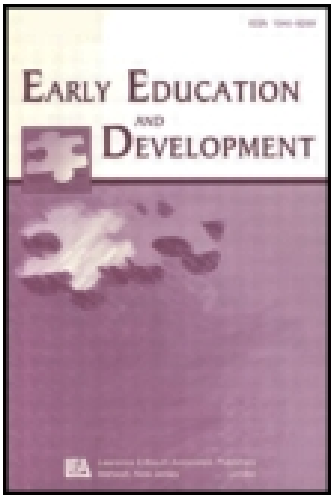

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Preschoolers' Emergent Literacy Skills: The Mediating Role of Maternal Reading Beliefs

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Preschoolers' Emergent Literacy Skills: The Mediating Role of Maternal Reading Beliefs

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Research Findings: The purpose of this paper is to explore the association between maternal reading beliefs and children's emergent literacy outcomes in light of maternal education. Furthermore, I consider whether maternal reading beliefs may mediate the association between maternal education level and children's print knowledge and phonological awareness while classroom quality, maternal literacy practices, gender, and ethnicity are controlled. Data were collected from a socioeconomically diverse population of 92 mothers and their preschool children from 2 demographically different counties in a Mid-Atlantic state. Correlations among all measures were moderate and positive, with higher levels of maternal education associated with higher scores on a maternal beliefs measure and higher child scores on a print knowledge and phonological awareness measure. Maternal reading beliefs mediated the effects of maternal education level on children's print knowledge and phonological awareness. This pathway remained in the presence of the 4 covariates for print knowledge only. *Practice or Policy*: These findings have important implications for practitioners as they work to involve parents in students' literacy development by creating parent training programs that not only integrate but also highlight and even shape maternal reading beliefs.

It is well established that literacy development begins long before a child steps into the primary classroom and receives formal reading instruction. Prior to school, children gain familiarity with the uses of literacy, develop attitudes toward literacy and reading, and the gain precursory literacy skills (e.g., phonological awareness, print knowledge) upon which formal reading and writing depends (Heath, 1983; Teale, 1986; van Kleeck, 2003; Whitehurst & Lonigan, 1998). These precursory literacy skills, typically called *emergent literacy skills,* contribute significantly to children's successful mastery of reading and writing in the early elementary years (Hammill, 2004; La Paro & Pianta, 2000; National Early Literacy Panel, 2009; Storch & Whitehurst, 2002). Indeed, children who enter school with strong emergent literacy skills tend to develop into strong readers, whereas children who lag in their emergent literacy skill development in kindergarten or first-grade entry are likely to struggle in their reading achievement (Duncan et al., 2007; Juel, 1988). The focus of the present study is on the experiential factors, namely maternal reading beliefs and practices, that may contribute to 4-year-old children's development of two particular emergent literacy skills: print knowledge and phonological awareness.

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Print knowledge is one of the best predictors of children's reading achievement (Hammill, 2004; Lonigan, 2006; National Early Literacy Panel, 2009). Young children's print knowledge is represented by their familiarity with print forms and features (e.g., words, letters, print directionality) and their understanding of the functions of literacy (e.g., their understanding that print is a system of communication and conveys meaning; Clay, 1979; Justice & Ezell, 2001; Lomax & McGee, 1987). Like print knowledge, phonological awareness is also highly correlated with children's later reading achievement (National Early Literacy Panel, 2009). *Phonological awareness* refers to the ability to recognize that spoken language can be broken into smaller parts and thus to attend accurately to the sound structure of speech (Snow, Burns, & Griffin, 1998). Children demonstrate phonological awareness when they successfully interpret spoken language as strings of words, word parts, syllables, and, ultimately, phonemes (individual speech sounds). Together print knowledge and phonological awareness reflect important code-related precursors to later reading success.

In the past three decades, researchers have increasingly recognized the importance of children's home literacy experience as fundamental to their emergent literacy development (Bus, van IJzendoorn, & Pellegrini, 1995; Connor, Son, Hindman, & Morrison, 2005; Evans & Shaw, 2008; Griffin & Morrison, 1997; Justice & Ezell, 2000; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2005; Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004). Research supports a significant though modest association (approximately 8% of the variance) between the home literacy environment and child literacy outcomes (Bennett, Weigel, & Martin, 2002; Bingham, 2007; Christian, Morrison, & Bryant, 1998; Griffin & Morrison, 1997; Leseman & de Jong, 1998), yet questions about this correlation are still under discussion, with a need for more research in this area (Burgess, Hecht, & Lonigan, 2002; Bus et al., 1995; Scarborough & Dobrich, 1994). For example, several studies have found that global measures of the home literacy environment are stronger predictors of children's early language and literacy skills than specific components of this environment (Griffin & Morrison, 1997; Leseman & de Jong, 1998; Roberts, Jurgens, & Burchinal, 2005). Whereas some researchers have used a single measure of the home literacy environment (e.g., shared reading; DeBaryshe, 1995), others have used more complex conceptualizations, thus leading to differing results (Burgess et al., 2002). In addition, although much of the literature on the home literacy environment uses quantitative measurements and definitions that focus on frequency or exposure (e.g., number of books in the home, number of minutes spent in shared book reading; Bus et al., 1995; Christian et al., 1998; Dickenson & DeTemple, 1998; Griffin & Morrison, 1997), other studies have looked at qualitative aspects of the home literacy environment, such as maternal sensitivity, interaction quality, and parental reading beliefs (Bennett et al., 2002; Bingham, 2007; Bus & van IJzendoorn, 1988; DeBaryshe, 1995; DeBaryshe, Binder, & Buell, 2000).

Thus, there is evidence to suggest that the home literacy environment should be conceptualized broadly (Dickinson & Tabors, 1991; Leseman & de Jong, 1998; Roberts et al., 2005) and that intangible facets of the home literacy environment, such as maternal reading beliefs, may influence certain aspects of children's literacy development (Bennett et al., 2002; Curenton & Justice, 2008; DeBaryshe, 1995; DeBaryshe et al., 2000; Leseman & de Jong, 1998; Weigel, Martin, & Bennett, 2006a). Although the literature supports maternal reading beliefs as an important component of the definition of the home literacy environment, very few studies have looked explicitly at maternal reading beliefs (Bennett et al., 2002; Bingham, 2007; DeBaryshe, 1995; DeBaryshe et al., 2000). Furthermore, the association between maternal reading beliefs

and such emergent literacy skills as print knowledge and phonological awareness has been largely unexplored.

Furthermore, results considering whether maternal reading beliefs vary systematically by maternal education level are mixed, leading to questions about whether this is a facet of the home literacy environment that contributes to gaps in children's emergent literacy skills (Curenton, 2008; Sonnenschein, Baker, Serpell, & Scher, 1997). The goal of this paper, therefore, is to explore the associations between maternal reading beliefs, maternal educational levels (often used as an SES indicator highly related to children's literacy outcomes; Duncan, Brooks-Gunn, & Klebanov, 1994; Haveman & Wolfe, 1995), and children's emergent literacy skills. Specifically, this study considers whether maternal reading beliefs may mediate the association between maternal education and children's print knowledge and phonological awareness.

Maternal Reading Beliefs and Child Outcomes

Maternal reading beliefs are defined as knowledge or ideas taken by the parent to be true about reading development (Evans, Fox, Cremaso, and McKinnon, 2004; McGillicuddy-DeLisi, 1982). These beliefs frequently guide interactions with children, often stem from a mother's own experiences as a child, and can be modified by later experiences in adulthood as well as by the actions of the mother's own child (Evans, 2004; McGillicuddy-DeLisi, 1982; Weigel et al., 2006b). Researchers have operationalized maternal reading beliefs along a number of dimensions, including maternal attitudes about how children learn from reading, mothers' enjoyment of reading with their children, and mothers' perceptions of their ability to serve as teachers to their children (DeBaryshe, 1995).

Some research has shown that maternal reading beliefs are associated with child literacy outcomes because they shape the way parents behave with their children around literacy (Bingham, 2007; DeBaryshe, 1995; Sonnenschein et al., 1997; Weigel et al., 2006b). For example, Stipek, Milburn, Clements, and Daniels (1992) found that mothers who believed in the importance of basic literacy skill development in their preschool-age children engaged in more direct teaching activities and used more didactic approaches. In contrast, these researchers and others have found that mothers who believed in more holistic approaches to preschooler's literacy development emphasized learning through exploration and play (e.g., drew more pictures, read more often, sang more songs, and told more stories; DeBaryshe et al., 2000; Fitzgerald, Spiegel, & Cunningham, 1991; Lynch, Anderson, Anderson, & Shapiro, 2006; Sonnenschein et al., 1997; Stipek et al., 1992; Weigel et al., 2006b). Regarding child early literacy outcomes, there are significant findings by belief group, with consistently higher child reading outcomes for those groups with more holistic belief systems and literacy approaches, specifically in the areas of print knowledge, interest in reading, phonological awareness, print concepts, and narrative competence (DeBaryshe, 1995; Sonnenschein, 1997; Weigel et al., 2006b). Together these studies support the notion that the beliefs mothers have about reading development drive their behavior and that their belief system aligns with the kinds of early reading activities they provide.

Alternatively, other researchers have failed to find an alignment between adult reading beliefs and adult reading behaviors (Curenton & Justice, 2008; Hammer, Rodriguez, Lawrence, & Miccio, 2007; Holden & Edwards, 1989). Curenton and Justice (2008) found that more educated mothers had higher scores on a measure of reading beliefs compared to less educated mothers,

although there were no differences between the two groups with regard to home literacy practices. Hammer et al. (2007) also found no relationship between Puerto Rican mothers' reading beliefs and their home literacy practices. In their methodological study of child-rearing attitudes, Holden and Edwards (1989) found that measures of parent attitudes typically do not reflect parents' behavior.

Therefore, although most studies do find an alignment between beliefs and practices, others find a disconnect. These studies underscore the importance of studying practices and beliefs, both independently as well as together, rationalizing that if beliefs and practices are not fully overlapping constructs, they must be addressed as independent components of the home literacy environment and both as potential contributors to child literacy outcomes. Therefore, the question explored in this paper is whether beliefs may relate to child emergent literacy outcomes directly, regardless of variation in adult reading behavior. Theoretically, there are reasons to consider a direct link between maternal reading beliefs and children's emergent literacy outcomes. Differences in maternal reading beliefs may be important to children's own perceptions and feelings toward literacy and may thus impact children's independent use and exploration of literacy (Baker & Scher, 2002; Baker, Scher, & Mackler, 1997). Mothers who believe that reading is a pleasurable activity and something to be explored and enjoyed convey this belief to their children, who in turn also adopt this belief about reading. Maternal reading beliefs have been empirically linked to increased levels of child interest and motivation in literacy in children ranging from preschool age to the early elementary age (Baker & Scher, 2002; DeBaryshe, 1995).

Maternal Reading Beliefs and Maternal Education Level

The literature on reading beliefs and maternal education is mixed in its findings, with some studies suggesting that maternal reading beliefs vary by maternal educational level and others failing to support such differences. One possible reason for this discrepancy may be in the dimensions of maternal reading beliefs measured. For example, studies that have found maternal education level differences in maternal reading beliefs have found the most significant differences with respect to maternal beliefs about the nature of preschool literacy instruction (DeBaryshe, 1995; Lynch et al., 2006; Sonnenschein et al., 1997; Stipek et al., 1992; Weigel et al., 2006b). DeBaryshe and colleagues (2000) found that parents with fewer years of education believed that basic literacy skills should be skill based and learned before school entry; used direct materials such as flashcards and worksheets; and believed that literacy instruction in the home should rely heavily on phonics, with structured teaching of vocabulary and spelling. In contrast, parents with more years of education tended to take a more holistic, entertainment-focused approach to literacy development, believing that the mechanics of reading (phonemic knowledge and decoding skills) will eventually be mastered and that focus during the early years should instead be on the love of literature and active engagement in the shared reading experience (DeBaryshe et al., 2000; Sonnenschein et al., 1997; Weigel et al., 2006b). Yet, other studies linking reading beliefs to children's interest and motivation toward literacy have not found differences across parent education level (Baker & Scher, 2002; Bingham, 2007; DeBaryshe, 1995). The present study considers how a comprehensive measure of maternal reading beliefs (e.g., mothers' beliefs about how to teach literacy, beliefs about how enjoyable it is to read with their child, beliefs in their efficacy as literacy teachers) may differ by the educational level of mothers.

This Study

Research suggests that the home literacy environment plays a significant role in young children's literacy development (Burgess et al., 2002; de Jong & Leseman, 2001; Griffin & Morrison, 1997; Leseman & de Jong, 1998; Purcell-Gates, 1996; van Steensel, 2006; Weigel, Martin, & Bennett, 2006a; 2006b). Yet research into the links among maternal education, home literacy, and child emergent literacy outcomes has been fairly limited, focusing primarily on how maternal education level differences in adult literacy *behaviors* relate to maternal education level differences in child emergent literacy. More research is warranted to address the question of whether the true influence on literacy outcomes is not literacy behaviors in the home but instead the beliefs that mothers hold about literacy. Curenton and Justice's (2008) research explored this by looking for a link between maternal reading beliefs, home literacy activities, and children's emergent literacy skills in light of maternal educational levels. They found that more educated mothers had higher scores on a measure of reading beliefs compared to less educated mothers. What is interesting is that they did not find differences between the less and more educated groups in terms of reading practices (e.g., frequency of literacy activities). Curenton and Justice also found that mothers' reading beliefs mediated the relation between maternal education level and print conventions, consequently identifying maternal reading beliefs as the main component in affecting certain aspects of emergent literacy skills in children (namely, print conventions). Curenton and Justice's study was intriguing, but their sample was small and limited to a socioeconomically homogeneous group of families (all families were from a single Appalachian community). The present study seeks to replicate the mediation model tested by Curenton and Justice but using a larger sample of families with a wider range of SES.

Aims of the Present Study

This study has three specific research aims: (a) to describe relations among maternal education, maternal reading beliefs, and two emergent literacy skills: children's print knowledge and phonological awareness; (b) to explore whether maternal reading beliefs mediate the relation between maternal education and children's print knowledge and phonological awareness; and (c) to explore whether beliefs mediate the relation between maternal education and children's print knowledge and phonological awareness when maternal literacy practices, classroom quality, and two child demographic characteristics (gender and ethnicity) are controlled.

Regarding the first aim, I hypothesize that maternal education levels will correlate with both reading beliefs and literacy outcomes, given that mothers with higher levels of education will be more likely to convey both the value of reading to their child as well as the enjoyment aspect of reading, thus increasing the amount of time spent reading and consequently improving their child's print knowledge and phonological awareness skills. Regarding the second aim, I hypothesize that maternal reading beliefs will mediate the relation between maternal education and child outcomes, with the rationale being that maternal beliefs are powerful enough to offset this existing relation and to create a new pathway by which children's literacy outcomes will be positively influenced by such beliefs. Regarding the third aim, I hypothesize that these beliefs will still be powerful when maternal literacy practices and demographic characteristics are controlled. By demonstrating that beliefs influence child outcomes even if practices and

demographics are held constant, I demonstrate an even stronger case for the role of beliefs in affecting child literacy outcomes.

METHODS

Participants

Participants in this study were 92 mothers and their preschool-age children, all of whom were enrolled in a larger study evaluating developmental outcomes in a sample of sociodemographically at-risk children. The children were participants in preschool programs with targeted enrollment designed to promote the school readiness of children from at-risk households (e.g., Head Start, Title I, and state-funded pre-kindergarten; see Justice, Mashburn, Pence, & Wiggins, 2008, for a detailed description of their recruitment and selection into the larger study). The children were placed across 16 classrooms and families were located in two demographically different counties in a Mid-Atlantic state, with one county located in rural Appalachia and the other located in an industrial and light farming region.

The present study included participants from the larger study who met the following criteria: (a) Children were enrolled in classrooms in which teachers used a specific language-based curriculum (to control for potential variability among classrooms in instructional practices), (b) all relevant child and family measures were available in the database, and (c) mothers served as respondents on family questionnaires. Of the 160 children enrolled in the larger study, 92 (58%) mother–child dyads met these requirements. Reasons for missing data included missing or incomplete questionnaires, questionnaires completed by someone other than the mother, child absenteeism, and family relocation. Comparisons of this cohort to the original cohort showed no significant differences across age ($t = 1.00$, $p > .05$), gender ($\chi^2 = 0.27$, $p > .05$), or literacy outcomes (print knowledge, $t = -0.01$, $p > .05$; phonological awareness, $t = -0.96$, $p > .05$).

The educational backgrounds of the mothers varied, with years of education ranging from 8 to 19 ($M = 14.29$, $SD = 2.03$). Thirty-six mothers (39.1%) reported having a high school degree as their highest level of education, 46 mothers (50%) reported having some college or higher educational training but no degree, and 10 mothers (10.8%) reported having a college degree or higher. Annual family income was also highly variable, ranging from $10,800 to $251,000, with a median of $35,600 (based on data available from 83 parents).

The children ranged in age from 47 to 59 months (3 years, 11 months, to 4 years, 11 months), with one outlier at 39 months.[1] The sample included more boys (58.7%, $n = 54$) than girls (41.3%, $n = 38$), and children were primarily Caucasian/White (79.3%, $n = 73$). Other races/ethnicities represented in the sample of children were African American/Black (16.3%, $n = 15$), Hispanic/Latino (2.2%, $n = 2$), and Native American or Alaska Native (2.2%, $n = 2$). All children were proficient in English, with 91 (98.9%) using English as their first language; one child (1.1%) was bilingual in English and Spanish. The number of children living in the home ranged from zero to six, with 88 families (96.7%) having three or fewer children in the home and 3 families (3.3%) having four or more children in the home.

[1]All regression analyses were run without the outlier ($N = 91$), and all were significant. No significant differences were found from the original sample ($N = 92$), and therefore all analyses include the outlier and reflect the original study sample of 92 mother–child dyads.

Procedures

Families were recruited into the study at the start of the preschool year. Following the completion of informed consent procedures, a set of family questionnaires was sent home to each family; primary caregivers were instructed to complete each questionnaire and to return the entire set in an envelope submitted to children's teachers. In total, the questionnaires required approximately 30 min to complete. Of relevance to this study are maternal responses to items on the family demographic questionnaire (i.e., maternal education, estimated annual household income), items on a measure of parental literacy beliefs, and items on a measure of parental literacy practices.

In the spring of the preschool year, children completed a set of direct assessments that were individually administered by trained research personnel (e.g., graduate students, undergraduate research assistants). These were conducted in a quiet area of the child's school or classroom. The entire battery lasted approximately 30 to 45 min and involved measures of language and emergent literacy.

Measures

Maternal reading beliefs. The 42-item Parental Reading Beliefs Inventory (PRBI; DeBaryshe & Binder, 1994) examined mothers' perceptions of how and what a child learns through the experience of reading, as well as how effective they feel teaching school-related skills to their child (DeBaryshe, 1995). Mothers are asked to respond to a series of statements using a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Examples of items include ''As a parent, I play an important role in my child's development,'' ''I feel warm and close to my child when we read,'' ''My child is too young to learn about reading,'' and ''Even if I'd like to, I'm just too busy and too tired to read to my child'' (DeBaryshe, 1990). The 42 items are organized into seven subscales (Teaching Efficacy, Positive Affect, Verbal Participation, Reading Instruction, Knowledge Base, Resources, and Environmental Input) and are summed to determine each subscale total. A total score is also computed by adding all responses, with scores ranging from 43 to 172. The use of a single total score is supported by findings from DeBaryshe and Binder (1994) indicating that all subscales loaded on a single factor that accounted for 52% of the variance (eigenvalue = 3.68). Internal consistency for the sample was adequate (Cronbach's $\alpha = .67$) and consistent with that previously reported by DeBaryshe and Binder.

Children's print knowledge. The 10-item Print and Word Awareness task of the Phonological Awareness Literacy Screening: Preschool (PALS Pre-K; Invernizzi, Sullivan, Meier, & Swank, 2004) served as a direct measure of children's print knowledge. To administer this task, an examiner engages the child in a shared reading event using a target storybook and embeds questions about the book into the interaction; these examine the child's knowledge of the directionality of reading, book organization (e.g., cover, title), and specific print units (e.g., the difference between letters and words). The examiner awards 1 point for a correct answer and no points for an incorrect answer (range of scores = 0–10). Internal consistency as calculated for the present sample for the Print and Word Awareness subtest was adequate

(Cronbach's $\alpha = .71$) and similar to that reported by the test creators (Cronbach's $\alpha = .75$; Invernizzi et al., 2004).

Children's phonological awareness. The 20-item phonological awareness composite was created from two tasks on the PALS Pre-K (Invernizzi et al., 2004): the 10-item Sound Awareness task and the 10-item Rhyme Awareness task. Both tasks are theoretically grounded, with items that meet the defining characteristics of phonological awareness. The tasks are both administered orally, with the examiner asking the child to identify the first sound of a presented picture and name and to identify two rhyming words from a group of four pictures. One point is awarded for a correct answer, with a maximum score of 20. Internal consistency as calculated for the present sample was adequate for the composite (Cronbach's $\alpha = .86$) as well as for the two individual tasks (Cronbach's α for Sound Awareness $= .87$, Cronbach's α for Rhyme Awareness $= .79$). This is consistent with that of the original task development (Cronbach's α for Sound Awareness $= .93$, Cronbach's α for Rhyme Awareness $= .84$).

Literacy practices. A 20-item literacy practices survey served to measure a range of home literacy behaviors reported by mothers (adapted from Bennett et al., 2002). A modified version of the survey was created to more accurately examine the frequency of mothers' and children's engagement in reading activities (see Appendix). Specifically, items focused on mothers' direct involvement in activities related to home literacy, their ability to provide access to certain literacy materials, and their observations of child literacy behavior. Examples of items from the modified 10-item survey include ''How often do you or another family member read aloud to your child?'' ''How often do you buy new or used books?'' and ''How often does your child look at books by himself/herself?'' Mothers responded with ratings on a Likert scale. Responses were summed and a total score was used. Possible scores ranged from 0 to 38, with higher scores indicating greater maternal involvement in literacy activities. Internal consistency was found to be acceptable for the sample (Cronbach's $\alpha = .72$).

Classroom quality. The Instructional Support Domain from the Classroom Assessment Scoring System (CLASS; La Paro, Pianta, & Hamre, 2006) served as a measure of classroom quality. The CLASS is an observational tool with established links to children's academic outcomes that uses a 7-point rating system (minimum of 1, maximum of 7). Composed of three dimensions that are averaged (Concept Development, Quality of Feedback, and Language Modeling), the Instructional Support Domain is one of three broad CLASS constructs that focuses on how effectively teachers can implement their curricula, extend their instruction, and engage their students so as to instill usable knowledge. Observations were conducted across three time points (fall, winter, spring), then averaged. Interrater reliability averaged .85 across all 11 dimensions for the present sample, consistent with that cited in the CLASS technical manual (.87).

Data Analysis Procedures

To address the first research aim, I describe maternal education, maternal reading beliefs, children's print knowledge, and children's phonological awareness and examine the single-order correlations among these variables.

To address the second aim of determining whether maternal reading beliefs mediate the relation between maternal education and children's emergent literacy outcomes, I conducted

mediation analyses. To document the presence of a mediation effect, one renders a significant relation between the independent and dependent variables nonsignificant when a third variable, the mediator, is considered (Baron & Kenny, 1986). If the relation between the independent and dependent variable does not reach zero but does drop significantly with the introduction of a mediator, multiple mediators may exist. Baron and Kenny (1986) cited this as a more realistic occurrence in social and behavioral sciences because most behaviors have multiple causes (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). For the present purposes, I conducted five regression models, regressing children's print knowledge on maternal education (Model 1), children's phonological awareness on maternal education (Model 2), maternal reading beliefs on maternal education (Model 3), children's print knowledge on both maternal education and maternal reading beliefs (Model 4), and children's phonological awareness on both maternal education and maternal reading beliefs (Model 5). I also tested mediation using Sobel's test, which confirms whether a mediator carries the significant influence from the independent to the dependent variable.

To strengthen the argument that beliefs have substantial and independent influence on emergent literacy skills, I addressed the varied and competing effects on children's literacy skills by running the same five regression models described for the second aim in light of four covariates: classroom quality (measured by the Instructional Support Domain from the CLASS; La Paro et al., 2006), maternal literacy practices in the home, gender, and ethnicity. Adding covariates not only allows for a more rigorous examination of the association between maternal beliefs and literacy outcomes but also addresses the time lag between beliefs data collection (fall) and direct assessment of child outcome measures (spring) and the resulting influence that these four important factors may have on children's reading outcomes. Although this does not provide a full explanation of possible mechanisms that explain the relation between maternal beliefs and child literacy outcomes, it does make the case that it is important to consider maternal reading beliefs independent of other factors.

RESULTS

With regard to the first research aim of describing relations among maternal education, maternal reading beliefs, and two emergent literacy skills (children's print knowledge and phonological awareness), Table 1 presents descriptive information for these variables. Maternal ratings of

TABLE 1
Descriptive Statistics for Maternal Education, Maternal Reading Beliefs, and Children's Literacy Outcomes

				Correlations			
Variable	*M*	*SD*	*Range*	*1*	*2*	*3*	*4*
1. Maternal education in years	14.29	2.03	8–19	—	.33**	.31**	.26*
2. Maternal reading beliefs	153.99	9.90	119–166		—	.39**	.26*
3. Print knowledge	7.13	2.17	2–10			—	.40**
4. Phonological awareness	13.03	4.92	1–20				—

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

reading beliefs ranged from 119 to 166 ($M = 154$, $SD = 9.9$), with generally high ratings characterizing this group of mothers. Children's scores on the Print and Word Awareness task ranged from 2 to 10, with an average score of 7.13 on a scale of 0 to 10, indicating that most children demonstrated some basic knowledge of letters and book structures. Children had more difficulty demonstrating knowledge of words and the relation of print to oral language. Although approximately 68% could point to a specific word on the page (i.e., *hey*), only 34% could track each word in a sentence as it was being read, and only 45% of children could correctly identify the space between two words. Children's scores on the phonological awareness composite ranged from 1 to 20, with an average score of 13.03 on a scale of 0 to 20. In addition, 62% of students were able to answer more than half of the items correctly, with most students having the hardest time identifying the beginning sound of *mean* (55.4% answered incorrectly) and rhyming with *man* (45.7% answered incorrectly). Most children had the easiest time identifying the beginning sound of *ball* (70.7% answered correctly) and rhyming with *cake* (80.4% answered correctly).

Table 1 presents single-order correlations among all main study variables. Correlations among the four main study variables (maternal education, maternal reading beliefs, children's print knowledge, and children's phonological awareness) were moderate and positive (see Table 1). Higher levels of maternal education were associated with higher child scores on the print knowledge and phonological awareness measures ($r = .31$, $p < .01$; and $r = .26$, $p < .05$, respectively) and with higher scores on the PRBI ($r = .33$, $p < .01$). Higher scores on the PRBI were also associated with higher child scores on the print knowledge and phonological awareness measures ($r = .39$, $p < .01$; and $r = .26$, $p < .05$, respectively).

With regard to the second research aim of testing the mediating effect of maternal reading beliefs on children's literacy outcomes, Table 2 presents the regression and mediation models. As presented in Figure 1, the first and second models demonstrated that maternal education was significantly predictive of both child literacy outcomes. Maternal education explained 9.3% of the variance ($R^2 = .09$) in print knowledge, $F(1, 90) = 9.24$, $p < .01$; and 6.8% of the variance

TABLE 2
Predictive Associations Among Maternal Education, Maternal Reading Beliefs, and Children's Literacy Outcomes

Variable	*B*	*SEB*	*β*	*R*
Model 1				
Maternal education to print knowledge	0.33	.11	.31**	.09
Model 2				
Maternal education to phonological awareness	0.63	.25	.26*	.07
Model 3				
Maternal education to maternal reading beliefs	1.63	.49	.33**	.11
Model 4				
Maternal education and maternal reading	0.21	.11	.20	.19
Beliefs to print knowledge	0.07	.02	.32*	
Model 5				
Maternal education and maternal reading	0.47	.26	.20	.10
Beliefs to phonological awareness	0.10	.05	.20	

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

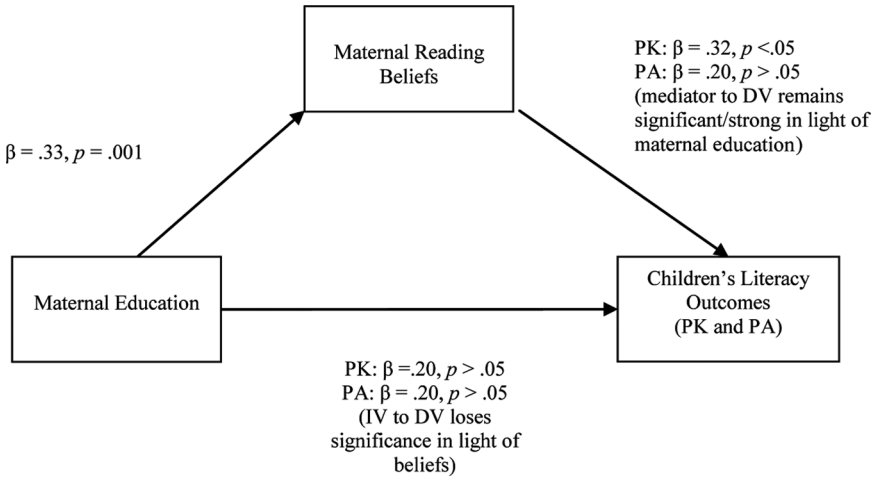

FIGURE 1 Predictive relations among maternal education, maternal reading beliefs, and children's emergent literacy outcomes (PK and PA). PK = print knowledge; PA = phonological awareness; IV = independent variable; DV = dependent variable.

($R^2 = .07$) in phonological awareness, $F(1, 90) = 6.58$, $p < .05$. The third model demonstrated that maternal education was significantly predictive of maternal reading beliefs, $F(1, 90) = 11.27$, $p = .001$, and explained 11.1% of the variance ($R^2 = .11$) in PRBI scores (see Table 2).

The fourth model (see Figure 1) demonstrated that maternal reading beliefs and maternal education collectively accounted for 18.6% of the variance ($R^2 = .19$) in children's print knowledge, a significant effect, $F(2, 89) = 10.17$, $p < .001$. However, in terms of unique predictive power, maternal education did not have a significant and unique association with children's print knowledge ($\beta = .20$, $t = 1.95$, $p > .05$), whereas maternal reading beliefs did ($\beta = .32$, $t = 3.19$, $p < .05$). The fifth model proved similar, with maternal beliefs and education accounting for 10.4% of the variance ($R^2 = .10$) in children's phonological awareness, also a significant effect, $F(2, 89) = 5.14$, $p < .01$. In this model, maternal education again dropped below a level of significance in its relation with children's phonological awareness ($\beta = .20$, $t = 1.83$, $p > .05$), whereas maternal reading beliefs approached significance and maintained a stronger association ($\beta = .20$, $t = 1.87$, $p > .05$) than maternal education (see Table 2).

In Models 4 and 5 Sobel's test of mediation confirmed that partial mediation occurred with both emergent literacy outcomes. Maternal reading beliefs proved to carry the significant influence on both literacy outcomes in light of maternal education (Sobel test for print knowledge = 2.60, $p < .01$; Sobel test for phonological awareness = 2.05, $p < .05$). These findings showed that maternal reading beliefs mediated the effects of maternal education level on two important aspects of children's emergent literacy skills: print knowledge and phonological awareness.

With regard to the third research aim of testing mediation in light of four covariates (literacy practices, classroom quality, gender, and ethnicity), I ran the same regression models and found that all associations remained significant except for Model 5 (the mediation model with

TABLE 3
Predictive Associations Among Maternal Education, Maternal Reading Beliefs, and Children's Literacy Outcomes Controlling for Classroom Quality, Maternal Literacy Practices, Gender, and Ethnicity

Variable	*B*	*SEB*	*β*	R^2
Model 1				
Maternal education to print knowledge	0.32	.11	.30**	.11
Model 2				
Maternal education to phonological awareness	0.64	.26	.27*	.08
Model 3				
Maternal education to maternal reading beliefs	1.50	.47	.31**	.27
Model 4				
Maternal education and maternal reading	0.22	.12	.21	.20
Beliefs to print knowledge	0.07	.03	.30*	
Model 5				
Maternal education and maternal reading	0.51	.28	.21	.10
Beliefs to phonological awareness	0.09	.06	.17	

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

phonological awareness as the outcome; see Table 3). Again, Models 1 and 2 demonstrated that maternal education related significantly to both literacy outcomes: print knowledge, $F(5, 83) = 2.53$, $p < .01$; phonological awareness, $F(5, 83) = 1.36$, $p < .05$. Maternal education explained 13.2% of the variance ($R^2 = .13$) in print knowledge and 7.6% of the variance ($R^2 = .08$) in phonological awareness. Model 3 continued to prove a significant association between maternal education and maternal reading beliefs, $F(5, 83) = 6.24$, $p < .01$, with 27.3% of the variance ($R^2 = .27$) in PRBI scores explained (see Table 3).

Model 4 tested mediation using print knowledge as the outcome in light of the control variables and demonstrated that maternal education and maternal reading beliefs accounted for 19.6% of the variance ($R^2 = .90$), $F(6, 82) = 3.34$, $p < .01$. With regard to print knowledge, maternal education lost its predictive association ($\beta = .21$, $t = 1.89$, $p > .05$), whereas maternal reading beliefs maintained a unique and significant association($\beta = .30$, $t = 2.56$, $p < .05$), thus demonstrating that maternal reading beliefs were more strongly significant even in light of four controlling factors theoretically important to literacy outcomes (see Figure 2). In addition, with regard to print knowledge, Sobel's test proved that maternal beliefs carried significant influence over maternal education (Sobel test = 2.35, $p < .05$).

Model 5 tested mediation using phonological awareness as the outcome in light of the control variables and demonstrated that maternal education and maternal reading beliefs accounted for 10% of the variance ($R^2 = .10$), $F(6, 82) = 1.48$, $p > .05$. However, with this model, both maternal education and maternal reading beliefs lost their unique and significant associations with phonological awareness ($\beta = .21$, $t = 1.84$, $p > .05$; and $\beta = .17$, $t = 1.40$, $p > .05$, respectively).

The fact that this stringent model affected the two literacy outcomes differently prompted follow-up analyses that isolated each of the control variables within the mediation model with phonological awareness as the outcome. I ran models with one control at a time and found that maternal reading beliefs approached significance whereas maternal education lost its significant relationship (thus demonstrating partial mediation) in light of three of the four covariates:

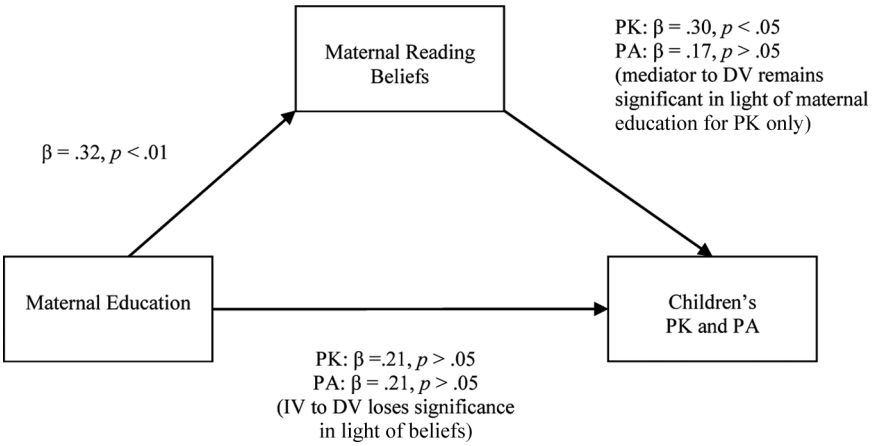

FIGURE 2 Predictive relations among maternal education, maternal reading beliefs, and children's emergent literacy outcomes (PK and PA) when classroom quality, maternal literacy practices, gender, and ethnicity are controlled. PK = print knowledge; PA = phonological awareness; IV = independent variable; DV = dependent variable.

classroom quality, $F(3, 88) = 3.40$, $p > .05$, $R^2 = .10$; gender, $F(3, 88) = 3.39$, $p > .05$, $R^2 = .10$; and ethnicity, $F(3, 88) = 3.49$, $p > .05$, $R^2 = .11$. When literacy practices were controlled, not only did the relationship between maternal education and phonological awareness become nonsignificant, but maternal reading beliefs also lost its significant association with this outcome, $F(3, 85) = 3.01$ $p > .05$, $R^2 = .10$. What is interesting is that literacy practices also proved to have no relationship to the outcome of phonological awareness, $F(1, 87) = 0.42$ $p > .05$, $R^2 = .01$. To summarize, follow-up analyses that entered one covariate at a time proved that regressions continued to approach significance for three of the four covariates—gender, ethnicity, and classroom quality—demonstrating that beliefs maintained its strong relationship with phonological awareness in light of these controls. For the fourth covariate, literacy practices, the association between beliefs and phonological awareness dropped substantially, becoming nonsignificant.

DISCUSSION

This paper has explored the associations among maternal education, maternal reading beliefs, and emergent literacy in children. Although the relation between maternal education and child academic outcomes is well established, understanding maternal education as a marker variable for the family processes that characterize it leads to questions about such processes and their impact on child outcomes (Lonigan, 1994; Mistry et al., 2004). I chose to explore maternal reading beliefs as one facet of such family processes, specifically determining its role as a mitigating factor within the relation between maternal education and two emergent literacy skills in preschoolers.

This study had three major aims. The first was to understand the relation between maternal education level, maternal reading beliefs, and two child literacy skills: print knowledge and phonological awareness. Overall findings showed that positive correlations existed among all

four constructs. The second aim was to examine whether maternal reading beliefs served as a mediator between maternal education and children's literacy skills. Results supported this model. The third aim was to examine whether maternal reading beliefs continued to mediate the relationship between maternal education and children's literacy skills in the presence of four covariates: classroom quality, maternal literacy practices, gender, and ethnicity. All results remained significant, except for a loss of mediating effects of beliefs on phonological awareness.

Relations Among Maternal Education, Maternal Reading Beliefs, and Emergent Literacy Skills

As expected, I found a significant relation between maternal education and two emergent literacy skills. When maternal education levels were higher, children performed better on a print knowledge and phonological awareness task. This is consistent with the large body of literature that supports the direct link between SES and literacy skills (Byrd & Weitzman, 1994; Justice & Ezell, 2001; National Assessment of Educational Progress, 2003; Nord, Lennon, Liu, & Chandler, 2000; Purcell-Gates, 1996). Some have explained this link by suggesting that mothers with more years of education have a better sense of how to instruct their children in print and phonological processes (Curenton & Justice, 2008). I interpret this relation differently, referring to the body of research on maternal literacy behaviors and outcomes that finds that when mothers engage in more entertaining and enjoyable aspects of literacy (e.g., storytelling, song singing, picture drawing, oral reading for meaning) as opposed to more skill-based mechanical aspects (e.g., phonics drills, flashcards, and workbook use) children have greater interest in reading and thus do better with literacy skills (Sonnenschein et al., 1997; Weigel et al., 2006b). This is consistent with Baker and Scher's (2002) finding that the use of basic skills books negatively impacts children's interest in reading and motivation to read and Bingham's (2007) finding that the high emotional quality of book reading leads to greater print skills. Thus, I speculate that mothers with more years of education engage in home literacy behaviors that are more enjoyable, entertaining, and meaningful compared to mothers with fewer years of education, whose literacy foci are more likely on rote learning of mechanics with content less interesting and applicable to their children's lives.

Moreover, I found a significant relation between maternal education and reading beliefs. When maternal education levels were higher, mothers' scores on a global measure of reading beliefs were higher. Conversely, when maternal education levels were lower, mothers' scores on a global measure of reading beliefs were lower. Mothers in this study with fewer years of education indicated that they felt less empowered in their role as teacher to their child, encountered more barriers to shared literacy time with their child, and viewed reading as a mandatory task taught through drill and practice of mechanics. Alternatively, mothers with more years of education indicated that they felt more empowered in their role as teacher, felt more involved with their child's literacy development, and found reading with their child to be an enjoyable experience. This finding supports the notion that mothers with fewer years of education may hold beliefs that are less conducive to literacy growth in children.

Although the past literature has demonstrated variability in the beliefs of mothers with less education, the present findings do not. A reason for this may be my use of a global measure of beliefs that measured a range of belief categories, including the mother's feelings

of effectiveness and enjoyment as a teacher, the value she places on child participation, and the number of resources available to her. Mothers scored higher in certain areas within the belief scales, thus demonstrating variability within the global beliefs measure. For example, on items that reflected a mother's role as her child's teacher (''Parents need to be involved in their child's education''), all of the mothers marked *strongly agree,* the highest score possible. However, items that tapped mothers' personal experiences with reading demonstrated more variability. For example, on the item ''I have good memories of being read to when I was a child,'' approximately half (45.6%) of the mothers indicated that they disagreed. This supports the idea that the use of a global measure of literacy beliefs may mask a variability that exists in the literacy beliefs of mothers from low-SES households (Bingham, 2007).

I can speculate that another reason for the relation between maternal education and beliefs is that mothers with fewer years of education have lower literacy levels themselves (Fitzgerald et al., 1991). They may therefore find reading to be less of an enjoyable experience (i.e., something they would not choose to spend their free time doing) and more of a mandatory task (i.e., something they had to do in school). In this way, their beliefs would reflect this, and their approaches to literacy with their own children would also align in this way, with more activities focused around skill books and drill-and-practice exercises.

The final relation that I explored and confirmed was between maternal reading beliefs and emergent literacy outcomes in children. Based on the small body of research in this area (Curenton & Justice, 2008; Weigel et al., 2006b), I hypothesized that mothers who conveyed positive thoughts and feelings about reading to their children would not only pass along this same attitude to their children but would also create an environment that was both engaging and conducive to learning, thus leading to improved skills. Conversely, those parents whose beliefs were less enthusiastic and more negative would set the stage for less interest in literacy, less literacy exposure, and thus weaker skills (Weigel et al., 2006b). The present findings did support this hypothesis. Closely related to the present finding is the correlation some researchers have found between positive reading beliefs and greater interest and motivation in reading (Baker & Scher, 2002; DeBaryshe, 1995). These findings allow me to speculate that when beliefs are positive and appropriate, interest is also high, thus leading to more time spent engaging in reading and more exposure to print.

Maternal Reading Beliefs as a Mediator Between Maternal Education and Children's Emergent Literacy Skills

The second and third aims of the study examined whether maternal reading beliefs serve as a mediator between maternal education level and two emergent literacy skills in children with and without controls. Results supported this model. Specifically, once I introduced maternal reading beliefs, the relation between maternal education and both print knowledge and phonological awareness became nonsignificant, although beliefs maintained its strong association. Controlling for four factors that may influence literacy outcomes (classroom quality, maternal literacy practices, gender, and ethnicity) changed this effect only for phonological awareness. This suggests that when maternal reading beliefs were introduced, a new pathway between maternal education level and children's print knowledge was created, serving to offset the effects of fewer years of maternal education on this specific code-related literacy outcome in preschool.

Although partial mediation remained for the print knowledge outcome, it did not remain for the phonological awareness outcome. I found that controlling for one particular factor interfered with the new pathway between maternal education and phonological awareness: maternal literacy practices. It is important to note that when correlated directly with phonological awareness, literacy practices did not relate significantly. I can speculate why both of the literacy outcomes behaved differently in light of literacy practices, proposing that print knowledge is a construct that is more affected by environmental influence than is phonological awareness (Lonigan, 1994). Also, phonological awareness is a more difficult skill that often develops later and is more difficult to master (van Kleeck & Schuele, 1987). This notion, in concert with its linguistic and sound-based nature, may help to explain phonological awareness's lack of correlation with literacy practices and ultimately the lack of influence that maternal reading beliefs had on it. These differences highlight the importance of understanding the many complex constructs that compose early literacy, the range of code-related and meaning-focused skills that are subject to variability, and the different paths to literacy success.

Overall, this study supports the notion that maternal beliefs about reading may be powerful enough that, through their direct association with how mothers feel, talk, and act with their children about literacy, they can make an impact on some of the ways children perform on literacy tasks. Identifying maternal reading beliefs as a mechanism by which to offset low levels of maternal education on children's literacy outcomes leads to implications for practitioners in recognizing and incorporating mothers' existing beliefs in how they intervene with children's literacy development.

Implications and Limitations

This paper contributes to the literature in that it identifies maternal reading beliefs as an important component of the home literacy environment and thus a protective mechanism for children who are at risk for low literacy. The notion of maternal reading beliefs as truly a ''linchpin'' (DeBaryshe, 1995) in improving literacy outcomes warrants a discussion of implications for practitioners.

One implication for teachers and administrators is that they can involve parents in their students' literacy development in a very specific way: by developing parent training programs that not only integrate but also highlight and even shape maternal reading beliefs. Involving parents at the beliefs level (as opposed to a behavioral level) is beneficial for a number of reasons. First, in looking specifically at print knowledge outcomes, there is support in the literature that parental behaviors during book reading have little impact on preschoolers' print-related skills. This is because parents tend to focus much less on print-related aspects of books when sharing book reading with their child, and children spend very little time focusing on words in books (Justice & Ezell, 2000, 2002, 2004). Second, teaching parents that literacy beliefs are equally as important as the literacy activities they participate in, and then demonstrating how to convey constructive beliefs to their children, may actually be more appealing to parents with limited resources who may not have the capacity to engage in home literacy activities. Parents with limited resources may be more willing to adopt parent training methods that emphasize beliefs over activities; although it is important to own lots of books, take trips to the library, and even spend time in shared reading activities, it is equally important if not more so to approach reading in

positive, exploratory ways that emphasize meaning and enjoyment of the story. In sum, the results of this study support the notion that the specific type of parent involvement program that may a have significant impact on outcomes is one that includes as much about parents' expectations or belief systems about their child's literacy development as about the kinds and the number of literacy activities that parents participate in.

One caveat for practitioners to consider is that existing belief systems may be very difficult to change because they are shaped by two fixed determinants; mothers' own past experiences with literacy and mothers' literacy level. In recognizing that belief systems are born from one's own experiences (McGillicuddy-DeLisi, 1982), it follows that if a mother's own experiences learning how to read were positive (e.g., books and good stories were shared with an adult in a nurturing, warm environment), then her belief system about acquiring literacy would be more appropriate and facilitative. However, if a mother's own experiences were negative (e.g., reading was laborious and created more tension than pleasure), then her belief system may be less appropriate. In a related way, a mother's own ability to read may impact her belief system (Fitzgerald et al., 1991). If she has a high literacy level and as an adult chooses to read for pleasure, then she may inadvertently do more modeling of reading and writing, use language that is more encouraging of literacy development, and want her children to gain the same pleasure from reading. In this way, her beliefs would be more facilitative. If practitioners speculate that these two determinants of literacy beliefs are unchangeable, and therefore beliefs themselves are unchangeable, then it is important that they acknowledge parents' existing belief systems and create consistency between classroom practices and expectations and what is valued in the home (DeBaryshe, 1995; Sonnenschein et al., 1997; Weigel et al., 2006b). Even if the beliefs that mothers have about their child's literacy development run counter to their own beliefs, practitioners can provide modeling and suggestions that emphasize reading for enjoyment while still respecting these beliefs (Sonnenschein et al., 1997).

This paper supports beliefs as important to children's outcomes, yet the mechanism by which they work to influence outcomes can only be speculated. One limitation of this study is that although it addressed two potential intermediary processes (classroom quality and maternal literacy practices) and two demographic characteristics (gender and ethnicity) that could influence children's emergent literacy outcomes, many variables still remain unaddressed. Therefore, I cannot claim that maternal beliefs operate independent of other variables in shaping these outcomes. Another limitation is that mothers self-reported their beliefs about literacy. This may have caused accuracy problems because literacy is an inherently positive construct. When asked about their beliefs about literacy, mothers may know what the appropriate response should be and may indicate it even if they do not truly believe it. This may explain why more of the factual questions on the PRBI that related to mothers' own experiences proved to have lower scores. Another limitation is that the measure of maternal education accounted for a small percentage of the explained variance in the literacy outcomes. As a result, although maternal education is often used as a proxy for SES (Duncan et al., 1994; Haveman & Wolfe, 1995), this was not appropriate for this study. A final limitation is the use of a global measure of beliefs. As mentioned previously, the beliefs measure rated several different aspects of beliefs. However, consistent with others who have researched maternal reading beliefs (Bingham, 2007), this study used only a global beliefs score. Therefore, the variability across items within the measure was masked, and thus the measure may have proven to be less accurate. Despite its limitations, this study contributes to the small body of research on the relation between maternal reading

beliefs and children's code-related literacy skills, recognizing beliefs as an important part of the home literacy environment that warrants further examination and study.

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APPENDIX

Home Literacy Practices Survey

1. How many times have you or someone in your family sat and read books with your child in the past week?
   ___Not at all
   ___One time
   ___Three or more times
   ___Every day
2. How often does your child like to write or pretend to write? (Question 7)
   ___Never
   ___Has done it once or twice
   ___Sometimes
   ___Often
3. How often does your child ask to be read to? (Question 10)
   ___Daily
   ___Weekly
   ___Occasionally
   ___Hardly ever
   ___Never
4. How often do you or another family member read aloud to your child? (Question 12)
   ___Hardly ever
   ___Once or twice a month
   ___Once or twice a week
   ___Once a day
   ___Two or more times a day
5. How often does your child look at books by himself/herself? (Question 13)
   ___Hardly ever
   ___Once or twice a month
   ___Once or twice a week
   ___Once a day
   ___Two or more times a day
6. How often does your child ask you to read to him/her, look at books, or tell stories? (Question 14)
   ___Hardly ever
   ___Once or twice a month
   ___Once or twice a week
   ___Once a day
   ___Two or more times a day
7. How often do you buy new or used books? (Question 15)
   ___Hardly ever
   ___Once or twice a month
   ___Once or twice a week

___Once a day
___Two or more times a day

8. How often do you or another family member sing or recite rhymes to your child? (Question 17)
___Hardly ever
___Once or twice a month
___Once or twice a week
___Once a day
___Two or more times a day
9. How often do you or another family member tell stories with your child? (Question 18)
___Hardly ever
___Once or twice a month
___Once or twice a week
___Once a day
___Two or more times a day
10. How often do you or another family member go to the library with your child? (Question 20)
___Hardly ever
___Once or twice a month
___Once or twice a week
___Once a day
___Two or more times a day