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RELATIONS BETWEEN COPARENTING AND FATHER INVOLVEMENT IN FAMILIES WITH PRESCHOOL AGED CHILDREN

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Abstract

One-hundred twelve primarily European American and middle-class two-parent families with resident fathers and a 4-year-old child (48% girls) participated in a longitudinal study of associations between coparenting and father involvement. At the initial assessment and one year later, fathers reported on their involvement in play and caregiving activities with the focal child, and coparenting behavior was observed during triadic family interactions. SEM was used to test cross-lagged associations between coparenting behavior and father involvement. Overall, paths from father involvement to coparenting behavior were significant, but paths from coparenting behavior to father involvement were not. Specifically, greater father involvement in play was associated with an increase in supportive and a decrease in undermining coparenting behavior over time. In contrast, greater father involvement in caregiving was associated with a decrease in supportive and an increase in undermining coparenting behavior. Multi-group analysis further showed that these cross-lagged relations did not differ for dual earner families and single (father) earner families, but these relations appeared to differ for families with focal daughters and families with focal sons. These findings highlight the potential for fathering to affect coparenting and the importance of considering the role of contextual factors in coparenting-fathering relations.

Keywords

father involvement; coparenting; child gender; moderation; longitudinal study

Child socialization in the family is a function of complex transactions among family subsystems (Adamsons & Buehler, 2007). Father involvement, or the degree to which fathers are involved in childrearing, and coparenting, or parents' functioning as partners or adversaries in their parenting roles (Belsky, Putnam, & Crnic, 1996; Feinberg, 2003), represent two important sources of family influence on child socialization. However, only relatively recently have father involvement and coparenting been studied together in the service of understanding their associations.

Much existing theory and research has emphasized that fathers' involvement in parenting is susceptible to influences of the social and family environment (Doherty, Kouneski, & Erickson, 1998; Goetze-Morey & Cummings, 2007; Marsiglio, Roy, & Fox, 2005; Townsend, 2002). From this perspective, the quality of the coparenting relationship is believed to play an important role in shaping father involvement. Other scholars have stressed that fathers' involvement is self-determined as well as contextually influenced

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(Freeman, Newland, & Coyl, 2008; Walker & McGraw, 2000). Emphasizing fathers' agency, or their power to actively choose the nature and level of their involvement, raises the possibility that fathering behavior could influence family processes such as coparenting as well (e.g., Arditti & Michaelena, 1994; Cookston, Braver, Griffin, De Luse, & Miles, 2007).

These perspectives are not necessarily inconsistent, given that family systems theory stipulates that families consist of mutually interdependent subsystems (Minuchin, 1974; Whitchurch & Constantine, 1993), implying reciprocal relations between father involvement and coparenting. The current study, guided by family systems theory, was designed to examine reciprocal relations between coparenting behavior and father involvement in families with resident fathers and preschool aged children. It advanced the literature by (a) testing cross-lagged associations between coparenting and father involvement, (b) utilizing observational measures of coparenting behavior, which are central to coparenting assessment but absent in prior investigations of relations between coparenting and father involvement, and (c) examining the specificity of links between father involvement in play and caregiving and coparenting behavior. We further explored the roles of child gender and family earner status as moderators of relations between coparenting behavior and father involvement.

Father Involvement and Coparenting

Expectations for fathers' active involvement with their children increased over the past half century (LaRossa, 1988; Pleck & Pleck, 1997). An essential component of diverse conceptualizations of father involvement is fathers' direct involvement with their children in one-on-one activities (Doherty et al., 1998; Lamb, Pleck, Charnov, & Levine, 1987), the developmental importance of which has been underscored by numerous studies (e.g., Bronte-Tinkew, Carrano, Horowitz, & Kinukawa, 2008; Roggman, Boyce, Cook, Christiansen, & Jones, 2004). Thus, this study focused on fathers' direct involvement in developmentally appropriate play and caregiving activities, because these types of involvement are core facets in most theoretical models of fathering and they reflect the most salient forms of direct father involvement in two-parent families with preschool aged children.

Accompanying the growth of research on father involvement has been increased interest in coparenting, a key aspect of the family system that involves the quality of coordination between adults in their parental roles (Feinberg, 2003). In keeping with its theoretical status as the family's "executive subsystem," the coparenting relationship has been shown to be more proximally linked to child outcomes than other aspects of the interparental relationship (Frosch, Mangelsdorf, & McHale, 2000; McHale & Rasmussen, 1998).

Many approaches to conceptualizing coparenting highlight the extent to which parents support versus undermine each other's parenting as one important component of the coparenting relationship (Feinberg, 2003), and supportive and undermining behavior are considered as distinct dimensions of coparenting behavior (Belsky et al., 1996; McHale, 1995). Supportive coparents value each other's contributions to parenting, respect each other's authority, and are cooperative and warm when interacting with their child together. In contrast, parents who undermine each other do so through criticism, blame, or disparagement of the other parent, competing for the child's attention, or disregarding the other's authority.

We argue that coparenting and father involvement are distinct constructs, inviting examination of their relations. Coparenting is usually described as a triadic-level family construct (mother-father-child), versus a dyadic-level construct such as the father-child

relationship (Belsky et al., 1996). On the one hand, when parents share childrearing equally, couples can still vary in the quality of their coparenting behavior (Feinberg, 2003). On the other hand, parents can occupy different roles and still achieve a high-quality coparenting relationship (Buckley & Schoppe-Sullivan, in press; McHale et al., 2002).

Coparenting as an Influence on Father Involvement

Perspectives that emphasize the vulnerability of father involvement to the social and family environment (Doherty et al., 1998; Goeke-Morey & Cummings, 2007; Marsiglio et al., 2005; Townsend, 2002) posit that a supportive coparenting relationship provides encouragement for father involvement, whereas a conflictual coparenting relationship may interfere with fathers' engagement in child rearing. Indeed, research has substantiated relations between interparental relationship quality and resident father involvement. Interparental conflict predicts less engaged parenting by fathers (e.g., Carlson & McLanahan, 2006; Jouriles & Farris, 1992), whereas a supportive interparental relationship is associated with fathers' greater engagement with children (e.g., McBride & Rane, 1998; NICHD, 2000). However, few of these studies have focused on or distinguished between supportive and undermining coparenting behaviors, which are not equivalent to cooperation and conflict in the marital or romantic relationship (Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004).

In addition, few (if any) studies of coparenting and father involvement in families with resident fathers have included multidimensional measurement of coparenting or have employed designs suited for investigating reciprocal associations between coparenting and father involvement. Recent studies of nonresident fathers have demonstrated such advances in measurement and design (Sobolweski & King, 2005; Carlson, McLanahan, & Brooks-Gunn, 2008), and have consistently shown stronger associations from coparenting to fathering than vice versa. However, these findings may not apply to resident fathers, given that their involvement with their children is arguably less contingent on their relationship with their child's mother than that of nonresident fathers (Coley & Hernandez, 2006).

Father Involvement as an Influence on Coparenting

Despite emphasis on coparenting as an influence on father involvement, father involvement likely also affects coparenting, given that family subsystems are mutually influential (Minuchin, 1974; Whitchurch & Constantine, 1993). Moreover, there are reasons to expect that prospective associations between father involvement and coparenting could be particularly apparent in families with resident fathers and preschool aged children.

First, a father's behavior might have more impact on the coparenting relationship when parents reside together, given that resident fathers have more opportunities to participate in daily coparenting interactions and may have greater assurance that asserting themselves as active parents will not result in loss of contact with their child. Second, interactions between father involvement and coparenting are developmentally sensitive (Palkovitz, 2007). In children's infancy, coparenting may be especially likely to influence the development of the paternal role, because mothers often take the lead role in parenting infants under the assumption that mothers are better suited for rearing infants (Schoppe-Sullivan, Brown, Cannon, Mangelsdorf, & Sokolowski, 2008). Thus, fathers may be especially dependent on the existence of a supportive coparenting relationship to become actively involved with their infants. However, as children enter the toddler and preschool years, their advances in motor, cognitive, and socioemotional development may spark many fathers to become more involved (Bruce & Fox, 1999; Halme, Åstedt-Kurki, & Tarkka, 2009). More active father involvement may challenge the family equilibrium and trigger more coparenting exchanges (McHale & Fivaz-Depeursinge, 1999). Hence, for families with preschool aged children,

prospective associations between father involvement and coparenting may be just as evident as associations between coparenting and father involvement.

Though little empirical work has addressed this issue, prospective relations between father involvement and coparenting may depend on the particular aspect of father involvement examined. Fathers spend less time in caregiving activities than mothers do, and fathers spend more time in play than in caregiving activities with children (Craig, 2006). Some argue that fathers' devotion to play is a unique aspect of the paternal role, and functions to endow children with competence, trust, and autonomy (Grossmann et al., 2002; Paquette, 2004; Parke et al., 2004). As it fulfills both expectations of the paternal role and children's needs, father involvement in play activities may be more likely to receive support from mothers and thus may perpetuate positive family processes including increases in supportive and decreases in undermining coparenting behavior.

The nature of prospective relations between father involvement in caregiving activities and coparenting behavior is less clear. On the one hand, fathers' involvement in the more maternal caregiving domain could relieve mothers from pressure and "role overload" (Kalil, Ziol-Guest, & Coley, 2005), thus increasing supportive coparenting. However, fathers' increased involvement in caregiving might also arouse negative maternal gatekeeping behaviors (a particular type of undermining behavior) as mothers consciously or unconsciously try to protect their authority over parenting (Allen & Hawkins, 1999; McBride et al., 2005; Schoppe-Sullivan et al., 2008). It is also possible that two highly involved parents simply have greater opportunities to both support and undermine each other.

The Current Study

The aim of this study was to examine reciprocal relations between observed coparenting behavior and father involvement in families with resident fathers and preschool aged children. Consistent with a family systems perspective (Minuchin, 1974; Whitchurch & Constantine, 1993), we expected significant pathways in both directions. As described above, father involvement in play activities was expected to predict more supportive and less undermining coparenting behavior, whereas father involvement in caregiving activities was expected to portend *both* more supportive and more undermining coparenting behavior. Consistent with the notion that a high-quality coparenting relationship supports greater father involvement overall (Doherty et al., 1998), high levels of supportive and low levels of undermining behavior were expected to forecast greater father involvement in play and caregiving.

We further examined demographic variables that might confound associations between coparenting and father involvement: parent age, parent education, couple relationship length, family income, family size, child's birth order, and fathers' work hours (Pleck & Masciadrelli, 2004). We also controlled for mothers' involvement with their children, in light of recent research indicating that fathers may model mothers' involvement (Pleck & Hofferth, 2008).

Finally, we also tested whether child gender and family earner status moderate relations between coparenting behavior and father involvement. These analyses were necessarily exploratory because of our modest sample size, which was rendered smaller still when splitting the sample into subgroups. But, these tests were important nonetheless because both the fathering and coparenting literatures have revealed effects of child gender in families with resident fathers, with fathers often revealed as more involved with sons than with daughters (Marsiglio, 1991; NICHD, 2000), and undermining coparenting behavior

apparently more common among maritally distressed parents of boys than maritally distressed parents of girls (McHale, 1995). With respect to family earner status, families with employed versus non-employed mothers may provide different contexts for father involvement (Pleck & Masciadrelli, 2004), and thus earner status may further affect relations between coparenting and father involvement (Buckley & Schoppe-Sullivan, in press).

Method

Participants and Procedure

One hundred and twelve married or cohabiting couples with a 4-year-old child were recruited for a longitudinal study of family relationships and children's socioemotional development through preschools, day care centers, advertisements and word-of-mouth from a Midwestern U. S. city and surrounding area. Participating parents could read and speak English; however, we did not inquire about the language(s) spoken in the families' homes.

Families were assessed at recruitment (Phase 1; $N = 112$) and one year later (Phase 2, $N = 93$). Attrition was 17%, mainly due to an inability to contact families, geographic relocation, and families' unavailability to participate. Comparisons of families who participated at both phases with those who only participated at Phase 1 on all measures of coparenting behavior, father involvement, and demographics revealed only one significant difference: In families who participated only at Phase 1, mothers worked fewer hours per week than mothers in families who participated at both phases, $t(109) = -2.18, p < .05$. Sample demographic information is provided in Table 1.

In accordance with procedures approved by the university's institutional review board, informed consent was obtained from parents at both phases of the study. All families received a \$30 gift card at Phase 1 and \$50 cash at Phase 2 as compensation for their participation.

This report utilized data on father involvement and coparenting behavior collected as part of the larger study. At both Phase 1 and Phase 2, questionnaires were mailed to families before a laboratory observation. Parents reported their demographic information and each parent separately reported their involvement with the focal child. Two weeks later, the parents and focal child visited the laboratory together to complete videotaped triadic interaction tasks for coparenting behavior assessment.

Measures

Father involvement in play and caregiving activities—Fathers reported on how frequently they were involved with the focal child in developmentally appropriate *play activities* (6 items; e.g., “take him/her for a ride on your shoulders or back”) and *caregiving activities* (7 items; e.g., “give him/her a bath”) during the past month on a 6-point scale (1 = *not at all*; 6 = *more than once a day*). These items were drawn from the Early Head Start Research and Evaluation Study (see Cabrera et al., 2004). Cronbach's alpha was .76 for play and .73 for caregiving at Phase 1, and .80 for play and .69 for caregiving at Phase 2.

Item parceling was applied to the items assessing each aspect of fathering. Three aggregate parcels were created from each set of items to use as indicators in SEM. Item parceling is desirable because it can help correct the unreliability and non-normal distribution of original items, and reduce the indicator to sample size ratio (Hall, Snell, & Foust, 1999).

Observed supportive and undermining coparenting—At each phase of the study, parents were instructed to work together to assist the focal child to complete two tasks

together. The tasks at Phase 1 involved drawing a picture of their family together and building a house out of a toy building set. These tasks were a little bit difficult for preschoolers and required the guidance of both parents, providing an opportunity to detect supportive and undermining coparenting behavior (Schoppe, Mangelsdorf, & Frosch, 2001; Schoppe-Sullivan et al., 2004). The observation procedure at Phase 2 was similar to that at Phase 1, except that two new tasks were used to avoid familiarity effects and provide an appropriate fit for the child's developmental level. The tasks at Phase 2 involved playing a game together and completing a puzzle. In total, the tasks yielded 20 minutes of family interaction at each phase.

The observations were coded for coparenting behavior using a series of 5-point rating scales (1 = *very low*, 5 = *very high*) originally developed by Cowan and Cowan (1996): *pleasure*, *warmth*, *cooperation*, *interactiveness*, *displeasure*, *coldness*, *anger* and *competition* (see Schoppe et al., 2001 for detailed descriptions of the coding scales). Scores on these scales have been used and validated in a number of previous studies of coparenting behavior (Schoppe et al., 2001; Schoppe-Sullivan et al., 2004). Separate teams of two trained coders rated coparenting behavior at Phase 1 and 2. The Phase 1 and Phase 2 coding team members were each randomly assigned half of the interactions to code at that phase, and overlapped on a randomly selected set of episodes to evaluate reliability (29% and 34% overlap at Phase 1 and 2, respectively). Gamma coefficients, an appropriate measure of inter-rater reliability for ordinal data (Liebetrau, 1983), were computed for each of the eight dimensions of coparenting behavior at Phase 1 and Phase 2. The gammas in our sample ranged from .78 to .94 ($M = .85$) at Phase 1 and from .59 to .90 ($M = .77$) at Phase 2.¹

Scores on the eight coparenting scales were aggregated across the two tasks at Phase 1 and across the two tasks at Phase 2. The sets of aggregated scores at Phase 1 and 2 were significantly correlated, except warmth, cooperation and competition (Table 2). Next, at each of the phases, two coparenting latent variables were created. Specifically, supportive coparenting behavior was indicated by pleasure, warmth, cooperation and interactiveness, and undermining coparenting behavior by displeasure, anger, coldness, and competition.

Demographic and control variables—The demographic variables examined were: fathers' and mothers' ages, fathers' and mothers' education levels, couple relationship length, family income, family size, the focal child's birth order, and fathers' work hours. Also included as covariates were the mother's report of her involvement in play and caregiving activities with the focal child at Phase 1. Mothers' involvement was measured using the same questionnaire items as fathers' involvement (described above). Cronbach's alphas for mothers' involvement in play and caregiving activities were .70 and .60, respectively. In addition, the categorical variables of focal child gender (girls vs. boys) and family earner status (single (father) earner vs. dual earner) were examined as moderators in multi-group analysis. Additional information regarding assessment and coding of demographic variables is provided in Table 1.

Results

Preliminary Analysis

Table 2 presents the descriptive statistics and the correlations of the coparenting behavior and father involvement indicator variables. As expected, correlations among the indicators

¹Gamma statistics can be interpreted similarly to weighted kappa, such that values of .61–.80 indicate substantial agreement (Landis & Koch, 1977). Only one of the coparenting coding scales had a gamma of less than .61; this was coparental competition at Phase 2 (.59). Despite lower interrater reliability this scale was retained because of the theoretical importance of competitive behavior to the construct of undermining behavior (Feinberg, 2003; McHale, 1995).

of the father involvement and coparenting behavior supported the construction of the latent variables. In terms of demographic variables, child's birth order, father's and mother's age, mother's education and family income showed few if any associations with father involvement and coparenting, and thus were not included in later analyses.

Analysis Plan and Model Specification

SEM (see Figure 1) was used to test the associations between coparenting behavior and father involvement over time. We controlled for the cross-time stability of both coparenting behavior and father involvement, cross-sectional associations between coparenting behavior and father involvement, and residual correlations between the two father involvement constructs and the two coparenting constructs at the initial phase. We further estimated the error correlations for all of the indicators across the two phases to account for the non-independence of error due to repeated measures (Kenny, Kashy, & Cook, 2006). We also controlled for covariates that were associated with the indicators of father involvement and/or coparenting behavior: family size, couple relationship length, fathers' education, fathers' work hours, and mothers' involvement in play and caregiving activities.

LISREL 8.70 (Jöreskog & Sörbom, 2004) was applied to estimate all models. Missing data (8.3%) were handled using the full information maximum likelihood (FIML) procedure (Schafer, 1997), which utilizes all information for each case, and is robust to the assumption of MCAR (Missing Completely At Random; Newman, 2003). As suggested by Bollen (1989), overall model fit was assessed by the chi-square (χ^2) test, the root-mean-square error of approximation (RMSEA; values of .08 or less are desirable, see Browne & Cudeck, 1993), and the 90% confidence interval of RMSEA. Completely standardized estimates and their statistical significance are reported. In addition, the likelihood ratio test (LR) was used to compare nested models in order to find the best fitting model.

A chi-square plot created to assess multivariate normality suggested only a slight departure from normality in the data. Given that departures from multivariate normality may lead to inaccurate estimation and inflated Type I error when the FIML method in LISREL is employed, bootstrapping procedures were used as an alternative way to evaluate the magnitude of effect sizes (Schumacker & Lomax, 2004; Shrout & Bolger, 2002).

Measurement Model for Coparenting Behavior and Father Involvement

Prior to testing our hypotheses, it was necessary to test the measurement model of father involvement and coparenting behavior for its goodness-of-fit. Confirmatory factor analysis yielded an acceptable result: $\chi^2(322) = 567.30, p < .001, RMSEA = .08 (CI_{90\%} = .071, .094)$. Factor loadings were all statistically significant, with standardized loadings ranging from 0.60 – 0.78 and 0.54 – 0.80 for father involvement in play at both phases, 0.55 – 0.72 and 0.38 – 0.59 for father involvement in caregiving at both phases, 0.39 – 0.84 and 0.58 – 0.84 for observed supportive coparenting behavior at both phases, and 0.65 – 0.85 and 0.35 – 0.80 for observed undermining coparenting behavior at both phases.

Cross-Lagged Relations between Coparenting Behavior and Father Involvement

To test our hypotheses, we estimated a structural model of cross-lagged relations between coparenting behavior and father involvement. We started with the baseline model (Figure 1), and removed paths with critical ratios smaller than 1.96 (non-significant at the .05 level) one by one, re-estimated the modified models, and compared the nested models with the LR test. A non-significant LR test supports adoption of the more parsimonious model.² The final model (Figure 2) had good fit, $\chi^2(506) = 682.24, p < .01, RMSEA = .06 (CI_{90\%} = .044, .066)$, with all the measurement loadings statistically significant.³

Overall, paths from father involvement to coparenting behavior were significant, but paths from coparenting behavior to father involvement were not. This is consistent with the change in the squared multiple correlations (R^2). Specifically, after constraining the paths from father involvement to supportive coparenting behavior to zero, the percent of variation explained for the latter decreased from 19% to 3%. Similarly, constraining the paths from father involvement to undermining coparenting behavior to zero reduced the percent variance explained for the latter from 47% to 40%. In contrast, the R^2 for the two father involvement variables did not change when the paths from coparenting behavior to each aspect of father involvement were constrained to zero.⁴

In terms of the specificity of fathering-coparenting links, the final model showed that father involvement in play activities at Phase 1 predicted an increase in supportive coparenting behavior ($\beta = .32, p < .05$) and a decrease in undermining coparenting behavior ($\beta = -.35, p < .05$) over time. In contrast, fathers' involvement in caregiving activities at Phase 1 predicted a decrease in supportive coparenting behavior ($\beta = -.40, p < .05$), and an increase in undermining coparenting behavior ($\beta = .29, p < .05$) over time.

Bootstrapping was used to confirm the significance and size of these effects. Two hundred bootstrapped samples were drawn randomly from the original dataset with 90% fraction. The final model was tested in these samples to yield 200 sets of estimates, and the mean effect solutions and 95% confidence intervals were calculated. The significant paths of interest in the final model had 95% confidence intervals that did not include zero, confirming their significance, and the mean effect solutions estimated from bootstrapping were close to the unstandardized path solutions estimated from FIML (Table 3).

Child Gender and Family Earner Status as Moderators

Multi-group comparisons were used to test child gender and family earner status as moderators of the associations between fathering and coparenting. Because of limited sample sizes for subgroup analyses, the original model was decomposed into four models in which each of the father involvement and coparenting behavior variables at Phase 2 was predicted by all of the Phase 1 variables.⁵ Prior to multi-group analysis, the models were tested in the original sample and each subgroup sample (i.e., families with focal boys vs. families with focal girls and single (father) earner families vs. dual earner families) and all but one were found to have acceptable fit.⁶ In the current study we focused on structural equivalence (requiring the same structural effects across groups), and were interested in the equivalence of the paths between father involvement and coparenting behavior. However, configural invariance (requiring the same pattern of factors across groups) and metric invariance (requiring the same strength of item-factor loadings across groups) were also

²This procedure was first used to identify which of the six demographic and control variables should be included in the final model. Three variables – fathers' education, fathers' work hours and mothers' involvement in play activities – had significant associations with fathering and/or coparenting and were maintained in the model. Next, we fixed nonsignificant error correlations, residual correlations, cross-time stability paths and cross-lagged paths one by one, and eliminated paths for which the LR test was not significant. Further information is available upon request.

³In the final model, the ranges of the completely standardized loadings were 0.59 – 0.73 and 0.67 – 0.68 for father involvement in play at Phase 1 and 2, 0.55 – 0.76 and 0.38 – 0.81 for father involvement in caregiving at Phase 1 and 2, 0.38 – 0.83 and 0.58 – 0.82 for observed supportive coparenting behavior at Phase 1 and 2, and 0.67 – 0.86 and 0.35 – 0.81 for observed undermining coparenting behavior at Phase 1 and 2.

⁴The R^2 change calculation was based on the model in which all cross-lagged paths between father involvement and coparenting were set free. The total R^2 values (see Figure 2) for father involvement were larger than for coparenting because of stronger stability and error correlations for father involvement.

⁵Only mothers' involvement in play at Phase 1 was controlled in these analyses because of sample size constraints. We still controlled the Phase 1 residual correlations and error correlations for the repeated measures.

⁶Of the 16 subgroup models tested, the only inadequate model was for the dual earner subgroup when using Phase 1 variables to predict father involvement in caregiving at Phase 2: $\chi^2(118) = 167.88, p < .001, RMSEA = .09$. Further information about the fit of the other subgroup models is available upon request.

specified as important precursors to structural invariance tests⁷ (Adamsons & Buehler, 2007).

The likelihood ratio (LR) test was used to identify the paths with significant cross-group differences. Specifically, a model with certain parameter(s) varying freely across groups was compared to a constrained model with the parameter(s) fixed equal across groups. The lack of a significant chi-square difference between the two nested models indicates the equivalence of the path constrained.

Supportive coparenting behavior at Phase 1 was associated with increased father involvement in caregiving activities at Phase 2 in families with a female focal child ($\beta = .50$, $p < .05$), but not in families with a male focal child ($\beta = -.07$, *ns*). Fathers' involvement in play activities with focal boys (but not girls) predicted reduced undermining coparenting behavior at Phase 2 ($\beta = -1.35$, $p < .05$; $\beta = .03$, *ns* for families of girls). In contrast, fathers' involvement in caregiving activities with focal boys predicted increased undermining coparenting behavior ($\beta = .80$, $p < .05$), but this was not the case for families of focal girls ($\beta = -.01$, *ns*). All other paths of interest were not significantly different by child gender.

Multi-group analysis did not yield any differences in the links between father involvement and coparenting behavior when dual earners were compared to single (father) earner families.

Discussion

This study investigated cross-lagged relations between father involvement in play and caregiving activities and observed supportive and undermining coparenting behavior in families with resident fathers and preschool aged children. Although both aspects of father involvement emerged as significant predictors of both dimensions of coparenting behavior, the reverse was not the case – there were no significant paths from either dimension of observed coparenting behavior to either aspect of father involvement. In line with that, the variance explained by the longitudinal pathways from father involvement to coparenting behavior was greater than that explained by pathways from coparenting behavior to father involvement.

Even though family systems theory (Minuchin, 1974; Whitchurch & Constantine, 1993) led us to expect reciprocal relations between father involvement and coparenting, that father involvement was prognostic of change in coparenting behavior is consistent with perspectives that stress fathers' agency or their power to actively choose the nature and level of their involvement with their children (Freeman et al., 2008; Walker & McGraw, 2000), and research that indicates that fathering behavior may have the potential to influence coparenting (e.g., Arditti & Michaelena, 1994; Carlson et al., 2008; Cookston et al., 2007). These findings were also consistent with our expectation that father involvement in families with resident fathers and preschool aged children would show prospective associations with coparenting behavior, both because resident fathers may have more agency in parenting, and because children's development during the preschool years may spark more direct father involvement (Bruce & Fox, 1999; Halme et al., 2009), and thus more coparenting interactions (McHale & Fivaz-Depeursinge, 1999). However, two previous studies that

⁷LR test provided evidence for configural invariance for the four sets of analyses for child gender, and for the four sets of analyses for family earner status. In terms of metric invariance, one set of analyses for child gender rejected the metric invariance, and two sets of analyses for family earner status rejected the metric invariance. Thus, configural and metric invariance was supported except for three metric invariance tests among 16. Despite the existence of a few cases in which metric invariance was not supported, all the factor patterns and loadings were constrained to be equal before the structural equivalence tests. By doing this we could have reduced type I error and produced more conservative results. Further information is available upon request.

compared associations between the interparental relationship and fathering for resident and nonresident fathers did not find significant differences (Carlson & McLanahan, 2006; Coley & Hernandez, 2006). Studies that directly compare associations between multiple dimensions of father involvement and coparenting in families with resident and non-resident fathers and children of various ages are needed to clarify how these contextual factors may affect fathering-coparenting relations. In addition, it should be noted that in the current study there was less cross-time stability in coparenting behavior than in father involvement; thus, the nonsignificant paths from coparenting to father involvement could be in part explained by the fact that there was less residual variance to account for in father involvement at Phase 2.

As expected, fathers' involvement in play activities was distinguished from their involvement in caregiving activities by its positive prospective associations with coparenting behavior. Specifically, the more frequently fathers engaged in play activities with children, the more supportive and less undermining coparenting behavior was observed one year later. This is not surprising in light of research indicating that fathers' involvement in play activities with young children is typical (Craig, 2006) and may fulfill important developmental needs of preschool aged children (Grossmann et al., 2002; Paquette, 2004; Parke et al., 2004). Although we did not measure mothers' specific attitudes about father involvement in play and caregiving activities in this study, we speculate that many mothers may expect and embrace fathers' involvement in play with their children, and thus fathers' involvement in play may receive support from mothers and be perceived as a beneficial contribution to coparenting, thereby perpetuating high levels of supportive and low levels of undermining behavior.

In contrast, families with fathers who initially engaged in more caregiving activities with children tended to display less supportive and more undermining coparenting behavior one year later. Although we had anticipated that greater father involvement in caregiving activities would be associated with increased coparenting conflict, we were surprised that greater father involvement in caregiving also predicted lower levels of supportive coparenting behavior. We speculate that variables not measured in the present study may explain the association between higher father involvement in caregiving and less adaptive coparenting behavior. For example, fathers' heightened involvement in the caregiving role may disturb mothers' sense of maternal identity and arouse gatekeeping behaviors (Allen & Hawkins, 1999; Schoppe-Sullivan et al., 2008), which may not only increase conflict in the coparenting relationship but also lead to the erosion of coparental support, particularly if fathers withdraw from coparenting. More research on coparenting behavior, maternal gatekeeping, and father involvement is needed to substantiate this speculation.

In addition, understanding the reasons why some fathers are more involved in caregiving activities with children than others is an important direction for future research. Some fathers may become highly involved in caregiving activities because this type of involvement has high "salience" or "prominence" in their parenting identity hierarchies (Rane & McBride, 2000), or because their attitudes about involvement in caregiving are positive. Assessing parents' beliefs or expectations about multiple aspects of father involvement (Beitel & Parke, 1998) and further research into paternal identity will likely be useful.

Other fathers may become more involved in caregiving because of demands specific to their family situation (Crouter, Perry-Jenkins, Huston, & McHale, 1987; Volling & Belsky, 1991), which could include maternal employment-related factors, children's needs, or family stressors. We did explore the role of family earner status in this study, but did not find that relations between father involvement and coparenting differed for single- and dual-earner

families. However, these non-significant findings must be interpreted with caution given low statistical power for the multi-group analyses as well as lack of fit and metric invariance for some of the family earner status subgroup models.

In addition, because we did not include parents' perceptions of coparenting in this study, it remains possible that even in the context of greater observed undermining and less observed supportive behavior, the coparenting relationships of fathers who are highly involved in caregiving activities are perceived positively by parents. Moreover, other important aspects of the coparenting relationship (e.g., childrearing agreement, joint family management; Feinberg, 2003) may show different associations with father involvement. Future studies would benefit from including both subjective and objective measures of coparenting (McHale & Rotman, 2007), as well as measures of other aspects of the coparenting relationship. And, even if higher father involvement in caregiving were to be causally related to less adaptive coparenting behavior across one single-year period, such an effect might not hold across a longer period of time or at a different point in the child's development.

Child gender appears to be another contextual factor that is relevant to understanding relations between coparenting behavior and father involvement. Our exploratory analyses of moderation revealed that fathers' involvement in play activities predicted reduced undermining coparenting behavior and that fathers' involvement in caregiving activities predicted increased undermining coparenting behavior only in families with a male focal child. Fathers' involvement in play – especially with sons – may be welcome in families because of its typicality and posited unique developmental significance (Paquette, 2004). In contrast, fathers' involvement in caregiving of sons may be more likely to spark coparenting disputes because fathers may feel greater efficacy in parenting sons, but mothers may not appreciate having their role as primary caregiver encroached upon (Allen & Hawkins, 1999; McBride et al., 2005; Schoppe-Sullivan et al., 2008). We also found that greater observed supportive coparenting behavior predicted increases in fathers' involvement in caregiving activities only in families with a female focal child. Given that fathers tend to be less involved with daughters than with sons, especially in caregiving activities (e.g., NICHD, 2000; Rouyer, Frascarolo, Zaouche-Gaudron, & Lavanchy, 2007), a supportive coparenting relationship may foster this type of direct father involvement with daughters. Although this result seems at odds with our other findings, father involvement and coparenting are dynamic family processes, and it is possible that father involvement is fostered by supportive coparenting in one group (e.g., families with girls), while simultaneously leading to less supportive coparenting in other groups. Future research should further examine the role of child gender in associations between coparenting and fathering, and should also consider other child-related factors such as the gender composition of the sibling group (Harris & Morgan, 1991), and whether the father has other biological children living in other households (Hofferth & Anderson, 2003).

Limitations and Conclusions

Some additional limitations should be acknowledged, particularly with respect to measurement. A few of the factor loadings in our models, though significant, were lower than desired, and likely compromised the fit of our measurement model. In addition, our study focused on the frequency of fathers' direct involvement in play and caregiving activities as self-reported by fathers. Thus, we did not examine other potentially important aspects of father involvement (e.g., in financial or moral realms; see Hawkins & Dollahite, 1997). Our measures also did not explicitly tap the quality of father-child interactions, which may be more proximally related to children's functioning than the quantity of involvement per se (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Pleck & Masciadrelli, 2004). Moreover, multiple measures of father involvement would have provided an

opportunity to directly validate the fathers' reports in our study; however, previous research has indicated that fathers' reports of their involvement have comparable (if not superior) predictive validity when compared to mothers' reports (Hernandez & Coley, 2007).

Other limitations were with respect to our sample. Participants in this study were two-parent families with resident fathers and typically developing preschool aged children, most of whom were European American and of relatively high socioeconomic status. Thus, we caution against extrapolation from our findings to families with non-resident fathers, children with clinical-level problem behaviors, lower SES, or more diverse racial/ethnic backgrounds. Moreover, our sample size was small in relation to the complexity of our models, which limited the number of parameters that could be estimated and compromised the power of statistical tests, especially with respect to the multi-group analyses. Thus, nonsignificant findings may not reflect the true absence of meaningful effects.

Despite these limitations, this study has provided important clues about how coparenting behavior may be related to – and especially, responsive to – different aspects of father involvement in families with resident fathers and preschool aged children. We would like to affirm the value of future studies replicating and extending our results and further examining the processes linking coparenting and fathering and the factors that may serve to strengthen or weaken the associations between them.

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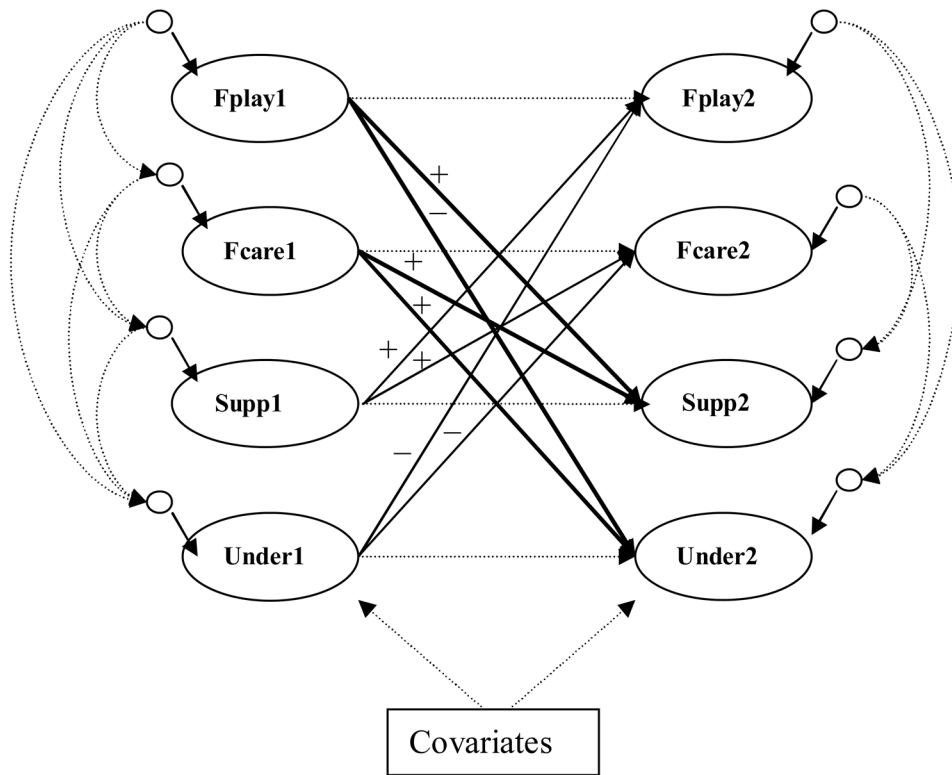


Figure 1. The hypothesized cross-lagged model of longitudinal relations between coparenting behavior and father involvement. This model controls the stability of coparenting behavior and father involvement over time, residual correlations between fathering and coparenting at each phase, residual correlations between fathering constructs and between coparenting constructs at the initial phase, nonindependence of measurement errors for father involvement and coparenting indicators across the two phases (not shown), and covariates. Fplay = fathers’ involvement in play activities with children; Fcare = fathers’ involvement in caregiving activities with children; Supp = Observed supportive coparenting behavior; Under = Observed undermining coparenting behavior. Measures at Phase 1 are indicated by “1” and measures at Phase 2 are indicated by “2”. The plus (+) signs and minus (-) signs indicate the directions of the hypotheses.

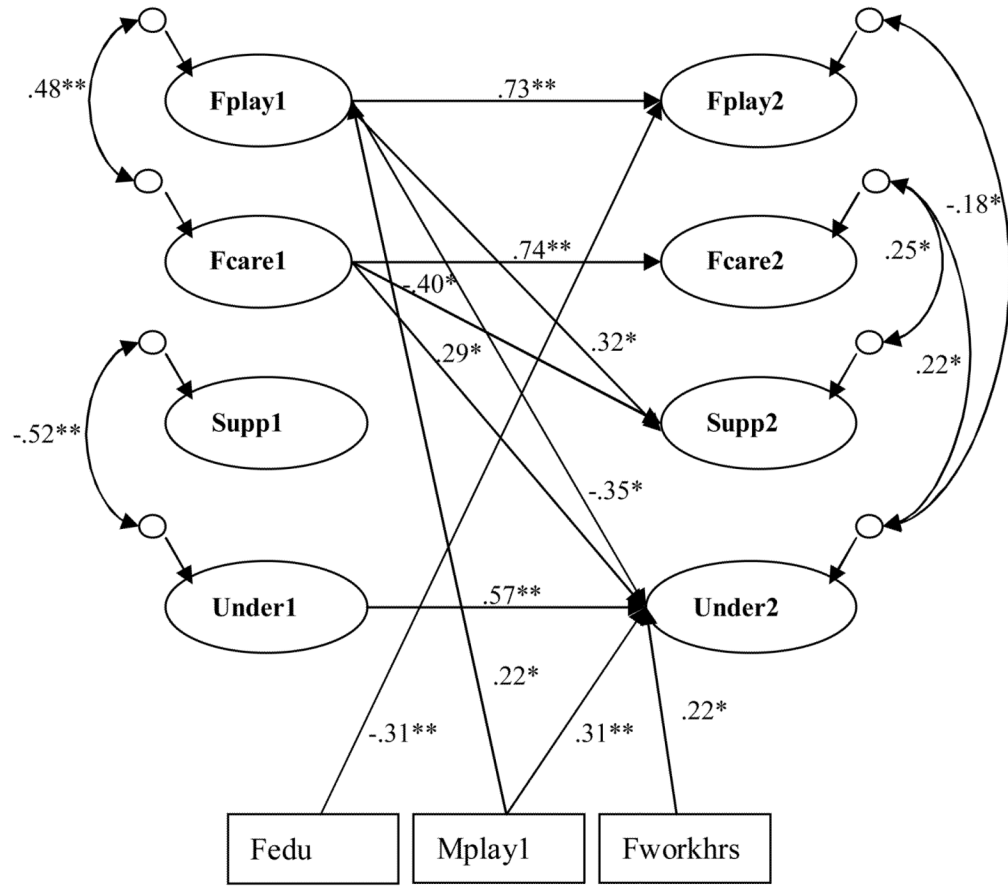


Figure 2. The best fitting model with significant standardized solutions. The goodness-of-fit is: $\chi^2(506) = 682.24, p = .001, RMSEA = .06 (CI_{90\%} = .044, .066)$. R^2 for Fplay2 = .64, R^2 for Fcare2 = .55, R^2 for Supp2 = .14, and R^2 for Under2 = .45. Fplay = fathers' involvement in play activities with children; Fcare = fathers' involvement in caregiving activities with children; Supp = Observed supportive coparenting behavior; Under = Observed undermining coparenting behavior; Fedu = fathers' educational level; Fworkhrs = Fathers' work hours per week; Mplay = Mothers' involvement in play activities with children. Measures at Phase 1 are indicated by "1" and measures at Phase 2 are indicated by "2". * $p < .05$. ** $p < .01$.

Table 1

Demographic variable table: Descriptive statistics (N=112)

Variables	Categories and Coding	Descriptive Statistics	
		Father	Mother
Age in Years <i>M(SD)</i>		37.73 (5.74)	36.03 (5.26)
Education <i>N(%)</i>	1 = some high school	1(0.9%)	0
	2 = high school degree	3(2.7%)	1(0.9%)
	3 = some college	17(15.2%)	17(15.3%)
	4 = college degree	48(42.9%)	53(47.7%)
	5 = masters degree	25(22.3%)	28(25.2%)
	6 = Ph.D. degree	18(16.1%)	12(10.8%)
Race/Ethnicity <i>N(%)</i>	1 = European American	92(84.4%)	95(85.6%)
	2 = African American	9(8.3%)	9(8.1%)
	3 = Hispanic	5(4.6%)	2(1.8%)
	4 = Asian	2(1.8%)	2(1.8%)
	5 = mixed race/ethnicity	1(0.9%)	3(2.7%)
^a Work hours per week <i>N(%)</i>	0 = not working	7(6.3%)	47(42.3%)
	1 = 1–10 hrs	3(2.7%)	6(5.4%)
	2 = 11–20 hrs	3(2.7%)	14(12.6%)
	3 = 21–30 hrs	2(1.8%)	5(4.5%)
	4 = 31–40 hrs	28(25%)	22(19.8%)
	5 = 41–50 hrs	48(42.9%)	16(14.4%)
	6 = over 50 hrs	21(18.8%)	1(0.9%)
^b Family earner status <i>N(%)</i>	dual earners		47.7%
	single (father) earners		43.2%
	single (mother) earners		4.5%
	non-earners		4.5%
^c Family size <i>N(%)</i>	3 members	18(16.1%)	
	4 members	65(58.0%)	
	5 members	21(18.8%)	
	6 members	3(2.7%)	
	7 members	4(3.6%)	
	8 members	0	
	9 members	1(0.9%)	
Family income <i>N(%)</i>	1 = less than 10K	3(2.8%)	
	2 = 11k – 20k	4(3.7%)	
	3 = 21k – 30k	4(3.7%)	
	4 = 31k – 40k	6(5.5%)	
	5 = 41k – 50k	14(12.8%)	
	6 = 51k – 60k	4(3.7%)	
	7=61k – 70k	13(11.9%)	

Variables	Categories and Coding	Descriptive Statistics	
		Father	Mother
	8=71k – 80k	8 (8.3%)	
	9=81k – 90k	14(12.8%)	
	10=91k – 100k	8 (7.3%)	
	11=over 100k	30 (27.5%)	
Family income <i>Mdn (R)</i>	\$70–80K (less than \$10K to over \$100K)		
Focal child gender <i>N(%)</i>	girls	54(48.2%)	
	boys	58(51.8%)	
Child age <i>M(SD)</i>		4.12 (0.52)	
Child birth order <i>N(%)</i>	1 = first-born	67(59.8%)	
	2 = second-born	30(86.6%)	
	3 = third-born	11(9.8%)	
	4 = fourth-born	2(1.8%)	
	5 = fifth-born	1(0.9%)	
	6 = sixth or later-born	1(0.9%)	
Marital status <i>N(%)</i>	married	111(98%)	
	cohabiting	1(2%)	
Relationship length in years <i>M (SD)</i>		9.10 (4.30)	

^aThis is consistent with U.S. Census Bureau data (2008) indicating that 58.1% of married women with children under the age of 6 years are in the workforce.

^b Aparent was considered “non-earner” if the parent reported working less than 10 hours per week.

^c Family size included both parents, the focal child, and siblings.

Table 2

Descriptive Statistics and Correlations of Father Involvement and Coparenting Behavior Indicators

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
<i>Father involvement at Phase 1</i>																														
1. FPLAY①																														
2. FPLAY②	.48**																													
3. FPLAY③	.44**	.47**																												
4. FCARE①	.28**	.20**	.28**																											
5. FCARE②	.33**	.24*	.16	.45**																										
6. FCARE③	.19	.20*	.06	.41**	.40**																									
<i>Father involvement at Phase 2</i>																														
7. FPLAY①	.70**	.23*	.43**	.16	.29**	.23*																								
8. FPLAY②	.34**	.57**	.31**	.27*	.24*	.19	.41**																							
9. FPLAY③	.43**	.33**	.64**	.33**	.18	.16	.51**	.46**																						
10. FCARE①	.19	.12	.31**	.56**	.20	.14	.28**	.23*	.45**																					
11. FCARE②	.28**	.10	.20	.23*	.65**	.25*	.49**	.30**	.24*	.21*																				
12. FCARE③	.24*	.13	.15	.50**	.30**	.57**	.31**	.27*	.31**	.39**	.25*																			
<i>Supportive coparenting behavior at Phase 1</i>																														
13. PLEA	-.02	-.01	.04	.01	.05	.10	.03	-.05	-.01	-.10	.07	.16																		
14. WARM	.10	-.04	.15	-.03	-.13	-.09	.11	-.11	.14	-.02	.01	.10	.65**																	
15. COOP	.07	-.02	.16	-.06	-.13	-.04	.15	-.11	.12	-.05	.00	.03	.57**	.63**																
16. INTER	.16	-.00	.09	.01	.10	-.01	-.01	-.05	.13	-.17	.07	-.01	.35**	.38**	.23*															
<i>Undermining coparenting behavior at Phase 1</i>																														
17. DISP	-.07	.06	-.16	.01	.18	.07	-.15	.10	-.17	-.06	.18	.10	-.31**	-.25**	-.37**	.09														
18. COLD	-.14	.02	-.15	.11	.15	.10	-.20	.06	-.15	.00	.03	-.03	-.48**	-.56**	-.62**	-.27*	.54**													
19. ANGE	-.13	-.07	-.25**	-.05	.12	.07	-.20	.04	-.18	-.06	.14	.08	-.25**	-.30**	-.40**	.09	.71**	.54**												

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
20. COMP	-.11	-.03	-.12	-.11	.09	.00	-.16	-.04	-.22*	-.15	.15	.10	-.12	-.22*	-.23	.09	.55**	.41**	.58**										
<i>Supportive coparenting behavior at Phase 2</i>																													
21. PLEA	.09	.05	-.01	-.21*	-.16	.06	.17	-.06	-.02	-.02	.03	.00	.23*	.21*	.08	.18	.01	-.11	.02	-.01									
22. WARM	.06	.07	.02	-.04	-.14	.09	.23*	.06	.09	.06	-.02	.03	.12	.10	.08	.02	.07	-.16	-.01	-.14	.65**								
23. COOP	.03	-.01	.04	-.00	-.08	-.01	.10	-.11	.01	.08	.00	-.02	.09	.04	.01	.13	-.09	-.20	-.14	-.00	.48**	.55**							
24. INTER	.17	.02	.05	-.03	-.03	.06	.13	-.06	.08	.05	.05	.09	.10	.13	.04	.31*	.20	-.02	.10	.03	.53**	.50**	.25*						
<i>Undermining coparenting behavior at Phase 2</i>																													
25. DISP	-.11	.05	-.03	.16	.16	.04	-.15	.08	.03	.13	.02	.27*	.08	-.01	-.11	.05	.25*	.24*	.35**	.28**	-.25*	-.25*	-.29**	.10					
26. COLD	-.12	-.04	-.09	.01	.07	-.06	-.23*	-.00	-.12	-.08	-.07	.15	-.11	-.10	-.22	-.12	.27**	.35**	.22*	.18	-.33**	-.57**	-.43**	-.21*	.47**				
27. ANGE	-.21*	-.03	-.14	-.03	.01	-.04	-.26*	-.12	-.13	-.07	-.05	.13	.08	-.04	-.05	.04	.23*	.24*	.32**	.25*	-.21*	-.29**	-.27*	.08	.62**	.60**			
28. COMP	-.04	-.12	-.13	.02	.04	.06	-.11	-.09	-.13	-.02	-.04	.05	-.10	-.12	-.20	.02	.31**	.28**	.46**	.19	-.06	-.02	-.13	.12	.32**	.21	.23*		
M	3.39	3.66	3.80	4.14	3.20	3.59	3.15	3.50	3.60	3.67	3.08	3.47	2.96	2.53	2.96	2.63	2.06	1.92	1.49	1.82	2.97	3.10	3.21	2.78	1.44	1.19	1.06	1.61	
SD	.99	.85	.98	.92	.71	.70	1.04	.81	1.15	.96	.65	.80	.60	.49	.49	.49	.62	.62	.50	.59	.54	.54	.41	.41	.42	.54	.39	.19	.52
N	112	112	112	112	112	112	91	91	91	90	91	90	112	112	112	112	112	112	112	112	89	89	89	89	89	89	89	89	89

Note. FPLAY=Father involvement in play activities with children; FCARE=Father involvement in caregiving activities with children; PLEA=Pleasure; WARM=Warmth; COOP=Cooperation; INTER=Interactiveness; DISP=Displeasure; COLD=Coldness; ANGE=Anger; COMP=Competition. ①②③ indicate the three indicators for the two types of father involvement derived from item parceling.

* $p < .05$.

** $p < .01$.

Table 3

Effect sizes from FIML and Mean Effect Sizes and Confidence Intervals Derived from 200 Bootstrapped Samples (Fraction = 90%) for the Significant Paths in the Best Fitting Model

The Predictor	The Predicted	Effect size in FIML	Mean effect size in Bootstrapping	95% C. I. of the Difference		T-values
				Lower	Upper	
<i>Cross-lagged effects between father involvement and coparenting behavior</i>						
Fplay1	Supp2	.20	.35	.27	.42	9.00**
Fplay1	Under2	-.20	-.31	-.37	-.26	-11.13**
Fcare1	Supp2	-.25	-.42	-.51	-.34	-9.72**
Fcare1	Under2	.17	.23	.20	.26	10.56**
<i>Cross-time stability of father involvement and coparenting behavior</i>						
Fplay1	Fplay 2	.72	.71	.64	.77	20.91**
Fcare1	Fcare 2	.50	.49	.46	.53	27.70**
Under1	Under2	.48	.46	.43	.48	34.43**
<i>Effects of control variables on father involvement and coparenting behavior</i>						
Fedu	Fplay2	-.21	-.14	-.16	-.13	-23.38**
Fworkhrs	Under2	.06	.04	.04	.05	21.78**
Mplay1	Fplay1	.22	.16	.14	.19	15.76**
Mplay1	Under 2	.18	.18	.17	.19	27.71**

Note. The effect estimates from FIML and Bootstrapping are unstandardized.

Fplay = fathers' involvement in play activities with children; Fcare = fathers' involvement in caregiving activities with children; Supp = Observed supportive coparenting behavior; Under = Observed undermining coparenting behavior; Fedu = fathers' educational level; Fworkhrs = Fathers' working hours per week; Mplay = Mothers' involvement in playactivities with children. Measures at Phase 1 are indicated by "1" and measures at Phase 2 are indicated by "2".

** p < .01.