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Low-income minority mothers' and fathers' reading and children's interest: Longitudinal contributions to children's receptive vocabulary skills☆

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Abstract

Using data from a diverse sample of low-income African American and Latino mothers, fathers, and their young children who participated in Early Head Start (n = 61), the current study explored the association between parents' reading quality (i.e. metalingual talk) while reading with their 2-year-old children and their children's receptive vocabulary skills at pre-kindergarten. It further examined whether children's interest in reading mediated this association. There were three main findings. First, most mothers and fathers in our sample read relatively often to their children (a few times a week) and used some metalingual talk; fathers used more than mothers. Second, controlling for parental education, mothers' and fathers' early reading quality significantly predicted children's receptive vocabulary skills at pre-kindergarten. Third, children's interest in reading mediated the association between mothers' and fathers' reading quality and children's receptive vocabulary scores. These findings have important implications for programs aimed at fostering low-income children's vocabularies and suggest that both mothers and fathers need to be included in programs.

Keywords

Parenting; Toddlers; Vocabulary; Reading; Low-income

1. Introduction

On average, children from low-income families hear language less frequently and of lower quality than children from middle- and high-income families (Hart & Risley, 1995), which places them at risk for language delays (Fiorentino & Howe, 2004; National Institute of Child Health & Human Development Early Child Care Research Network, 2001) that may persist upon kindergarten entry and throughout formal schooling (Duncan et al., 2007; Farkas & Beron, 2004). Low-income parents are also less likely than their middle-class

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counterparts to read to their children, which may be problematic because reading exposes children to language and promotes vocabulary development (Bus, van Ijzendoorn, & Pellegrini, 1995; Whitehurst et al., 1994). However, this literature suffers from several limitations. First, it is mostly based on the frequency of reading rather than on the quality of the reading. Emerging research suggests that not only frequency of reading, but also quality of reading promote children's vocabulary skills (Deckner, Adamson, & Bakeman, 2006; Mol, Bus, de Jong, & Smeets, 2008). Second, research on parent-child reading has primarily focused on mothers and has not included fathers. This omission is important because over the last two decades, research has shown that fathers contribute uniquely to their children's language development, over and above mothers' contributions (Pancsofar & Vernon-Feagans, 2006; Pancsofar, Vernon-Feagans, & The Family Life Project Investigators, 2010; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). And third, the research on parent–child shared book reading has not examined the potential child mechanisms that might explain why reading fosters vocabulary growth. Recently, scholars have shown that children who are attentive, experience enjoyment, and participate in the reading activity, in other words, show interest in reading, are more likely to learn new words than children who are not interested in reading (Deckner et al., 2006). In this study, we address these gaps by examining the associations among mothers' and fathers' reading frequency and quality, children's interest in reading, and children's receptive vocabulary skills.

Using a sample of low-income minority children and their mothers and fathers enrolled in the Early Head Start Research and Evaluation Project (EHSREP), we seek answers to the following research questions: (1) What is the frequency and quality of maternal and paternal reading to their toddlers? (2) Does the frequency and quality of maternal and paternal reading with their toddlers, over and above one another, contribute to toddler's receptive vocabulary skills at pre-kindergarten? And (3) does toddlers' reading interest partially mediate the association between maternal and paternal reading quality and children's pre-kindergarten receptive vocabulary skills?

1.1. Theoretical framework

The present study builds from a Vygotskian (1978) theoretical framework that suggests that learning and development are socially mediated processes. Parents provide children with a range of socio-cultural experiences and scaffold their activities in ways that stimulate cognitive growth. In short, parents support language learning by providing a range of responsive and challenging linguistic interchanges that are attuned to their children's developmental needs (Bruner, 1981). One such experience is shared book reading. Research has shown that children who are read to often by their caregivers have better vocabularies than children who are not (Bus et al, 1995). The shared-book reading experience gives children the opportunity to learn new words and reinforce existing ones. Another aspect of the reading experience that is related to vocabulary skill building is the quality of reading (e.g. metalingual talk or talk that directs attention to language or vocabulary itself; Deckner et al., 2006; Jones & Adamson, 1987). Examples of metalingual talk include labeling objects (e.g. that's a cow) or recasting the child's language (e.g. that's right, that's a frog?). Metalingual talk promotes vocabulary growth by highlighting new and reinforcing existing

vocabulary words and by encouraging children to be more engaged or attentive during the reading process (Lonigan, Anthony, & Burgess, 1995).

1.2. Low-income toddlers' vocabulary skills

On average, children from low-income families have smaller vocabularies and slower vocabulary growth than children from middle- and high-income families (Arriaga, Fenson, Cronan, & Pethick, 1998). This difference has primarily been attributed to literacy experiences at home, in particular mother-child reading interactions. This research has mostly focused on reading frequency and quality of maternal talk. For example, low-income mothers, on average, are less likely to read to their children than middle or high-income parents (Whitehurst et al, 1994), speak fewer words to them (Hart & Risley, 1995), and are less likely to actively engage their children in discussion during reading interactions (Purcell-Gates, 2000). Nevertheless, there is also great within-group variability. In one study, approximately half of all low-income mothers read every day with their children (Raikes et al., 2006).

In contrast, research on how low-income fathers contribute to their toddler's language skills has focused more on how fathers talk with their children and less on how often they read to them. Fathers, across SES groups, more so than mothers, use language that conversationally challenges their children (Ely, Gleason, Narasimhan, & McCabe, 1995; Rowe, Coker, & Pan, 2004). Low-income fathers have been found to ask more wh-questions (i.e. who, what, where, etc.) to their toddlers and elicit higher amounts of and more diverse speech (i.e. word types) from their children (Rowe et al., 2004). And fathers' vocabulary and grammatical complexity in the context of play has been directly linked to children's language skills, after controlling for maternal linguistic inputs (Pancsofar & Vernon-Feagans, 2006). Additionally, among middle-class families, fathers have been found to use more metalingual talk (e.g. labeling) than mothers during linguistic interactions with their children (Ely, Gleason, MacGibbon, & Zaretsky, 2001). We know of no research that examines the nature and frequency of metalingual talk among low-income fathers.

1.3. Parent–child shared reading and children's vocabulary skills

The importance of parent–child *reading* interactions for children's emergent language and literacy skills has been extensively documented in the literature (Bus et al, 1995; Mol et al., 2008; Whitehurst & Lonigan, 1998). This robust body of research has identified three aspects of the reading interaction to be important contributors to children's vocabulary skills: frequency of reading, quality of reading, and children's interest in reading.

1.3.1. Frequency of reading—Shared book reading provides children the opportunity to hear new vocabulary words and learn that letters represent sounds. Research has consistently shown that mothers, across SES groups, who read more frequently with their children, have children with more advanced expressive and receptive vocabularies (Bus et al., 1995; Raikes et al., 2006; Sénéchal & LeFevre, 2002; Whitehurst & Lonigan, 1998). Although the associations between frequency of reading and children's vocabulary are concurrent and longitudinal, most studies report relatively small effects, suggesting that the frequency of reading is not the entire story (Bus et al., 1995).

To date, only a handful of studies have examined the frequency of *father–child reading* interactions despite evidence that many fathers read regularly with their children (Cabrera, Hofferth, & Chae, 2011; Duursma & Pan, 2011; Duursma, Pan, & Raikes, 2008). The few studies that include fathers have found similar findings to mothers. For example, Duursma et al. (2008) found that almost 60% of low-income fathers in their sample reported reading to their young children daily and that fathers who reported reading more often to their children at 24-months had children with higher cognitive scores at 36-months. Based on this review, we expect that children whose fathers and mothers read to them more frequently will have higher receptive vocabulary scores than children whose fathers and mothers read less frequently.

1.3.2. Quality of reading—Increasingly, researchers are beginning to focus on the *quality* of reading interactions, suggesting that although children must be read to on a regular basis, it is the way parents engage their children during reading that can foster vocabulary growth (Dickinson, De Temple, Hirschler, & Smith, 1992; Mol et al., 2008). Definitions of reading quality vary across the literature but generally, quality of reading refers to caregivers' relevant talk that extends beyond the text of the book (i.e. extra-textual talk). For example, mothers who engage in discussions during reading interactions have children who perform better on vocabulary measures than children whose mothers only read the text of the book (De Temple, 2001; Dickinson et al., 1992). Interventions that promote dialogic reading between caregivers and children have been shown to foster children's vocabularies, although this effect is not as strong for low-SES families (Mol et al., 2008). Another way in which parents engage children during reading is by using metalingual talk (Jakobson, 1960; Jones & Adamson, 1987). When parents label new objects, prompt their children to produce language, or recast their children's language (i.e. use metalingual talk), children are encouraged to draw upon existing vocabulary and learn new vocabulary. Research with mothers has shown that the use of metalingual talk during reading encourages young children to produce novel words and effectively fosters receptive vocabulary development (Deckner et al., 2006; Sénéchal, 1997).

Although less studied, research with fathers has also found that the *quality of father–child reading* is related to children's vocabulary skills. For example, a study of low-income rural families found that fathers' lexical diversity during picture book interactions with their 6-month old infants predicted children's advanced language development at 15- and 36-months of age (Pancsofar et al., 2010). We expect that mothers and fathers who use more metalingual talk during book reading will have children with more advanced receptive vocabularies at pre-kindergarten than parents who use less metalingual talk.

1.3.3. Children's interest in reading—Children who show interest in reading have stronger vocabulary skills both in preschool and at pre-kindergarten than children who show less interest (Lonigan et al., 1995; Payne, Whitehurst, & Angell, 1994). One reason for this is that children who are interested in reading are more likely to pay attention, participate, and affectively engage during shared reading which is related to more advanced vocabularies (Haden, Reese, & Fivush, 1996; Lonigan et al., 1995; Mol et al., 2008). Thus it appears that both frequency and quality of reading stimulate vocabulary growth by engaging

children or increasing their interest in reading (Deckner et al., 2006; Farver, Xu, Eppe, & Lonigan, 2006). We expect that children's interest in reading will mediate the association between parents' metalingual talk and children's vocabulary skills.

It is worth noting, however, that most research examining children's interest in reading has relied on maternal reports of the frequency with which a child asks to be read (Farver et al., 2006). This approach is limited because it does not capture how the child is engaged during the reading activity. An alternate approach is used by Deckner et al. (2006) who identified three behavioral aspects of children's reading interest that manifest during a mother-child reading interaction: attention, affect, and participation. They found that children's attention during reading (i.e. focus on the book), participation (i.e. using gestures and language), and positive affect explained the association between mothers' reading quality and children's later receptive vocabulary skills. Therefore, we use this observational coding scheme to assess children's reading interest in the context of both maternal and paternal reading.

1.4. Current study

The current study seeks to extend the limited literature on how both mother–child *and* father–child reading are related to children's vocabulary skills by examining the associations among mothers' and fathers' frequency of reading, quality of reading (assessed as metalingual talk during reading), children's interest in reading (assessed as attention, affect, and participation during reading), and children's receptive vocabulary skills. Based on the social interaction framework that children learn language in the context of linguistic interactions with their caregivers, we hypothesize that: (1) mothers and fathers who, at 24-months, read often to their toddlers will have pre-kindergarteners with higher receptive vocabulary skills than parents who do not; (2) mothers and fathers who, at 24-months, engage in high-quality reading (i.e. proportionally more metalingual talk) will have pre-kindergarteners with higher receptive vocabulary than parents who do not; and (3) mothers' and fathers' frequency and quality of early reading at 24-months will be related to pre-kindergarteners' receptive vocabulary skills partially because children will be more interested in reading.

2. Method

2.1. Data source

Data for this study come from the Early Head Start Research and Evaluation Project (EHSREP). Participating families were recruited from seventeen EHS sites across the U.S. and were eligible for EHS services based on family income (at or below the federal poverty level), as EHS is a federal program that provides services for low-income families (Administration for Children & Families, 2002). Fathers were identified based on information provided during the 24-month mother interviews and twelve of the seventeen EHSREP sites elected to include fathers (Boller et al., 2006). In general, participating fathers were more likely to have completed more years of education, be married or cohabitating, be older, and to be employed than those who did not participate (Cabrera et al., 2004; Tamis-LeMonda et al., 2004 for more detailed analysis of selection bias). Because we were interested in understanding fathers and mothers interactions with their children, for this

study, we selected a subsample of families that had a resident mother and father, had all demographic and mother–child and father–child interaction data from the 24-month wave and pre-kindergarten English vocabulary assessment data, and for which both mother–child and father–child interaction data occurred in English and included at least 30-s of active reading. Our sample was drawn from sites serving mostly Latino and African American families. Participants in the final analytic sample (n = 61) represent two-parent minority families where fathers resided with their children from child's birth to pre-kindergarten.

2.2. Participants

Participants were 61 mothers, resident fathers or father figures, and their toddlers from low-income, African American (n = 35) and Latino (n = 26) families who participated in EHSREP. Mothers' education ranged from 9 to 17 years (*M* = 12.10, *SD* = 1.85) and fathers' education from 4 to 20 years (*M* = 12.03, *SD* = 2.47). The majority of families (81%) identified English as the primary home language and the remaining families (19%) identified Spanish as the primary home language. However, all parent–child reading interactions included in the study occurred in English, which was the language chosen by the parent. Children's age at the time of the mother–child and father–child reading interactions varied from 23-to 35-months (*M* = 28.01, *SD* = 3.06); 57.4% of children were female (n = 35). Means and standard deviations for all demographic variables are presented in Table 1.

2.3. Procedure

Data collection included child assessments, mother and father interviews, and home visits during which videotaped observations of mother–child and father–child interactions were obtained. Mothers and fathers were interviewed at separate times. At the 24-month data collection wave, mother and father visits involved interviews and videotaped mother–child and father–child interactions. The parent–child interactions included 10 min of semi-structured play and shared book reading. Mothers and fathers were instructed to sit on a mat with their child, try to ignore the camera, and act naturally. Mothers were given three bags, the first containing a book entitled, “The Very Hungry Caterpillar” by Eric Carle and the second two containing toys. Fathers were also given three-bags, the first containing a book entitled “The Very Busy Spider” by Eric Carle and the second two bags containing toys. Both books were designed to be age appropriate and stimulate talk and play between parent and child. Mothers and fathers were directed to engage their child with the items in the three bags for 10 min; to start with bag #1, move on to bag #2, and finish with bag #3. Parents were told they could divide up the 10-min as they liked. These videotapes were subsequently transcribed at the utterance unit level according to the standardized format of the Codes for the Analysis of Human Language (CHILDES; MacWhinney, 2000). After transcription, a second individual then verified each transcript to ensure accuracy. To complete the verification process, all transcripts were run through an automatic “check” in the CHAT program. The book reading portion of the transcript was then extracted using a GEM command in the CHAT program. The mother–child and father–child book reading component of the interaction is the focus of the present investigation and ranged across the sample from 30 to 460 s (*M* = 135.60, *SD* = 59.57) for mothers and fathers. Follow-up vocabulary assessments were conducted in the spring prior to the child's enrollment in

kindergarten. Children's age at vocabulary assessment ranged from 50 to 77 months (*M* = 62.41, *SD* = 3.73).

2.4. Measures

2.4.1. Frequency of parent–child reading at 24-months—Mothers and fathers each reported how often they read to their child. Response options were on a 6-point Likert scale and included: rarely, not at all, a few times a month, a few times a week, once a day, or more than once a day.

2.4.2. Parents' quality of reading at 24-months—A coding scheme for metalingual talk was developed from the work of Jones and Adamson (1987) and Deckner et al. (2006) to assess the quality of mothers' and fathers' reading when their children were approximately 24-months-of-age. Four types of metalingual talk were coded from the mother–child and father–child reading interactions at the level of the utterance: recasts of child's language (e.g., Yes, that's a dog), prompts to produce language (e.g., What does a cow say?), labels (e.g., That's a bird), and queries for labels (e.g., What do you call that?). Two research assistants coded parents' metalingual talk from the interaction transcripts and achieved a kappa coefficient of .91 on a random sample of 20% of the videotaped interactions. The sum of parents' metalingual talk, across the four types, was then computed. Finally, a ratio was created that divided parents' number of metalingual utterances by parents' total number of extra-textual utterances.

2.4.3. Children's interest in reading at 24-months—Children's interest in reading was assessed when children were approximately 24-months-of-age using a behavioral coding scheme adapted from Deckner et al. (2006). Overall child interest consisted of three components: child's attention, affect, and active participation during the book-reading interaction. Three coders rated attention, affect, and active participation at successive 30-s intervals. Paying attention during shared reading was rated from 1, not paying attention (child not attending to the book for the whole interval), to 5, constant paying attention for book reading (child appears riveted to the book for entire interval). Affect during shared reading was rated based on facial, vocal, and behavioral cues from 1, extremely negative affect (child crying or protesting during interval), to 5, extremely positive affect (child laughing or smiling frequently during the interval). Active participation was rated based on behavioral or vocal contributions to the shared reading interaction from 1, no participation (child made no contributions during the interval), to 5, high participation (more than 4 physical acts, gestures, or manipulations or verbal utterances during interval; e.g. pointing to book, turning book page, labeling an object in book). Two research assistants coded children's interest in reading, pausing at 30-s intervals to assign an attention, affect, and participation score to the child. The two coders achieved a kappa coefficient of .89 on 20% of the videotaped interactions. Mean scores for attention, affect, and active participation were created across intervals. Scores for the three scales were correlated strongly for both the mother–child interaction (*rs* = .61, .61, and .55) and the father–child interaction (*rs* = .70, .76, .77). Cronbach's alpha coefficient was .77. Thus, we averaged the scores for attention, affect, and active participation across the mother and father interactions to create

an average children's interest in reading score. Higher scores signify higher interest in reading.

2.4.4. Children's receptive vocabulary at pre-kindergarten—Children's receptive vocabulary was assessed at the pre-kindergarten data collection wave using the Peabody Picture Vocabulary Test-III (PPVT-III; Dunn & Dunn, 1997). Raw scores were then converted to age-adjusted, standardized scores with a mean of 100 and a standard deviation of 15. All children were assessed in English.

2.5. Control variables

In addition to the main variables of interest, other variables were used to control for possible biasing factors. Variables were dummy coded with 1 representing the presence of the factor and 0 representing the absence of the factor. Specifically, control variables included father's biological relationship to the focal child (biological father=1), child's age, mothers' and fathers' average years of schooling, child's gender (girl = 1), and the primary home language of the child (English = 1). All control variables were taken from the 24-month mother and father interviews.

3. Results

3.1. Analytic strategy

Data for the analyses included demographic information, mother and father questionnaire responses, and videotaped mother–child and father–child interactions from the 24-month data collection wave and children's vocabulary scores from assessments during the pre-kindergarten data collection wave. All variables included in the analyses were normally distributed and there were no missing data. To address our research questions, we first analyzed mean-level differences between mothers and fathers for both frequency and quality of parent–child reading interactions. We then examined bivariate correlations to determine associations among our primary variables of interest (frequency of mother–child and father–child reading, mothers' and fathers' reading quality, toddler's interest in reading, and children's receptive vocabulary scores) and control variables (fathers' biological relationship to the child, parents' education level, and the primary home language of the child). Finally, we conducted multiple regression analysis to determine the contributions of mothers' and fathers' reading frequency and quality on children's receptive vocabulary scores, and to assess whether children's interest in reading mediated the association between mothers' and fathers' frequency of reading, reading quality and children's receptive vocabulary skills.

3.2. Frequency and quality of mothers' and fathers' reading

Our first research question sought to describe the frequency and quality of mother–child and father–child reading experiences. Table 1 shows the frequency with which mothers and fathers reported reading with their children. There was wide variability in mothers' reports of reading frequency. Almost 60% of mothers reported reading to their children once or more than once per day, a third reported reading a few times per week, and a little more than 10% reported reading less than a few times per week. Similarly, there was wide variability in fathers' reports of reading frequency. A little more than a third of fathers report reading to

their children once or more than once per day; almost a third report reading a few times per week and almost 40% reported reading less than a few times per week.

On average, mothers reported reading “once per day” to their children (M = 4.77, SD = 1.15) and father reported reading “a few times per week” to their children (M = 3.75, SD = 1.48). A paired-samples t-test revealed that, on average, mothers reported reading more frequently to their children than fathers; $t(60) = 4.96$, $p < .001$, $d = .77$.

Reading quality was assessed as the proportion of metalingual talk to extra-textual talk (talk that is not related to the book/text) that parents used with their children during an observed videotaped reading-interaction. Table 2 shows the means, standard deviations, and range of mothers' and fathers' metalingual, textual, and total utterances. Approximately 12% of mothers' extra-textual talk to their children (M = .12, SD = .10) and 35% of fathers' extra-textual talk to their children was metalingual (e.g. labeling; M = .35, SD = .19). A paired-samples t-test revealed that, on average, fathers used more metalingual talk than mothers; $t(60) = 8.53$, $p < .001$, d = 1.51. There were no significant differences between mothers and fathers in the total utterances or textual utterances used during book sharing, $p > .05$.

3.3. Bivariate correlations

Bivariate correlations among study variables are presented in Table 3. Bivariate correlations showed that mothers' and fathers' reading quality were positively associated with children's receptive vocabulary scores (rs = .28, .34, respectively). Additionally, children's interest in reading was significantly associated with children's receptive vocabulary scores (r = .55). The control variables of home language is English, father is biological father, child age, child is a girl, and length of the reading interactions were not associated with our dependent variable of children's receptive vocabulary skills (see Table 3) and thus were not included in the multiple regression analyses. Mothers' and fathers' average years of education were significantly associated with children's receptive vocabulary skills (r = .26) and is included in subsequent analyses as a covariate. Associations among the study's primary variables appeared to be similar for both mothers and fathers and thus we chose to conduct subsequent multiple regression analyses with both mothers and fathers in the same model. This is consistent with the theoretical literature that does not suggest varying pathways of influence by parent gender.

3.4. Multiple regression analysis

To address our research questions, we conducted step-wise multiple regression analysis to examine the simultaneous effects of mother–child and father–child reading frequency, mothers' and fathers' reading quality, and children's interest in reading on children's receptive vocabulary skills, controlling for parental education. Model 1 assessed the direct association among the frequency and quality of mother–child and father–child reading when children were 24-months of age and children's receptive vocabulary skills at pre-kindergarten. Model 2 assessed mediation through children's reading interest using a mediation procedure that utilizes a bias-corrected bootstrapping methodology to construct 95% confidence intervals (CI; Preacher & Hayes, 2008). A significant mediation effect is indicated by a confidence interval that does not include zero. This procedure is increasingly

recommended for testing mediation, particularly for smaller samples (Preacher & Hayes, 2008). The results of these analyses are presented in Table 4.

Model 1 accounted for 28% of the variance in children's receptive vocabulary skills (R^2 =. 28, $F(5,56) = 4.38$, $p < 01$). The frequency of mother–child and father–child reading interactions and parental years of education were not related to children's receptive vocabulary skills ($p > .05$). However, over and above maternal and paternal reading frequency and education, mothers and fathers with higher reading quality had children with more advanced receptive vocabulary skills (β = .242, $t(56) = 2.09$, $p = .04$ and β = .332, $t(56) = 2.77$, $p = .007$, respectively). Model 2 added children's interest in reading and accounted for 43% of the variance in children's receptive vocabulary skills ($R^2 = .43$, $F(6,55) = 6.74$, $p < 001$). After adding children's interest in reading to the model, maternal and paternal reading quality was no longer significant ($p > 05$). Children's interest in reading was significant (β = .432, $t(55) = 3.68$, $p = 001$) and 95% confidence intervals (6.24–44.02 and . 68–19.82, respectively) did not include zero indicating that the relation was at least partially mediated.

Finally, we conducted a reverse mediation analysis to determine if maternal and paternal reading quality might mediate the association between children's interest in reading and children's receptive vocabulary skills. The 95% confidence intervals produced from this analysis for the mediators of maternal reading quality (−1.04 to 2.74) and paternal reading quality (−.083 to 3.32) both include 0. Thus, results from the reverse mediation analysis indicate that maternal and paternal reading quality do not mediate the association between children's interest in reading and children's receptive vocabulary skills.

4. Discussion

This study adds to the limited literature on how both mothers *and* fathers contribute to their children's language development by examining the association between the frequency and quality of parent–child reading interactions and children's receptive vocabulary skills. We also sought to understand the mechanism by which parental frequency and quality of reading at 24-months contribute to pre-kindergarteners' receptive vocabulary skills. We thus examined how children's interest in reading explained the association between our variables of interest. Overall, our findings show that most low-income mothers and fathers in our study read relatively often to their children—almost 90% of mothers and more than 60% of fathers read at least a few times a week and almost 60% of mothers and 30% of fathers read at least once per day. We also found variability in the quality reading as a group and also between parents. More than a third of fathers' and a little more than 10% of mothers' talk during reading was metalingual, suggesting that many low-income children are engaged in high-quality reading, especially from their fathers. These findings are generally consistent with past studies that highlight variability among low-income families and extend the literature by showing that low-income fathers, as it has been found with middle-class fathers, also use high levels of metalingual talk with their children (Ely et al., 2001). We also found that metalingual talk by both parents is indirectly related to pre-kindergarteners' receptive vocabulary through children's interest in reading. These findings suggest that

increasing children's interest might be one reason why shared book reading fosters vocabulary growth.

Our first hypothesis, that the frequency of parental reading would be associated with children's receptive vocabulary, was not supported by our findings. Both mothers' and fathers' frequency of reading did not contribute to children's receptive vocabulary skills. Our finding is consistent with some studies but not with others (see Bus et al., 1995 for a review). One explanation for the inconsistent findings in the field is the parental report nature of our measurement. Parental reports might be overestimating how much children are read to thus we need to interpret our findings with caution as they do not mean that frequency of reading is not important. Rather, the mixed findings support recent calls to pay attention to both frequency and quality of reading, as we have done in the present study (Mol et al., 2008).

Our second hypothesis that parental reading quality would contribute to children's vocabulary skills was supported by our findings. Controlling for frequency of reading and parental education, we found that mothers and fathers who engaged in higher proportions of metalingual talk during reading interactions at 24-months, had pre-kindergarteners with higher receptive vocabulary scores. Overall, our findings mirror similar studies conducted with mothers (Deckner et al., 2006) that suggest that reading quality is important for promoting children's vocabulary. Further, in contrast to the findings of Mol et al. (2008), we find these associations in a low-income minority sample demonstrating the importance of looking at within-group variability. We also extend this finding to include fathers suggesting that promoting high-quality father–child reading interactions and encouraging not just mothers, but also fathers to read to their children may be an effective strategy to improve low-income children's vocabulary skills.

Our third hypothesis that children's interest in reading would mediate the association between reading and vocabulary skills was also supported. Our findings reveal that mothers' metalingual talk during reading indirectly promotes pre-kindergarteners' receptive vocabulary skills by increasing children's interest in reading. This finding is consistent with the literature showing that children who are interested in reading have higher expressive (Deckner et al., 2006) and receptive vocabulary skills (Farver et al., 2006). A new finding is that the mechanism of change is the same for fathers–fathers' use of metalingual talk also may increase children's interest in reading. Because reading has been found to have a direct effect on children's vocabulary (Bus et al., 1995), we did not expect children's interest in reading to fully mediate the association between maternal and paternal metalingual talk and children's receptive vocabularies. The results from our reverse mediation analysis provide additional support of the directionality of the mechanism, which is particularly important because our measures of children's interest and parental metalingual talk were coded from the same interaction. One possible explanation for our finding of full mediation is that although most parents in our sample used some metalingual talk, proportionally most of the extra-textual talk was not metalingual in nature. This is an area ready for additional research. Future studies should utilize a transactional model to explore how parent–child interactions promote children's language development, especially among low-income families. These findings also point to a potential point of intervention, suggesting that programs focused on

helping parents increase children's interest during shared book reading or directly increasing child's interest might be a cost effective way to improve language skills among low-income children who are at a higher risk for language delays.

This study has several limitations. First, obtaining observed measures on both parents is extremely difficult and time-intensive thus our sample size is modest. The limited sample size did not permit us to establish a higher minimum reading time of 30-seconds. Although length of reading interaction was not associated with parents' metalingual talk or children's outcomes, suggesting that our minimum cutoff was sufficient for the purposes of the study, it would have been better to have a larger sample to extend our range. Second, only receptive vocabulary measures were available in the EHSREP data set. Our preference would have been to include both receptive and expressive measures.

Despite these limitations, this study is important on several levels. First, our new findings point to the importance of both maternal and paternal reading for children's vocabulary development. Our study shows that mothers *and* fathers make important and unique contributions to children's language skills. It also adds to the growing literature that fathers play an important role in their children's language development, above and beyond mothers (Pancsofar & Vernon-Feagans, 2006; Pancsofar et al, 2010; Tamis-LeMonda et al., 2004). Our findings suggest, that to be most effective, interventions should be broadened to include both parents, not just one. Second, unlike past studies that have relied on parental reports of child interest in reading (Farver et al., 2006), we used an observational measure (Deckner et al, 2006), which more comprehensively captured the construct of child interest. Third, we examined longitudinal associations between early literacy experiences, namely reading by both parents, and language skills at pre-kindergarten. Our findings suggest that encouraging parents and other caregivers to provide high-quality literacy experiences such as reading during early childhood, a period when children build foundational blocks for language growth and development, may pay high dividends in the long-term. Such early experiences can help children develop the language skills they need to succeed in school. Fourth, it offers further evidence of the agency of children in their own development. Programs and activities that help children become interested, engaged, and motivated to read may be central to developing critical language skills, especially for children whose caregivers might not be able to provide high-quality literacy experiences at home.

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Table 1

Descriptive statistics (*N*=61).

Variable	*n*	%	*M* (*SD*)
Child gender			
Male	26	42.6	
Female	35	57.4	
Child age T1	61	100	28.15 (2.95)
Child age T2	61	100	62.41 (3.73)
Mother years of school	61	100	12.08 (1.83)
Father years of school	61	100	12.03 (2.47)
Child ethnicity			
African-American	35	57.4	
Latino	26	42.6	
Fathers' relationship to child			
Biological father	45	73.8	
Non-biological father	16	26.2	
Household language			
English	51	83.6	
Spanish	10	16.4	
Average length of reading	61	100	132.30 (59.87)
Maternal reading frequency			
Not at all	0	0	
Rarely	3	4.9	
A few times a month	4	6.6	
A few times a week	18	29.5	
Once a day	15	24.6	
More than once a day	21	34.4	
Paternal reading frequency			
Not at all	5	8.2	
Rarely	9	14.8	
A few times a month	10	16.4	
A few times a week	17	27.9	
Once a day	12	19.7	
More than once a day	8	13.1	
Average reading interest	61	100	3.52 (.72)
Receptive vocabulary	61	100	90.79 (14.75)

Table 2

Mothers' and fathers' talk during reading.

	Mother *M* (*SD*)	**Father *M* (*SD*)**
Textual utterances (0–44)	8.14 (16.32)	3.28 (6.23)
Metalingual utterances		
Prompts to produce language (0–25)	2.84 (2.79)	13.26 (4.35)
Labels (0–61)	6.75 (6.51)	32.45 (8.66)
Query for label (0–53)	5.68 (6.34)	26.33 (7.01)
Recasts (0–12)	.91 (1.85)	3.89 (1.68)
Metalingual/extra–textual (.00–.85)	.12 (.10)	.35 (.19)
Total utterances (41–405)	141.51	221 (73.77)

Table 3

Bivariate intercorrelations.

	1	2	3	4	5	6	7	8	9	10	11
1. Length	1										
2. Child age	.303*	1									
3. Father	–.043	–.069	1								
4. English	.043	–.213	–.072	1							
5. Girl	–.011	.189	–.062	–.173	1						
6. Education	–.024	.089	.241	.097	–.164	1					
7. Mother freq.	.056	–.012	–.055	–.115	.001	.110	1				
8. Father freq.	.105	.026	–.024	.020	.014	.108	.153	1			
9. M. quality	.193	.185	.092	.008	.143	.109	.055	–.035	1		
10. F. quality	–.116	.108	–.084	.071	–.120	.202	–.191	–.059	.085	1	
11. Interest	–.020	.142	.070	.046	.186	.151	.087	.001	.389**	.284**	1
12. Vocabulary	.115	.023	.093	.078	.083	.264*	.131	.229	.284*	.340**	.552**

Note. Length = average length of mother and father reading interactions (in seconds). Child age = child's age at time of vocabulary assessment (in months). Father = father in video is biological father (dichotomous). English = household's primary language is English (dichotomous). Girl = child is a girl (dichotomous). Education = maternal and paternal average years of schooling. Mother freq. = frequency of mother–child reading interactions. Father freq. = frequency of father–child reading interactions. M. quality = proportion of mother's metalingual talk to total extra-textual utterances. F. quality = proportion of father's metalingual talk to total extra-textual utterances. Vocabulary = receptive vocabulary standardized, age-adjusted score.

* $p < .05$.

** $p < .01$.

Table 4

Multiple regression models predicting children's pre-kindergarten receptive vocabulary skills (n = 61).

	Model 1			Model 2		
	B	***SE***	***β***	***B***	***SE***	***β***
Parental education	1.27	1.14	.132	1.08	1.03	.112
Mother reading frequency	1.71	1.53	.133	1.08	1.39	.084
Father reading frequency	2.22	1.16	.223	2.18	1.04	.219*
Mother reading quality	34.89	14.76	.242*	12.78	16.15	.089
Father reading quality	25.64	9.26	.332**	16.76	8.70	.217
Reading interest				8.88	2.41	.432**

[1] R^2 = .28, $F(5, 56) = 4.38$, p = .002.

[2] R^2 = .43, $F(6, 55) = 6.74$, $p < .001$.

* $p < .05$.

** $p < .01$.