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African American and Hispanic Fathers' Work Characteristics and Preschool Children's Cognitive Development

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Abstract

Father involvement is a salient predictor of children's cognitive development and recent studies suggest that African American and Hispanic fathers, who are highly involved, have children who enter school more poised to succeed. Little is known, however, about contextual barriers to positive father involvement in ethnic minority families. This study examined prospective relations between fathers' work characteristics (i.e., total work hours per week, job satisfaction, and work shift) and children's cognitive development in preschool (i.e., reading and math scores). A total of 2,340 children were included in the study (35% African American, 65% Hispanic). Fathers' total work hours per week positively predicted children's reading and math scores. Fathers' work shift (i.e., nonstandard) positively predicted reading, but not math. In contrast, fathers' job satisfaction negatively predicted children's math achievement. Findings were evident even after controlling for a host of demographic factors (e.g., father education, mother education, home-learning environment, and family income).

Keywords

African American, Hispanic, fathers, preschool, cognitive development, ECLS-B

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Parenting practices have gained increasing attention for enhancing children's early developmental trajectories (Baker & Rimm-Kaufman, 2014; Bornstein, 2002; Bornstein, Tamis-LeMonda, Hahn, & Haynes, 2008; Gershoff, Aber, Raver, & Lennon, 2007). Numerous studies have shown that children with highly involved parents enter school more poised to succeed (Baker, Cameron, Rimm-Kaufman, & Grissmer, 2012; Lamb, 2004; Rimm-Kaufman & Pianta, 2000). As more mothers have entered the workforce when their children are very young, parenting researchers have increasingly recognized the importance of fathers to child development. The consensus in the early childhood literature is that specific fathering behaviors (e.g., home-learning stimulation) are directly related to children's reading, math, and social–emotional development in preschool and kindergarten (Cabrera, Shannon, West, & Brooks-Gunn, 2006; Downer, Campos, McWayne, & Gartner, 2008). Little is known, however, about contextual barriers (e.g., work characteristics) to positive father involvement in ethnic minority families. Even less is known about these associations in culturally and linguistically diverse families.

Ecological systems theory posits that social settings that do not involve the child directly, but affect the child's life (e.g., parents' work characteristics), are particularly important for understanding child development (Bronfenbrenner, 1979, 1986). It is hypothesized that parents' work environments influence child development through their influence on parenting practices. Although numerous studies have shown that maternal work characteristics are directly related to parenting and child development (Daniel, Grzywacz, Leerkes, Tucker, & Han, 2009; Joshi & Bogen, 2007; Rosenbaum & Morett, 2009), less attention has been paid to links between fathers' work characteristics, parenting practices, and child development. Moreover, most empirical research with fathers has focused on Caucasian fathers rather than ethnic minority fathers (Cabrera & Bradley, 2012). McAdoo's (1993) seminal work on the importance of ethnic minority fathers concluded that historical, cultural, and contextual differences in the ecology of ethnic minority homes reinforces the need for positive relationships between fathers and their young children. Recent studies with ethnic minority men have confirmed this and suggest that contextual differences related to fathers' employment are especially important in understanding children's developmental trajectories (Baker, 2014a; Cabrera & Bradley, 2012). For example, Pancsofar, Vernon-Feagans, and Odom (2013) linked African American fathers' work characteristics to their language input during shared book-reading interactions, showing that fathers who worked nonstandard shifts used more quality language with their young children. However, their study did not examine whether fathers' work characteristics were also associated with children's cognitive development. The present study examines

prospective relations between African American and Hispanic fathers' work characteristics (defined in this study as total work hours per week, job satisfaction, and work shift) and their children's cognitive development in preschool. Utilizing longitudinal data from a national sample of employed African American and Hispanic fathers from the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), this study investigates two specific questions. First, what is the relationship between fathers' work characteristics and children's reading achievement in preschool? Second, what is the relationship between fathers' work characteristics and children's math achievement in preschool?

Fathers' Work Characteristics and Child Development

Research points to the salience of three specific work characteristics (i.e., total work hours per week, job satisfaction, and work shifts) to parenting and child development (Baydar & Brooks-Gunn, 1991; Parcel & Menaghan, 1990; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). Evidence from large-scale studies suggests that fathers who work more hours per week tend to spend less time with their children, which has a negative impact on parenting. For example, in a study using data from the Panel Study of Income Dynamics, Yeung et al. (2001) found that fathers' total work hours (per week) was negatively associated with the amount of time they spent with their children on weekdays. Other studies also show that children of fathers who work fewer hours per week tend to experience more frequent father–child interactions (e.g., Tanaka & Waldfogel, 2007). However, it is important to note that none of these studies investigated direct relations between fathers' work hours and children's cognitive development.

Researchers investigating the relative influence of parents' work characteristics on child development argue that parents' *subjective* experiences at work (e.g., job satisfaction) are also related to children's development (Barling, 1986; Stewart & Barling, 1996). It is hypothesized that parents who experience greater job satisfaction are more likely to engage in positive parent–child interactions. In fact, some research with mothers has shown that mothers who are less satisfied with their jobs have children with poorer developmental outcomes compared with mothers who are more satisfied (Belsky, 1984). However, the relations between fathers' job satisfaction and child development have not been widely investigated. The small body of work that exists suggests that fathers' job satisfaction is positively related to the total amount of time fathers spend with their young children (Barling, 1986; Stewart & Barling, 1996). There is also evidence that fathers who experience greater job satisfaction have more positive father–child

relationships, which has been linked to optimal child outcomes (Barling, 1986). For example, Barling (1986) used a small sample of middle-class fathers from South Africa to examine relations between fathers' work characteristics and children's behavioral outcomes. He found that South African fathers who were more dissatisfied with their jobs had children with significantly greater conduct problems and hyperactivity. These results provide some evidence that fathers' job satisfaction may be directly related to child development; however, no studies have examined these associations in large samples of African American and Hispanic fathers living in the United States.

A separate literature has linked maternal work shifts (i.e., standard vs. nonstandard) to children's cognitive, social, and emotional development. One national study found that mothers who worked nonstandard shifts (i.e., evenings, nights, and rotating shifts) had children with lower expressive language outcomes (at 36 months) compared with mothers who worked standard 9 a.m. to 5 p.m. shifts (Han, 2005). Similarly, Joshi and Bogen (2007) found that children of low-income mothers who worked nonstandard work shifts (i.e., hours that fall outside of the typical 9 a.m. to 5 p.m. work shifts) had children with more social emotional problems compared with children of low-income mothers who worked standard work shifts. Studies that have focused exclusively on ethnic minority families have yielded similar results and suggest that ethnic minority mothers who work nonstandard shifts have children with lower literacy (Odom, Vernon-Feagans, & Crouter, 2013) and math-related skills (Heymann & Earle, 2000) compared with mothers who worked standard work shifts. Although the studies cited here point to a significant link between maternal work shifts and child development, less attention has been paid to the relations between fathers' work shift and child development. As a result, the relations between fathers' work shifts and child development remains poorly understood, especially in ethnically diverse families.

Demographic Characteristics and Child Development

There is longstanding evidence that characteristics of the home, including family income, parent education, age, marital status, and number of children living in the home are associated with child development (Alexander, Entwisle, & Horsey, 1997; Alexander, Entwisle, & Kabbani, 2001; Baker, 2014b; Baker & Iruka, 2013; Brooks-Gunn & Markman, 2005; Cabrera et al., 2004; Cabrera et al., 2006; Davis-Kean, 2005; McLoyd, 1998). On average, older, more educated parents tend to have more financial capital and engage in more positive parenting practices, which are positively related to children's reading and math achievement. For example, one recent study found that

African American and Caucasian parents' education, income, and marital status were positively related to parent's provision of home-learning stimulation and children's preschool reading and math scores (Baker, 2013a).

It is hypothesized that married parents tend to engage in more positive interactions with each other and with their children. These kinds of households stand in contrast to families where children are exposed to marital discord or divorce, which has been negatively linked to child development (McLoyd, 1998; Shaw, Winslow, & Flanagan, 1999). Mixed findings exist, however, about the relationship between number of children living in the home, parenting, and child development. Some studies indicate that more children living in the home is associated with less optimal parenting and developmental outcomes (Crnic & Greenberg, 1990; Heer, 1985), whereas other studies have found that more siblings living in the home minimizes the demands of parenting and increases the amount of support that children receive from their older siblings (Behrman & Taubman, 1986). The primary goal of this study was to understand the unique contribution of fathers' work characteristics to children's cognitive development above and beyond demographics. As such, this study controlled for 10 demographic characteristics (i.e., father and mother education, father and mother age, marital status, intimate relationship happiness, father-reported home-learning stimulation, and number of children living in the home).

The Importance of Preschool Cognitive Development

The earliest years of life represent a critically important time for promoting children's cognitive development. Scholars argue that birth to age 5 years is a time when children experience significant brain development as their cognitive abilities progress at an astounding rate (Baker, Vernon-Fegans, & the Family Life Project Investigators, 2015; Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Shonkoff & Phillips, 2000). As a result, infants and toddlers need consistent, positive learning experiences with their parents to enhance their reading and math-related skills. Longitudinal studies have shown that children who enter preschool and kindergarten with sufficient knowledge of math and reading are more likley to experience later academic success, attain higher levels of education, and secure employment (Duncan et al., 2007; Tramontana, Hooper, & Selzer, 1988). Reciprocally, children whose math and reading skills lag behind their peers in preschool tend to stay behind their peers on formal tests of cognitive development in later grades. Thus, enhancing children's preschool cognitive skills is a necessary, if not critical, way to increase children's capacity to succeed in school and in life.

The Present Study

Drawing from ecological theory, this study examined prospective relations between fathers' work characteristics and children's cognitive development in preschool. Two specific research questions were examined after controlling for important mother, father, and child characteristics. First, what is the relationship between fathers' work characteristics at 24 months and children's reading achievement in preschool? Second, what is the relationship between fathers' work characteristics at 24 months and children's math achievement in preschool? Based on a review of the extant literature, it was hypothesized that fathers who worked standard work shifts and fewer total work hours each week would have children with better preschool outcomes. It was also hypothesized that fathers who experienced greater job satisfaction would have children with better preschool outcomes.

Method

Participants and Design

Study participants were from the ECLS-B. The ECLS-B is a nationally representative probability sample of approximately 14,000 children born in 2001, designed to represent the nearly 4 million children born in the United States in that year (Najarian, Snow, Lennon, & Kinsey, 2010; Nord et al., 2004). Children were excluded from the study if: (a) they were born to mothers under the age of 15 years, (b) they were adopted at or shortly after birth, and (c) they died before the age of 9 months. The ECLS-B cohort of children was followed at approximately 9, 24, and 48 months and at kindergarten entry. The ECLS-B oversampled Asian, American Indian, Alaska Native, twins, and low or very low birth weight children.

The full sample was selected using a clustered, list frame sampling design, which was made up of registered births from the National Center for Health Statistics vital statistics system. Births were sampled from 96 core primary sampling units (counties and county groups) representing all infants born in the United States in 2001. The ECLS-B collected data from mothers and fathers through both a computer-assisted questionnaire and a self-administered questionnaire. Data for the present study were obtained from the parent interviews completed by biological mothers at 24 months, the resident father questionnaire completed at 24 months as well as direct child assessments collected during home visits when children were approximately 4 years old (i.e., preschool aged). Response rates were 74% at 9 months, 69% at 24 months, and 63% at 48 months (i.e., preschool).

Analysis Sample

The sample for this study was (N = 2,340) children who had fathers who self-identified as African American or Hispanic. The sample size was rounded to the nearest 10 due to restricted license requirements. As mentioned previously, 35% of the sample was African American and 65% of the sample was Hispanic. During the preschool data collection, the average age of African American and Hispanic children was 53.23 months old (SD = 4.33). Children in the sample had 2 to 3 siblings living in their homes (M = 2.35, SD = 1.46). On average, children's mothers and fathers had at least a high school education or GED with almost 30% having some college. The average age of fathers at the time of data collection was 31.91 (SD = 7.14). The scales for the aforementioned variables are described below and Table 1 presents means and standard deviations for all variables in the study.

Measures

Preschool Reading and Math. Reading and math scores were measured using individually administered tests that lasted approximately 35 minutes for each child. The final content of the early reading and math assessments were guided by a framework provided by Brush, Salinger, Sussman, and Kirshstein (2003) for the preschool wave, which differed from the kindergarten wave as well as previous waves (i.e., 9 months and 24 months) of cognitive assessments. Specifically, the preschool reading assessment comprised items assessing children's basic skills (80%) and vocabulary (20%). The reading test assessed children's reading and emergent literacy development in six specific areas: (a) English language skills/oral language, (b) phonological awareness, (c) letter and word sound knowledge, (d) print conventions, (e) word recognition, and (f) vocabulary (both receptive and expressive). The reliability estimates for the reading test scores were .95.

The math test assessed children's math development in four specific areas: (a) number sense, properties, and operations skills, which refers to children's understanding of numbers, cardinality, quantity, operations and estimation, and their application, 74% of the math test consisted of these types of items; (b) measurement, which involved understanding the attributes of objects (e.g., length and volume) and the ability to compare objects by their attributes. Five percent of the math items involved measurement; (c) geometry and spatial sense, which included simple identification of geometric shapes to transformations and combinations of those shapes. Fourteen percent of the math items involved geometry; (d) patterns, algebra, and functions, which required children to identify, duplicate, and extend patterns that may predict

Table 1. Bivariate Correlations, Means, and Standard Deviations for Study Variables (N = 2,340).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	*M* (*SD*)
1. Child age	1.00																	53.23 (4.33)
2. Child gender	−.03	1.00																0.50 (0.48)
3. Father race	**−.11**	.01	1.00															0.36 (0.47)
4. Father education	**−.07**	−.01	**.25**	1.00														1.85 (0.73)
5. Mother education	**−.07**	−.01	**.19**	**.40**	1.00													1.97 (0.78)
6. Father age	**−.07**	.01	**.10**	**.17**	**.17**	1.00												31.91 (7.14)
7. Mother age	**−.06**	.02	**.05**	**.18**	**.27**	**.72**	1.00											29.32 (6.27)
8. Marital status	.03	.01	.03	**.21**	**.19**	**.25**	**.28**	1.00										0.66 (0.47)
9. Family income	.02	.03	.09	**.28**	**.26**	**.10**	**.15**	**.17**	1.00									0.67 (0.46)
10. Relationship	−.01	**.08**	**.14**	**.04**	.03	−.03	**−.06**	**−.09**	.03	1.00								1.36 (0.53)
11. Home learning	**−.08**	.01	**−.06**	**.05**	.01	−.02	**−.06**	−.01	−.01	**−.04**	1.00							5.20 (1.57)
12. # of children	.01	−.03	**.05**	**−.09**	**−.10**	**.25**	**.29**	**.09**	**−.19**	.01	**−.05**	1.00						2.35 (1.46)
13. Work hours	**−.05**	.02	.01	**.08**	**.06**	.01	.04	**.08**	**.06**	**−.12**	**−.08**	−.01	1.00					43.79 (15.40)
14. Job satisfaction	−.04	.01	**.10**	.06	−.01	−.01	.04	**−.14**	**.08**	.03	.01	−.01	**.08**	1.00				2.97 (0.98)
15. Work shift	.02	.05	**.12**	**.09**	.04	.03	.01	−.01	**.05**	−.01	.01	−.02	.02	**−.14**	1.00			0.28 (0.45)
16. Reading	**.25**	−.09	**.19**	**.32**	**.28**	**.11**	**.12**	**.11**	**.22**	−.01	**.06**	**−.13**	**.12**	.01	.05	1.00		21.84 (9.35)
17. Math	**.35**	−.12	**.09**	**.24**	**.22**	**.04**	**.08**	**.08**	**.21**	−.04	**.06**	**−.14**	.04	−.02	.02	**.75**	1.00	26.528 (9.33)

Note. Child age is in months. Relationship = father-reported relationship happiness with child's mother. Bold estimates are significant at the .05 level.

later algebraic thinking about the properties of items. All items included in this category were pattern recognition items. Seven percent of the math items involved algebra patterns. The reliability estimates for the math test scores were .94.

Total Work Hours per Week. During the 24-month data collection, fathers were asked to report the total number of hours they work for pay at their primary place of employment each week. Higher scores indicate more frequent work hours in this study.

Job Satisfaction. During the 24-month data collection, fathers were asked to report their level of job satisfaction (1 = *very dissatisfied* to 4 = *very satisfied*). Higher scores indicate more job satisfaction.

Work Shifts. During the 24-month data collection, fathers were asked,which of the following best describes their work shift at their main job: regular daytime shift—any time between 6 a.m. and 6 p.m.; regular evening shift—any time between 2 p.m. and midnight; regular night shift—any time around 9 p.m. and 8 a.m.; rotating shift—one that changes periodically from days to evenings or nights; split shift—one consisting of two distinct periods each day; and other shift—one consisting of varied hours. Using information from this variable, a dummy variable was created to identify whether or not fathers worked any nonstandard shift (regular dayshift = 0; evening, night, rotating, split, other = 1).

Home-Learning Stimulation. During the 24-month data collection wave, fathers were asked to report the frequency (1 = *never* to 4 = *everyday*, $\alpha = .67$) of their participation in three specific home-learning activities including: parent–child reading, singing songs, and telling stories. In this study, fathers' home-learning stimulation was the mean of these three items. An example of a specific item is "In the past week, how often have you read to your child?" Higher scores indicate more frequent home-learning stimulation.

Demographic Characteristics and Covariates. A host of child and family characteristics were included in the regression models. Child age, mothers' age, and fathers' age were continuous variables. Additionally, number of children living in the home was a continuous variable. Child gender was a categorical variable (0 = female and 1 = male). Father race was a categorical variable with African Americans coded as the reference group (i.e., 0 = Hispanic and 1 = African American). Family income was a categorical variable (0 = below the poverty line and 1 = at or above the poverty line). Fathers' marital status

was a categorical variable with values ranging from (0 = not married to 1 = married). Intimate-partner relationship quality or happiness was an ordinal variable with values ranging from (1 = *very happy* to 3 = *not too happy*). Fathers' and mothers' highest level of education were ordinal variables with values ranging from (1 = 8th grade or below through 4 = graduate degree). Finally, father-child home learning stimulation was a continuous variable.

Analytic Strategies

The ECLS-B is a restricted use data set that is based on a complex sampling design; thus, the appropriate weights were used in the analyses based on information from the ECLS-B *User's Manual* to ensure results were representative (Nord et al., 2004). In addition, one-way analyses of variances were examined to determine whether there were demographic (i.e., age, employment, family income) differences between fathers who completed the (resident father questionnaire) questionnaire and those who did not. These analyses yielded nonsignificant results for the ECLS-B's sample of ethnic minority fathers. Using guidelines from Singer and Willet (2003), a four-step approach was used to guide subsequent analyses and deal with missing data. First, using SPSS 19.0, means and standard deviations were computed for all study variables (see Table 1). Second, Little's missing completely at random (MCAR) test was used to examine missing data patterns. Little's MCAR test is implemented as a chi-square test in SPSS 19.0 with the null hypothesis that missing data is MCAR.

Third, based on nonsignificant findings from Little's MCAR test, missing data were accounted for using multiple imputation (MI) procedures. MI offers realistic modeling of linear relationships and was used to highlight the interest in the parameters available in the data. MI helps avoid biased estimated due listwise deletion or mean imputation. The MI procedure resulted in five plausible data sets that were analyzed using SPSS 19.0 software. Fourth, to examine whether fathers' work characteristics at 24 months were related to children's cognitive development in preschool, two hierarchical regression models were examined controlling for a host of demographic characteristics.

Results

Preliminary Analyses

Means, standard deviations, and bivariate correlations among the variables are presented in Table 1. On average, African American and Hispanic fathers

in this study worked more than 40 hours per week ($M = 43.79$, $SD = 15.40$) and were moderately satisfied with their jobs ($M = 2.97$, $SD = 0.98$). Furthermore, nearly 30% of the fathers in this study reported that they worked nonstandard shifts. A review of the bivariate correlations revealed that fathers who worked more hours per week were more satisfied with their jobs ($r = .08$, $p < .05$) than fathers who worked fewer hours per week. In contrast, fathers who worked standard shifts were less satisfied with their jobs ($r = -.14$, $p < .05$) than fathers who worked nonstandard shifts. Correlation analyses also revealed that fathers who worked nonstandard shifts had children with higher reading scores ($r = .12$, $p < .05$) compared with children of fathers who worked standard shifts. Finally, fathers' provision of home-learning stimulation was positively related to children's reading ($r = .06$, $p < .05$) and math ($r = .06$, $p < .05$) scores in preschool. These positive correlations encourage further analyses of predictive relations between fathers' work characteristics and children's cognitive development.

Predicting Preschool Cognitive Development

Reading Achievement. The final hierarchical regression model, including all predictors and demographic controls, accounted for 27% of the variance in children's preschool reading achievement ($F = 6.62$, $p < .01$). Child control variables were entered in Step 1 of the hierarchical regression analyses predicting children's reading achievement. Child age was positively associated with reading ($\beta = .25$, $p < .01$), but child gender was negatively associated with reading ($\beta = -.08$, $p < .01$). Therefore, older children had higher scores than younger children and females had higher scores than males. Family demographics and controls were entered into Step 2, and were found to contribute significantly to the model ($\Delta R^2F = 5.70$, $p < .01$). Specifically, father race was positively associated with children's reading with children of African American fathers demonstrating higher reading scores than children of Hispanic fathers ($\beta = .14$, $p < .01$). Fathers' and mothers' education were positively associated with reading with children of more educated parents demonstrating higher reading scores than children of less educated parents ($\beta = .20$, $p < .01$; $\beta = .15$, $p < .01$, respectively).

Family income was also positively related to reading with children living at or above the poverty line demonstrating higher reading scores than children living below the poverty line ($\beta = .10$, $p < .01$). Finally, number of children living in the home was negatively related to reading ($\beta = -.06$, $p < .05$) with children with more siblings demonstrating lower reading scores than children with fewer siblings living in the home. The addition of fathers' work characteristics in Step 3 significantly contributed to the model ($\Delta R^2F = 3.27$,

Table 2. Summary of Hierarchical Regression Analysis Predicting Preschool Reading Achievement (N = 2,340).

	B	*SE* B	β	R^2	ΔR^2
Step 1: Child characteristics				.07*	
Child age (in months)	0.54	0.04	.25**		
Child gender	−1.54	0.04	−.08**		
Step 2: Demographic characteristics				.25**	.18**
Father race	2.77	0.38	.14**		
Father education	2.54	0.27	.20**0		
Mother education	1.76	0.25	.15**		
Father age	0.04	0.03	.03		
Mother age	0.04	0.04	.03		
Marital status	0.44	0.38	.02		
Family income	1.96	0.39	.10**		
Relationship happiness	−0.54	0.32	−.03		
Home-learning environment	0.19	0.11	.03		
Number of children	−0.44	0.14	−.06*		
Step 3: Fathers' work characteristics				.27**	.02**
Fathers' total work hours (per week)	0.51	0.01	.08*		
Fathers' job satisfaction	−0.03	0.17	−.03		
Fathers' work shift	1.22	0.37	.06*		

**$p < .01$. *$p < .05$.

$p < .05$). Fathers who worked more hours per week had children with higher reading scores compared with fathers who worked fewer hours per week (β = .08, $p < .05$). Similarly, fathers who worked nonstandard shifts had children who had higher reading scores than fathers who worked standard shifts (β = .06, $p < .05$). Table 2 presents the results of the regression predicting children's preschool reading scores.

Math Achievement. The final hierarchical regression model, including all predictors and demographic controls, accounted for 25% of the variance in children's preschool math achievement ($F = 4.20, p < .05$). Child control variables were entered in Step 1 of the hierarchical regression analyses predicting children's math achievement. Child age was positively associated with math (β = .35, $p < .01$), but child gender was negatively associated with math (β = −.11, $p < .01$). Therefore, older children had higher math scores than younger children and females had higher math scores than males. Family demographics and controls were entered into Step 2, and were found to contribute significantly to the model ($\Delta R^2F = 4.89$, $p < .01$). Specifically, father race was

positively associated with children's math scores with children of African American fathers demonstrating higher math scores than children of Hispanic fathers (β = .06, $p < .05$). Fathers' education, mothers' education, and mothers' age were positively associated with math with children of more educated parents demonstrating more advanced scores than children of less educated parents and children of older mothers demonstrating higher scores than children of younger mothers (β = .16, $p < .01$; β = .12, $p < .01$; β = .05, $p < .05$, respectively).

Family income was also positively related to math with children living at or above the poverty line demonstrating higher math scores than children living below the poverty line (β = .11, $p < .01$). Finally, number of children living in the home was negatively related to math (β = −.07, $p < .05$) with children with more siblings demonstrating lower math scores than children with fewer siblings. The addition of fathers' work characteristics in Step 3 significantly contributed to the model ($\Delta R^2F = 3.27$, $p < .05$). Fathers who worked more hours per week had children with higher math scores compared with fathers who worked fewer hours per week (β = .08, $p < .05$). In contrast, fathers who were more satisfied with their jobs had children with lower math scores compared with fathers who were less satisfied with their jobs (β = −.06, $p < .05$). Table 3 presents the results of the regression predicting children's preschool math scores.

Discussion

Despite growing evidence that fathers are important figures in the ecology of young children, few studies have examined fathers' work characteristics in relation to children's cognitive development. This study represents a first step toward understanding whether and how African American and Hispanic fathers' work characteristics are related to their children's cognitive development in preschool. Fathers' work characteristics were defined as total work hours per week, job satisfaction, and work shifts. Data from this study showed that father's total work hours (per week) positively predicted children's reading and math scores. Furthermore, fathers' work shift (i.e., nonstandard) positively predicted reading, but not math. Finally, fathers' job satisfaction negatively predicted children's math achievement. These findings suggest that fathers' work characteristics are uniquely related to children's cognitive development and may be particularly important for understanding ethnic minority children's academic achievement in preschool. The aforementioned findings and their implications are discussed below.

The first key finding in this study was that fathers who worked more hours per week had children with higher reading and math scores compared with

Table 3. Summary of Hierarchical Regression Analysis Predicting Preschool Math Achievement (N = 2,340).

	B	*SE* B	β	R^2	ΔR^2
Step 1: Child characteristics				.13**	
Child age (in months)	0.75	0.04	.35**		
Child gender	−2.00	0.36	−.11**		
Step 2: Demographic characteristics				.24**	.11**
Father race	1.22	0.38	.06*		
Father education	2.01	0.27	.16**		
Mother education	1.40	0.25	.12**		
Father age	−0.04	0.03	−.03		
Mother age	0.08	0.04	.05*		
Marital status	0.18	0.38	.09		
Family income	2.28	0.39	.11**		
Relationship happiness	−0.30	0.32	−.02		
Home-learning environment	0.13	0.11	.02		
Number of children	−0.46	0.14	−.07*		
Step 3: Fathers' work characteristics				.25**	.01*
Fathers' total work hours (per week)	0.02	0.01	.04*		
Fathers' job satisfaction	−0.55	0.17	−.06*		
Fathers' work shift	0.63	0.37	.03		

**$p < .01$. *$p < .05$.

fathers who worked fewer hours per week. These findings are in line with prior research with mothers. For example, Parcel and Menaghan (1994) found that mothers' work hours were positively related to children's cognitive development. This study extends past research by linking fathers' work hours to children's cognitive development. One possible explanation for this finding is that fathers who work more hours tend to earn more money and are able to provide a better quality of life for their young children. In fact, preliminary correlations revealed that fathers in this study who worked more hours also had families with higher incomes. Because socioeconomic status is a positive and reliable predictor of children's cognitive development, it is possible that father affluence contributed to advances in children's cognitive skills. Another explanation for this finding is that mothers of children with fathers who work more hours may increase their involvement due to consistent father absence. It is likely that an increase in positive mother–child interactions led to an increase in children's cognitive capacities. It is equally likely that fathers who worked more hours per week engaged in cognitively stimulating activities that were not measured in this study. Correctly understood,

the ECLS-B collected data from fathers about their provision of three home-learning activities. This measure was included as a control in the regression models. However, a plethora of home-learning activities were not available in the ECLS-B (e.g., visiting the library). It is possible that these unmeasured activities contributed to children's cognitive development. Future research with ethnic minority families should more comprehensively examine parent–child interactions in relation to fathers' work characteristics.

The second key finding in this study was that father-reported job satisfaction was negatively related to children's math achievement, but not reading. Little to no studies that have examined predictive relations between African American and Hispanic fathers' job satisfaction and preschool children's cognitive development. However, research that has focused on White, middle-class fathers has shown that fathers' job satisfaction is positively related to the total amount of time fathers spend with their young children (Barling, 1986; Stewart & Barling, 1996). Correlational data from this study showed that fathers' job satisfaction was not related to fathers' provision of home-learning stimulation. However, after controlling demographic characteristics fathers' job satisfaction emerged as a negative predictor of children's math achievement. One possible explanation for this finding is that fathers who are more satisfied with their jobs may spend more time at work and less time at home with their young children, which could negatively influence children's math skills. Indeed, fathers in this study who were more satisfied with their jobs also worked more hours per week. It is possible that fathers who spent more time at home (due to job dissatisfaction) engaged in more numeracy-related activities (e.g., playing counting games), which may have contributed to children's math skills.

The third key finding in this study was that fathers' work shift (i.e., nonstandard) positively predicted children's reading achievement, but not math. Notably, fathers who worked nonstandard shifts also reported that they were more satisfied with their jobs. Prior research with African American fathers suggests that fathers who work nonstandard shifts tend to provide more *quality* language input during father–child book-reading interactions (Pancsofar et al., 2013). However, few studies have examined whether work shift is related to the quantity of father–child literacy interactions and no studies have examined whether work shift is directly related to children's cognitive development. Correlations from this study showed that fathers' work shift was not related to the quantity of home-learning stimulation provided by fathers. However, nonstandard shifts were a positive predictor of children's reading achievement.

These findings are inconsistent with studies that have focused exclusively on mothers. For example, Odom et al. (2013) found that African American

mothers who worked nonstandard shifts had children with less advantageous cognitive outcomes (i.e., expressive language) than mothers who worked standard shifts. Similarly, Joshi and Bogen (2007) found that children of low-income mothers who worked nonstandard shifts had children with less advantageous behavioral outcomes. Findings from this study suggest that relations between parents' work shift and children's cognitive development may differ as a function of parent gender. Notably, both of the aforementioned studies focused on low-income mothers, whereas this study focused on socioeconomically diverse fathers. One possible explanation for the incongruent findings is that fathers in this study who worked nonstandard shifts had higher incomes than fathers who worked standard shifts. Thus, socioeconomic status may explain advances in their children's reading scores. Another possible explanation for these findings is that fathers in this study may have worked nonstandard shifts by choice, which would explain why fathers who worked nonstandard shifts also reported greater job satisfaction. More research is needed to fully understand the implications of these findings.

Finally, it is important to note that several demographic factors (e.g., father education, mother education, and family income) were positively related to children's reading and math scores. Most fundamentally, children of mothers and fathers who reported that they had more years of formal education had more advanced reading and math skills than children with less educated parents. These findings are consistent with previous research that has linked parents' education to cognitive development in large samples of older children (e.g., Davis-Kean, 2005).

Limitations and Future Directions

This study provides valuable information about the direct relations between fathers' work characteristics and child development in ethnic minority families. However, some limitations require mention. First, the current study does not include qualitative data about specific father–child interactions and the ECLS-B collected very limited information on fathers' provision of home-learning stimulation. Thus, this study was unable to comprehensively examine home-learning stimulation in relation to father' work characteristics and child development. Second, this study examined relations between fathers' work characteristics at 24 months and children's cognitive development in preschool. As a result, we do not know whether fathers' work characteristics remain significant over time. Longitudinal research is needed to understand if these relations persist during the transition to middle school and high school. Third, prior work suggests that ethnic minority fathers are more likely than Caucasian fathers to experience less optimal work environments, which

often leads to more stress (Pancsofar et al., 2013) and less positive fathering behaviors (Baker, 2014c). Therefore, more research is needed on the possible relations between fathers' psychological functioning, work characteristics, and child development in ethnic minority families. Fourth, this study did not include data on mothers' work characteristics or parenting practices. It is possible that these aspects of the family also influence child development. Future research should include more comprehensive data from fathers, mothers, grandparents, and so on in an effort to understand child development in diverse contexts. Such contributions to the literature are critical to informing effective parent involvement programs.

Implications

Changes in the American economy have led to more mothers entering the work force than ever before. As a result, more families depend on fathers for child care while mothers are at work. The changes in the landscape of American families highlight the need for policy initiatives aimed at supporting employed fathers in their pursuit of the most optimal employment characteristics and the most optimal parenting strategies. Data from this study suggest that programs that increase work shift flexibility may be particularly beneficial for ethnic minority fathers with young children. In addition, vocational training programs that assist ethnic minority men in findings jobs that provide more work hours and more financial compensation may have lasting benefits for fathers and their young children. One of the primary components of these kinds of programs could be to help ethnic minority men gain more education and training, which is likely to increase the diversity and longevity of their employment opportunities.

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