

Father Involvement in Immigrant and Ethnically Diverse Families from the Prenatal Period to the Second Year: Prediction and Mediating Mechanisms

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Abstract This longitudinal study focused on fathers' involvement from the prenatal period through infants' first year in Dominican immigrants ($n=73$), Mexican immigrants ($n=65$) and African Americans ($n=66$) residing in New York City. Fathers' prenatal involvement, the quality of the mother–father relationship, fathers' postnatal involvement with their 1- and 6 month olds and fathers' involvement with their 14 month-olds (i.e., time spent with infant; eating meals with infant; activities with infant) were examined. Father involvement was uniformly high and stable. Fathers' prenatal involvement predicted involvement at 14 months, and the quality of the mother–father relationship mediated these associations. Father ethnicity and residency moderated associations between the father–mother relationship, father postnatal involvement and father involvement with 14 month olds.

Keywords Father involvement · Mother–father relationship · Immigrant families · Infancy

Introduction

Significant life transitions can have long term implications for an individual's well being as well as the functioning of members within the larger family system (e.g., Eccles et al. 1989; Ruble 1994). In particular, the birth of a baby is characterized by enormous joy as well as major challenges for parents (Bornstein and Tamis-LeMonda 2001). Fathers and mothers must prepare for and then adjust to the needs of a new family member, as well as renegotiate their roles and relationships within the family. Here we examine fathers' prenatal behaviors and later involvement with their infants, and examine pathways that might account for stability from early to later father involvement in Mexican immigrants, Dominican immigrants, and African Americans. Specifically, we ask whether continuity in father involvement across the first year is supported by positive mother–father relationships and fathers' early engagements with their infants. We also ask whether these early processes vary across ethnicities.

Two complementary theories guide this work: family systems theory and attachment theory. According to family systems theory, father involvement is nested within the broader family context, and relationships among family members dynamically affect one another within and across time (Cabrera et al. 2007). According to attachment theory, early father–infant interactions form a foundation to secure and sustained relationships over time (e.g., Lamb 2002).

Both these theories provide useful frameworks for practitioners and policy makers who aim to promote positive family relationships and secure father–infant attachments early in development. Research on low-income fathers finds that the vast majority of men are highly committed to their newborns (Edin and Kefalas 2005), and actively engage in the everyday care of their

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infants, such as bathing and feeding (e.g., Carlson and McLanahan 2002; Gibson-Davis et al. 2005; Hofferth et al. 2007; Boller et al. 2006). However, a measurable proportion of men become disengaged from their children in the early years, and many low-income fathers no longer see their children at all by the time their children enter school (e.g., Lerman 1993; Perloff and Buckner 1996). The demands of caring for a new infant can strain the family system and, for some fathers, might lead to declines in involvement over time. The “magic moment” (Carlson and McLanahan 2002) may therefore dissipate in the first few months after infants’ births. Consequently, the design of effective parenting programs rests on understanding the factors that relate to positive father involvement before, during, and after the experience of a new baby.

Fathers and Families from Diverse Ethnic Backgrounds

We chose to study Mexican immigrants, Dominican immigrants and African American families based on their growing numbers in the U.S. and their unique cultural backgrounds. These groups represent three of the largest minority groups in the U.S. (including two of the fastest-growing immigrant groups), and are over-represented among families living in poverty. As of 2004, there were approximately 29 million Mexicans living in the U.S. which represents two-thirds of U.S. Latinos; and the population of Mexican immigrants in the U.S. is expected to at least double by 2030 (Ramirez 2004). In New York City specifically, Mexicans showed higher rates of population growth than any other Latino immigrant group during the 1990s (Hernandez and Rivera-Batiz 2003; Smith 2005). Similarly, Dominicans are the fourth largest Latino group in the United States (Ramirez 2004), and are expected to become the largest Latino population in NYC within the next 10 years (Hernandez and Rivera-Batiz 2003). African Americans have the longest history in the U.S. and in New York. With over 34 million African Americans residing in the U.S. comprising over 12% of the population. In New York City, the proportion of African Americans is even greater, at 26% (U.S. Census Bureau 2008).

Beyond these statistics, these three groups present unique cultural backgrounds that are reflected in views and practices regarding fathers’ role within the family system. Latino families, including Mexicans and Dominicans, have been characterized as endorsing masculine gender attitudes for men (*machismo*), and family-oriented, self-sacrificing attitudes for women (*marianismo* or *hembrismo*) (Denner and Dunbar 2004; Peart et al. 2006). These Latino traditional attitudes are often assumed to be associated with gendered arrangements in which men are primarily responsible for economic provisioning and women for children and family (e.g., Ybarra 1982; Denner and Dunbar 2004; Gil and

Vazquez 1996). However, the migration process and adjustment to patterns of women’s employment and education in the U.S. has also resulted in shifts in patriarchal roles in Dominican and Mexican families (Gutmann 1996; Smith 2005). Similarly, traditional values of *familismo* (i.e., solidarity and reciprocity among members of nuclear and extended families) (Contreras et al. 1999; Fuligni et al. 1999; Sue and Sue 2003) may highlight the responsibilities of Latina women for the care of the family (Epstein et al. 1994).

In contrast, fewer U.S. families among other ethnic groups adhere to a gendered division of family responsibility (Peart et al. 2006). In particular, African American families have been characterized by a relatively equitable distribution of childcare responsibilities and overlapping parental roles (Jackson 1993; McAdoo 1988). African American fathers are shown to highly value their role as parent (Downer and Mendez 2005; McAdoo 1986; McLanahan and Carlson 2004), and a noted strength of African American families is flexibility in shared duties between mothers and fathers (Jarrett et al. 2002). In one of the few studies of fathers’ engagements with young infants, African American fathers were at or above the norm in their involvement with infants based on observations of their caregiving and social interactions (Roopnarnine et al. 2005). This pattern maintained regardless of SES, leading the authors to suggest that father–infant interaction in African American families reflects a gender-egalitarian cultural schema.

Nonetheless, how father involvement might play out in Mexican, Dominican and African American groups, both prenatally and over the course of the first year of infants’ lives is not straightforward. Despite the suggestion that traditional Latino values might lead to *less* father involvement with children as compared to African American families, values such as familism might lead Latino men (particularly Mexican immigrant fathers) into more involved fathering (Parke et al. 2004). In support of this notion, one study found that Latino men who scored high on traditionalism expressed the view that not supporting the family or being irresponsible was “the worst or lowest thing” a man could do (Mirande 1997; p. 107).

Fathers’ Prenatal Involvement Across Diverse Groups

A first goal of this study was to describe the prenatal behaviors of fathers from diverse ethnic backgrounds. Fathers’ prenatal involvement refers to men’s supportive behaviors toward their partners during the pregnancy and around the time of infants’ birth (Bronte et al. 2007). These include attending doctor visits, buying things for the future baby, and being present at the infant’s birth. Positive prenatal involvement might indicate a father’s commitment to the pregnancy his new child. Nonetheless, there is

virtually no research on fathers' behaviors during the prenatal period and how these behaviors might relate to fathers' involvement across the first year. One of the few studies addressing this topic is based on the Early Childhood Longitudinal Birth Cohort national study (ECLS-B) (Bronte-Tinkew et al. 2007). Between 91% and 97% of fathers reported engaging in the prenatal behaviors of visiting the hospital with mothers, seeing a sonogram, listening to the baby's heartbeat, feeling the baby move, and buying things for the baby; over 40% of fathers attended some form of childcare class. However, although this report provides a national portrayal of fathers' prenatal involvement, less is known about fathers' prenatal involvement in specific ethnic groups (e.g., a pan-ethnic group of Hispanics is examined). Moreover, data are limited to resident fathers, and are based on retrospective accounts of prenatal involvement gathered when infants were 9 months.

Prenatal Involvement and Later Father Involvement

A second goal was to examine whether fathers' prenatal involvement relates to father activities with infants at 14 months. To date, only a handful of studies have addressed links between fathers' prenatal and postnatal involvement. Recent analysis of the ECLS-B (described above; Bronte-Tinkew et al. 2007) found that fathers' prenatal behaviors predicted fathers' warmth and engagement in cognitively stimulating activities with their 9 month olds. In the Early Head Start National Evaluation Project, measures of fathers' prenatal involvement (e.g., accompanying mother to prenatal visits, being present at the newborn's birth) predicted fathers' presence in their children's lives up to 5 years later (Shannon et al. 2006). Over 90% of fathers, who displayed high levels of prenatal involvement, still saw their children at least three times per week during the pre-kindergarten period. In contrast, of those fathers who displayed low prenatal involvement, fewer than 25% saw their children regularly 5 years later. Moreover, these

patterns maintained for African American, Latino and White fathers alike.

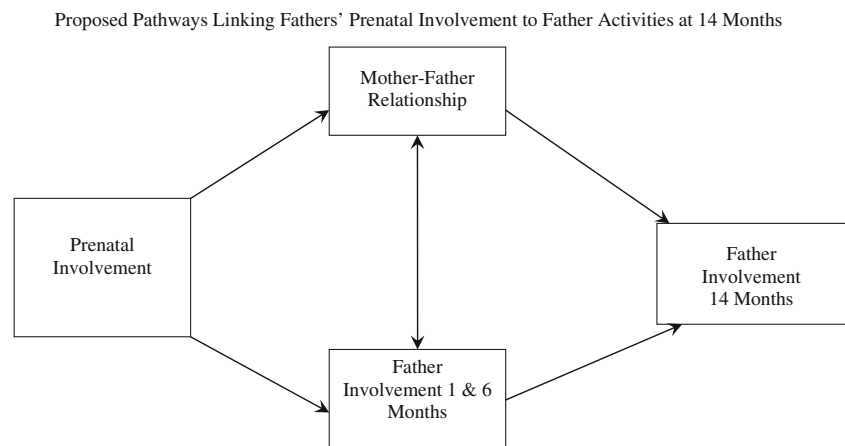
Pathways to Father Involvement

The third goal was aimed at testing mediating and moderating processes between father prenatal involvement and later involvement at 14 months. We sought to understand the mediating mechanisms through which early prenatal father involvement might be associated with later father involvement, and the potential moderating role of ethnicity and father residency in these associations (See Fig. 1).

In terms of mediation, it was hypothesized that a father's early commitment to the pregnancy (as expressed in his prenatal behaviors) would be associated with the quality of the mother–father relationship as rated by mothers soon after infants' births; in turn, supportive mother–father relationships were expected to predict continued father involvement over time. Mothers might perceive fathers as more supportive in the first year if fathers accompany mothers to the hospital, buy things for the baby, etc., before the baby is born. Consequently, father prenatal involvement surrounding the child's birth might invoke higher levels of support from mothers following infants' births (Carlson and McLanahan 2002; Fagan et al. 2007). It may also be that fathers who are highly involved prenatally are those who already share a closer relationship with the mothers of their infants, and father prenatal involvement might further promote the mother–father relationship. In one study, teen fathers in romantic relationships with the mothers of their children demonstrated higher levels of prenatal involvement, whereas those experiencing intraparental conflict demonstrated lower prenatal involvement (Fagan et al. 2007). In another study, high parent conflict was associated with lower father prenatal involvement (Fagan et al. 2003).

Moreover, the quality of the mother–father relationship affects father involvement and fathers' roles in the family (e.g., Allen and Hawkins 1999). Warm, close mother–father

Fig. 1 Proposed pathways linking fathers' prenatal involvement to father activities at 14 months.



relationships are linked to greater paternal involvement (McKenry et al. 1992), whereas fathers in unstable, hostile or conflicted relationships with the mothers of their children are more likely to be uninvolved (Gavin et al. 2002), display negative involvement with their children (Coley and Chase-Lansdale 1998), be less responsive toward their infants (Shannon et al. 2002), and experience maternal gatekeeping of access to infants or children (Cabrera et al. 2000).

In terms of the second pathway, father prenatal involvement was also expected to directly predict *fathers' postnatal engagements* with their infants (i.e., at 1 and 6 months). To the extent that fathers' prenatal involvement predicts fathers' postnatal involvement, a cycle of continued father investment might ensue. That is, frequent engagements with a new infant might predict father–infant attachment as well as a father's enjoyment of and commitment to his new role, leading to continuity in involvement over time (Lamb and Lewis 2004; Shannon et al. 2002).

In terms of moderation, we asked whether father ethnicity, marital and/or residency status would moderate associations between early and later father involvement. Father residency is higher in Latino families and newly arriving immigrant families such as Mexicans than in African American families (McLoyd et al. 2000). This may translate to more consistent and/or relatively high levels of father–child engagement in early and later infancy in these groups. Fathers who reside with their partners and children are more involved with their children than their nonresidential counterparts, perhaps because they have more access to their children on a daily basis (Cabrera et al. 2004). They are also more likely to engage in sensitive behaviors than nonresidential fathers (Brophy-Herb et al. 1999). Moreover, family rituals such as eating the evening meal together and spending time together on weekends are common in Mexican American families, which may be due to a combination of high residency and family-oriented values (Downer and Mendez 2005).

Present Study

In summary, little is known about the experiences of fathers from diverse ethnic and socio-economic backgrounds in the U.S., particularly during the prenatal and early infancy periods. In response to these gaps, three questions framed this study:

1. What is the nature of fathers' involvement during the prenatal period, and does it vary by ethnic group? We expected fathers' prenatal involvement to be high across all groups, but did not hypothesize specific ethnic differences, in light of the limited research in this area.
2. Does prenatal father involvement predict father engagement with their 14 month olds? We hypothesized that fathers' prenatal involvement would predict fathers' involvement with their toddlers, and that these patterns of prediction would maintain across all ethnic groups.
3. What are the factors that might mediate and moderate associations between fathers' prenatal involvement and engagements with their 14 month old children? We explored the role of the mother–father relationship and fathers' postnatal involvement (i.e., with 1- and 6 month olds) as potential mediators of later father involvement. Father marital status, residency, and employment were also considered in relation to father involvement, and ethnicity and residency were tested as potential moderators of lagged associations. We hypothesized that fathers' involvement in infancy and the mother–father relationship would mediate associations from fathers' prenatal involvement to activities at 14 months. Although we did not expect ethnicity to moderate associations from predictors to later father involvement, we hypothesized that fathers' residency status would moderate associations between predictors and later father involvement. Specifically, associations from fathers' prenatal involvement, the mother–father relationship, and fathers' involvement in infancy to fathers' involvement with their 14 month olds were expected to be stronger for non-resident than resident fathers.

Method

Participants

Three-hundred and ten (310) low-income Dominican, Mexican and African-American mothers were recruited from hospitals shortly after giving birth to the focal child (156 boys and 154 girls). The Dominican mothers were 79.5% first-generation, and 20.5% second generation. Nearly all fathers in this group (94.4%) were Dominican and 77.8% of them first generation. The Mexican mothers were 95.4% first-generation parents and 100% of fathers were Mexican (96% first generation). Dominican immigrants were primarily from Santo Domingo, the capital of the Dominican Republic, and Mexican mothers were primarily from the state of Puebla, one of the poorer states of Mexico. All African American mothers were U.S. born and 95.2% of fathers were also US born African American.

Of this initial recruited sample, 204 (66% response rate) families remained in the study through 14 months (66 African American, 73 Dominican American, 65 Mexican American; see Table 1) (99 families with boys and 105

Table 1 Father characteristics.

	Full sample (<i>N</i> =204) (%)	Mexican (<i>n</i> =65) (%)	Dominican (<i>n</i> =73) (%)	African American (<i>n</i> =66) (%)
Married	27	35	37	9
Father resident	67	86	65	50
Father high school education	41	32	32	62
1st generation	63	97	73	15

families with girls). Seventy-three of the mothers who were interviewed at birth provided contacts that resulted in disconnected phones and/or no response. An additional 10 mothers moved out of the state beyond a 100-mile catchment area within the year, and thus were not followed up. Finally, 23 mothers who had participated in the earlier waves of telephone interviews (1 and/or 6 months) declined participation at 14 months when a home visit was required.

Attrition analyses examining a host of baseline family characteristics (e.g., racial/ethnic group, immigrant status, education, and marital/cohabiting status) indicated yielded no significant differences between mothers with and without data at the 14 month wave. Mothers ranged in age from 18 to 46 ($M=26.24$ years, $SD=6.20$). Fathers ranged in age from 18 to 50 ($M=29.80$ years, $SD=7.59$). Across groups families had an average of one other child and 40% of the infants were first born.

At the time of the birth interview, among Dominican parents, 75% of mothers and 69% of fathers had completed at least a high school education. For Mexican parents, 44% of mothers and 41% of fathers completed high school, and 68% of African American mothers and 71% of African American fathers completed high school. Dominican and African American fathers had completed more years of schooling than Mexican fathers ($F(2, 202)=25.66, p<.001$).

During the year preceding their child's birth, 66% of Dominican mothers, 66% of African American mothers, and 62% of Mexican mothers were employed. Ninety-two percent of Dominican fathers were employed, 98% of Mexican fathers, and 74% of African American fathers (Mexican and Dominican fathers were more likely to be employed than African American fathers ($F(2, 202)=8.95, p<.001$). Finally, overall 66% of mothers were co-residing with fathers at the child's birth, with the highest co-residency rates in Mexican immigrant families ($F(2, 202)=9.00, p<.001$). In light of these findings, father employment, residency, education, and marital status were included in first steps of regressions (with ethnicity).

Procedures

Mothers were approached in maternity wards of three New York City public hospitals shortly after giving birth to the focal child. Researchers were introduced to mothers by their attending physicians and nurses and were handed colorful brochures that described the research project and a copy of the consent form which they could spend time reviewing with family members. Mothers who expressed interest and gave permission to the researchers to approach them later, were de-briefed about the project and completed a screener assessing their eligibility to participate in this study. Mothers were eligible for participation in the study if they (1) were at least 18 years of age, (2) resided in New York City and were not living in a shelter at the time of recruitment, (3) had given birth to a healthy, full-term infant (birth weight > 2,500 grams), and (4) were self-identified as Mexican, Dominican, or African American U.S. born.

Mothers participated in baseline interviews in the hospital. Initial interviews were followed up by telephone interviews when infants were 1 month, and again when they were 6 months. At the 14 month assessment surveys and semi-structured interviews with mothers were conducted in their homes. Across assessments, mothers were interviewed by native speakers of their language. All African-Americans, 25% of Dominican mothers, and 9% of Mexican mothers spoke English as their primary language; the remaining mothers spoke Spanish. Families were reimbursed \$25 for the hospital interview, \$40 for each of the interviews at 1- and 6 months of age, and \$75 for their participation in the home-visit at 14 months.

Measure

Fathers' Prenatal Involvement

During the initial baseline interview, mothers were asked eight questions with respect to the prenatal involvement of the baby's father: (a) has the baby's father visited you in the hospital? (b) Visited the doctor with you during the pregnancy? (c) Saw an ultrasound of the baby? (d) Listened to the baby's heartbeat during the pregnancy? (e) Given you money to buy things to get ready for the baby? (f) Spoken to you about the pregnancy? (g) Feel the baby move? (h) Attend Lamaze or other birth classes with you? The sum of yes responses to these questions yielded a total prenatal involvement score for each father. Alpha reliability for the prenatal involvement items was modest at .76.

Mother–Father Relationship

When infants were 1 month, mothers were asked two questions about the mother–father relationship. First, they

were asked to rate the quality of their relationship with the baby's father (on a scale of 1–5, with higher scores representing higher relationship quality). Second, they were asked how much support they felt they received from the father in their role as mothers (on a scale from 1–5 with higher scores representing more support). The average score on these questions was used in analyses.

Father Involvement in Infancy

At both the 1- and 6 month follow-ups, mothers were interviewed about a typical day in the lives of their babies using a time diary approach (Hofferth and Sandberg 2001; Yeung et al. 2001). At the start of this interview, mothers were asked whether the prior day had been “typical” for the infant. If mother responded yes, the daily diary interview began; otherwise, mothers were asked to report on the nearest preceding day that had been “typical”. The daily diary interview began from the time the infant awoke in the morning, and covered a 24-h period until the next morning. Mothers reported the activities infants engaged in (e.g., feeding, bathing, sleep, play, outings) over the course of the day, and reported on the person(s) who was directly engaged with the infant in the specific activity (e.g., mother, father, sibling, grandmother). Interviewers wrote information into a 24-h time grid that was later coded for activities and people engaged in those activities.

For purposes of the present study, we coded whether or not fathers had directly engaged with their infants in three forms of activities on the day of the daily diary (i.e., prior day): caregiving (e.g., feeding baby, changing baby; putting baby to sleep; bathing baby), social interaction (e.g., playing with baby with or without toys, singing to baby), and taking the baby on an outing (e.g., to the park, to visit relatives). The three types of engagement were summed across the time diaries at the 1- and 6 month follow-ups, generating a composite score for father's involvement that ranged from 0–6 (0 being the father had not engaged in any of the three activities at either age; 6 being the father had engaged in all three activities at both ages). Thus, higher scores represented higher postnatal engagement.

Father Involvement at 14 Months

At the 14 month assessment, three measures of father involvement were obtained: time spent with child; eating meals with child; and activities. Mothers were asked whether, on a typical day, fathers ate at least one meal per day with the child and mother (coded as yes or no). For time with child, they were asked how often the father watched the child in mothers' absence since the birth of the child through the 14 month visit (rarely/never, a few times per month a few times per week or daily). Fathers' time

with children is a core feature of models of father involvement, capturing the notion of “accessibility” and commitment (e.g., Lamb and Tamis-LeMonda 2004; Yeung et al. 2001). Finally, mothers were asked about the frequency of occurrence of ten possible father–child activities over the course of the prior month: watch TV, watch videos, read books, tell stories, listen to music, play games without toys, play rough-tumble games, build things with child, play with ball. Each item was rated on a four-point likert scale (1=rarely or not at all; 2=few times per month; 3=few times per week; 4=everyday). These scores were summed into a Father-Activity score at 14 months.

Results

Results are organized around the three research questions. First, descriptive data are presented on fathers' prenatal involvement, and these data are compared across ethnic groups. Second, bivariate correlations test whether father prenatal involvement relates to fathers' involvement (time alone, meals, and activities) with children at 14 months. Third, potential mediators of associations are tested in a set of hierarchical regressions that include 14 month measures of father involvement as dependent measures and the quality of the mother–father relationship and father postnatal involvement (from 1- and 6 month assessments) as mediators. Regressions also examine other potential predictors and/or moderators of father 14 month involvement measures, including father ethnicity, education, employment, residency and marital status. Fathers' years in U.S. and mother work status were not included as they did not relate to mediators and outcomes, with one exception. Fathers' years in U.S. was associated with less time spent with children ($r=-.28, p<.001$). Tests of mediation and moderation are based on recommendations by Shrout and Bolger (2002) and Sobel (2008). All analyses were based on two-tailed significance levels of .05; findings at the $p<.10$ level are reported as “marginal”.

Prior to these analyses, measures of the mother–father relationship as well as father involvement in infancy (1 and 6 months) and at 14 months were compared in families with boys versus girls. Child gender was unrelated to study variables, and patterns of association among study measures did not vary by child gender so findings are collapsed across child gender.

Describing Father Prenatal Involvement Across Ethnic Groups

The first research question asked about father prenatal involvement across ethnic groups. High levels of involvement were expected, with no specific hypotheses regarding ethnic variation. As hypothesized, fathers from the three

ethnic groups were uniformly high on all prenatal involvement behaviors (see Table 2). The average prenatal involvement score was .83 across the groups, reflecting the fact that fathers engaged in 83% of the prenatal behaviors on average, with a range of .11 (engaging in one of the nine possible behaviors) to 1.0 (engaging in all behaviors). When examining specific prenatal measures, virtually all fathers spoke to mothers about the pregnancy and felt the baby move (i.e., 95% each), whereas at the other extreme, few fathers attended Lamaze or pregnancy classes (i.e., 16% of fathers). These percentages and distributions were similar across the three ethnic groups with two exceptions. A greater percentage of Mexican and Dominican fathers discussed the pregnancy with mothers (96% and 100%) versus African American fathers (88%) ($\chi^2(2)=8.01, p<.05$); and a greater percentage of Mexican fathers had visited the hospital (98%) compared to Dominican and African Americans (82% and 84%) ($\chi^2(2)=8.27, p<.05$). Total prenatal involvement scores did not differ across groups.

Relations Between Prenatal Involvement and Fathers' Engagement with Their 14 Month Olds

The second question asked whether fathers' prenatal involvement would predict their fathers' eating meals, spending time

alone with children, and engagement in shared activities with their 14 month olds. Lagged associations from prenatal involvement to later engagement were hypothesized, and associations were expected to obtain across all groups.

Descriptive data on the outcomes of father engagement at 14 months revealed that approximately half of fathers spent time alone with their children on a daily basis; the remaining fathers watched their children a few times per week, month, or never (i.e., between 15% and 18% of fathers falling into each response category). Fathers from the three ethnic groups did not differ in their time alone with their children ($\chi^2(6)=4.32, ns$). On average, 80% of fathers ate at least one meal with their children and partners on a typical day. Fathers' eating meals with their children differed by group, $\chi^2(2)=11.17, p<.01$. Mexican fathers were most likely to regularly eat meals with their children (93%), followed by African American fathers (76%) and Dominican fathers (68%). Finally, in terms of shared activities, the majority of fathers participated in the various activities with their children at least a few times per month. An exception was that fewer Mexican fathers (24%) told stories to their toddlers, than African American (50%) and Dominican (49%) fathers ($\chi^2(2)=9.58, p<.01$). The composite scores of fathers' total activities at 14 months did not differ by ethnicity ($F(2, 156)=.88, ns$).

Table 2 Descriptive statistics for measures based on % of fathers engaged in activities.

	Full sample (N=204) (%)	Mexican (n=65) (%)	Dominican (n=73) (%)	African American (n=66) (%)
Father prenatal involvement total				
Visited hospital	89	99	83	85
Visited the doctor	73	69	80	71
Saw an ultrasound	80	73	85	81
Listened to the baby's heartbeat	80	78	83	78
Gave money to buy things for the baby	93	95	93	91
Spoke to mother about the pregnancy	96	97	100	90
Felt the baby move	95	97	91	97
Attended Lamaze or other birth classes	18	14	20	21
Father alone with child 14 months	50	52	53	46
Father eat with child 14 months	77	94	70	72
Father activities 14 months				
Sing songs	66	59	73	67
Watch TV	82	85	80	83
Watch videos	59	56	61	60
Read books	63	62	68	60
Tell stories	41	25	50	50
Listen to music	75	73	76	77
Play games without toys	71	69	75	67
Play rough-tumble games	73	75	69	74
Build things with child	47	39	54	49
Play with ball	77	77	78	75

As hypothesized, fathers' prenatal involvement predicted the three forms of father engagement with their 14 month olds (i.e., time alone; eating meals; total activities). First, prenatal involvement predicted fathers' frequency of spending time alone with their children, $r=.28, p<.001$. However, patterns of prediction varied by father ethnicity. Whereas prenatal involvement predicted this measure in Dominican immigrant and African American groups (r 's $=.28, p<.05$ and $.37, p<.01$), it did not predict in Mexican immigrant fathers ($r=.19, ns$).

Next, logistic regression was conducted to examine prediction from prenatal involvement to the variable of eating meals with children. Although most fathers ate with their children, fathers with higher prenatal involvement scores were nearly seven times as likely to eat meals with their children than those with lower scores (Walds (1)=3.86, Exp (B)=6.898, $p<.05$).

Finally, prenatal involvement related to fathers' total activity scores at 14 months ($r=.38, p<.001$). Associations maintained across the three ethnic groups, although the effect size was only marginal in Mexican immigrants ($r=.48, p<.001$ for African Americans; $r=.38, p<.001$ for Dominican immigrants; $r=.23, p=.08$ for Mexican Americans).

Mediating and Moderating Pathways

The third research question was focused on the factors that moderate and mediate associations between father prenatal involvement and fathers' later involvement with their 14 month olds. These pathways were tested through a set of regressions that included measures of father ethnicity; measures of father prenatal involvement; and the hypothesized mediators of the mother–father relationship and father postnatal involvement (from 1 and 6 month combined scores). The three outcome measures of father involvement (time alone with child; eating meals with child; father–child activities) served as dependent measures. In all regressions, demographic controls (i.e., employment, education, residency, marital status) were entered in the first step of regressions. In the second step of regressions, prenatal involvement was entered to test its unique contribution to later father involvement. In the third step, the two mediators were entered, addressing the question as to whether the quality of the mother–father relationship and/or fathers' 1- to 6 month involvement mediated lagged associations between prenatal involvement and 14 month involvement.

Finally, to examine moderation by ethnicity, co-residency, and marital status, interaction terms between moderators and prenatal involvement and between moderators and the two mediators of postnatal involvement and mother–father relationship quality were tested. Marital status did not moderate any associations and is therefore not presented.

Prenatal Involvement in Relation to Mediators

As a preliminary step to tests of mediation in full models, we asked whether fathers' prenatal involvement related to the mother–father relationship and fathers' postnatal involvement above father ethnicity, employment, education, residency and marital status. In regressions that included these controls, prenatal involvement retained its prediction to the mother–father relationship (standardized beta $=.33, p<.01$) and postnatal involvement (standardized beta $.21, p<.01$). Ethnicity did not moderate the association between prenatal involvement and the proposed mediators.

Therefore, the three criteria for testing mediation were supported (Baron and Kenny 1986): (1) prenatal involvement predicted all three measures of 14 month father involvement; (2) prenatal involvement predicted the two proposed mediators of the mother–father relationship and father postnatal involvement; and (3) the mediators of the mother–father relationship and father postnatal involvement predicted the three measures of 14 month father involvement.

Fathers' Time Alone with Child

In terms of prediction to fathers' spending time alone with their 14 month olds, demographic measures, prenatal involvement, the mediators of the mother–father relationship and father postnatal involvement explained 15% of the variance (9% adjusted) in fathers' time alone with their children, a significant proportion of the variance ($F(9, 142)=2.69, p<.01$). As shown in Table 3, in Step 1 of the regression, only father residency status predicted fathers' time alone with children. Fathers who resided with their children were more likely to spend time alone with their children (beta $=.20, p<.05$). In Step 2, fathers' prenatal involvement was entered and significantly predicted fathers' 14 month activities after controlling for demographic measures (R -squared change of $.05, p<.01$; standardized coefficient of $.22$). In Step 3, the two proposed mediators—quality of the mother–father relationship and fathers' postnatal involvement—were entered and together and explained an additional yet marginal 4% of the variance in the dependent measure, based on a two-tailed $.10$ significance level ($p=.06$). Of the two hypothesized mediators, only fathers' postnatal involvement explained unique variance over demographic measures and fathers' prenatal involvement; the standardized coefficient was $.18 (p<.05)$. In this model, the effect of prenatal involvement was attenuated to marginal significance (from the original standardized coefficient of $.22$ to a standardized coefficient of $.15$, a reduction of 32% in the magnitude of the association, $p=.08$), suggesting partial mediation. The indirect association of prenatal involvement with fathers'

Table 3 Predicting fathers' time alone with infants at 14 months.

Predictors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Father education	-.052	.199	-.022	-.080	.195	-.034	-.064	.193	-.027
Father marital status	.184	.216	.074	.154	.211	.062	.180	.209	.072
Father employment	.340	.270	.111	.335	.265	.110	.343	.261	.112
Father residency	.511	.227	.200*	.400	.226†	.157†	.202	.238	.079
Mexican contrast	-.389	.259	-.164	-.342	.254	-.144	-.308	.256	-.130
Dominican contrast	-.324	.257	-.131	-.304	.251	-.144	-.278	.248	-.112
Prenatal involvement				1.433	.527	.218*	1.001	.565	.153†
Involvement 1 & 6 months							.791*	.398	.179*
Mother–father relationship							.086	.103	.075
	R^2 total=.07			R^2 total=.11			R^2 total=.15		
	$F(6, 145)=1.68, p=.131$			$F(7, 144)=2.56, p=.016$			$F(9, 142)=2.69, p=.006$		

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; two-tailed

time with child through levels of postnatal involvement was significant, using Sobel's test ($t=1.96, p < .05$).

When interaction terms were entered into models, father residency was found to moderate associations between the mother–father relationship and fathers' time spent with child (standardized beta = $-.83, p < .01$). The interaction accounted for an additional 4% of the variance in fathers' time alone with child, ($F(2, 143)=3.53, p < .05$), with the full model accounting for 20% of the variance in fathers' time alone with children ($F(2, 142)=3.14, p < .001$). Analysis of the interaction revealed that, as predicted, the quality of the mother–father relationship predicted fathers' time alone with their 14 month olds among non-resident fathers ($r=.48, p < .05$), but not among resident fathers ($r=.02, ns$).

Fathers' Meals with Children

Next, prediction to fathers' eating at least one meal a day with children was examined (Table 4). Together, demographic measures, prenatal involvement, the mediators of the mother–father relationship and father postnatal involvement explained 22% of the variance (17% adjusted) in this outcome ($F(9, 141)=4.33, p < .001$). In Step 1 of the regression, only father residency status predicted fathers' frequency of eating meals with children. Fathers who resided with their children were more likely to eat with them ($\beta=.29, p < .01$). In Step 2, fathers' prenatal involvement was entered and did not explain additional variance in fathers' time alone with child (standardized beta = $.08$). In

Table 4 Predicting fathers' eating meals with infants at 14 months.

Predictors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Father education	-.014	.065	-.018	-.018	.065	-.023	-.011	.063	-.014
Father employment	.108	.088	.103	.106	.088	.102	.108	.086	.104
Father marital status	.005	.072	.006	.000	.072	.000	.005	.070	.006
Father residency	.255	.075	.291**	.242	.076	.276	.167*	.078	.190*
Mexican contrast	.039	.085	.048	.046	.085	.056	.076	.085	.094
Dominican contrast	-.127	.084	.150	-.123	.084	-.146	-.105	.082	-.124
Prenatal involvement				.183	.176	.081	-.022	.185	-.010
Involvement 1 & 6 months							.281*	.130	.186*
Mother–father relationship							.059	.034	.147†
	R^2 total=.16			R^2 total=.16			R^2 total=.22		
	$F(6, 144)=4.40, p=.000$			$F(7, 143)=3.92, p=.001$			$F(9, 141)=4.33, p=.000$		

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; two-tailed

Model 3 (step 3 of regression), the quality of the mother–father relationship and fathers’ postnatal involvement explained an additional 6% ($p < .01$) of the variance in 14 month father–child time alone. Fathers’ postnatal involvement explained unique variance over demographic measures and fathers’ prenatal involvement; the standardized coefficients was .19 ($p < .05$); the mother–father relationship marginally related to this outcome when tested at a two-tailed, .10 level of significance (standardized beta = .15, $p < .10$). Because prenatal involvement did not predict father eating with child, mediation was not examined.

However, both ethnicity and father residency moderated relations between both hypothesized mediators (i.e., mother–father relationship and fathers’ postnatal involvement) and fathers’ eating meals with children. In terms of ethnicity, there was a significant interaction between Mexican status and the quality of the mother–father relationship ($\beta = -.65$) on fathers eating meals with children. The interaction term explained an additional 2% of the variance, ($F(1, 140) = 4.32$, $p < .05$, with the full model accounting for 24% variance in fathers’ eating meals with children ($F(10, 140) = 4.42$, $p < .001$). Specifically, although the mother–father relationship related to fathers’ eating meals with children in both African American and Dominican families (r 's = .39 and .37, p 's < .01), it did not relate to fathers’ eating meals in Mexican families ($r = .07$, *ns*). This findings is likely due to the fact that Mexican fathers nearly always ate meals with their children, which was also reflected in the strength of the association of Mexican ethnicity with eating meals with children ($\beta = .76$, $p < .05$).

The interaction between fathers’ ethnicity and fathers’ postnatal involvement was explained by Dominican status ($\beta = .32$, $p < .05$), with the interaction term explaining an additional 3% of the variance in this outcome ($F(1, 140) = 6.16$, $p < .05$). The association between Dominican fathers’ postnatal involvement and later eating with children was very strong ($r = .58$, $p < .001$). However, there was no such association for African American or Mexican fathers (r 's = .19 and .13, respectively).

Father residency also moderated associations between both the mother–father relationship and fathers’ postnatal involvement to fathers’ eating meals with children at 14 month. (β s = .97 and .48, p 's < .001 and .05). The addition of interaction terms (residency X mother–father relationship; residency X postnatal involvement) accounted for an additional 12% of the variance in fathers’ eating meals with children ($F(2, 143) = 13.084$, $p < .001$), which led to a final model that accounted for 34% of the variance in this outcome ($F(10, 143) = 7.39$, $p < .001$). Specifically, the association between the mother–father relationship and fathers eating with their children maintained in non-resident fathers ($r = .55$, $p < .001$) but not in resident fathers ($r = -.11$, *ns*). Similarly, fathers’ postnatal involvement

mattered for nonresident fathers’ eating meals with their children ($r = .52$, $p < .001$), but did not predict this behavior in resident fathers ($r = .05$, *ns*).

Fathers’ Activities with Children at 14 Months

In the final model, fathers’ total activities with children at 14 months served as the dependent measure. Together, demographic measures, prenatal involvement, the mediators of the mother–father relationship and father postnatal involvement explained 27% of the variance (23% adjusted) in fathers’ activities with their 14 month olds, a significant proportion of the variance ($F(9, 143) = 5.93$, $p < .001$).

As shown in Table 5, in Step 1 of the regression, only Mexican status predicted fathers’ 14 month activities. This was a marginal association ($\beta = -.20$, $p < .10$), indicating that Mexican fathers were less likely to engage in the various activities than African American fathers. In Step 2, fathers’ prenatal involvement was entered and significantly predicted fathers’ 14 month activities after controlling for demographics (R^2 change of .10, $p < .001$; standardized coefficient of .33). In Step 3, the two proposed mediators—quality of the mother–father relationship and fathers’ postnatal involvement—were entered and together explained an additional significant proportion of variance in 14 month involvement (R^2 change = .12, $p < .001$). Both measures explained unique variance over demographic measures and fathers’ prenatal involvement; the standardized coefficients were .30 for quality of the mother–father relationship ($p < .001$) and .18 for father postnatal involvement ($p < .05$). In this model, prenatal involvement continued to predict fathers’ activities with their 14 month olds, although the standardized beta was reduced from .33 to .18 (a reduction of 45% in magnitude), indicating partial mediation. We then examined the significance of the indirect associations of prenatal involvement with 14 month involvement through the two mediators. The association of prenatal involvement with later involvement through the quality of the mother–father relationship was significant, using Sobel’s methodology ($t = 2.69$, $p < .01$; Sobel 2008).

Interaction terms between moderators and prenatal involvement, and between moderators and the two mediators of postnatal involvement and mother–father relationship quality, did not emerge as significant for this dependent measure.

Discussion

Given the benefits of father involvement in the first years of life (Shannon et al. 2002; Tamis-LeMonda et al. 2004), it is important to explore initial commitment to fathering around the birth of a child, and its continuity and discontinuity in

Table 5 Predicting fathers' activities with infants at 14 months.

Predictors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Father education	.078	.131	.051	.051	.125	.033	.079	.116	.051
Father employment	.208	.179	.103	.202	.170	.101	.227	.158	.113
Father marital status	.003	.143	.002	.027	.135	.016	.008	.126	.005
Father residency	.245	.149	.147†	.135	.143	.081	.058	.143	.035
Mexican contrast	-.313	.172	-.200†	-.267	.163	-.171†	-.164	.155	.105
Dominican contrast	-.022	.169	.014	-.003	.161	.002	-.038	.150	-.024
Prenatal involvement				1.42	.338	.328**	.771	.342	.178**
Involvement 1 & 6 months							.532	.241	.184***
Mother–father relationship							.228	.062	.303**
	R^2 total=.05			R^2 total=.15			R^2 total=.27		
	$F(6, 146)=1.21, p=.302$			$F(7, 145)=3.66, p=.001$			$F(9, 143)=5.93, p=.000$		

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; two-tailed

infancy. In this study we explored patterns of prediction and mediating mechanisms that might account for links between prenatal father involvement and father involvement when children were 14 months. We investigated these patterns among low-income Mexican immigrant, Dominican immigrant, and African American U.S.-born families. The early course of father involvement has been understudied in general, and particularly in immigrant and ethnically diverse families. Our findings highlight similarities in father involvement across groups, as well as the ways in which fathering varied by ethnicity and father residency.

Similarities and Differences in Father Involvement

Levels of prenatal father involvement were high across the three ethnic groups. Nearly all fathers, for example, spoke to mothers about the pregnancy and felt the baby move (over 95%). Among the nine activities in the index, the lowest rates were for attendance at Lamaze or childbirth classes (at 16%). How do these rates of prenatal involvement compare to other studies? One recent study used data from the Early Childhood Longitudinal Study—Birth Cohort, a nationally representative sample, to examine the subset of co-resident fathers' participation in some of these very same activities. In that study (Bronte-Tinkew et al. 2007) fathers themselves reported similarly high rates of speaking to the mother about the pregnancy and feeling the baby move, although their rates of attendance at a childbirth class were higher (42%). This may be because of the generally higher incomes that this national sample of co-resident fathers had to childbirth classes, when compared to this low-income, immigrant sample. When children turned 14 months, the majority of fathers engaged regularly in most father–child activities and fathers across all groups

often spent time alone watching their children and most fathers ate at least one meal with their children and families every day.

Although overall measures of father prenatal and later involvement were similar across groups, there were select differences as well. Mexican immigrant fathers engaged in significantly higher rates of hospital visitation during the prenatal period, and were also more likely to eat meals with their children at 14 months. These differences might in part be explained by the higher rates of residency seen in Mexican immigrant fathers, compared to their Dominican and African American counterparts. However, findings might also reflect strong family values in new immigrant groups such as Mexicans. A high degree of family-centered concern and regard of the family has been found in immigrant Latino families who face economic challenge (Sabogal et al. 1987). Moreover, although *machismo* stereotypically refers to male dominance and sexism in Latino men, it may denote qualities of family respect, responsibility, and a strong cultural ethic surrounding fatherhood (Mirandé 1997). In this way, familism has been theorized as pulling Mexican American men into more involved fathering in the form of eating meals together and spending weekend time with the family (Parke et al. 2004), and the current findings support this notion.

Similarities and Differences in Patterns over Time

Over developmental time, similar associations and pathways maintained between fathers' prenatal and later involvement across groups. Somewhat counter to stereotypes about low-income, urban fathers of color, fathers' high levels of involvement at birth were much more likely to maintain over time than to present a pattern of

disengagement. Specifically, fathers' prenatal involvement predicted quite strongly to father involvement at 14 months (a standardized regression coefficient of .33, after adjusting for demographic factors such as co-residence, marital status and paternal employment). This finding accords with research on the importance of prenatal involvement in other studies (Bronte-Tinkew et al. 2007; Shannon et al. 2006), but advances that work by exploring pathways in a majority immigrant sample.

What might explain associations between fathers' prenatal involvement and later involvement? We examined two potential mediators: a composite of father engagement at 1 and 6 months, and a report of mother–father relationship quality at 1 month. We found that prenatal involvement predicted the postnatal engagement composite across 1 and 6 months, and the quality of the mother–father relationship. In turn, fathers' postnatal involvement and the quality of the mother–father relationship were associated with fathers' participation in a variety of activities with their 14 month olds. When these mediators were considered jointly, they partially accounted for the association of prenatal involvement to 14 month activities, with a reduction in the magnitude of the coefficient of 40%. The indirect association of prenatal involvement with later activities through the quality of the mother–father relationship was significant.

We also examined predictors of fathers' time alone with children and eating meals together with children at 14 months. The literature shows positive consequences of family time together when having meals for family functioning and children's later cognitive and socio-emotional development (Brody and Flor 1997). We found that prenatal involvement, as hypothesized, was associated with higher levels of time alone with children at 14 months, and that postnatal involvement mediated this relationship (with a significant indirect association). On the other hand, although postnatal involvement predicted eating meals together at 14 months, prenatal involvement was not associated with this outcome after covarying other measures. In addition, the quality of the mother–father relationship was only weakly associated with either time alone with child or eating meals with child. This may be because lower quality of the mother–father relationship may in fact predict higher father time alone with child in some families (that is, without the mother present).

A major goal of our study was to examine whether patterns of association between early and later father involvement and the mother–father relationship differed for Mexican, Dominican, and African American families. Due to different rates of co-residence as well as norms of family cohesion across these groups, we expected that associations might differ. Although prenatal involvement predicted later involvement equally strongly across ethnic groups, other tests of moderation revealed variation by

ethnicity and father residency. Ethnicity moderated associations to fathers' eating with their children. Specifically, the quality of the mother–father relationship and fathers' prenatal involvement predicted fathers' eating with children only in African American and Dominican groups, and fathers' postnatal involvement predicted fathers eating with children only in Dominican immigrants. The general lack of prediction to fathers' eating with children in Mexican immigrants may be because the vast majority of Mexican men ate meals with their children, and thus there was little variance in this outcome for that group. The involvement of Mexican fathers in meals and with their children indicates both the continued role of familismo post-immigration for these families, as well as adjustments in traditional patriarchal roles in the U.S. (Gutmann 1996).

Finally, father residency moderated associations between the mother–father relationship and two of the 14 month father involvement measures: eating with children and spending time alone with children. As hypothesized, these associations were stronger in non-resident fathers than in resident fathers, with nonresident fathers also showing lower rates of both behaviors overall. Thus, men who did not reside with the mothers of their children, yet were able to maintain a positive relationship with them, were more likely to take responsibility for their children in mothers' absence and to eat regular meals with their children. In contrast, these types of behaviors remained high in resident fathers, regardless of the quality of their relationships with mothers, at least at this early period in child development.

In general, these findings underscore the high levels of involvement low-income, ethnically diverse fathers have in their young infants' lives. Moreover, results suggest that enhancing prenatal involvement may increase the probability of later positive family processes. These processes include not only father involvement in activities with children at 14 months, but also daily routines with fathers, such as mealtimes and overall time spent with fathers. These processes have all been associated with more positive child outcomes later in development. In addition, the results suggest that enhancing the quality of the mother–father relationship may also improve later father involvement quality. Interventions for families with young infants, such as home visiting programs, may benefit from a focus on the mother–father relationship. Few home visiting programs currently emphasize this topic; most concentrate on providing information about child development, and strengthening the parenting skills of the mother (Gomby 2005).

A number of future directions are called for, particularly in light of limitations to the current study. First, future studies should ask fathers directly about their prenatal and postnatal involvement. Research shows that mother and father reports of father involvement are quite highly correlated among low-income (Coley and Morris 2002),

with fathers in dyads typically reporting higher levels of involvement than mothers. To the extent that mothers reported on fathers' behaviors and may not have first-hand knowledge as to what fathers do when they spend time with infants, the rates of father involvement reported here might actually be conservative estimates. Second, large-scale studies should examine father involvement over early infancy when fathers are transitioning to the experience of a new infant, and when family relationships are in high flux. The present study relied on a small sample, which meant that statistical power to detect associations was relatively low. However, we can be fairly confident in the robustness of associations given the relatively large magnitude of effects. Finally, the present findings revealed different patterns of findings and moderation, depending on the measure of father involvement examined. That is, whether there were ethnic or residency differences in father involvement; whether the mother–father relationship mediated prenatal–postnatal relations; and whether lagged associations were moderated by ethnicity and/or father residency depended on the measure of father involvement that was being explored. This level of specificity highlights the need for investigators to consider multiple types of father involvement so as to advance a richer understanding of what fathers do with their children, when and why.

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