Published in final edited form as:

Child Maltreat. 2016 August ; 21(3): 175–185. doi:10.1177/1077559516656398.

Can parenting intervention prevent cascading effects from placement instability to insecure attachment to externalizing problems in maltreated toddlers?

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Abstract

Multiple placement changes disrupt continuity in caregiving and undermine well-being in children in child welfare. This study conducted secondary data analysis of a randomized controlled trial to examine whether a relationship-based intervention, Promoting First Relationships® (PFR), reduced risk for a maladaptive cascade from placement instability to less secure attachment to elevated externalizing problems. Participants included caregivers (birth or foster/kin) of toddlers (10–24 months) recently transitioned to their care because of child welfare placement decisions. Although main effects of PFR on security and externalizing problems were not previously observed, this study's results revealed that PFR attenuated the association between multiple placement changes (baseline) and less security (postintervention), and that the indirect effect of placement instability on greater externalizing problems (6-month follow-up) via less security was evident only in toddlers in the comparison condition. These findings shed light on how a history of multiple caregiver changes may influence toddlers' risk for poor adjustment in subsequent placements, and the promise of supporting caregivers through a parenting intervention to prevent such risk.

Keywords

Child welfare; toddlers; placement changes; externalizing; prevention

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Young children involved in the child welfare system (CWS) are susceptible to ongoing experiences of trauma and loss stemming from their disrupted and unstable living situations. Many of these children have been exposed to recurrent interpersonal trauma, such as maltreatment (e.g., neglect and abuse) and domestic violence. Past experiences of adverse care in children in the CWS elevate their risk for poor developmental outcomes, such as problem behavior and low educational achievement (Ford, Vostanis, Meltzer, & Goodman, 2007). Those that experience “placement drift” while in care, however, face even greater psychosocial challenges over the long-term (Villodas, Litrownik, Newton, & Davis, 2015). Although there is increasing recognition of the risks associated with placement instability in

terms of undermining children's well-being and adaptation to care, less is understood regarding *how* these prior placement experiences may impact atypical development, and what type of intervention services may buffer risk for poor outcomes.

While it may be necessary to remove a child from their family of origin due to significant safety concerns, being placed with new caregivers in unfamiliar homes is stressful and disorienting for young children who most often do not understand reasons for moves (Zeanah, Berlin, & Boris, 2011). The longer children spend in out-of-home care the more likely they are to experience multiple changes in caregivers (U.S. Department of Health and Human Services, 2012). Prior research suggests that placement instability harms children's regulatory system, as manifested by a pattern of deficits across neural, physiological, emotional, and behavioral domains (Fisher, Mannerling, Van Scoyoc, & Graham, 2013). For instance, placement changes have been shown to predict dysregulation in cortisol rhythms, in terms of smaller morning-to-evening cortisol decreases, in preschoolers receiving regular foster care services (Fisher, Van Ryzin, & Gunnar, 2011). More placement changes are also linked to poorer inhibitory control in pre-school/kindergarten children in foster care (Pears, Fisher, Bruce, Kim, & Yoerger, 2010) or who have been adopted (Lewis, Dozier, Ackerman, & Sepulveda-Kozakowski, 2007).

Children first learn to regulate emotion and behavior in attachment relationships and it has long been recognized that significant separations—and discontinuity in care—between a young child and their primary caregiver result in the most serious disturbances in attachment (Bowlby, 1969/1982). In this light, as a result of inconsistent caregiving, multiple placement moves are likely to harm the quality of children's attachment (Stovall & Dozier, 1998). Many young children in the CWS have experienced a series of attachment stressors beginning with early exposure to maltreatment in their birth family, followed by a significant—and in most cases traumatic—separation from their parent, and then potentially exposure to unstable caregiving while seeking a permanent home. The dislocated relational experiences that characterize a trajectory of placement instability may undermine children's trust and “felt security” in attachment relationships, thereby reinforcing negative relational models of self and others (Bowlby, 1969/1982). Notwithstanding this, as attachment is dyadic, for children in care the process of forming a secure attachment with a new or former caretaker after a placement move is likely modulated by consistent, sensitive caregiving (Gabler et al., 2014; Stovall-McClough & Dozier, 2004; Zeanah et al., 2011).

Despite theoretical reasons for linking early attachment disruptions to long-term consequences, little research has examined longitudinal associations between placement instability and quality of attachment. Strijker, Knorth, and Knot-Dickscheit (2008) found a significant positive association in a sample of 419 Dutch children (*M* age = 10 years), whereas Jonkman and colleagues (2014) found a non-significant association in a sample of 126 Dutch children (*M* age = 5 years), as did Bovenschen and colleagues (in press) in a sample of 49 German children (*M* age = 5 years) in foster care. Due to the lack of research regarding the effects of placement changes on quality of attachment, and the strong theoretical rationale for such a link (Bowlby, 1969/1982; Stovall & Dozier, 1998), there is a need for further investigation using large samples and observational measures of attachment security in toddlers.

In addition to potentially undermining attachment quality, multiple placement changes can precipitate or exacerbate children's externalizing problems (Lewis et al., 2007; Newton, Litrownik, & Landsverk, 2000), irrespective of baseline levels of behavior problems (Rubin, O'Reilly, Luan, & Localio, 2007). Little is known about relational mechanisms implicated in the development of externalizing problems in toddlers in the CWS, particularly in those that have experienced multiple placement moves. Prior research suggests that insecure attachment is associated with externalizing problems (e.g., aggression, non-compliance) in children in birth families (Fearon, Bakermans-Kranenburg, van Ijzendoorn, Lapsley, & Roisman, 2010), and a history of disrupted attachments is associated with externalizing problems for children in foster care (Oosterman & Schuengel, 2008). In early childhood, an insecure attachment characterized by low levels of parent-child mutual reciprocity, heightens risk for coercive caregiver-child exchanges and escalation of child hostility (Kochanska & Kim, 2012). Furthermore, because of their past interpersonal trauma, toddlers in the CWS may express their unmet attachment needs using a "language of distress" (e.g., yelling, crying) that caregivers potentially experience as aversive, which in turn might inadvertently amplify coercive interactions. Other toddlers may develop a strategy in which they turn away from new caregivers when they are feeling distressed (Dozier, Zeanah, & Bernard, 2013), failing to elicit responsiveness from caregivers which could increase their risk for further relationship disruption (Stovall-McClough & Dozier, 2004).

In sum, theory and prior results suggest links between placement changes, attachment, and externalizing problems. Moreover, these interrelationships appear to be particularly developmentally salient to toddlers who rely on their caregiver as a co-regulator, yet are keen, often defiantly so, to exert more autonomy in relationships, while still desiring comfort from the caregiver when distressed. Together, these findings support a cascading effects model wherein a history of placement instability affects the quality of toddlers' attachment relationships, which in turn underpins the emergence of externalizing problems.

Given the negative sequelae associated with chaotic and unstable caregiving in young children in the CWS, strengthening caregiver-child relationships should be the primary focus of interventions for this high-risk group (Toth, Gravener-Davis, Guild, & Cicchetti, 2013). Promoting First Relationships® (PFR; Kelly, Sandoval, Zuckerman, & Buehlman, 2008) is a 10-week relationship-based home visiting intervention aimed at enhancing caregiver sensitivity and improving the quality of the caregiver-child relationship. Alongside other intervention components, PFR uses reflective practice with caregivers, involving discussions of videotaped interactions with their children, to strengthen caregivers' understanding of and sensitive responding to toddlers' expression of attachment needs. These outcomes were demonstrated in a randomized controlled trial (RCT) involving 210 caregivers (birth or foster/kin) of toddlers recently transitioned to their care because of child welfare placement decisions (Spieker, Oxford, Kelly, Nelson, & Fleming, 2012). Relative to caregiver-toddler dyads that received a control intervention (Early Education Support; EES), at postintervention those in the PFR intervention demonstrated greater improvements on observed caregiver sensitivity, caregivers' understanding of toddlers' social emotional needs, and caregiver-reports of child competence. There were no significant differences between the groups at 6-month follow-up on the outcomes assessed in the sample of dyads that remained intact since baseline. Despite gains in caregiver sensitivity, PFR was not associated

with greater improvements in child attachment security relative to EES. Beyond overall differences between the two groups, it is important to investigate more subtle or “hidden” effects (Brock & Kochanska, 2015) of PFR on developmental processes occurring in the context of the caregiver-child relationship, and to factor in significant aspects of children’s prior relational experiences. Based on the evidence outlined above, there is compelling reason to examine history of placement changes with respect to risk for poor outcomes in toddlers in the PFR versus EES condition.

In the context of a RCT of a relational intervention (PFR) delivered to caregivers of toddlers in the CWS, the primary goal of this study was to examine a maladaptive cascade from prior placement changes (baseline) to lower levels of attachment security (postintervention) to externalizing problems (6-month follow-up), and investigate whether intervention condition (PFR vs. EES) moderated risk for this cascade. Considering that caregivers in the PFR versus EES condition showed greater improvements in sensitivity and understanding of toddlers’ social emotional needs at postintervention (Spieker et al., 2012), there is reason to suspect that they were able to develop relatively stronger emotional bonds with toddlers that entered their care with a history of unstable caregiving. Thus, we first examined whether intervention condition moderated the association between prior placement changes (baseline) and attachment security (postintervention), and hypothesized that the PFR intervention would attenuate the relationship between multiple placement moves and less security. In a separate analysis, we tested our second hypothesis that PFR would prevent risk for the maladaptive cascade; that is, the indirect effects of a greater number of placement changes (baseline) on externalizing problems (6-month follow-up) via less attachment security (postintervention), would be stronger in the EES but weaker or absent in the PFR condition.

Method

Sample

This study was a secondary data analysis of a RCT of the PFR intervention (see Spieker et al., 2012) involving two hundred and ten toddlers ($M_{\text{age}} = 18.01$ months, $SD = 4.73$, 56% boys) and their caregivers who were recruited into the Fostering Families Project (FFP) between April 2007 and March 2010. Based on records from the state Department of Social and Health Services (DSHS), a DSHS social worker identified all children residing in a metropolitan county who were in state dependency, aged between 10 – 24 months, and who had experienced a court-ordered placement that resulted in a change in primary caregiver within the 7 weeks prior to enrollment. Eligible caregivers spoke English and included foster parents ($n = 89$), biological parents ($n = 56$), or adult kin ($n = 65$). Caregivers were compensated \$75/research visit for completing assessments at baseline, postintervention, and 6-month follow-up. The state IRB approved all study procedures and participant consent forms.

Regarding toddler ethnicity and race, 10% were Hispanic; 55.2% were White, 19.5% Mixed Race, 14.8% Black, 6.7% Native American/Alaskan Native, 3% Other, and 1% Native Hawaiian/Other Pacific Islander. Regarding placement history, mean toddler age at first removal was 10.8 months ($SD = 7.4$); on average toddlers had experienced 2.7 placement

changes ($SD = 1.6$) prior to enrollment, and 10.5% of toddlers had been removed from their birth parents' home more than once. Mean years of education for caregivers was 13.02 ($SD = 1.95$). There were no significant differences between the intervention conditions in terms of toddler and caregiver demographics and background information, with the exception that more toddlers in the PFR (16.2%) versus EES (4.8%) group experienced one or more failed reunifications with their birth parent prior to enrollment, $\chi^2(1) = 7.31, p < .01$.

Interventions

PFR—Caregiver-toddler dyads ($n = 105$) randomized to the PFR intervention were offered ten weekly 60- to 75-minute in-home visits by a masters-level mental health provider from one of several local agencies. Seventy one percent of the caregivers received all ten sessions. The sessions focused on increasing parents' sensitivity using attachment theory-informed and strength-based consultation strategies. For instance, reflective video feedback was included in five sessions using taped episodes of caregiver-child play or caregiving behavior, wherein the PFR provider guided discussion concentrating on parenting strengths and interpretation of the child's cues. Across the sessions a variety of handouts were reviewed pertaining to topics such as "Staying Connected During Difficult Moments." This aspect of the curriculum promoted caregivers' understanding that toddler challenging behavior often reflects underlying unmet attachment needs (e.g., safety and comfort). PFR providers received 90 hours of training (including supervision) over six months, and there was good implementation fidelity (see Spieker et al. 2012 for more details).

EES—Caregiver-toddler dyads ($n = 105$) randomized to the control condition—*Early Education Support* (EES)—were offered three monthly 90-minute, in-home sessions delivered by an early education specialist. Eighty one percent of the caregivers received complete dosage of the intervention. The sessions consisted of instruction in early childhood developmental issues (e.g., cognitive and language development) as well as referral to service programs such as child care, housing, and mental health. Results from the fidelity assessments reported elsewhere (see Spieker et al., 2012) demonstrated that EES providers did not implement the relationship-based consultation strategies and video feedback techniques that were used by PFR providers.

Measures and Procedure

Caregiver-toddler dyads were assessed at baseline, postintervention, and 6-month follow-up during 2-hour in-home research visits. Visits included interviews, self-report measures, and videotaped caregiver-child interactions, including a brief separation when the caregiver went outside for 3 minutes. Due to the relatively shorter duration of the EES intervention, there were significantly smaller time intervals between baseline and postintervention assessments (EES: $M = 2.88$ months; PFR: $M = 4.12$; $t(173) = 7.05, p < .001$) and baseline and 6-month follow-up assessments (EES: $M = 8.85$; PFR: $M = 10.05$; $t(127) = 5.25, p < .001$), in the EES versus PFR condition.

Number of *placement changes* prior to randomization included changes in a child's placement of any length that involved a move between caregivers (e.g., lateral move in out-of-home care, reunification move, re-entry into out-of-home care), as recorded in the state

child welfare administrative database. Temporary episodes in respite care were not included in this count.

Problem behavior at baseline was assessed using the Problem scale (31 items; Cronbach's $\alpha = .77 - .79$) from the Brief Infant Toddler Social and Emotional Assessment (BITSEA; Briggs-Gowan & Carter, 2002). Caregivers rated toddlers' problem behavior (e.g., "Hits, bites, or kicks you" and "Cries or throws tantrums until exhausted") in the last month along a 3-point scale (0 = *not true/rarely*; 1 = *somewhat true/sometimes*; 2 = *very true/often*). Raw scores were used as a baseline control for 6-month follow-up externalizing problems in analyses. BITSEA problem behavior has been shown to predict Child Behavior Checklist (CBCL) externalizing problems 1-year later (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004), which could not be assessed at baseline because children were too young.

Attachment security at baseline and postintervention was measured with the Toddler Attachment Sort-45 (TAS45; Kirkland, Bimler, Drawneek, McKim, & Schölmerich, 2004), which was scored immediately after each research home visit. The TAS45 is a 45-item modified version of the Attachment Q-Sort (AQS; Waters, 1987). We used a "trilemma" sorting technique wherein the 45 descriptive statements are presented in specific sets of three. The three items in a sample trilemma are: "Child wants to be at the center of caregiver's attention"; "Child is very independent"; "Child will go towards caregiver to give her/him toys, but does not touch nor look at her/him." The observer decides which one of the three statements in the set is *most like* and which is *least like* the child's behavior during the observation just completed. Each of the 45 items appears in two trilemmas; there are 30 trilemmas in all. The scoring results in an overall *security* score, which has demonstrated convergent and discriminant validity in a sample of at-risk toddlers (Spieker, Nelson, & Condon, 2011). Two trained research visitors administered the TAS45; in 16% of visits the TAS45 was coded by the two raters on-site (inter-rater reliability = .92).

Externalizing problems at 6-month follow-up were assessed via caregiver reports on the Child Behavior Checklist for Ages 1½–5 (CBCL; Achenbach & Rescorla, 2000) Externalizing Problems scale (24 items; $\alpha = .90$). Descriptions of externalizing problems (e.g., "Strong temper, loses easily" and "Disobedient at home") in the last two months were rated on a 3-point scale (0 = *not true*; 1 = *somewhat true/sometimes*; 2 = *very true/often*).

Analytic Procedures

Model description—Hypotheses were tested in two models using Mplus 7.1 with maximum likelihood estimation with robust standard errors (MLR). Full information maximum likelihood (FIML) was used to handle missing data. First, in a saturated model we examined whether the interaction between intervention condition (PFR vs. EES) and placement changes at baseline predicted attachment security at postintervention (Hypothesis 1). Next, we expanded this model and employed a conditional process analysis—using Hayes' (2013) PROCESS macro—to investigate whether intervention condition moderated the indirect effects of placement changes at baseline on externalizing problems at 6-month follow-up via attachment security at postintervention (Hypothesis 2). Conditional process analysis is a conceptual and analytic approach to examining whether the strength of indirect effects is conditional on levels of a moderator, and combines principles of mediation and

moderation analysis. The moderation of intervention condition on the association between placement changes at baseline and postintervention attachment security was included in the current model. This moderating effect does not have to be statistically significant to infer that the indirect effects are moderated by intervention condition (Hayes, 2013).

The parameters of interest for examining the conditional indirect effects are the 95% bias-corrected bootstrapped confidence intervals (CI). Bootstrapping is a non-parametric re-sampling procedure that takes into account the nature of asymmetrical distribution of the indirect effect (MacKinnon, 2008). Five thousand bootstrap draws were used to derive estimates of the product of coefficients for the conditional indirect effects. These estimates were deemed significant if the 95% CI does not include zero. The product of coefficients approach tests jointly the effects of indirect paths, and in contrast to requirements in traditional mediation analysis (Baron & Kenny, 1986), this approach is not contingent on a significant association between the independent variable (placement changes) and the outcome (externalizing problems) (MacKinnon, 2008). In terms of evaluating model fit, a non-significant χ^2 , Root Mean Square Error of Approximation (RMSEA) less than 0.05, and Comparative Fit Index (CFI) greater than 0.90 were considered an adequate fit to the data (Hu & Bentler, 1999).

Covariates—To control for potential confounds associated with toddler and caregiver demographics and background information, and to ensure consistency with prior research examining the PFR intervention (Spieker et al., 2012), the following covariates were included in both models: child sex, child age at enrollment, child race/ethnicity, one or more failed reunifications (0 = No; 1 = Yes) (differed between conditions at baseline), months between baseline and the given follow-up assessment (differed between conditions), caregiver type, and caregiver education. Baseline attachment security was included as a covariate when testing both Hypothesis 1 and 2, while behavior problems when testing Hypothesis 2.

Attrition and sample sizes—Figure 1 shows the flow of participant recruitment, assignment, and attrition over time, pertaining to the sample included in this study. When the child experienced a caregiver change following the intervention, later assessments were completed with the new caregiver. In the current study, only data from visits with caregiver-toddler dyads that remained intact since baseline were used, resulting in a potential sample size of 175 toddlers at postintervention (Hypothesis 1), and 123 toddlers at 6-month follow-up (Hypothesis 2) who had the same caregiver at all three time points. The final sample sizes included in the analyses were 172 (Hypothesis 1) and 120 (Hypothesis 2) intact caregiver-toddler dyads that had non-missing data on the relevant covariates. Missing data status was not significantly associated with intervention condition, demographics, and toddler placement history (all p 's > .05). At postintervention, compared with dyads that experienced a caregiver change or did not complete the postintervention assessments, assessed intact dyads were younger, $M = 17.62$ vs. $M = 19.98$, $t(208) = 2.74$, $p = .007$. Intact dyads at postintervention did not differ significantly on any other demographic or background variable compared with dyads that experienced a caregiver change or noncompleters. At 6-month follow-up, assessed intact dyads no longer differed with respect to child age

compared to dyads with new caregivers or noncompleters, but did differ regarding caregiver type at baseline, $\chi^2(2) = 7.66, p = .022$, with intact dyads more likely to include birth parents (33% vs. 16%) and less likely to include foster parents (38% vs. 49%).

Results

Bivariate Associations

Table 1 shows descriptive statistics and Pearson's correlations among the main study variables for the total sample. Higher baseline scores on problem behavior were significantly associated with greater levels of externalizing problems at 6-month follow-up. Attachment security at baseline demonstrated a positive association with attachment security at postintervention and a negative association with externalizing problems at 6-month follow-up. Furthermore, lower levels of attachment security at postintervention were significantly associated with higher externalizing problems at 6-month follow-up. Intervention condition (PFR versus EES) and number of placement changes did not demonstrate significant bivariate associations with attachment security and externalizing problems.

Moderation of Intervention Condition on the Association Between Placement Changes and Attachment Security

In testing our first hypothesis, that PFR would mitigate the negative effects of placement changes on attachment security, we regressed postintervention attachment security scores on the abovementioned covariates (which included baseline attachment security), placement changes at baseline, intervention condition (0 = *EES*; 1 = *PFR*), and the interaction effect (i.e., placement changes $\times$ intervention condition). The model accounted for 32.3% of the variance in postintervention attachment security. Results revealed that a higher number of placement changes at baseline predicted lower levels of attachment security at postintervention ($\beta = -0.20$; B (SE) = -0.009 (0.004), $p = .038$). Intervention condition was not significantly associated with postintervention attachment security ($\beta = -0.16$; B (SE) = -0.023 (0.020), $p = .25$). In line with our first hypothesis, the interaction term between placement changes and intervention condition significantly predicted attachment security ($\beta = 0.28$; B (SE) = 0.012 (0.005), $p = .036$). Regarding associations with the covariates, age ($\beta = 0.27$) and baseline attachment security ($\beta = 0.46$) were significantly positively associated with attachment security at postintervention (p 's < .001).

To clarify the nature of the interaction effect, simple slope analyses conditioned on the PFR and EES intervention groups were conducted. As shown in Figure 2, there was a significant negative association between placement changes and attachment security in the EES condition (B (SE) = -0.009 (0.004), $p = .038$), but not in the PFR condition (B (SE) = 0.002 (0.003), $p = .47$). We further tested the regions of significance to examine the conditions under which the two groups significantly differed from each other in terms of their levels of attachment security. Results showed different levels of attachment security between the two groups for all observed values equal to ($p = .059$) or greater than ($p = .02$) four placement changes at baseline, representing 27% of the sample. Thus, among children with a history of

more frequent (> 4) placement changes, those in the EES group demonstrated lower levels of attachment security than children in the PFR group at postintervention.

Indirect Effects of Placement Changes on Externalizing Problems via Attachment Security as Moderated by Intervention Condition

In testing our second hypothesis, we examined the magnitude of the indirect effects of prior placement changes at baseline on externalizing problems at 6-month follow-up, through attachment security at postintervention, as a function of intervention condition (i.e., EES vs. PFR). The same covariates used in the regression analysis above (with the addition of baseline behavior problems) were included in this analysis. Figure 3 illustrates the conceptual model for the conditional process analysis and standardized path estimates. The model provided a good fit to the data, $\chi^2(17) = 21.27, p = .21$, CFI = 0.93, RMSEA = 0.046; and accounted for 31.5% of the variance in externalizing problems at 6-month follow-up. Results demonstrated that more frequent placement changes at baseline were significantly associated with lower levels of attachment security at postintervention ($B(SE) = -0.015(0.005), p = .002$). Lower levels of attachment security at postintervention were significantly associated with higher scores on externalizing problems at 6-month follow-up ($B(SE) = -34.91(12.47), p = .005$). Intervention condition was not significantly associated with externalizing problems ($\beta = -0.10; B(SE) = -1.65(1.64), p = .31$). The interaction term between placement changes and intervention condition did not significantly predict postintervention attachment security ($B(SE) = 0.015(0.008), p = .066$); however, the path coefficient ($\beta = 0.30, p = .065$) was slightly larger in magnitude than the path coefficient reported in our first analysis that included a larger sample size ($\beta = 0.28, p = .036, n = 172$). Consistent with our second hypothesis, the conditional indirect effect of placement changes on externalizing problems via attachment security was significant in the EES group, 95% CI = (0.127, 1.282), but not in the PFR group, 95% CI = (-0.648, 0.539).

Concerning associations with the covariates, postintervention attachment security was significantly positively associated with age ($\beta = 0.28$) and baseline attachment security ($\beta = 0.41$). Furthermore, levels of externalizing problems at 6-month follow-up were significantly associated with baseline scores on behavior problems ($\beta = 0.30$), non-hispanic vs. hispanic status ($\beta = -0.16$), one or more failed reunifications ($\beta = 0.27$), and caregiver education ($\beta = -0.24$). We repeated our analyses testing Hypothesis 1 and 2 including child age as the only covariate and the pattern of results did not differ from what is reported above.

Discussion

For many young children in the CWS, the adverse effects of early exposure to maltreatment are compounded by recurring stress and loss associated with unstable attachment relationships. To the best of our knowledge, the current results provide the first evidence regarding the indirect impact of placement instability on the emergence of externalizing problems in toddlers by way of adversely affecting the quality of attachment. Importantly, however, this developmental cascade was not evident in toddlers with caregivers who were supported through a relationship-based intervention. Together, these findings offer new insight regarding the effects of multiple placement changes on toddlers' adjustment to care,

and how risk for a maladaptive pathway leading to behavior problems may be offset via exposure to a parenting intervention, despite that the intervention overall had no significant effect on attachment security (Spieker et al., 2012).

In line with our first hypothesis, results demonstrated a significant interaction between intervention condition and placement changes in the prediction of attachment security at postintervention. Specifically, among toddlers with a history of multiple placement changes, those in the EES group demonstrated less security than toddlers in the PFR group. The increased risk for less secure attachment associated with a history of placement instability is consistent with results from a prior study of school-aged children in foster care (Strijker et al., 2008). Importantly, our findings indicate that PFR attenuates this risk. In terms of main effects, PFR was associated with greater improvements in caregivers' sensitivity and understanding of toddlers' social and emotional needs at postintervention (Spieker et al., 2012). Thus, considering the importance of sensitive caregiving for fostering security in children in care (e.g., Stovall-McClough & Dozier, 2004), it may be that these improvements in caregiving contributed to reduced risk for less secure attachment in toddlers with a history of multiple placement changes in the PFR group. Young children with prior experiences of unstable placements may have greater difficulties communicating their attachment needs and seeking comfort and safety from their primary caregiver. PFR intentionally supports caregivers with these relational challenges by enhancing their ability to think about and appropriately respond to the fear and desire for comfort underlying their toddlers' challenging behavior. Although PFR did not demonstrate main effects on enhancing security at postintervention, its significant interaction with placement changes is consistent with prior studies that have found pronounced effects of preventive parenting interventions on key outcomes such as attachment (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011) and behavior problems (Dishion et al., 2008) in the most high-risk children.

In testing our second hypothesis using a moderated mediation model, we found support for relatively subtle intervention-related effects embedded in a maladaptive cascade that factored in toddlers' prior placement experiences. As predicted, the indirect effects of a greater number of placement changes on higher levels of externalizing problems, via less security, were only evident in toddlers in the EES condition. The effects of attachment quality on the development of externalizing problems are consistent with results from prior research involving children living in birth (Fearon et al., 2010) and foster (Oosterman & Schuengel, 2008) families. The interaction term between intervention condition and placement changes marginally predicted security in the cascade model; however, the magnitude of the regression coefficient was slightly larger than the one found in testing our first hypothesis. In this light, we are cautious in suggesting that PFR may have reduced risk for less secure attachment in toddlers with multiple placement changes, which in turn potentially buffered against the development or exacerbation of externalizing problems.

The present findings are consistent with and extend those from a prior study that examined the moderation of a foster parent intervention on the relationship between placement changes and cortisol rhythms in preschool-aged children (Fisher et al., 2011). The intervention, Multidimensional Treatment Foster Care for Preschoolers (MTFC-P), includes a component that aims to strengthen caregivers' behavioral management practices, such as

positive reinforcement and consistent limit-setting. Results revealed that, compared to children in the MTFC-P condition, children who received regular foster care services had more blunted daily cortisol decreases over a 6-month period after a placement change. These findings are similar to those in the present study given that deviant cortisol patterns are linked to both insecure attachment (Luijk et al., 2010) and externalizing problems (Cicchetti & Rogosch, 2001). The interventions examined in the present study and in Fisher and colleagues' (2011) utilize different therapeutic approaches to enhance the caregiver-child relationship; however, together the results from both studies suggest that consistent, responsive parenting may prevent some of the adverse effects of placement instability on various child regulatory outcomes.

Although our findings reflect temporal and not necessarily causal associations, the RCT/experimental design of the study bolsters support for the direction of effects in the hypothesized model. Notwithstanding this, past studies have revealed reciprocal effects between placement changes and behavior problems (e.g., Rubin et al., 2007). We included baseline levels of behavior problems as a potential covariate for externalizing problems at 6-month follow-up; however, it is possible that toddlers' disruptive behavior in prior placements influenced removal decisions and contributed to placement instability. Placement changes at baseline did not demonstrate significant cross-sectional associations with behavior problems, nor with attachment security. Regarding the latter, Stovall-McClough and Dozier (2004) found that foster infants with more risk factors (e.g., placement instability, physical abuse) showed relatively higher coherence of attachment behavior early in placement but then decreasing levels of coherence and security over time. An important characteristic of our sample is that toddlers had recently been placed with a new primary caregiver within the 7 weeks prior to enrollment. Placement changes occur due to different reasons (e.g., breakdown between caregiver and child, administrative needs and policies) which may affect children's initial response to their new placement in different ways (e.g., temporary increase or decrease in problematic behavior). Consistent with past research (e.g., Fisher et al., 2011; Lewis et al., 2007; Newton et al., 2000), this study's assessment of placement changes indexed the number of moves between homes regardless of underlying reasons, as we reasoned that any change in caregiver is stressful for this vulnerable population.

Future research might consider examining levels of risk associated with different types of placement moves. Interestingly, in the current study we found that toddlers' history of at least one failed reunification (coded as *yes* or *no*) significantly predicted elevated levels of externalizing problems over and above the effects of the other variables in the model. Thus, multiple re-entries into out-of-home care may be associated with unique risk processes leading to poor outcomes and deserves future investigation.

This study's strengths include the multi-informant, multi-method measurement approach, and the "real-world" setting of the study involving delivery of the intervention by trained leaders in community services and a representative sample of toddlers in the CWS. Regarding study limitations, assessments of toddlers' maltreatment history were not available to examine in the model as potential confounds. Furthermore, the reduced sample size at 6-month follow-up resulted in decreased statistical power and helps explain the

marginally significant interaction term involving intervention condition and placement changes in testing our second hypothesis. However, it should be noted that toddlers who experienced a caregiver change after enrollment—and were ineligible to participate—accounted for a larger proportion of the sample that were not included in this study, than toddlers who did not complete assessments.

In sum, the present findings support the preventive effects of the PFR intervention in reducing risk for a maladaptive cascade from multiple placement changes to less security to greater externalizing problems. With respect to policy and practice implications, these results shed light on two chief goals of the CWS: stability in children's attachment relationships and enhancement of their well-being. When considered in the context of prior studies that have demonstrated detrimental effects of multiple placement moves on child adjustment, our findings reinforce the consensus view among researchers and clinicians regarding the importance of adopting a proactive approach in the CWS to preventing unnecessary placement changes (e.g., Fisher, 2013). Although all toddlers in the CWS are at-risk for adverse outcomes, the present findings suggest that those who have been exposed to multiple caregivers face increased risk for insecure attachment and subsequent behavior problems. Thus, toddlers with a history of placement instability might be considered for targeted prevention efforts involving parenting interventions that focus on enhancing the caregiver-child relationship.

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Figure 1.
Flow of participant recruitment, assignment, and attrition over time

Figure 2. Simple slopes of associations between history of placement changes at baseline and attachment security postintervention, for the PFR and EES intervention groups. The shaded region represents the number of placement changes at which there were significant group differences on levels of attachment security.

Figure 3. Conceptual model showing standardized coefficients for the primary tested paths and 95% confidence intervals (CI) for the indirect effects of placement changes on externalizing problems through attachment security, moderated by intervention (PFR vs. EES). Significant paths are indicated with solid lines and significant indirect effects are in bold. * $p < .05$. ** $p < .01$.

Table 1

Intercorrelations, Means, and Standard Deviations for the Key Study Variables

	<i>M (SD)</i>	Range	1	2	3	4	5
1. EES = 0; PFR = 1	-	-	-				
2. Number of placement changes (<i>baseline</i>)	2.69 (1.59)	1.00 – 12.00	-.01	-			
3. Problem behavior (<i>baseline</i>)	11.28 (6.29)	0.00 – 33.00	-.02	-.01	-		
4. Attachment security (<i>baseline</i>)	0.12 (0.08)	-0.17 – 0.24	.10	.03	-.30***	-	
5. Attachment security (<i>postintervention</i>)	0.14 (0.07)	-0.08 – 0.25	.09	.00	-.14	.45***	-
6. Externalizing problems (<i>6-month follow-up</i>)	13.31 (8.03)	0.00 – 39.00	-.02	.08	.32***	-.20**	-.27***

* $p < .05$,

** $p < .01$,

*** $p < .001$;

Range $n = 164 - 210$.