
The Role of Home Literacy Practices in Preschool Children's Language and Emergent Literacy Skills

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This study examined how 4 specific measures of home literacy practices (i.e., shared book reading frequency, maternal book reading strategies, child's enjoyment of reading, and maternal sensitivity) and a global measure of the quality and responsiveness of the home environment during the preschool years predicted children's language and emergent literacy skills between the ages of 3 and 5 years. Study participants were 72 African American children and their mothers or primary guardians primarily from low-income families whose home literacy environment and development have been followed since infancy. Annually, between 18 months and 5 years of age, the children's mothers were interviewed about the frequency they read to their child and how much their child enjoyed being read to, and the overall quality and responsiveness of the home environment were observed. Mothers also were observed reading to their child once a year at 2, 3, and 4 years of age, and maternal sensitivity and types of maternal book reading strategies were coded. Children's receptive and expressive language and vocabulary were assessed annually between 3 years of age and kindergarten entry, and emergent literacy skills were assessed at 4 years and kindergarten entry. The specific home literacy practices showed moderate to large correlations with each other, and only a few significant associations with the language and literacy outcomes, after controlling for maternal education, maternal reading skills, and the child's gender. The global measure of overall responsiveness and support of the home environment was the strongest predictor of children's language and early literacy skills and contributed over and above the specific literacy practice measures in predicting children's early language and literacy development.

KEY WORDS: home literacy, language, emergent literacy, preschool children

Understanding how the home literacy environment affects the acquisition of children's later language and emergent literacy knowledge has become of increasing interest during the past three decades (Lonigan, Burgess, & Anthony, 2000; Neuman & Dickinson, 2001; Sénéchal & LeFevre, 2002; Whitehurst & Lonigan, 1998). Children who acquire successful initial reading skills tend to remain good readers, while children who experience difficulty in learning to read tend to continue to have problems in reading throughout the school years (Adams, 1990; Baydar, Brooks-Gunn, & Furstenberg, 1993; Cunningham & Stanovich, 1997; National Research Council, 1998). Considerable research has shown children's emergent literacy skills—the skills, knowledge, and attitudes that are necessary for the development of reading and writing (Sulzby, 1989; Teale & Sulzby, 1986)—are

Leslie Rescorla served as guest associate editor on this article.

important for later reading success (Lonigan et al., 2000; Sénéchal & LeFevre, 2002; Storch & Whitehurst, 2002; Wagner et al., 1997). The experiences, attitudes, and materials pertaining to literacy that a child encounters and interacts with at home compose a child's home literacy environment (Leseman & DeJong, 1998; Payne, Whitehurst, & Angell, 1994; Sénéchal, LeFevre, Thomas, & Daley, 1998; Whitehurst & Lonigan, 1998). A number of studies have reported relationships between the home literacy environment (in particular, shared book reading interactions) and children's later language and literacy skills (DeJong & Leseman, 2001; Haden, Reese, & Fivush, 1996; Sénéchal & LeFevre, 2002; van Kleeck, Gillam, Hamilton, & McGrath, 1997).

In order to understand the role of the home literacy environment in children's later language and development, it is important to examine how specific aspects of the home literacy environment contribute to children's later language and literacy development. This study examined the extent to which specific home literacy practices (frequency of shared book reading, maternal strategies and sensitivity during book reading, children's interest in reading) and a global measure of the overall responsiveness of the home environment during the preschool years related to children's language and emergent literacy skills between the ages of 3 and 5 years. Study participants were African American preschoolers primarily from low-income families whose development and family environments had been prospectively studied since infancy.

Frequency of Book Reading

A method frequently used to assess the home literacy environment has been to obtain information from parent questionnaires about the frequency that parents read to their children (Chaney, 1994; Dickinson & DeTemple, 1998; Frijters, Barron, & Brunello, 2000; Leseman & DeJong, 1998; Payne et al., 1994). Scarborough and Dobrich (1994), in a review of research studies on the influence of parent-child reading experiences on the development of children's language and literacy skills, reported that parents read to their children an average of 4.5 to 10.5 times per week and that children from low-income families are read to less frequently by their parents than children of middle socioeconomic status. In a meta-analysis published in 1994, Scarborough and Dobrich reported the frequency of shared book reading during the preschool years accounted for 7% of the variance in children's emergent literacy skills at entry to school, 8% of the variance in children's reading achievement from kindergarten through 3rd grade, and 7% of the variance in preschool children's language development. Sim-

ilarly, Bus, van IJzendoorn, and Pellegrini (1995) reported that the frequency of shared book reading during the preschool years accounted for about 8% of the variance in children's later literacy achievement, decreasing in strength as children's literacy skills increased. Although these reported associations on the impact of the frequency of shared book reading on children's development are modest, the importance of shared reading on later literacy and language development warrants further study.

Child Interest During Book Reading

Another potential factor that has been studied in relation to children's development of language and literacy skills is a child's interest in literacy activities (Frijters et al., 2000; Payne et al., 1994; Sénéchal, LeFevre, Hudson, & Lawson, 1996). Bus (2003) noted that the role of parents is to create an interactional context that encourages a child's interest in reading. In their review, Scarborough and Dobrich (1994) reported that a child's perceived interest in literacy accounted for about 14% of the variance in children's language and literacy outcomes and that this correlation was higher than those reported for the frequency and quality measures assessed during shared book reading. More recent studies also have reported a link between children's interest in shared book reading measured by parents' or the child's own rating of their interest or by children's request to be read to (Frijters et al., 2000; Payne et al., 1994; Sénéchal et al., 1996) and children's language development. The impact of children's interest in literacy has been less studied compared to the frequency or quality of interactions during shared book reading; a child's interest in literacy activities may be an important factor contributing to children's language and early literacy development.

Maternal Book Reading Strategies

In addition to studying the frequency of shared book reading, other research has focused on more qualitative measures of book reading, such as the impact of specific types of interactions that occur between parents and their children during shared book reading on children's literacy and language development (Haden et al., 1996; Leseman & DeJong, 1998; Pellegrini, Perlmutter, Galda, & Brody, 1990; Reese & Cox, 1999; van Kleeck et al., 1997). In their meta-analysis of correlational studies, Scarborough and Dobrich (1994) reported that the quality of shared book reading during the preschool years accounted for only 4% of the variance in children's emergent literacy skills and accounted for a smaller degree of association with children's emergent literacy

and language skills than did the frequency of shared book reading. In meta-analyses of intervention studies that attempted to modify the quality of parental book reading to increase children's language and literacy skills, Scarborough and Dobrich reported mild associations accounting for 3%–8% of the variance in children's language and literacy skills. More recent correlational studies (Haden et al., 1996; van Kleeck et al., 1997) and intervention studies (Lonigan & Whitehurst, 1998; Whitehurst, Arnold, et al., 1994; Whitehurst, Epstein, et al., 1994; Whitehurst et al., 1988) have shown that specific parent behaviors, such as asking open-ended questions, adding information, focusing on print concepts, and eliciting abstract language, are related to children's later language skills. A few studies have reported different strategies in book reading among low-income African American mothers and both low- and middle-income White mothers (Anderson-Yockel & Haynes, 1994; Heath, 1983). For example, Heath (1983) described how low-income African American families in comparison to White middle-class families had fewer books, read less to children, placed less emphasis on literacy-related activities, and used a different style when reading to children. Yet, Pelligrini and colleagues (1990) reported that, similar to what had been found in other studies of middle-class children, mothers of Head Start preschoolers adjusted their strategies to the cognitive demand level of their child and redirected children's attention during joint book reading. These studies provide some support that mothers' use of certain types of communicative behaviors during book reading interactions may facilitate children's early language and literacy development, although their impact on children's language and literacy development needs further study.

Maternal Sensitivity

Another measure of home literacy practices, qualitative ratings of parents' (which we refer to as *maternal* instead of *parental*, since most of the literature focuses on mothers) sensitivity and responsiveness to children, has been well documented as influencing children's language development (Landry, Smith, Swank, & Miller-Loncar, 2000; National Institute of Child Health & Human Development, Early Child Care Research Network [NICHD ECCRN], 2000, 2002). A sensitive, responsive, and supportive style by mothers during book reading and other literacy related activities is thought to support positive mother–child interactions, provide a child with the encouragement and motivation to participate in literacy-related interactions, and support language and cognitive development. In a recent study of more than 500 mothers and their children, the NICHD ECCRN (2000) reported that

ratings of responsive, sensitive caregiving from birth to 3 years of age were related to children's cognitive and language development through age 3 years. A follow-up analysis of outcomes at 4½ years showed that maternal sensitivity and responsiveness (i.e., sensitive, stimulating, and supportive maternal behavior) was the strongest single predictor of children's language and preacademic skills at entry to kindergarten (NICHD ECCRN, 2002). Other studies have shown that the social emotional quality of the interactions, as measured by factors such as supportive presence, respect for the child's autonomy, structuring, and limit setting by parents, appeared to be a factor independent of other aspects of home literacy interactions in predicting children's language and reading skills during the early elementary school years (Bus, Leseman, & Keultjes, 2000; DeJong & Leseman, 2001). Given the considerable literature support for the influence of maternal responsiveness on children's language development, it is important to consider its role in children's acquisition of language and emergent literacy skills compared with other measures of the home literacy environment.

Overall Home Environment

In addition to quantitative and qualitative measures of shared book reading and the home literacy environment, it is also important to examine the role of more general characteristics of the home environment in children's development of language and literacy skills. It is possible that it is not just the frequency of reading, specific language-eliciting interactions, and social emotional processes that go on during literacy activities, but also more general dimensions in the child's environment that have an impact on children's language and literacy development. Thus, parents who are responsive, sensitive, and accepting of a child's behavior, and who provide structure, organization, and a positive general emotional climate at home, along with stimulating toys and interactions, facilitate children's language and early literacy development. Over the past 50 years, a body of research has demonstrated linkages between children's home environment and their development (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Bradley, Corwyn, McAdoo, & García Coll, 2001; NICHD ECCRN, 2000, 2002). Families whose homes are rated higher on the Home Observation for Measurement of the Environment Inventory (HOME; Caldwell & Bradley, 1984), a measure of the quality and quantity of stimulation and support available in the home, have been shown to score higher on later measures of language, cognitive, and academic skills (Bradley, Corwyn, Burchinal, et al., 2001; Bradley, Corwyn, McAdoo, & García Coll, 2001). Burchinal and colleagues (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997)

reported that the HOME was one of the best single predictors of children's cognitive development through 8 years of age. Whether the specific home literacy practice measures contribute over and above a global measure of the home environment to children's language and literacy skills in the preschool years needs to be examined.

Summary and Research Questions

The relationship between the home literacy practices during the preschool years and children's language and early literacy skills is not clear. Whether linkages between home literacy practices and children's language and literacy skills differ over time has not previously been examined. Most studies examining the relationship between home literacy practices and children's language and literacy development have documented family literacy practices only once; few studies have been longitudinal, with repeated assessments of both the predictors and outcomes of interest. Possibly, a responsive parenting style is important for early language and literacy development in the early preschool years when literacy learning is more meaning-based, while literacy focused maternal strategies may be more important in the later preschool years, when literacy learning is more print-based. Further, it is not clear if a global measure of the home environment contributes over and above the specific literacy practices to children's language or literacy development. Understanding the role of home literacy practices in children's language and literacy development during the preschool years has important implications for children's later literacy success. The relationship between home literacy practices during the preschool years and children's language and emergent literacy skills is important to study for African American children, particularly children from low-income families. A number of studies have shown that low-income African American children score lower on measures of language and emergent literacy skills during the preschool years and are at increased risk for literacy difficulties in school as compared to their nonminority cohorts (Byrd & Weitzman, 1994; Children's Defense Fund, 2001; The College Board, 1999; Jencks & Phillips, 1998; Patterson, 1997; Snow, Burns, & Griffin, 1998). Further, a few studies have reported that low-income African American families differ from middle-income families in both the quantity and quality of shared book reading and other literacy interactions (Dickinson & Tabors, 1991; Purcell-Gates, 1996). However, a few other researchers who have examined whether low-income African American parents differ in their frequency and/or quality of shared book reading interactions, compared with middle-class families, noted the

considerable individual differences within low-income families and questioned whether these socioeconomic differences have an impact on children's literacy development (Anderson, Anderson, Lynch, & Shapiro, 2003).

This study examined the relationship between home literacy practices during the preschool years and the language and emergent literacy skills of African American children between the ages of 3 years and kindergarten entry, who were primarily from low-income families. In particular, the study examined whether four specific measures of home literacy practices (i.e., parents' perceptions of frequency of shared book reading and of how much a child enjoys being read to, maternal book reading strategies, and maternal sensitivity during shared book reading) could predict both the level of and change in children's early language and literacy skills between 3 years of age and entry to kindergarten. Further, the study examined whether a global measure of the home environment could contribute over and above these specific home literacy practice measures in predicting children's early language and literacy development during the preschool years.

Method

Participants

The participants in this study were 72 African American children (39 girls and 33 boys) who were part of a larger longitudinal study that examined the relationship between children's health and their development (Roberts et al., 1995). The children were recruited from community-based child care centers in several small southern cities. The criteria for study inclusion were as follows: African American, enrolled in child care, less than 12 months of age, and appearing to be typically developing. Children entered the study at a mean age of 8.1 months ($SD = 2.0$). In the current study, we included all children who continued to participate in the study but excluded from these analyses 4 children whose older sibling also participated in the study and 2 children with developmental disorders.

The caregivers' mean age at study onset was 25.7 years ($SD = 7.6$), ranging from 14 to 63 years. At entry to the study, 91.8% of the caregivers were the children's biological mothers. The remaining were fathers (1.4%), grandmothers (4.1%), or foster or adoptive mothers (2.7%). When the children entered the study, 28.4% of caregivers had less than a high school education, 28.4% had a high school education, and 43.2% had education beyond high school. By the children's entry to kindergarten, 18.9% of caregivers had less than a high school education, 16.2% had a high school education, and 64.9% had education beyond high school. At study onset, the majority of the families (74.3%)

Table 1. Ages of administration for home literacy predictors and child language and literacy outcomes.

Predictors and outcomes	Child age (months)							Pre-K
	9	18	24	30	36	42	48	
Home literacy predictors								
Frequency of reading		✓		✓		✓		✓
Enjoyment of reading		✓		✓		✓		✓
Maternal sensitivity			✓		✓		✓	
Maternal book-reading strategies			✓		✓		✓	
HOME	✓	✓		✓		✓		
Language/literacy outcomes								
PPVT-R					✓			✓
CELF-RL/EL							✓	✓
TERA							✓	✓

Note. HOME = Home Observation for Measurement of the Environmental Inventory; CELF-EL = Clinical Evaluation of Language Fundamentals–Expressive Language score; CELF-RL = Clinical Evaluation of Language Fundamentals–Receptive Language score; PPVT-R = Peabody Picture Vocabulary Test—Revised; Pre-K = Kindergarten entry; TERA = Test of Early Reading Ability.

had an income that was <185% of the federal poverty threshold (income <\$20,609 for a family of three) and were categorized as low-income. When the children entered kindergarten, 58% of the families had an income that was <185% of the federal poverty threshold. At study onset, 29.7% of the primary caregivers were married.

Overview of Study Procedures

In this report, children were followed from their first year of life through entry to kindergarten. The majority of primary caregivers were mothers; therefore, all primary caregivers are referred to as *mothers* throughout this study. Family background measures (mother's education level, mother's reading level) were assessed at entry to the study. Mothers were given questionnaires regarding their children's literacy behaviors when their children were 18, 30, and 42 months old and before kindergarten entry. Mothers' communicative strategies and sensitivity during shared book reading were assessed when their children were 2, 3, and 4 years of age. The overall quality and responsiveness of the home environment were assessed at 9, 18, 30, and 42 months of age and at entry to kindergarten. Children's language and literacy development was assessed annually between 3 years of age and kindergarten entry. See Table 1 for an overview of when the home literacy measures were completed and when the study children completed the language and literacy assessments.

Family Background Measures

The education level of mothers was determined from self-report upon entry into the study. To determine

reading level, the Wide Range Achievement Test—Revised (WRAT–R) (Jastak & Wilkinson, 1984) was administered to mothers at study onset. The WRAT–R is a brief achievement test with three subtests (Reading, Spelling, and Arithmetic). However, only the score from the Reading subtest was used in this study. The Reading subtest measures the ability to recognize and name letters and words. The WRAT–R has adequate levels of reliability and validity. The mean score of mothers on the WRAT–R was 92.1 ($SD = 14.5$).

Measures of the Home Literacy Practices Frequency of Book Reading

Three trained project staff members used a questionnaire to interview mothers (or the primary guardian) about their home literacy environment when their children were 18, 30, and 42 months of age and at kindergarten entry. The frequency of shared book reading was assessed with the question, "How often is your child read to?" The number of days per week (maximum = 7) that the parent reported reading to his or her child was computed and entered into the analysis.

Child's Interest in Reading

On the same home literacy questionnaire that assessed frequency of reading, mothers also were interviewed about the child's enjoyment of book reading when children were 18, 30, and 42 months of age and at kindergarten entry. Mothers were asked, "Does your child enjoy being read to?" and were provided five choices: (1) *not at all*, (2) *a little*, (3) *pretty much*, (4) *very much*, or (5) *loves it*. The value mothers reported was entered into the analysis at each age.

Maternal Book Reading Strategies

The interactions of mothers and their children were videotaped for 10 min during shared book reading when the children were 2, 3, and 4 years of age. The interactions were coded for the type of information the parent relayed to the child while reading (McClelland, Hammett, Roberts, & Dunston, in review). The mother was asked to read to her child the way she would at home and was told the researcher would be outside the room. Age-appropriate books were provided, with one book at each session being a picture book without written words. The books were (a) for 2-year-olds, *Max's Bedtime* (Wells, 1985), *Find the Puppy* (Cartwright & Zeff, 1983), and *Cookie Monster's Good Time to Eat* (Brown, 1982); (b) for 3-year-olds, *Yoo-hoo, Little Rabbit* (Miller, 1986), *Early Words* (Scarry, 1976), and *Carl's Afternoon in the Park* (Day, 1991); and (c) for 4-year-olds, *Winnie the Pooh All Year Long* (Walt Disney Productions, 1981), *Carl Goes Shopping* (Day, 1989), and *The Very Hungry Caterpillar* (Carle, 1969).

The category system for the coding of mothers' strategies during storybook reading was adapted from the work of Haden and colleagues (1996) and DeTemple (1994). The following strategies used by the mother to convey information were coded: simple description (i.e., physical attribute of a character, animal, or object; simple action; or location description); elaborate description (i.e., explanation, summary, or elaboration of plot information, focusing on what is happening); links to the world (i.e., connection between real-world knowledge such as personal experiences and the book); prediction/inferences (i.e., predictions about what is going to happen in the text and reasoning about motivations, internal states, or causality); book concepts (i.e., references to books such as title, author, page-turning, or the process of reading); letter/word related references (i.e., references to words or letters as print, such as identifying the letter *B*); letter-sound relationships (i.e., information about letter-sound relationships, such as rhyming or initial letter sound); and recall/recite of the text (i.e., pretend reading by the child, saying memorized text, or repetition of the text just read). The number of times the parent used each of these strategies was computed. See McClelland and Roberts (in review) for further details about the coding procedures. Inter-coder reliability between two coders was calculated for 10% of the sample using intraclass correlations and was .79 at 2 years, .83 at 3 years, and .81 at 4 years of age. In the analysis, the total frequency of these maternal strategies summed together was computed for each age.

Maternal Sensitivity

During the shared book reading interactions, the overall level of maternal sensitivity was coded. Ma-

ternal sensitivity was determined using MULTI-PASS (Marfo, 1992), a video coding scheme for analyzing parent-child interaction. For this study, maternal sensitivity was a composite variable computed from the means of the following six dimensions as defined in MULTI-PASS: (a) warmth—the extent to which the child's mother displays positive affect to the child (e.g., patting, kissing, verbal endearments) or other actions depicting fondness; (b) sensitivity—the extent to which the child's mother shows an awareness of and reads the child's verbal and nonverbal cues and signals, and exhibits awareness of the child's current developmental capabilities; (c) responsiveness—how promptly, consistently, and appropriately the child's mother responds to the child's cues, interests, and overt behaviors; (d) encouragement of initiative—determined by how the child's mother's interaction style reflects awareness of the importance of a child's need to be self-directed (e.g., expects the child to select next activity and encourages the child to explore tasks independently); (e) stimulation value—the extent to which the mother orients her interactions toward providing cognitive or linguistic stimulation to the child (e.g., uses teachable moments to promote cognitive or linguistic competence); and (f) elaborateness—the degree to which the parent follows, expands, or elaborates on the child's verbal and nonverbal behaviors. See Wallace and colleagues (Wallace, Roberts, & Lodder, 1998) for more details about the coding procedure.

Two African American coders coded the interactions of mothers from videotapes of mother-child book reading interactions to determine the levels of these behaviors. Each behavior was coded using a 5-point rating scale, with 1 indicating the lowest amount of the behavior and 5 indicating the highest amount of the behavior. Inter-rater agreement was computed for 10% of the tapes and averaged across the six dimensions and was .55 at 2 years, .69 at 3 years, and .61 at 4 years using kappa. A kappa of greater than .4 indicates good-to-moderate agreement (Cohen, 1968). The results of a factor analysis at each age indicated that the six mother-child interaction variables that were used to form the sensitivity composite variable were highly correlated: at 2 years, the Cronbach coefficient alpha was .77, at 3 years, the Cronbach coefficient alpha was .79, and at 4 years, the Cronbach coefficient alpha was .89.

Overall Responsiveness of the Home Environment

The overall quality and responsiveness of the home environment were assessed using the HOME for infants-toddlers at 18 months and early childhood at 30 months, 42 months, and at entry to kindergarten. The HOME is a 45-item semistructured observation/interview that measures the primary caregiver's emotional and verbal

responsivity, acceptance of the child's behavior, organization of the environment, academic and language stimulation, and maternal involvement with the child. The HOME has had considerable norming and standardization and has been widely used in studies (e.g., Bradley, Corwyn, Burchinal, et al., 2001; Bradley, Corwyn, McAdoo, & García Coll, 2001; Bradley, Corwyn, & Whiteside-Mansell, 1996). Moderate internal consistency, acceptable levels of test-retest reliability, and high levels of content validity have been reported for HOME scores for White and African American families (Bradley et al., 1996; Bradley, Corwyn, Burchinal, et al., 2001; Bradley, Corwyn, McAdoo, & García Coll, 2001; Caldwell & Bradley, 1984). During the 5-year period, home visits were conducted by two trained nurse practitioners and two speech-language pathologists who had achieved interrater agreement of at least 95% before collecting the data. The proportion of items passed for the HOME total score computed at each age was entered into the analysis.

Measurement of Child Language and Literacy Outcomes

There were two different measures of children's language and one measure of emergent literacy that were administered between 3 years and entry to kindergarten. Because this was a longitudinal study that began in 1990, children's language and emergent literacy skills were evaluated using the versions of the tests that were current at the time period; more recent editions are now available. The Peabody Picture Vocabulary Test—Revised (PPVT-R; Dunn & Dunn, 1981) was administered to study participants to assess receptive vocabulary at 3 years of age and at entry to kindergarten, and a standard score was computed. The Clinical Evaluation of Language Fundamentals—Preschool (CELF-P; Wiig, Secord, & Semel, 1992) was administered to children at 4 years of age and kindergarten entry to measure receptive and expressive language skills. The receptive language sections on the CELF-P measure linguistic and basic concepts and sentence structure, while the expressive sections measure the ability to recall and repeat spoken sentences, formulation of labels, and word structure. Standard scores on the CELF-P for receptive language (CELF-RL) and expressive language (CELF-EL) were computed. The Test of Early Reading Ability (TERA; Reid, Hresko, & Hammil, 1981) examines children's emergent literacy knowledge as it relates to the alphabet, conventions of print, and the ability to construct meaning from print. The TERA was administered when children were 4 years old and at kindergarten entry. The mean age of the study children when tested at kindergarten entry was 5 years, 3 months ($SD = 3.4$ months). The lan-

guage and literacy outcome measures were selected based on their standardization and adequate levels of reliability and validity. Because of scheduling or other related issues, all children were not included for all data points in this longitudinal study. The number of participants included in the analysis of each measure is shown in the tables.

Results

Analysis Strategy

Analyses examined the extent to which the specific home literacy practices related to children's language and emergent literacy skills between the ages of 3 years and entry to kindergarten and compared those associations with the associations observed from a global measure of the home environment. There were four specific home literacy practices collected during the preschool years: (a) mothers' report of the frequency of mother-child shared book reading, (b) mothers' report of their child's interest in book reading, (c) frequency of maternal communicative strategies during shared book reading, and (d) ratings of maternal sensitivity during shared book reading. There also was one global measure of the home environment, the HOME Total. We predicted that the specific home literacy practices would relate to children's language and early literacy between 3 years of age and entry to kindergarten. Further, we hypothesized that these associations would be stronger than those observed between a global measure of the home environment, the HOME Total, and children's language and early literacy skills. The four outcome measures were standardized scores collected at various ages and included a measure of (a) receptive vocabulary (PPVT-R) collected at 3 years and kindergarten entry, (b) receptive and expressive language on the CELF-P (CELF-RL and CELF-EL) collected at 4 years and kindergarten entry, and (c) early literacy (TERA) collected at 4 years and kindergarten entry. The first 8 children who entered into the study were not administered the CELF-P at kindergarten entry because of a change in the protocol. Therefore, the number of children was lower for the CELF-P as compared to the other measures at kindergarten entry.

Table 2 provides descriptive statistics for all of the home literacy practices and child language and emergent literacy outcomes at each age and also includes selected child and maternal characteristics (child's gender, maternal reading as measured by WRAT-R scores, and highest level of years of mothers' education) included as covariates in some of the analyses. The maternal WRAT-R and maternal education covariates, listed in the first column, were collected when children entered into the study. To provide descriptive information about

Table 2. Descriptive statistics for home literacy environment measures by age.

	Age (months)				
	6-12 (n = 72)	18/24 ^a (n = 59)	30/36 ^a (n = 59)	42/48 ^a (n = 61)	54/Pre-K ^a (n = 61)
Covariates					
Gender (% male)	44				
Maternal WRAT-R	92.6 (14.1)				
Maternal education (years)	13.27(1.95)				
Home literacy practices					
Literacy questionnaire					
No. days read to child		4.34(2.31)	4.70(2.07)	4.71(2.31)	3.62(2.48)
Child enjoys reading					
1-Not at All		0	0	0	0
2-A little		17%	8%	7%	10%
3-Pretty much		20%	17%	13%	15%
4-Very much		29%	12%	16%	16%
5-Loves it		34%	63%	64%	57%
Mother-child book reading					
Maternal sensitivity		3.80(.51)	3.93(.55)	3.77(.58)	
Maternal strategies		60.58(26.88)	59.51(17.10)	66.97(21.84)	
HOME		.78(.15)	.81(.91)	.82(.11)	.79(.12)
Child outcomes					
PPVT-R			85.58(11.98)		83.15(15.38)
CELF-RL				94.34(12.17)	95.36(16.02)
CELF-EL				100.00(12.23)	102.42(11.39)
TERA				99.69(10.87)	92.02(12.24)

Note. WRAT-R = Wide Range Achievement Test—Revised.

^aThe slash between ages indicates “or.”

the relationships of the home literacy predictors and the covariates, intercorrelations were run among the five home literacy and child and family background measures.

Repeated measures analyses were conducted (see Singer, 1998, and NICHD ECCRN, 1998, for complete details) to determine how the home literacy measures predicted children’s language and literacy development. We wanted to know if the level (at both assessments for a particular measure) of children’s language and literacy skills and change or rate of growth in children’s language and literacy skills (between the two assessments) during early childhood were related to the home literacy practices. The repeated measures analyses simultaneously predicted the overall level and rate of change in children’s language and literacy scores from literacy practices measures and selected covariates. The repeated measures analyses estimated the mean of the repeated assessments as the intercept and the difference between them as a slope. The main effect for literacy activities in these analyses tested the extent to which that activity related to the mean of the repeated assessment. The Age \times Literacy interaction tested the extent to which that literacy activity related to change over time on that outcome. These analyses

allowed for repeated assessments of both the independent (i.e., home literacy activities) and the dependent variables (i.e., children’s language and literacy skills). We included in our model a global measure of family literacy practice (i.e., the HOME and covariates—the child’s gender, maternal education, and maternal reading skill). For the rating of child enjoyment, the ordinal predictor was included in the analysis models as a categorical variable, with a linear contrast across the four levels of this variable. Because of the number of possible associations (i.e., five home literacy practices measures and four child outcomes), findings are interpreted only if the repeated measures analyses showed a consistent pattern of association across the outcome measures.

In a follow-up analysis, we wanted to determine whether the global measure of the home environment contributed over and above the four specific literacy practice measures (i.e., reading frequency, enjoyment of reading, book reading strategies, maternal sensitivity) in predicting children’s early language and literacy development. The analysis added the HOME to a model that included the four specific home literacy practice measures, the three covariates, the child’s test age, and the interactions (among age, the literacy practices, and the covariates).

Table 3. Correlations among home literacy practices at 18/24 months ($N = 59$).

	Like read	Maternal sensitivity	Book strategy	HOME	Maternal WRAT-R	Maternal education	Male
Times read to	.45***	.18	.16	.55***	.02	.31*	.05
Like read	-.01		-.00	.45***	.26*	.25	-.09
Maternal sensitivity			.35**	.29*	.12	.37**	.09
Book strategy				.30*	.16	.26	-.07
HOME					.30*	.50***	.05
Maternal WRAT-R						.45***	-.02
Maternal education							.18

* $p < .05$. ** $p < .01$. *** $p < .001$.

Home Literacy Practices

The literacy questionnaire and HOME were administered at 18, 30, 42, and 54 months, and the mother-child book reading interactions measure was administered at 24, 36, and 48 months, so for the analysis we combined the 18 and 24 month data into a single record, the 30 and 36 month data into a single record, and the 42 and 48 month data into a single record. That is, we treated the 18 month literacy questionnaires and HOME data and the 24 month mother-child interactions as if they were collected at the same age. Further, we also treated the 48 month mother-child interaction scores as if they were collected at 54 months, using a carry-forward imputation approach.

As Table 2 illustrates, the literacy practices did not change markedly over time. Mothers reported on average reading to their children slightly more at 3 and 4 years (4.7 times per week) than at 2 years (4.3 times per week) or at entry to kindergarten (3.6 times per week). The across-time correlations among these reports of frequency of reading ranged from .40 to .49 for number of days per week read to child. Mothers reported their child very much enjoyed or loved reading slightly more at 3 years (75%), kindergarten entry (73%), and 4 years (80%), than at 2 years (63%). The across-time correlations among these reports were .14 to .59 for child enjoyment, considerably lower than for the other literacy environment measures we examined. The rating of maternal sensitivity was relatively consistent across ages, ranging from 3.8 at 2 and 4 years to 3.9 at 3 years. Across-time correlations were mild to moderately correlated, varying from .33 to .47 for maternal sensitivity. Maternal reading strategies also were relatively consistent between 2 and 4 years, with mothers using 60.1 book reading strategies at 2 years, 60.0 strategies at 3 years, and 67.0 strategies at 4 years during the 10-min book reading session. The across-time correlations were relatively high, ranging from .54 to .69 for reading strategies. Finally, the HOME Total scores (computed as the proportion of items passed) were also

relatively stable, as reflected in both the mean proportions over time (.78 at 18 months, .81 at 30 months, .82 at 42 months, and .79 at 54 months) and the across-time correlations (.60-.75).

Intercorrelations Among the Home Literacy Measures and Background Measures at Each Age

Table 3 shows the intercorrelations among the four specific literacy practices (frequency of reading, child's enjoyment of reading, maternal sensitivity, book reading strategy) and the HOME at age 18/24 months and the three covariates (child's gender, maternal WRAT-R scores, and maternal education). Because the patterns of correlations were similar at the other ages, only the data at 18/24 months are included in the table. The other two tables for 36 and 48 months can be obtained from the first author. These correlations indicate there is considerable overlap among the various home literacy assessments. The two measures from the literacy questionnaire (frequency of reading and child's enjoyment of reading) were moderately correlated with each other, as were the two measures from book-reading interactions (maternal sensitivity and book reading strategy). The global measure, HOME Total, was moderately to highly correlated with the four specific literacy practice measures. Maternal education was mildly correlated with only two of the four literacy practices—frequency of reading and maternal sensitivity—while moderately correlated with the more global measure of the HOME and the mothers' measure of reading on the WRAT-R. In comparison, the mothers' WRAT-R scores were less consistently and mildly correlated regarding the child's enjoyment of reading and the HOME at 2 years. Gender was not significantly correlated with the specific or global literacy measures.

Language and Literacy Measures

Table 2 shows the means and standard deviations for the outcomes measured at each age. Children

Table 4. Correlations and partial correlations^{a,b} for home literacy practices (averaged across all ages) with early child language and literacy outcomes.

Language and literacy outcomes	N	Times read to ^c	Enjoy reading ^c	Maternal sensitivity ^c	Book strategies ^c	HOME ^c
		<i>r</i> (partial <i>r</i>)	<i>r</i>	<i>r</i> (partial <i>r</i>)	<i>r</i> (partial <i>r</i>)	<i>r</i> (partial <i>r</i>)
PPVT-R						
3 years	58	.10	-.00	.47***(.44)***	.32**(.28*)	.50***(.48**)
Kindergarten entry	61	.21	.24	.26* (.12)	.28*(.25)	.46***(.33**)
CELF-RL						
4 years	61	.18	.34	.17	.18	.35** (.29*)
Kindergarten entry	53	.13	.20	.19	.08	.31** (.24)
CELF-EL						
4 years	61	.25	.44***	.19	.18	.38** (.30*)
Kindergarten entry	53	.24	.36	.29	.15	.39** (.29*)
TERA						
4 years	61	.16	.38	.16	.08	.48***(.31**)
Kindergarten entry	61	.15	.08	.04	.09	.43** (.32**)

^aPresented partial correlations only for variables significant in the longitudinal analyses. ^bPartialled out the child's gender, maternal education, and maternal reading skill. ^cAveraged across ages administered (times read to and enjoy reading—18, 30, and 42 months), (maternal sensitivity and book strategies—2, 3, and 4 years), and HOME (9, 18, 30, and 42 months).

* $p < .05$. ** $p < .01$. *** $p < .001$.

scored more than 1 *SD* below the mean for receptive vocabulary on the PPVT-R at both 3 and 4 years. For emergent literacy on the TERA, children scored at the mean at 4 years and approximately 0.5 *SD* below the mean at kindergarten entry. Children scored at the mean for expressive language on the CELF-P and about 0.5 *SD* below the mean in receptive language. The across-time correlations for each of the successive language and literacy measures (e.g., PPVT-R at 3 years and at kindergarten entry) indicated that the scores were highly correlated: .63 for PPVT-R, .64 for CELF-RL, .74 for CELF-EL, and .49 for TERA. CELF-RL and CELF-EL were highly correlated at both 48 months ($r = .74$) and kindergarten entry ($r = .72$). At kindergarten entry, PPVT-R scores were highly correlated with both CELF-RL ($r = .65$) and CELF-EL ($r = .75$) scores, while TERA scores were moderately to highly correlated with scores on all of the language measures ($r = .44$ -.59).

Relationship of the Home Literacy Environment to Children's Language and Literacy Development

Number of Times Mother Reads to Child

This home literacy measure was not significantly related to the mean score (main effect) or the change over time (Age \times Language/Literacy Interaction) for any of the outcomes.

Child Enjoyment of Reading

This home literacy measure was not significantly related to the mean score (main effect) or the change over time (Age \times Language/Literacy Interaction) for any of the outcomes.

Maternal Sensitivity

Maternal sensitivity was significantly related to children's receptive vocabulary ($B = 5.24$), $F(1, 67) = 6.61$, $p < .05$, demonstrating an association between observed maternal sensitivity during book reading and children's mean level of vocabulary between 3 years and entry to kindergarten. The magnitude of this association is illustrated by the partial correlations (after partialing out the background factors) shown in Table 4 (see Table 4 also for the zero-order correlations, which show modest associations between maternal sensitivity and children's vocabulary).

Book Reading Strategies

The measure of book-reading strategies ($B = .17$), $F(1, 67) = 6.45$, $p < .05$, was also related to scores on the PPVT-R. The main effect of the book-reading strategies indicated that mothers who used more book reading strategies had children with higher vocabulary scores over time between 3 years and entry to kindergarten. The partial correlations shown in Table 4 suggest modest associations.

HOME

In contrast, the HOME was related to all four of the outcomes, showing a positive association with scores averaged over time for receptive vocabulary (PPVT-R) at 3 years and at entry to kindergarten ($B = .59$), $F(1, 66) = 17.21$, $p < .001$; receptive language (CELF-RL) at 4 years and at entry to kindergarten ($B = .41$), $F(1, 56) = 4.77$, $p < .05$; expressive language (CELF-EL) at 4 years and at entry to kindergarten ($B = .35$), $F(1, 56) = 4.20$, $p < .01$; and early literacy skills (TERA) at 4 years and at entry to kindergarten ($B = .38$), $F(1, 56) = 8.57$, $p < .01$. As shown in Table 4, the HOME Total showed significant associations with both CELF-RL and CELF-EL at 4 years and at kindergarten entry, PPVT-R receptive vocabulary at 3 years and at kindergarten entry, and TERA early literacy at 4 years and at kindergarten entry (even after partialing out the background factors). Partial correlations indicated moderate associations between the HOME and the language and literacy outcomes.

Contribution of Global Measure of Home Environment Over and Above the Home Literacy Practices

The final analysis added the global measure of the home environment, the HOME Total, to a model including the four home literacy practices (i.e., reading frequency, enjoyment of reading, book reading strategies, maternal sensitivity), the three covariates, and the child's test age, and interactions (among age, the literacy practices, and the covariates) to determine whether a global measure of the home environment contributed over and above the specific literacy practice measures in predicting children's early language and literacy development. After adjusting for the four specific literacy practices, the HOME was a significant predictor of the overall level of receptive vocabulary at 3 years and at kindergarten entry ($B = .53$), $F(1, 67) = 12.08$, $p < .001$, and of the overall level of preschool early literacy skills at 4 years and at kindergarten entry ($B = .39$), $F(1, 54) = 7.99$, $p < .01$. Finally, this analysis did not support the hypothesis that the literacy practices, in part, account for the observed association between the HOME scores and the child language and literacy outcomes.

Discussion

This study followed African American children primarily from low-income families from 18 months to kindergarten entry and examined the relationship between four specific home literacy practices and a global measure of the home environment, family background

factors, and children's language and literacy skills during the preschool years. The specific home literacy practices showed moderate-to-large correlations with each other, and only a few significant associations with the language and literacy outcomes, after controlling for maternal education, maternal reading skills, and the child's gender. Although the longitudinal analyses indicated that maternal sensitivity and maternal use of book reading strategies were significantly associated with children's levels of receptive vocabulary at 3 years and at entry to kindergarten, there was not a consistent pattern of association between either maternal sensitivity or maternal use of book reading strategies and the other language outcome measures during the preschool years. The global measure of the home environment, the HOME, was the most consistent predictor of children's language and literacy skills. It predicted all four of the language and literacy outcomes: receptive and expressive language at 4 years of age and at entry to kindergarten, receptive vocabulary at 3 years and at entry to kindergarten, and early literacy skills at 4 years and at entry to kindergarten. The HOME also contributed over and above the specific literacy practice measures in predicting children's early language and literacy development.

These findings of only a few modest associations between specific family literacy practices and children's language and literacy development need to be considered given previous reports of a positive relationship between specific home literacy practices and children's language and literacy development (Bus et al., 1995; Haden et al., 1996; Reese & Cox, 1999; Scarborough & Dobrich, 1994; van Kleeck et al., 1997). Several studies have reported that children's language and literacy development are related to the frequency that mothers reported reading to their child and their child's enjoyment of reading (see reviews by Bus & colleagues, 1995; Scarborough & Dobrich, 1994), maternal sensitivity (Landry et al., 2000; NICHD ECCRN, 2000, 2002) and maternal book reading strategies (Haden et al., 1996; Reese & Cox, 1999; van Kleeck et al., 1997). Overall, the magnitude of the individual correlations between the specific literacy practices and all of the measures of children's language and literacy development in this study was considerably less consistent and generally not as large as compared to previous studies.

Although we found that mothers who scored higher in maternal sensitivity and who used more book reading strategies had children with higher average receptive vocabulary scores on the PPVT-R at 3 years and at entry to kindergarten in the longitudinal analyses, we were not able to interpret this finding. Neither maternal sensitivity nor maternal use of book reading strategies was significantly related to the overall measures of receptive

or expressive language as measured on the CELF-P or to literacy outcomes as measured by the TERA. Perhaps the maternal literacy practices may be related to receptive vocabulary but not to measures that include both vocabulary and sentence structure. In future studies, we plan to look more specifically at these associations. We did not find an association between the literacy practices and children's early literacy development; perhaps we will find associations in the early school years when literacy learning is more phonologically based (Sénéchal & LeFevre, 2002; Whitehurst & Lonigan, 1998).

We found that the measure of the overall quality and responsiveness of the home environment, the HOME, was the most consistent and strongest predictor of children's language and literacy skills. In the longitudinal analyses and the individual correlation analyses (even after partialing out important child and family background factors), the home environment was related to both children's language and early literacy skills. In fact, in the longitudinal analyses, the HOME was related to all four of the outcomes showing a positive association with averaged over time scores for receptive and expressive language, receptive vocabulary, and early literacy skills. Furthermore, the global measure of overall responsiveness and support of the home environment contributed over and above the specific literacy practice measures in predicting children's early language and literacy development.

There are a few possible explanations for why the HOME was more predictive of children's language and literacy development than the specific literacy practices and appeared to encompass more variance than accounted for by the specific literacy practices. The overall index of the HOME may measure a general educational and social milieu of the home environment that the child experiences, which may generalize from one point in time to the next more so than the specific literacy practices. The HOME may assess several parameters of a child's language and literacy environment (i.e., the primary caregiver's emotional and verbal responsiveness, acceptance of the child's behavior, organization of the environment, academic and language stimulation, and maternal involvement with the child) that together have a greater impact on a child's language and literacy development than isolated literacy practices. It may thus be tapping some of the same underlying constructs as the individual home literacy practices we studied. It is also likely that measurement issues, particularly the psychometric characteristics of the HOME, can explain why we see stronger linkages between children's language and literacy skills with the HOME as compared to the specific home literacy practices. The HOME is theoretically driven and has undergone extensive psychometric testing and evaluation, including standardization and reliability

and validity studies (Bradley, Corwyn, Burchinal, et al., 2001; Bradley, Corwyn, McAdoo, & García Coll, 2001; Bradley et al., 1996). Thus, the HOME psychometrically appears to provide a better index in the statistical analyses than the specific home literacy practices. The specific literacy practices generally have no norms and limited psychometric characteristics (although some, such as frequency of book reading strategies or ratings of sensitivity, have been used in a number of studies), which can affect their ability to detect associations in the statistical analyses we conducted. These data do not suggest that compared to the HOME the specific individual literacy practices are not contributing to children's language and literacy acquisition. Given the importance of home literacy practices (Haden et al., 1996; Leseman & DeJong, 1998; NICHD ECCRN, 2002; Payne et al., 1994; van Kleeck et al., 1997) and the home environment, as described in recent transactional and ecological models of child development (Bronfenbrenner & Morris, 1998; Sameroff & Fiese, 2000), it is likely that specific home literacy practices are measuring some of the same dimensions included in the general home environment and that measurement issues may be explaining our findings.

For several reasons, it is important that these data are interpreted cautiously. First, other predictor variables that we did not measure are accounting for differences in children's language and literacy development. The magnitude of the simple correlations between the family literacy practices and children's language and emergent literacy skills were modest, even with the HOME (which was our most consistent and significant predictor). These data emphasize the importance of controlling for background factors in the data analyses, such as the education level of the mother and the general home environment. Second, the results should be interpreted carefully when generalizing to other samples. The sample size was small and included only African American children who were recruited in infancy from child care programs, and their mothers. Third, other considerations of this study relate to the outcomes studied. The TERA is a gross measure of children's emergent literacy skills; therefore, different results may have occurred with a more sensitive measure that would examine a wider range of emergent literacy skills such as phonological awareness. Also, newer versions of many of the language and literacy tests are now available. However, the study was longitudinal, and the instruments used for the language and literacy assessments were well-accepted measures when the assessments were made. Fourth, maternal report of frequency of book reading and a child's interest in literacy was collected from the children's mothers during an interview and may be

influenced by social desirability of responses. Researchers (Scarborough & Dobrich, 1994) have cautioned that it is important to consider the social desirability of information about reading frequency collected from questionnaires or interviews, because they may not be as valid a measure of children's literacy experiences compared to other literacy practices. Further, it is possible that the interaction style of mothers during the book reading in a lab setting may differ from typical interaction patterns in a child's home. Yet, both the use of interviews to collect frequency of reading data and observation of mothers reading to their child in a lab setting have been used in a number of studies (Haden et al., 1996; NICHD ECCRN, 2002; Scarborough & Dobrich, 1994; van Kleeck et al., 1997).

There are many strengths of this study that make it a very important contribution to the literature. First, the study is prospective in design, following a group of children longitudinally from infancy through entry to school. Second, the study provides important information about the home literacy practices of African American children and their language and literacy development during the preschool years. Third, the home literacy practices were assessed at multiple time points, enabling the examination of the literacy practices' stability and cumulative effects over time. Fourth, multiple measures of specific literacy practices were assessed, including questionnaires, observations by trained examiners, and behavioral coding and rating of videotaped interactions. Fifth, both children's language and literacy skills were assessed using tests that were administered at least twice from 3 years through kindergarten entry, thus allowing more confidence in the findings than if the tests were only administered once. Finally, these results have important implications for future research studies examining the relationship between home literacy practices and children's language and literacy acquisition. These findings lend support for the use of the HOME as a global measure of the home environment, because it is done in a natural setting during a visit to the child's home and is less costly to collect than measures such as counting the use of specific maternal strategies and because it does not entail extensive coding of taped sessions.

In summary, the specific home literacy practices showed modest correlations and only a few significant associations with children's language and literacy skills after controlling for important child and family background measures. The global measure of the overall responsiveness and support of the home environment was the strongest and most consistent predictor of children's language and early literacy skills. Further, we did find evidence that a global measure of the home environment contributed over and above the specific literacy practice measures in predicting chil-

dren's early language and literacy development. We will continue to follow the study children to see whether these home literacy practices relate to children's later language and literacy achievement during the elementary school years.

Acknowledgments

The data collection and analysis for this research have been supported by the National Institutes of Health (Grant 01 R01-CD03817-01A1), Maternal and Child Health Program (Grants MCJ-370599, MCJ-370649, and 1 R40 MC 00343 Title V, Social Security Act), Health Resources and Services Administration, U.S. Department of Health and Human Services, and the Spencer Foundation. We are grateful to Eloise Neebe for the data analyses, Susan Zeisel for the data collection and coding, Janet McClelland for her book reading coding, and Sarah Henderson and Anne Taylor for assistance with manuscript preparation.

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Received April 26, 2004

Accepted June 21, 2004

DOI: 10.1044/1092-4388(2005/024)

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