivkees, 2001). Even though sleep is essential to growth and development, it is often elusive. In pediatrics, sleep problems constitute one of the most common complaints that parents share with their providers (Mindell & Owens, 2010) with frequent night awakenings and bedtime struggles occurring in approximately 20% to 30% of infants and toddlers (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006). Factors predicting the onset and maintenance of sleep problems include family stress (Mannering et al., 2011), maternal anxiety (Scher, 2008), maternal prenatal depression (Baird, Hill, Kendrick, & Inskip, 2009), poor limit setting (Sadeh, Flint-Ofir, Tirosh, & Tikotzky, 2007), and beliefs about the meaning of night-time crying (Tikotzky & Sadeh, 2009). A disruption in the parent–child relationship, which may be related to each of these factors, is also a likely contributor to sleep problems (Sadeh & Anders, 1993).

Recent research has demonstrated that the development of sleep patterns in infancy is influenced by the quality of the parent–child relationship denoted by the security of the attachment relationship (Morrell & Steele, 2003; Sadeh, Tikotzky, & Scher, 2010). Attachment

insecurity has been shown to be a predictor of sleep problems (McNamara, Belsky, & Fearon, 2003; Morrell & Steele, 2003); however, the mechanism for this relationship has not been empirically delineated. One mechanism is suggested by Bowlby (1982) who emphasized the experience of separations between toddlers and their caregivers. Separations from caregivers, beginning during the third quarter of the first year through the toddler years, are particularly anxiety provoking, especially when the parent–child relationship is not secure. In fact, in her seminal study, Ainsworth noted that anxiously attached infants (both avoidant and ambivalent) showed more separation distress in the home than securely attached infants (Ainsworth, Blehar, Waters, & Wall, 1978, p 126). An extension of attachment theory to understanding sleep problems suggests that separation from the caregiver at bed time and in the middle of the night provokes anxiety and contributes to displays of distress to draw the caregiver in to provide comfort (Scher & Asher, 2004). Morrell and Steele (2003) tested the argument put forward by Sadeh and Anders (1993) who stated that separation issues are implicated in the dyadic challenges that give rise to and maintenance of sleep problems. Morrell and Steele argued that certain behavioral correlates of types of insecure attachment would resemble night time problems that caregivers complain about: demand for parent intervention and lack of self-soothing. Morrell and Steele found support for their hypothesis, and demonstrated that children with ambivalent/resistant attachment strategies are the children with the greatest degree of sleep disruptions (night waking, sleeping with parent, and difficulty settling); moreover, this pattern of insecurity contributed to the persistence of sleep problems when children were two years old. Similar results were also found by McNamara et al. (2003).

There are theoretical underpinnings in attachment theory and the beginning of empirical support in the literature for the hypothesis that infant–parent relationships marked by anxious attachment and displays of separation distress contribute to toddler sleep difficulties. In other words, for toddlers who protest routine separations in the home, separation distress may be an underlying factor in developing and maintaining poor sleep patterns.

2. The current study

This study tests whether an attachment focused, relationship-based intervention reduces sleep problems among children who have been in foster care and are newly reunited with their birth parents. We know that young children in the foster care system have experienced early maltreatment, most often neglect, chaotic early environments, and frequent caregiver changes. A significant experience for children within child welfare is their separation from and later reunification with their birth parent. Upon reunification, toddlers and their caregivers face the challenges of reestablishing a disrupted relationship. In this study we test whether an intervention's effects on toddler sleep problems are accounted for by reductions in separation distress following every day separations from the mother. Few studies are available that assess sleep in populations of children at an increased risk for sleep disturbance, such as those who have been exposed to maltreatment and have experienced a separation from their birth parent as a result of child welfare actions and later reunified with that parent.

We conducted a secondary data analysis of a randomized controlled trial of a relationship-based intervention, *Promoting First Relationships*[TM] (PFR) (Kelly, Sandoval, Zuckerman, & Buehlman, 2008) designed to improve sensitive, responsive, and predictable care by caregivers (foster, kin, and birth caregivers) of toddlers with a recent child welfare mandated placement change. Early results of this intervention demonstrated increased caregiver sensitivity, $d = .41$, and marginally significant reductions of toddler sleep problems, $d = -.34$ (Spieker, Oxford, Kelly, Nelson, & Fleming, 2012a). Specifically for recently reunified birth parents we predicted that PFR, which focused on building parenting confidence and competence to respond sensitively to infant cues and support toddler's early self-regulation, would result in declines in child separation distress and sleep problems.

Similar to methods used by Scher and Asher (2004) we measured separation distress during a 90-minute home visit which included a brief separation when the parent appeared to leave the home. We hypothesized that improving a parent's sensitivity, predictability, and confidence could interrupt escalating patterns of child and parent separation distress and improve the child's ability to regulate during separations, including the separations inherent in going to bed and later awakening and returning to sleep throughout the night (Anders, Halpern, & Hua, 1992). We further predicted that reductions in child separation distress would mediate the effect of the intervention on child sleep problems.

3. Method

3.1. Participants

Recruitment and study procedures were approved by the state institutional review board. Two hundred and ten toddlers and their caregivers were recruited into the *Fostering Families Project* (FFP) (Spieker et al., 2012a), between April of 2007 and March of 2010. The primary recruitment area was a single county. Using state Department of Social and Health Services (DSHS) records, a DSHS social worker identified all infants in state dependency between the ages of 10 and 24 months who had experienced a court-ordered placement that resulted in a change in primary caregiver within the prior 7 weeks. All study procedures and subject consent forms were reviewed by the state IRB. Toddler–caregiver dyads that were eligible and agreed to participate were

randomly assigned to receive either the *Promoting First Relationships*[TM] (PFR) intervention or Early Educational Services (EES). Permission to contact caregivers about the project was obtained from a Department of Child and Family Services (DCFS) social worker, after which a research team social worker made the contact, determined eligibility, and scheduled the baseline research visit. Eligible caregivers spoke English and could be foster parents, birth parents, or adult kin. The consenting caregiver and child were assessed at baseline, received intervention services, and then assessed post-intervention and six months later if they were still in the same household. There were no differences by intervention condition on any demographic or pre-enrollment variable (e.g., gender of child, age of child at enrollment, race or ethnicity, caregiver household income, caregiver age, age of child at first removal from birth home, and number of placement changes prior to enrollment), with the exception that more PFR infants experienced two or more removals from their birth home, $X^2(1, N = 210) = 7.31$, $p < .01$, compared to EES infants (Spieker et al., 2012a).

At enrollment there were 56 biological parents and their recently reunified toddlers. This sample of birth parents was at greater risk and significantly different from kin and foster care providers on important contextual factors including income, education, and single parenthood. Our interest was to assess the outcomes of children who continued to reside with their birth parent given the contextual risk of this subsample. It is also more likely that birth parents experience greater anxiety and feelings of parental inadequacy because their child was removed from their care. We hypothesized, therefore, that birth parents and their children may have received greater benefit from the home-visiting program. Forty-three (25 in EES and 18 in PFR) of these dyads remained intact from enrollment to the 6-month post-intervention follow-up assessment and comprise the analysis sample for the present study (see Fig. 1). Demographic and background characteristics of these 43 families are shown in Table 1. There were no statistically significant ($p < .05$) differences between experimental conditions in any demographic or background variables.

3.2. Intervention exposure

The PFR intervention consisted of ten weekly 60- to 75-minute in-home visits by providers from community mental health agencies. Of the parents in the analysis sample of the current study, 12 (67%) in the PFR condition received all ten sessions. Details about the intervention are provided by Kelly et al. (2008) and Spieker et al., (2012b).

One of the ten PFR sessions directly addressed caregiver response to separation distress, while responding to child distress was also a theme throughout the intervention. During the family's second week in the PFR program, providers videotaped a brief separation and reunion in the home in which the parent left the house or apartment as he or she normally would, returning in 3 minutes. During a subsequent video feedback session, the provider used reflective comments and questions about the child's behavior during the charged moments of separation and reunion to help the parent think about what the child might have been feeling and needing, and what the parent might have been feeling and needing. Whether the parent noted that the child was distressed or concerned by her absence, but did not show this distress directly to the parent, or the parent attributed more extreme, inconsolable distress as being bad or manipulative, the provider helped the mother see the child's behavior as communicating a desire for closeness and comfort, and a need for predictability within the relationship. With the appropriate attribution of child distress, parents are more likely to respond consistently and sensitively to distress cues, and also engage in a "goal-corrected partnership" (Bowlby, 1982) that respects the child's need for some control in situations that affect the parent's physical and emotional availability.

Families in the EES condition received three monthly 90-minute, in-home sessions of EES delivered by an early education specialist. The sessions consisted of some education in early childhood developmental issues as well as referral to services for families that needed them. Of the
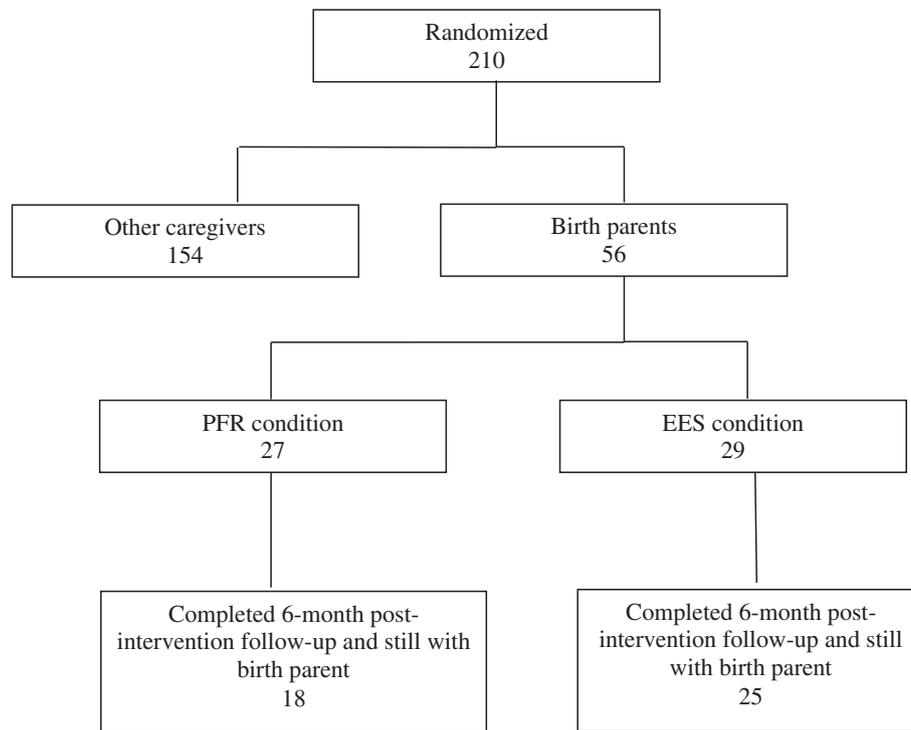
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                    │ intervention follow-up and still │ intervention follow-up and still
                    │   with birth parent          │   with birth parent
                    │        18                    │        25
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Fig. 1. Derivation of analysis sample from sample of the parent study.

parents in the analysis sample who were in the EES condition, 24 (96%) parents received all sessions.

3.3. Measures and procedure

Infants and their caregivers were assessed in two-hour, blinded research home visits at enrollment in the project (*baseline*), and at two times following the intervention (*post-intervention* and *6-month follow-up*). In the present study, data from the baseline and the 6-month follow-up are used. Due to the fact that the PFR intervention took longer to complete than the EES intervention, there was more time, on average, between the baseline and the 6-month follow-up for the PFR group than the EES group (10.55 vs. 8.80 months, $t = 3.73$, $df = 41$, $p < .01$). Because of this difference, time in months between

Table 1
Baseline characteristics by intervention condition.

	EES ($n = 25$)	PFR ($n = 18$)
	n (%)	n (%)
Infant male	11 (44)	9 (50)
Infant Hispanic	3 (12)	0 (0)
Infant race		
Native American/Alaskan native	1 (4)	0 (0)
Black	1 (4)	3 (17)
Mixed race	2 (8)	5 (28)
Unable to determine	2 (4)	0 (0)
White	19 (76)	10 (56)
Multiple removals	1 (4)	5 (28)
Household income <$20,000 per year	14 (58)	12 (71)
Caregiver male	4 (16)	1 (6)
	M (SD)	*M* (SD)
Age in months	18.15 (4.79)	18.29 (5.32)
Number of caregiver changes prior to enrollment	3.04 (1.14)	2.94 (1.16)
Age in months at first removal	8.59 (6.78)	7.23 (6.86)
Sleep problems	−0.08 (0.81)	−0.05 (1.19)
Separation distress	0.10 (0.25)	0.14 (0.26)

baseline and 6-month follow-up was included as a covariate in the analyses of PFR effects.

3.3.1. Sleep problems

At the 6-month follow-up, sleep problems were measured with six caregiver-reported items. Four items were from the *Child Behavior Checklist* (Achenbach & Rescrla, 2000) and two items are from the *Brief Infant Toddler Social and Emotional Assessment* (BITSEA) (Briggs-Gowan & Carer, 2002). The CBC items are: "Has trouble getting to sleep", "Resists going to bed at night", "Sleeps more than most kids during day and/or night", and "Wakes up often at night". The response options for these items are *Not true (as far as you know)* (0); *Somewhat or sometimes true* (1); and *Very true or often true* (2). The BITSEA items are: "Wakes up at night and needs help to fall asleep again" and "Has trouble falling asleep or staying asleep". Response options for these items are *Not true/rarely* (0); *Somewhat true/sometime* (1); and *Very true/often* (2). The scale score was the average of the six item scores. The scale had internal reliability of Cronbach's $\alpha = .87$ for the analysis sample.

Due to the young ages of the children at times one and two, the CBC was not administered at baseline (or the post-intervention follow-up). Because the study is based on a randomized design, a gold standard in reducing bias and contributing to equivalence between groups, we chose to use available sleep related indicators measured with two BITSEA items that were also in the follow-up sleep problems measure. These two items are "Wakes 3 or more times in the night and is unable to fall back to sleep" and "Requires extensive help to fall asleep" and each has a response options of *Never or sometimes* (0) and *Most times* (1).

3.3.2. Separation distress

The *Toddler Attachment Sort-45* (TAS45; Kirkland, Bimler, Drawneek, McKim, & Schölmerich, 2004) was scored immediately after each research home visit. The TAS45 is a 45-item modified version of the *Attachment Q-Sort* (AQS) (Waters, 1985). The AQS is considered a 'gold standard' measure of attachment security (van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004) which

also has many dependency items. Kirkland et al. (2004) used multidimensional scaling techniques to map 45 nonredundant items from two AQS versions (Waters, 1985; Waters & Deane, 1985) onto eight "Hotspot" or meaning clusters, and then reduced that number to include four to six of the best items for each hotspot. The *Separation Distress* hotspot weights most heavily on the following items: "When mom talks with others, child wants attention", "Child is very clingy, stays close to mom", "Child cries when mom leaves or moves to another place", and "Child gets upset if mom leaves or shifts place". Inter-rater reliability based on intraclass correlations was .92.

3.3.3. Multiple removals

State Department of Social and Health Services (DSHS) records of child welfare placements available via a statewide secure database were used to derive whether infants were removed from the birth parent's home more than once. Whether infants had experienced multiple removals was found to differ by experimental condition for the larger FFP sample of 210, in that more children in the PFR condition had experienced more removals prior to enrollment in the parent study (Author, 2012). Similar to the results in the parent sample, the analysis sample in current study, one EES infant (4%) had experienced multiple removals prior to enrollment in this study versus 5 PFR infants (28%) ($p = .067$ based on Fischer's exact test). Because multiple removals might disrupt secure attachment to caregivers and be related to regulatory problems generally and sleep problems specifically, a dichotomous variable representing multiple removals (*yes, no*) was included as a covariate in the models.

3.4. Analysis

The association between intervention condition and sleep problems at the 6-month follow-up was first analyzed with Ordinary Least Squares regression implemented with SPSS 17.0 (SPSS Statistics, 2007). Sleep problems were regressed on a dyadic variable representing intervention condition (EES = 0, PFR = 1), sleep problems at baseline, age in months at enrollment, whether the child had experienced multiple removals from the biological parent's home, and time between baseline and 6-month follow-up.

To address the mediation hypothesis, a path model was estimated that examined potential indirect effects of the intervention on sleep problems through the intervening variable of separation distress. Baseline separation distress was also included as a covariate in this model, in addition to sleep problems at baseline, whether the child had experienced multiple removals from the biological parent's home, time between baseline and 6-month follow-up, and age of child at enrollment. The path model was estimated with Mplus 6.2 (Muthen & Muthen, 1998–2011) using a maximum likelihood estimator. Since the model was fully saturated, with all baseline variables predicting separation distress at follow-up and both baseline variables and separation distress at follow-up predicting sleep problems at follow-up, the model provided an exact fit to the data. The test of the indirect effect was calculated using PRODCLIN (MacKinnon, Fritz, Williams, & Lockwood, 2007).

4. Results

As shown at the bottom of Table 1, children in the PFR and the comparison condition were similar at baseline with respect to means on the baseline measure of sleep problems and separation distress scores. At 6-month follow-up, children in the PFR condition were approximately half a standard deviation lower in sleep problems, PFR $M = 2.1$, $SD = 2.7$; EES $M = 3.6$, $SD = 3.4$ ($t = 1.54$, $p = .132$), and close to a full standard deviation lower in their separation distress scores, PFR $M = -0.07$, $SD = 0.13$; EES $M = 0.08$, $SD = 0.19$ ($t = 3.05$, $p = .004$). Estimates from the regression model predicting sleep problems at 6-month follow-up are shown in Table 2. Being in PFR predicted

Table 2
Estimates for regression model predicting sleep problems at follow-up.

	b	se
(Constant)	2.353	1.690
Intervention condition (1 = PFR, 0 = EES)	−2.116[*]	.927
Age in months at enrollment	.069	.088
Multiple removals	2.445[+]	1.325
Sleep problems at baseline	1.385[*]	.450

b = unstandardized regression coefficient and se = standard error.
[+] $p < .10$.

fewer sleep problems, adjusting for sleep problems at baseline and other covariates. The effect size, in terms of standard deviation unit difference, was $d = .67$. Multiple removals predicted more sleep problems at the trend level. The regression model explained 21% of the variance (adjusted R^2) in sleep problems.

A path model (see Fig. 2) showed a significant and negative effect of PFR on 6-month follow-up separation distress and a significant positive effect of separation distress on sleep problems. In other words, toddlers in the PFR condition showed a greater decrease, on average, in their separation distress scores, and toddlers exhibiting less separation distress score had fewer sleep problems. The unstandardized estimate for the indirect effect was − 0.96 (95% confidence level of − 2.22 to − 0.07).

5. Discussion

For birth parents recently reunified with their toddlers, random assignment to *Promoting First Relationships* (PFR), a brief, relationship-based home visiting intervention, resulted in less observed separation distress in the children and parents reporting fewer child sleep problems at 6-month post-intervention, compared to dyads in an alternative condition. These findings are consistent with dyadic models of infant sleep (Goodlin-Jones, Burnham, & Anders, 2000; Sadeh & Anders, 1993). Because sleep problems can be a special instance of separation distress, we predicted that child separation distress would mediate the association between PFR and child sleep, and this prediction was confirmed. Although PFR is not specifically a sleep intervention, it emphasizes parental predictability and caregiving routines as a way to help toddlers feel secure and in control of their world. PFR does intentionally help parents identify and understand the meaning of subtle and potent indicators of distress, including separation distress, and then helps parents reframe their attributions about these cues to support the parent–child relationship. For the birth parents in this sample, it is especially important that the provider helped them reflect on their recent separation from and reunification with their toddler. PFR directly
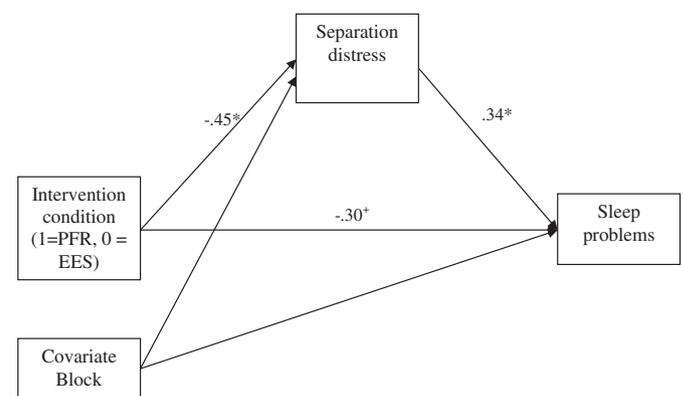
Fig. 2. Standardized path coefficients for mediation model. [*]$p < .05$. [+]$p < .10$. Effects of model covariates not shown. Covariates included time between baseline and 6-month follow-up and baseline measures of separation distress, sleep problems, whether the child had experienced multiple removals from the biological parent's home, and child age.

addressed parents' ability to reflect on their feelings of guilt, anger, and anxiety, and provided tools for parents to respond to their child in ways that would increase their competence and confidence, and their child's experience of parental sensitivity, predictability and safety.

Strengths of this study include a vulnerable population of parents and toddlers in child welfare, a randomized control design, behavioral observations of separation distress in the home, and analyses which controlled for baseline levels of sleep problems. Limitations of the study include small sample size and participant attrition which was slightly, but not significantly greater, in the PFR condition. The analysis sample does not include children who were exposed to the intervention with their birth parents and were then later removed. The hypotheses tested here specifically focused on birth parents and were secondary to the primary aims of the parent study, which focused county-wide on all new caregivers of toddlers in state dependency. We chose to limit the testing of the hypotheses for the present study to birth parents for two reasons. First, relative to the other caregivers in the study, birth parents were exposed to much greater contextual risk. They had lower income, lower education, and were more likely to be single parents. Second, because the state had deemed that they were inadequate parents and had removed their children, they would likely be particularly anxious about their parenting ability and their relationships with their children, contributing to their children's anxiety in the parent–child relationship.

6. Implications

Behavioral treatments, specifically unmodified extinction and graduated extinction, for bedtime struggles and night wakings are recommended by the Standards of Practice Committee of the American Academy of Sleep Medicine (Morgenthaler et al., 2006). Sleep problems, however, exist along a continuum and may reflect issues in the parent–child relationship, such as children being uncertain and anxious about the emotional and physical availability of the parent, which contributes to the display of separation distress in the home (Ainsworth et al., 1978). When these issues are addressed, sleep problems may be resolved without a specific behavioral intervention. The results of this study suggest that sleep problems are a subset of regulatory problems that can be reduced when parents are helped to understand the underlying meanings of a child's separation distress, respond to distress in consistent, predictable ways, and develop routines that increase the child's sense of safety and parental availability.

With severe sleep problems, such as were not the case in this study, an approach like PFR may be paired with the recommended standard of behavioral extinction. PFR helps parents understand that, on the one hand, toddlers need limits and boundaries for a sense of safety and, on the other hand, toddlers need opportunities to have some control as they develop a sense of self. Limit setting at night is a necessary part of this parenting package, but parents who are not feeling efficacious in their parenting role, and who are anxious about their child's love and need for them, may be less able to follow a strict behavioral program with their child. Their sense of being a 'good parent' needs to be realized first. Because PFR is strengths-based, parents have the experience of a trusted provider's positive and instructive feedback as they expand what may be a limited set of positive interactive skills with their child. As parents develop the confidence that a more positive relationship with their child is possible, they are more likely to be able to set limits in a calm and non-reactive manner that will in turn contribute to the child's sense of safety in the relationship. The approaches embodied in PFR may be a basic parenting program upon which pediatric psychologists can build more tailored interventions to address sleep and other problematic child behavior and troubled parent–child relationships.

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