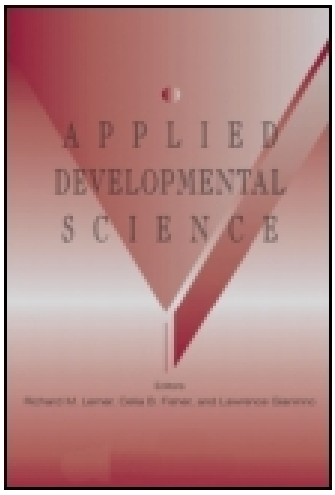

Applied Developmental Science
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/hads20

Fathers' and Mothers' Home Literacy Involvement and Children's Cognitive and Social Emotional Development: Implications for Family Literacy Programs

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Published online: 25 Oct 2013.

To cite this article: Claire E. Baker (2013) Fathers' and Mothers' Home Literacy Involvement and Children's Cognitive and Social Emotional Development: Implications for Family Literacy Programs, Applied Developmental Science, 17:4, 184-197, DOI: 10.1080/10888691.2013.836034

To link to this article: http://dx.doi.org/10.1080/10888691.2013.836034

APPLIED DEVELOPMENTAL SCIENCE, *17*(4), 184–197, 2013

ISSN: 1088-8691 print/1532-480X online
DOI: 10.1080/10888691.2013.836034

Routledge
Taylor & Francis Group

Fathers' and Mothers' Home Literacy Involvement and Children's Cognitive and Social Emotional Development: Implications for Family Literacy Programs

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The relations between fathers' and mothers' home literacy involvement at 24 months and children's cognitive and social emotional development in preschool were examined using a large sample of African American and Caucasian families ($N = 5190$) from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B). Hierarchical regression analyses revealed that both fathers' and mothers' home literacy involvement positively contributed to children's cognitive and social emotional development. Specifically, fathers and mothers who participated in more frequent home literacy involvement (e.g., shared book reading) had children with better reading, math, and social emotional outcomes (i.e., sustained attention and fewer negative behaviors) in preschool. Findings suggest that increasing family literacy involvement can have positive benefits for children's cognitive and social emotional skills during the developmentally important early childhood years.

Parenting is a dynamic, multi-dimensional construct that has direct links to children's development (Bornstein, 1986, 2002, 2006). Developmental research suggests that parenting may be particularly important during the first five years of life when children are rapidly acquiring the cognitive and social emotional skills that contribute to early school success (Brooks-Gunn & Markham, 2005; Gershoff, Raver, Aber, & Lennon, 2007; Downer, Campos, McWayne, & Gartner, 2008; Lamb, 2004). One particularly important area of parenting that has been linked to children's development is mothers' participation in home literacy activities such as shared book reading (Sénéchal & LeFevre, 2002). In fact, research has demonstrated that mothers who engage in more frequent home literacy involvement have children with more advanced language, literacy, and social emotional skills during early childhood (Baker, Cameron, Rimm-Kaufman, & Grissmer, 2012; Brooks-Gunn & Markham, 2005).

Although the majority of early childhood research has focused on just one parent (i.e., mothers), researchers have increasingly recognized fathers as key figures in the ecology of children's development (Cabrera & Tamis-LeMonda, 2012; Duursma, Pan, & Raikes, 2008; Pancsofar & Vernon-Feagans, 2006; Pancsofar, Vernon-Feagans, & the Family Life Project Investigators, 2010). One cross cultural study linked fathers' participation in shared book reading to children's cognitive development at 36 months (Duursma et al., 2008). More recently, Baker (in press) used a large sample of African American fathers to link fathers' home literacy involvement (e.g., shared book reading) to children's reading and math scores in preschool. While studies show that fathers' and mothers' home literacy involvement are *independently* related to children's cognitive development, few studies have included both mothers and fathers. Even fewer studies have examined fathers' and mothers' home literacy involvement in relation to multiple dimensions of child development (e.g., social emotional development).

Researchers in the area of social emotional development have long emphasized the role of parents in promoting healthy social emotional skills during early childhood (Gershoff et al., 2007; Raver & Knitzer, 2002). Scholars suggest that parent's function as the primary agents of socialization during early childhood and early

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parent-child literacy interactions can increase children's ability to pay attention and follow directions. In a nationally representative study of African American, Caucasian, and Hispanic mothers, Gershoff et al. (2007) found that mother-reported participation in home literacy activities was positively related to children's social competence and interpersonal skills in kindergarten. This study examined whether and how fathers' and mothers' home literacy involvement (e.g., shared book reading) may be related to children's cognitive and social emotional development in preschool.

Shared book reading is a key context for young children's early language and literacy development (Raikes et al., 2006; Sénéchal, 2006). Studies suggest that parent-child reading interactions provide guided learning opportunities for young children that are not apparent in other parent-child activities such as play or caregiving (Lonigan, 2004; Sénéchal, 2006). Parents that provide appropriate scaffolding and work within the child's zone of proximal development during shared book reading often enhance children's capacity for learning and development (Bronfenbrenner, 1979, 1989; Vygotsky, 1978). Thus, the developmental value of this context appears to rest on shared book reading as a didactic proximal process, in which parent's present information that is just beyond children's level of functioning. As a result, children internalize language, behaviors, and social skills that can have a positive influence on their cognitive and social emotional development.

This study used a large sample of African American and Caucasian families to examine the relation between fathers' and mothers' home literacy involvement and children's cognitive and social emotional development. Because much of the previous research has focused on one aspect of home literacy involvement (i.e., shared book reading) as a mechanism for enhancing children's emergent literacy skills, this study extends previous research through a focus on four aspects of home literacy involvement including: shared book reading, telling stories, singing songs, and providing educational materials in the home (i.e., children's books). Studies that have focused exclusively on mothers have shown that these specific aspects of home literacy are important predictors of children's early reading and math achievement (Brooks-Gunn & Markham, 2005; Farver, Xu, Eppe, & Lonigan, 2006; Lonigan, 2004). Fewer studies have examined home literacy in relation to children's social emotional functioning. However, those that have been conducted have found that mothers' home literacy involvement is positively related to children's social emotional development (e.g., Baker et al., 2012; Farver et al., 2006). Taken together, these studies point to the importance of examining fathers' and mothers' home literacy involvement as potential contributors to children's cognitive and social emotional development.

Theoretical and Empirical Foundations

Bronfenbrenner's ecological theory posits that the adults in the child's proximal environment likely have the most influence on the child's cognitive and social emotional development. Particularly important are the close proximal processes or relationships within these contexts that are postulated to drive the development of the child (Bronfenbrenner, 1979, 1989). Research that has focused on parenting has provided strong evidence that the family represents the primary context for developing early cognitive and social emotional skills (Bornstein, 2002, 2006; Collins, Maccoby, Steinberg, Heterington, & Bornstein, 2000). Thus, parent-reported activities, such as shared book reading, telling stories, and singing songs provides valuable information about parent-child guided learning interactions that likely contribute to multiple dimensions of child development. Indeed, early childhood literature has shown that cognitively stimulating parent-child interactions promote reading, math, and social emotional skills prior to kindergarten (Christian, Morrison, & Bryant, 1998). However, the majority of these studies have focused on mothers necessitating more research that examines the role that fathers play in promoting early cognitive and social emotional development.

This study is also guided by previous emergent literacy research that supports the salience of reading to children as a primary way that mothers can promote emergent literacy (e.g., Whitehurst & Lonigan, 1998; Raikes et al., 2006). *Emergent literacy* is a gradual process that begins at birth and continues until children can formally read and write (Lonigan, 2004). A key component of emergent literacy is the interdependence of several parts, namely language, speaking, listening, reading, and writing. Young children first learn literacy through active engagement with books in their homes (Lonigan, 2004) and emergent literacy skills in preschool and kindergarten collectively explain more than one-half of the variance in children's first grade reading ability (Storch & Whitehurst, 2002).

Studies that have included African American and Caucasian children have shown that specific home literacy activities (e.g., shared book reading frequency) are significantly and positively related to early reading and math achievement (Brooks-Gunn & Markham, 2005). Fewer studies have focused specifically on early parenting in relation to preschool math and social emotional development. However, there is evidence that strong literacy skills serve as a foundation for learning in other academic areas (e.g., math) and children with better cognitive skills tend to have better social emotional skills as well (Hindman & Morrison, 2012; McClelland, Cameron, Connor, Farris, Jewkes, & Morrison, 2007; Cameron-Ponitz & Rimm-Kaufman, 2011). In summary, the present study was guided by ecological theory and previous

emergent literacy research. This approach provided a useful foundation for studying the ecology of two-parent families in relation to children's cognitive and social emotional development.

Fathers' and Mothers' Home Literacy Involvement and Children's Cognitive Development

The first five years of children's lives are characterized by rapid advances in all areas of cognitive development, including the rapid acquisition of language, literacy, and math skills (Duncan et al., 2007; Hoff, 2006; Shonkoff & Phillips, 2000). Cognitive stimulation in the form of parent-child reading, telling stories, and singing songs, as well as providing an ample amount of children's books in the home, have been linked to children's later language and literacy abilities (Hart & Risley, 1995; Hoff, 2003; Snow, 1972; Senechal & LeFevre, 2002; Farver et al., 2006). For example, in a meta-analysis, Bus, van IJzendoorn, and Pellegrini (1995) linked mother–child reading frequency to children's language skills, emergent literacy, and reading achievement. In a small, longitudinal study of middle and upper class, Caucasian children and their mothers, Sénéchal and LeFevre (2002) found that children's exposure to books was positively related to the development of vocabulary and listening comprehension skills, and that these language skills were directly related to children's reading achievement in 3rd grade.

More recently, Sy and Schulenberg (2005) used data from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K) to link mother-reported home literacy involvement (i.e., telling stories and shared book reading) to Asian and Caucasian children's kindergarten reading and math outcomes. In their study, mothers who engaged in more frequent shared book reading and telling stories had children with more advanced reading and math achievement in kindergarten. Taken together, evidence from prior research suggests that shared book reading frequency is positively related to children's cognitive development most likely because it provides valuable parent-child language interactions. Therefore, it stands to reason that other parent-child language interactions (e.g., telling stories and singing songs) may have positive cognitive benefits as well.

There is a paucity of empirical research that has included fathers; however, data from a few studies have demonstrated that fathers' home literacy involvement is positively related to children's early literacy, reading, and math achievement (Baker, in press; Pancsofar &Vernon-Feagans, 2006; Duursma et al., 2008). Duursma et al. (2008) conducted a cross-cultural study of low-income, white, African American, and Hispanic fathers' reported book reading behaviors. They found that although fathers in their study reported reading less often than mothers, almost half of fathers read to their children on a frequent basis. Furthermore, father-reported book reading frequency predicted children's later picture vocabulary scores, but only for fathers who had at least a high school education.

In a large, nationally representative study of socioeconomically diverse African American fathers, Baker (in press) found that African American fathers who participated in more frequent home literacy practices (i.e., shared book reading, telling stories, singing songs) and provided more children's books in their homes had children with higher reading and math scores in preschool compared to African American fathers who participated in less frequent home literacy activities and provided fewer children's books in their homes.

Notably, these studies linking fathers' to children's development have generally failed to consider the concurrent influence of mothers' involvement. This approach has led to gaps in the understanding of family processes in two-parent families. It is equally notable that prior home literacy research has not generally involved large, nationally representative samples of both African American and Caucasian families. Given that mothers and fathers are usually the first teachers of their young children, it seems essential to consider the contribution of both parents to child development. The present study extends previous research by investigating fathers' and mothers' home literacy involvement, defined in this study as father-mother-child dyadic shared book reading, telling stories, and singing songs, as well as number of children's books in the home, in relation to children's cognitive development.

Fathers' and Mothers' Home Literacy Involvement and Children's Social Emotional Development

Early childhood research supports that salience of home literacy involvement to children's social emotional development (Gershoff et al., 2007). Social emotional development reflects the capacity of young children to demonstrate positive emotions during social interactions, regulate positive and negative emotions, and form secure relationships with parents, teachers, and peers (Denham, 2006; Raver, 2002). Emergent literacy, language and reading competence in young children have been linked to better social skills and emotional adjustment during early childhood (Baker et al., 2012; Farver et al., 2006; Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005). The consensus in the literature is that children who are able to use language to communicate their feelings may be better able to negotiate social situations.

Research that has examined home literacy involvement in relation to children's social emotional development has linked mothers' home literacy involvement to children's social emotional skills. Farver et al. (2006) used

a small sample of low-income, Latino preschoolers to examine the relation between mother-reported home literacy involvement and teacher-reported social emotional functioning. They found that mothers' direct involvement in literacy-related activities in the home (e.g., shared book reading) was directly related to children's social skills.

Similarly, Foster et al. (2005) used a small sample of African American and Caucasian preschool children to link mother-reported home literacy involvement (e.g., shared book reading and providing children's books in the home) to children's emergent literacy and teacher-rated social emotional development in preschool. Mothers in their study who engaged in more frequent home literacy involvement had children with better developed emergent literacy and social emotional skills. Gershoff et al. (2007) used data from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K) to examine the relation between multiple dimensions of parenting and African American, Hispanic, and Caucasian children's academic and social emotional outcomes. They found that mother-reported participation in cognitive stimulation (e.g., shared book reading) was positively related to children's social emotional development and interpersonal skills in kindergarten.

In a large sample of African American boys and their mothers, Baker et al. (2012) found that African American mothers who participated in more frequent shared book reading and provided more children's books in their home had children with more positive teacher-ratings of social emotional development in kindergarten compared to mothers who participated in fewer home literacy activities and provided fewer children's books in their home. These studies suggest that parental home literacy involvement is related to children's social emotional development. However, none of these studies included fathers.

The limited research that has included fathers has shown that there is some evidence that fathers' participation in home literacy is also related to children's social emotional development. Downer and Mendez (2005) used a small sample of low-income African American fathers to investigate the relation between father involvement and children's preschool outcomes. They found that father-reported involvement in home-based educational activities (e.g., parent-child reading, telling stories) was positively related to teacher-ratings of children's social-emotional development. This limited research suggests that fathers' home literacy involvement may be related to children's social emotional development.

Therefore, in addition to examining the contribution of mothers' and fathers' home literacy involvement to children's cognitive development, this study explored whether home literacy involvement may also be related to children's social emotional development. Consistent with previous parenting research (e.g., Landry, Smith, Swank, & Guttentag, 2008), this study investigated social emotional development in three areas including: children's engagement of parent, children's sustained attention during play, and children's negativity towards parent.

Demographic Characteristics

Ecological theory posits that multiple demographic characteristics influence parenting and child development (Bronfenbrenner, 1986). Demographic characteristics such as family income and parental education have been consistently linked to parenting and child development (McLoyd, 1998). Research suggests that older, more affluent, highly educated mothers and fathers are more likely to engage in positive parenting practices that enhance children's developmental outcomes (Baker et al., 2012; Brooks-Gunn & Markham, 2005; Pancsofar et al., 2010; Mollborn & Lovegrove, 2011). Using a large sample of African American and Caucasian fathers from low-wealth communities, Pancsofar et al. (2010) found that both mothers and fathers education were positively related to children's language and literacy development.

There is some evidence that specific parenting practices and child outcomes may differ as a function of parent race. Studies controlling for maternal race have found that racial differences in kindergarten reading and math achievement are largely related to differences in maternal home literacy involvement (e.g., Brooks-Gunn & Markham, 2005). However, there are very few studies that have controlled for paternal race in an effort to determine whether child outcomes differ as a function of paternal race. Finally, there is some evidence that fathers' job hours are related to father-child interactions and child development. Yeung, Sandberg, Davis-Kean, and Hofferth (2001) found that fathers' work hours were negatively associated with the time they spend interacting with their young children during the week. Another study of African American fathers found that African American fathers work characteristics (e.g., shifts and job flexibility) were related to their vocabulary to their children during shared book reading. These findings suggest that understanding characteristics of father employment may be particularly important for understanding fathering and child development in ethnically diverse samples.

Central to the positive development of all children is research that examines the diversity of factors that can attenuate or strengthen the capacity of fathers to positively engage with their young children; this kind of research has implications for public policies that seek to enhance father involvement (Cabrera & Peters, 2000). Therefore, the present study controlled eight demographic characteristics including: mothers' age, fathers' age, mothers' education, fathers' education, fathers' work hours, fathers' race, parents' marital status, and family income.

The Present Study

Despite growing theoretical and empirical support for the importance of fathers to children's development, few studies have examined the concurrent effects of mothers' and fathers' parenting practices. As mentioned previously, the studies linking fathers' home literacy practices to child development have generally excluded the influence of mothers' home literacy involvement. Young children in two-parent families often experience their parents as partners. Thus, home environments that include two parents are often characterized by parent-child interactions that reflect the contributions of both parents. These environments stand in contrast to single-parent families where children are only privy to the knowledge, resources, and capacities of one parent.

Therefore, the primary advantage of a concurrent study of both parents is that it should allow for a richer understanding of the ecology of two-parent families and their subsequent influence on children's development. This study used a large sample of African American and Caucasian families to investigate the extent to which mothers' and fathers' home literacy involvement were related to children's preschool cognitive (i.e., reading and math) and social emotional (engagement, attention and negative behaviors) development after controlling for a host of child and family characteristics.

Two specific research questions were addressed. First, what is the contribution of mothers' and fathers' home literacy involvement at 24 months to children's cognitive development at pre-K? Second, what is the contribution of mothers' and fathers' home literacy involvement at 24 months to children's social emotional development at pre-K? It was hypothesized that both mothers' and fathers' home literacy involvement would positively predict children's cognitive and social emotional development. Specifically, mothers' and fathers' in this study who reported more frequent home literacy involvement and provided more educational materials in their homes (i.e., children's books) would have children with better cognitive development (defined in this study as reading and math achievement) and social emotional development (defined in this study as engagement, attention, and negative behaviors) compared to mothers and fathers who reported less home literacy involvement and provided fewer children's books in the home.

METHOD

Sample and Design

Data for the current study were from the Early Childhood Longitudinal Study- Birth Cohort (ECLS-B) restricted use data file. The ECLS–B is a nationally representative probability sample of 10,700 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, (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 study oversampled Asian, American Indian, Alaska Native, twins, and low/very low birth weight children. The sample was selected using a clustered, list frame sampling design, which was made up of registered births in the National Center for Health Statistics (NCHS) vital statistics system. Births were sampled from 96 core primary sampling units (PSUs; counties and county groups) representing all infants born in the United States in the year 2001. The ECLS-B collected data from mothers and fathers through videotaped observations, computer-assisted questionnaires, and self-administered questionnaires during home visits. Response rates were 74% at 9 months, 69% at 24 months, and 63% at 4 years old.

Data for the present study were obtained from the parent interview completed by biological mothers at 24 months, the resident father questionnaire (RFQ) completed at 24 months, and direct child assessments and direct observations collected during home visits when children were approximately 4 years old (i.e., pre-K). Although this study included information from mothers, the primary goal of this study was to investigate preschool cognitive and social emotional development among children of African American and Caucasian fathers. Therefore, the sample consists of ($N = 5190$) children who had fathers who reported that their race/ethnicity was Black or African American and White or Caucasian. The sample size was rounded to the nearest 10 due to restricted license requirements.

Data for the present study were limited to co-resident fathers. The majority of African American and Caucasian fathers in this study were *biological* co-resident fathers (70%) others were step-fathers, mothers' partners, and other men acting as father figures who completed the father questionnaire. The average age of fathers in this study was 33.84 (standard deviation = 6.90). The average age of mothers in this study was 31.09 (standard deviation = 6.25). The average age of children in this study was 52 months at the time of pre-K cognitive and social emotional assessments (standard deviation = 4.04 months). Table 1 presents descriptive information for all variables in the study.

Measures

Dependent Variables: Early Reading and Math

Preschool reading and math scores were measured using individually administered tests that lasted approximately 35 minutes for each child. The final content of the

TABLE 1
Bivariate Correlations, Means, and Standard Deviations for Study Variables ($N = 5190$)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*Mean (SD)*
1. Child gender	1.00																	1.49 (.50)
2. Child age	–.02	1.00																52.56 (4.04)
3. Mother age	.01	–.01	1.00															31.09 (6.25)
4. Father age	–.01	**–.04**	**.75**	1.00														33.84 (6.90)
5. Mother education	.01	**–.04**	**.40**	**.26**	1.00													4.85 (1.82)
6. Father education	–.02	.01	**.36**	**.28**	**.60**	1.00												4.84 (1.90)
7. Father work hours	.00	.01	.02	.02	**–.07**	**–.10**	1.00											1.24 (.71)
8. Father race	.01	.01	**–.09**	**–.03**	**–.12**	**–.14**	**.08**	1.00										.16 (.36)
9. Marital status	–.01	–.02	**.23**	**.16**	**.30**	**.27**	**–.16**	**–.23**	1.00									.84 (.36)
10. Family income	–.01	–.02	**.44**	**.32**	**.55**	**.49**	**–.28**	**–.21**	**.38**	1.00								8.63 (3.01)
11. Mother literacy	**.06**	–.03	**.13**	**.07**	**.26**	**.23**	**–.06**	**–.18**	**.14**	**.23**	1.00							10.50 (1.96)
12. Father literacy	**.05**	–.01	**.04**	.09	**.19**	**.19**	**.06**	**–.10**	.02	**.10**	**.34**	1.00						8.41 (2.17)
13. Reading	**.07**	**.30**	**.18**	**.11**	**.35**	**.33**	**–.08**	–.09	**.16**	**.30**	**.22**	**.21**	1.00					26.62 (10.19)
14. Math	**.06**	**.35**	**.19**	**.11**	**.35**	**.33**	**–.08**	**–.12**	**.18**	**.32**	**.19**	**.17**	**.76**	1.00				30.27 (9.54)
15. Engagement	**.11**	**.08**	**.07**	.03	**.20**	**.17**	**–.05**	**–.13**	**.11**	**.20**	**.18**	**.11**	**.26**	**.28**	1.00			4.65 (1.01)
16. Attention	**.13**	**.06**	**.06**	**.03**	**.18**	**.15**	–.02	**–.11**	**.11**	**.17**	**.17**	**.12**	**.22**	**.24**	**.73**	1.00		4.53 (1.12)
17. Negative behavior	**–.06**	.01	**–.05**	–.02	**–.09**	**–.09**	.03	**.10**	**–.06**	**–.09**	**–.11**	**–.08**	**–.10**	**–.11**	**–.38**	**–.39**	1.00	1.33 (.74)

Note. Estimates in boldface are significant at $p < .05$.

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 was comprised of items assessing children's basic skills (80%) and vocabulary (20%). The reading test battery assessed children's reading and emergent literacy development in six specific areas: (1) English language skills/oral language, (2) phonological awareness, (3) letter and word sound knowledge, (4) print conventions, (5) word recognition, and (6) vocabulary (both receptive and expressive). The reliability estimates for the reading test scores were .95.

The math test battery assessed children's math development in four specific areas: (1) number sense, properties, and operations skills, which refers to children's understanding of numbers, cardinality, ordinality, quantity, operations, estimation, and their application, 74% of the math test consisted of these types of items; (2) measurement, which involved understanding the attributes of objects (e.g., length and volume) and the ability to compare objects by their attributes; 5% of the math items involved measurement; (3) geometry and spatial sense that included simple identification of geometric shapes to transformations and combinations of those shapes. Fourteen percent of the math items involved geometry; and (4) patterns, algebra, and functions, which required children to identify, duplicate and extend patterns that may predict 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.

Social Emotional Development

Three dimensions of children's social emotional development were assessed via direct observations when children were 24 months old: child's engagement of parent, child's sustained attention during play, and child's negativity towards parent. The aforementioned domains of social emotional development were measured using the Two Bags Task, which is a modified version of the Three Bags task used in the Early Head Start Research and Evaluation Study (Nord et al., 2004). The Two Bags Task is a 10-minute semi-structured dyadic interaction between mothers and their children. During the Two Bags Task, mothers were asked to play with two sets of toys, each placed in an individual numbered bag. Mothers were instructed to play with the materials in the bags in any manner they preferred, but to play with the toys in numerical order.

During the 24-month data collection the first bag contained a children's book entitled "Good Night, Gorilla" written by P. Rathmann (1994), the second bag contained a set of toy dishes. The 10-minute dyadic interactions were videotaped for each mother-child dyad and coded by trained coders. Each coder assessed the quantity and quality of children's behaviors (i.e., engagement, sustained attention and negativity towards parent) using a 7-point Likert rating scale. Higher score on the first two dimensions reflect consistent engagement, sustained interaction, and focused involvement with their mother; higher scores on the latter dimension

reflect consistent negativity while interacting with their mother.

Independent Variables: Fathers' Home Literacy Involvement

During the 24 month data collection wave, fathers were asked to report the frequency (1 = never to 4 = everyday, $\alpha = .55$) of their participation in three home literacy activities including: parent-child reading, singing songs, and telling stories. Data were also collected on the provision of educational materials in the home (i.e., number of children's books in the home). Number of children's books was recoded so that fathers with (1–10) books in their homes received a score of 1, fathers with (11–20) books in their homes received a 2, fathers with (21–30) books in their homes received a 3, and fathers with 31 or more books in their homes received a 4. Thus, in the present study, *fathers' home literacy involvement* was the mean of all four home literacy 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 literacy involvement and more provision of literacy materials.

Mothers' Home Literacy Involvement

During the 24 month data collection wave, mothers were asked to report the frequency (1 = never to 4 = everyday, $\alpha = .61$) of their participation in three home literacy activities including: parent-child reading, singing songs, and telling stories. Data were also collected on the provision of educational materials in the home (i.e., number of children's books in the home). Number of children's books was recoded so that mothers with (1–10) books in their homes received a score of 1, mothers with (11–20) books in their homes received a 2, mothers with (21–30) books in their homes received a 3, and mothers with 31 or more books in their homes received a 4. Thus, in the present study, *mothers' home literacy involvement* was the mean of all four home literacy 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 literacy involvement and more provision of literacy materials.

Demographic Characteristics and Covariates

Following guidelines from previous parenting research, ten demographic controls were included in the regression models. Fathers' and mothers' highest level of education was an ordinal variable with values ranging from (1 = 8th grade or below through 9 = graduate degree). Family income, mother age, father age, and child age were continuous variables. Child gender was a categorical variable (1 = male and 2 = female). Race of father was a dummy-coded variable race (1 = African American and 0 = White) and marital status was a dummy-coded variable with values ranging from (0 = married to 1 = not married). Fathers' number of work hours was ordinal variables with values ranging from (1 = zero hours per week to 4 = thirty-five hours or more per week).

Analytic Strategy

The ECLS-B restricted use data set is based on a complex sampling design, thus, the appropriate weights were used in the following analyses based on information from the *ECLS-B User's Manual* to ensure results were representative (Nord et al., 2004). Using guidelines from Peugh and Enders (2004), a four-step approach was used to select the analytic sample, deal with missing data, and choose the appropriate analyses. First, only child, mother, and father data collected during the first three waves of data collection were used in the analyses. Second, Little's MCAR test was used to examine missing data patterns. Little's MCAR test is implemented as a chi-squared test in SPSS 19.0 with the null hypothesis that missing data is MCAR (Little & Rubin, 1987).

Third, based on non-significant findings from Little's MCAR test, which revealed that missing data in the sample ranged from 1% to 6%, missing data were accounted for using Multiple Imputation (MI) procedures in SPSS 19.0. SPSS 19.0 uses full conditional specification to impute each variable with missing values then uses the imputed values in the imputation of other variables. Multiple Imputation has been shown to be superior to other missing data techniques (e.g., mean imputation, listwise and pairwise deletion) in terms of aspects of model estimation, bias, and efficiency (Peugh & Enders, 2004; Enders, 2001; Singer & Willet, 2003). The Multiple Imputation procedure resulted in five plausible data sets that were analyzed using SPSS 19.0 software. Fourth, to determine whether fathers' and mothers' home literacy involvement predicted children's reading, math, and social emotional development above and beyond demographic characteristics, five hierarchical regression models were examined controlling for key child, family, and demographic characteristics in SPSS 19.0.

RESULTS

Preliminary Analyses

Descriptive statistics and correlations among the predictor and outcome variables were first examined. Table 1 shows correlations among background variables, predictor variables, and children's cognitive and social emotional development. Some bivariate correlations merit

mention. First, mothers' and fathers' home literacy involvement were positively related to children's reading ($r = .22$, $p < .05$; $r = .21$, $p < .05$, respectively) and math achievement ($r = .19$, $p < .05$; $r = .17$, $p < .05$, respectively). Second, mothers' and fathers' home literacy involvement were positively related to children's social emotional development, namely engagement ($r = .18$, $p < .05$; $r = .11$, $p < .05$, respectively) and attention ($r = .17$, $p < .05$; $r = .12$, $p < .05$, respectively). Third, mothers' and fathers' education were positively related to children's reading ($r = .35$, $p < .05$; $r = .33$, $p < .05$, respectively) and math achievement ($r = .35$, $p < .05$; $r = .33$, $p < .05$, respectively). Fourth, mothers' and fathers' education were positively to children's social emotional outcomes, namely engagement ($r = .20$, $p < .05$; $r = .18$, $p < .05$, respectively) and attention ($r = .17$, $p < .05$; $r = .15$, $p < .05$, respectively). These positive correlations encourage further analyses to address whether fathers' and mothers' home literacy involvement contribute to children's early cognitive and social emotional development above and beyond the contribution of family, child and demographic characteristics. Table 1 presents correlations, means, and standard deviations for all study variables.

Predicting Early Academic Achievement

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. Child control variables were entered in Step 1 of the hierarchical regression analysis predicting children's reading achievement. Older children ($\beta = .29$, $p < 0.01$) who were also female ($\beta = .07$, $p < 0.01$) had more advanced reading scores at pre-K than younger children who were male. Father and mother demographic characteristics were entered into Step 2, and significantly contributed to the model. Specifically, children with more educated mothers ($\beta = .19$, $p < 0.01$) and fathers ($\beta = .18$, $p < 0.01$) with higher family incomes ($\beta = .11$, $p < 0.01$) had higher reading scores than children with less educated and less affluent parents. The addition of mothers' and fathers' home literacy involvement in Step 3 significantly contributed to the model. Mothers' ($\beta = .10$, $p < 0.01$) and fathers' ($\beta = .10$, $p < 0.01$) who engaged in more frequent home literacy involvement and provided more children's books in their homes at 24 months had children with higher reading scores at pre-K compared to children from families where parents were less involved in home literacy activities and provided fewer children's books. Table 2 presents the results of the hierarchical regression analysis predicting pre-K reading achievement.

Math Achievement

The final hierarchical regression model, including all predictors and demographic controls, accounted for 30% of the variance in children's preschool math achievement. Child control variables were entered in Step 1 of the hierarchical regression analysis predicting children's math achievement. Older children ($\beta = .36$, $p < 0.01$) who were also female ($\beta = .06$, $p < 0.01$) had more advanced math scores at pre-K than younger children who were male. Father and mother demographic characteristics were entered into Step 2, and significantly contributed to the model. Specifically, children with more educated mothers ($\beta = .17$, $p < 0.01$) and fathers ($\beta = .16$, $p < 0.01$) with higher family incomes ($\beta = .14$, $p < 0.01$) had higher math scores than children with less educated and less affluent

TABLE 2
Summary of Hierarchical Regression Analyses Predicting Preschool Cognitive Development

	Reading					*Math*				
	B	*SE B*	*β*	R^2	$R^2\Delta$	*B*	*SE B*	*β*	R^2	$R^2\Delta$
Step 1: Child characteristics				.09					.12	
Child gender	1.51	.35	.07**			1.07	.32	.06**		
Child age	.75	.05	.29**			.83	.04	.36**		
Step 2: Mother and Father demographics				.25	.16				.28	.17
Mother age	.00	.04	.00			.08	.04	.05*		
Father age	−.05	.04	−.03			−.09	.04	−.07*		
Mother education	1.12	.12	.19**			.87	.11	.17**		
Father education	1.00	.11	.18**			.82	.09	.16**		
Father work hours	−.27	.25	−.02			−.29	.22	−.02		
Father race	−.85	.54	−.03			−1.93	.48	−.06**		
Marital status	.41	.61	.01			.32	.54	.01		
Family income	.41	.08	.11**			.50	.07	.14**		
Step3: Parents' home literacy involvement				.27	.02				.30	.02
Mother home literacy	.51	.09	.10**			.35	.08	.07**		
Father home literacy	.47	.08	.10**			.29	.07	.07**		

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

parents. Further, children with Caucasian fathers ($\beta = -.06$, $p < 0.01$) who also had older mothers ($\beta = .05$, $p < 0.05$) had higher reading scores than children with African American fathers and younger mothers. In contrast, children with younger fathers had higher reading scores than children with older fathers ($\beta = -.07$, $p < 0.05$). The addition of mothers' and fathers' home literacy involvement in Step 3 significantly contributed to the model. Mothers' ($\beta = .07$, $p < 0.01$) and fathers' ($\beta = .07$, $p < 0.01$) who engaged in more frequent home literacy involvement and provided more children's books in their homes at 24 months had children with higher math scores at pre-K compared to children from families where parents were less involved in home literacy activities and provided fewer children's books in the home. Table 2 presents the results of the hierarchical regression analysis predicting pre-K math achievement.

Predicting Early Social Emotional Development

Engagement

The final hierarchical regression model, including all predictors and demographic controls, accounted for 8% of the variance in children's preschool engagement scores. Child control variables were entered in Step 1 of the hierarchical regression analysis. Older children ($\beta = .09$, $p < 0.01$) who were also female ($\beta = .10$, $p < 0.01$) demonstrated more positive engagement with their mothers than younger children who were male. Father and mother demographic characteristics were entered into Step 2, and significantly contributed to the model. Specifically, children with more educated mothers ($\beta = .12$, $p < 0.01$), higher family incomes ($\beta = .10$, $p < 0.01$) and Caucasian fathers ($\beta = -.09$, $p < 0.01$) had more positive engagement with their mothers compared to children with less educated mothers, lower family incomes who had African American fathers. Further, children with younger mothers had higher engagement scores than children with older mothers ($\beta = -.06$, $p < 0.05$). In Step 3, mothers' but not fathers' home literacy involvement significantly contributed to the model. Specifically, mothers ($\beta = .09$, $p < 0.01$) who engaged in more frequent home literacy involvement and provided more children's books in their homes at 24 months had children with higher engagement scores at pre-K compared to children from families where mothers were less involved in home literacy activities and provided fewer books. Table 3 presents the results of the hierarchical regression analysis predicting pre-K engagement scores.

Attention

The final hierarchical regression model, including all predictors and demographic controls, accounted for 7% of the variance in children's preschool attention scores. Child control variables were entered in Step 1 of the hierarchical regression analysis. Older children ($\beta = .13$, $p < 0.01$) who were also female ($\beta = .07$, $p < 0.01$) had more positive attention scores at pre-K than younger children who were male. Father and mother demographic characteristics were entered into Step 2, and significantly contributed to the model. Specifically, children with more educated mothers ($\beta = .09$, $p < 0.01$) and fathers ($\beta = .06$, $p < 0.05$) with higher family incomes ($\beta = .08$, $p < 0.05$) had more positive attention scores than children with less educated and less affluent parents. Further, children with Caucasian fathers ($\beta = -.07$, $p < 0.01$) who worked more hours at their jobs ($\beta = .06$, $p < 0.05$) had

TABLE 3
Summary of Hierarchical Regression Analysis Predicting Preschool Social Emotional Development

	Engagement					*Attention*					*Negative Behavior*				
	B	*SE B*	*β*	R^2	$R^2\Delta$	*B*	*SEB*	*β*	R^2	$R^2\Delta$	*B*	*SEB*	*β*	R^2	$R^2\Delta$
Step 1: Child characteristics				.02					.02					.01	
Child gender	.03	.01	.10**			.02	.01	.07**			.00	.01	−.01		
Child age	.20	.04	.09**			.29	.04	.13**			−.08	.03	−.06*		
Step 2: Mother and Father demographics				.06	.04				.05	.03				.02	.01
Mother age	−.01	.01	−.06*			−.01	.01	−.04			.00	.01	.01		
Father age	−.01	.01	−.02			−.01	.01	−.02			.01	.01	.03		
Mother education	.07	.02	.12**			.05	.02	.09**			−.01	.01	−.04		
Father education	.03	.01	.04			.04	.01	.06*			−.02	.01	−.04		
Father work hours	.02	.03	.01			.06	.03	.04*			−.01	.02	.01		
Father race	.32	.07	−.09**			−.26	.07	−.07**			.13	.05	.06*		
Marital status	.04	.08	.01			.06	.07	.02			.02	.05	.01		
Family income	.04	.01	.10**			.03	.01	.08*			−.01	.01	−.05*		
Step 3: Parents' home literacy involvement				.08	.02				.07	.02				.02	.00
Mother home literacy involvement	.05	.01	.09**			.05	.01	.09**			−.02	.01	−.05*		
Father home literacy involvement	.02	.01	.03			.02	.01	.04*			.02	.01	−.05*		

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

more positive attention scores than children with African American fathers and fathers who worked fewer hours. The addition of mothers' and fathers' home literacy involvement in Step 3 significantly contributed to the model. Specifically, mothers ($\beta = .09$, $p < 0.01$) and fathers ($\beta = .04$, $p < 0.01$) who engaged in more frequent home literacy involvement and provided more children's books in their homes had children with more positive attention scores than children from families where parents were less involved in home literacy activities and provided fewer children's books. Table 3 presents the results of the hierarchical regression analysis predicting pre-K attention scores.

Negative Behavior

The final hierarchical regression model, including all predictors and demographic controls, accounted for 2% of the variance in children's preschool negative behavior scores. Child control variables were entered in Step 1 of the hierarchical regression analysis. Older children ($\beta = -.06$, $p < 0.01$) demonstrated fewer negative behaviors than younger children. Father and mother demographic characteristics were entered into Step 2, and significantly contributed to the model. Specifically, children with lower family incomes ($\beta = -.05$, $p < 0.05$) and African American fathers ($\beta = .06$, $p < 0.05$) demonstrated more negative behaviors at pre-K compared to more affluent children with Caucasian fathers. The addition of mothers' and fathers' home literacy involvement in Step 3 significantly contributed to the model. Specifically, mothers' ($\beta = -.05$, $p < 0.01$) and fathers' ($\beta = -.05$, $p < 0.01$) who engaged in more frequent home literacy involvement and provided more children's books in their homes had children who demonstrated fewer problem behaviors than children from families where parents were less involved in home literacy activities and provided fewer children's books. Table 3 presents the results of the hierarchical regression analysis predicting pre-K negative behaviors.

DISCUSSION

Maternal home literacy involvement, particularly shared book reading, has been consistently linked to enhanced language and literacy development. However, little attention has gone into understanding the influence of both mothers and fathers. This study took an ecological approach to studying fathers' and mothers' home literacy involvement in relation to children's cognitive and social emotional development. Data from this study showed that both fathers' and mothers' home literacy involvement positively contributed to children's cognitive and social emotional development. Specifically, fathers and mothers who participated in more frequent home literacy involvement (e.g., shared book reading) had children with better reading, math and social emotional outcomes (i.e., sustained attention and fewer negative behaviors) in preschool. These findings are discussed further in the following section.

Fathers' and Mothers' Home Literacy Involvement and Children's Cognitive Development

The first key finding of this study was that mothers' and fathers' home literacy involvement made a significant positive contribution to children's pre-K reading and math achievement. Consistent with other large-scale studies that have included fathers (e.g., Baker, in press), data from this study showed that mothers and fathers who participated in more frequent shared book reading, telling stories, singing songs, and provided more children's books in their homes had children with more advanced reading and math skills. Two primary explanations for the findings linking home literacy involvement to early reading are evident. First, ecological theory suggests that learning during the early years (i.e., infancy to preschool) is especially dependent on guidance from parents who assist children in mastering more complex cognitive skills (Bronfenbrenner, 1979, 1986). Early reading requires language, speaking, and listening skills. As such, data from the present study imply that mothers' and fathers' home literacy involvement may be one mechanism by which children learn more sophisticated language and literacy skills that can positively influence preschool reading achievement.

Second, mother-child shared book reading has been shown to be a key context for promoting children's language, literacy, and reading skills (e.g., Raikes et al., 2006). Data from this study extend previous home literacy research by providing evidence that father-child shared book reading is also a key context for promoting children's language, literacy, and reading skills. Relatedly, telling stories, singing songs, and providing children's books in the home also appear to positively contribute to cognitive development. The common denominator during these parent-child interactions is parent-child language. Therefore, it is likely that parents who engage in more language-rich interactions with their young children positively stimulate cognitive development during early childhood.

Because research has demonstrated that literacy skills in preschool and kindergarten collectively explain more than one half of the variance in children's first grade reading ability (Storch & Whitehurst, 2002), the present findings linking mothers' and fathers' home literacy involvement to children's preschool reading scores are noteworthy. These findings not only point to the importance of father involvement during early childhood, but also to the potential of public policies that seek to identify and increase specific aspects of father involvement (e.g., home literacy) that

have positive benefits for children (Cabrera & Peters, 2000). Future research should examine other aspects of father involvement (e.g., play and caregiving) in relation to children's early reading achievement. These studies should include data from mothers in an effort to better understand the ecologies of two-parents families.

Data from this study also demonstrated that fathers' and mothers' home literacy involvement positively predicted early math. These findings are consistent with previous empirical work that has emphasized the importance of cognitively stimulating home environments to children's kindergarten math achievement (e.g., Brooks-Gunn & Markham, 2005). Although very few studies have linked fathers' home literacy involvement to children's math achievement, in a recent study, Baker (in press) used nationally representative data to link African American fathers' home literacy involvement to children's preschool math achievement. Notably, the aforementioned study did not include mothers or Caucasian fathers. Thus, the present study methodologically and conceptually extends prior research in an effort to understand mothers' and fathers' contributions to math achievement in an ethnically diverse sample.

Two primary explanations for the findings linking home literacy involvement to math achievement are plausible. First, early math requires sustained focus, recall, and coordination of information in novel ways. Data from the present study suggest that cognitively stimulating interactions can stimulate brain development and thinking skills that are required when solving computational tasks. Second, one advantage of frequent home literacy involvement may be the promotion language and literacy skills that help to bolster other aspects of early achievement (i.e., math). For example, Hindman and Morrison (2012) concluded that "language skills help children make sense of texts as they read them, decide how to express themselves as they write, and understand and reason about mathematical problems" (p. 126). Data from this study provide some empirical support for their contention. More research is needed to examine mother-father-child interactions outside of the home literacy context (e.g., playing sports, board games, and building structures) in relation to early reading and math. However, the present findings represent a significant step toward a better understanding of specific mother and father behaviors that can positively contribute to children's reading and math achievement prior to school entry.

Fathers' and Mothers' Home Literacy Involvement and Children's Social Emotional Development

The second key finding in this study was fathers' and mothers' home literacy involvement made a significant positive contribution to children's pre-K social emotional development. In the present study, social emotional development was operationalized as social emotional functioning in three specific areas including: child's engagement of parent, child's sustained attention during parent-child interactions, and child's negativity toward parent. These findings are consistent with results from Baker et al. (2012) who found that African American mothers who engaged in more frequent home literacy practices (e.g., shared book reading) had kindergarten children with better social emotional functioning in one specific domain (i.e., teacher-rated approaches to learning). Two primary explanations for the present findings are plausible. First, early childhood research suggests that children's early experiences set the stage for how they manage their emotions and relate to others (Raver & Knitzer, 2002). Studies also show that emotional development and academic learning are closely intertwined in the early years of development (Cameron-Ponitz & Rimm-Kaufman, 2011). Thus, it is likely that children who develop strong cognitive skills during home literacy interactions with their parents are likely to develop strong social emotional skills as well.

Second, children first learn social conventions through socialization with their families. Socialization can occur in different domains marked by different aspects of the parent-child relationship and different underlying mechanisms. During parent-child literacy interactions children learn to respond to verbal cues from parents, wait patiently as parents explain new concepts, and follow instructions during guided learning interactions. Data from this imply that home literacy involvement can serve as an effective way to socialize children toward better social emotional competence prior to school entry. It is possible that children who experience more guided learning interactions with their parents have more opportunities to practice positive social emotional behaviors such as paying attention and controlling negative emotions, which is likely to lead to better social outcomes.

Notably, fathers' home literacy involvement was only predictive of two domains of social emotional development (i.e., increased attention and fewer negative behaviors), whereas mothers' home literacy involvement was predictive of all three domains (i.e., increased engagement, attention, and fewer negative behaviors). Although more research is needed, these data provide promising evidence that both fathers' and mothers' home literacy involvement can set the stage for more positive behavioral trajectories among young children.

Demographic Characteristics and Children's Cognitive and Social Emotional Development

Most developmental scientists agree that child development is influenced by demographic characteristics

(Bronfenbrenner, 1979, 1986; Bornstein, Hahn, Suwalsky, & Haynes, 2003). The most consistent demographic predictors of children's cognitive and social emotional development in this study were mothers' education, fathers' education, and family income. By and large, children of mothers and fathers who reported that they had more years of formal education had children with better cognitive and social emotional outcomes than children of less educated parents. Similarly, children from higher-income families had better cognitive and social emotional outcomes than children from lower-income families.

These findings are consistent with previous research that has linked more parental education and higher family incomes to better cognitive development in large samples of older African American and Caucasian children (Davis-Kean, 2005). It is possible that mothers and fathers with more education are more likely to engage their children in learning-related activities because they are more familiar with educational environments and school norms. Similarly, parents with more financial resources and social capital are more likely to have the ability to purchase more children's books than parents with fewer financial resources. More research is needed to determine whether more educated, more affluent mothers and fathers also participate in other home-based educational activities that were not measured by the ECLS-B such as visiting the library. Longitudinal research could investigate whether these kinds of home literacy practices (e.g., visiting the library) are related to gains in children's cognitive development over time (i.e., during the transition to middle school).

It is also important to note that there were small yet significant differences in child outcomes as a function of fathers' race. Specifically, children of African American fathers demonstrated slightly lower math scores but not reading. In addition, children of African American fathers demonstrated lower social emotional scores compared to children of Caucasian fathers. These findings are in line with research from Brooks-Gunn and Markham (2005) that found differences in child outcomes as a function of mothers' race. Though beyond the scope of this study, it is possible that African American and Caucasian fathers parent their children differently during early childhood. For example, Brooks-Gunn and Markham (2005) found that African American and Hispanic mothers read to their children less often than white mothers, which led to differences in children's kindergarten reading and math scores. Future cross cultural research could examine whether differences in multiple dimensions of fathering (e.g., caregiving and play) are related to child development.

Limitations and Future Directions

There are several limitations to this study. First, parenting in this study was limited to four home literacy items that were collected from mothers and fathers who participated in the ECLS-B. This conceptualization does not provide a comprehensive picture of what parents do with their young children prior to school entry. It is possible that parents in this study who engaged in more home literacy practices were more likely to engage in other cognitive stimulation during early childhood, including playing with puzzles and visiting the library that may also contribute to child development. One or all of these unmeasured activities could also contribute to preschool outcomes. Relatedly, mothers' and fathers' home literacy involvement explained a significant but small amount of variance in children's cognitive and social emotional development in this study. Future research could utilize more comprehensive measures of parents' home literacy involvement.

Notably, the present study controlled for fathers' race and work hours rather than mothers' race and work hours. It is possible that these maternal characteristics may explain additional variance in children's cognitive and social emotional development. Thus, more research is needed on diverse demographic characteristics (e.g., maternal and paternal psychological functioning) that may be related to child development. Particularly important will be future efforts to understand whether more father involvement can compensate for low maternal involvement and whether there are developmental periods where other father-child interactions (e.g., warmth, discipline, and control) are especially salient to child outcomes. Such research could examine whether fathers matter more during the transition to middle school when academic demands exponentially increase and language, communication, and social emotional skills become more predictive of children's motivation and academic achievement (Wentzel, 1998). A final limitation of this study is its focus on resident fathers. Future research with families could include both resident and non-resident fathers in an effort to identify differences in fathering behaviors as a function of fathers' primary residence.

Implications for Family Literacy Programs

Decades of educational policies have promoted family literacy programs in homes, schools, and community organizations. For example, family literacy appears in the Elementary and Secondary Education Act, Reading Excellence Act, Workforce Investment Act, Community Services Block Grant Act, and the Head Start Act (National Center for Family Literacy, 2002). However, most of these policies have not been informed by adequate research with two-parent families or fathers. This integrative study of two-parent families suggests that one way to assist children in reaching their full potential as learners is to understand how to engage both parents in

programs designed to enhance early childhood outcomes. More specifically, programs that target cognitive and social emotional development should provide consistent support to fathers and mothers to remain actively involved in the lives of their young children, especially by way of shared book-reading, telling stories, singing songs, and providing children's books in their homes.

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