

# Testing the Home Literacy Model: Parent Involvement in Kindergarten Is Differentially Related to Grade 4 Reading Comprehension, Fluency, Spelling, and Reading for Pleasure

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This study examines the longitudinal relations among early literacy experiences at home and children's kindergarten literacy skills, Grade 1 word reading and spelling skills, and Grade 4 reading comprehension, fluency, spelling, and reading for pleasure. Ninety French-speaking children were tested at the end of kindergarten and Grade 1, and 65 were followed until the end of Grade 4. Parents reported in kindergarten that storybook reading occurred frequently and that they sometimes taught their child to read words. The results of hierarchical regression analyses that controlled for parent education as well as concurrent and longitudinal relations among literacy behaviors reveal that parent teaching about literacy in kindergarten directly predicted kindergarten alphabet knowledge and Grade 4 reading fluency, whereas storybook exposure directly predicted kindergarten vocabulary and the frequency with which children reported reading for pleasure in Grade 4. Moreover, storybook exposure predicted Grade 4 reading comprehension indirectly. These findings extend the Home Literacy Model proposed by Sénéchal and LeFevre (2002).

Powerful prescriptions for social policy require that models of reading acquisition be as comprehensive and accurate as possible. If the societal goal is to ensure that children quickly become able to read and understand texts fluently, then models of reading should include precise descriptions of the teaching methods that optimize learning, precise descriptions of the components that allow children to read fluently, and precise descriptions of the preparatory experiences and resources that

promote the development of these components. This study examines the longitudinal relations among literacy experiences at home and children's kindergarten literacy skills; Grade 1 word reading and spelling skills; and Grade 4 reading comprehension, fluency, spelling, and reading for pleasure.

Observational studies show that many preschool children have experiences with printed materials at home (e.g., Heath, 1983). For instance, Teale (1986) observed literacy activities in the homes of low-income families and found that the 24 preschool children in the study had numerous opportunities to observe their parents and other members of the family use print in their daily routines, as well as read books, magazines, and newspapers. In addition, Teale observed two types of parent-child activities that involved interactions with print: Parents sometimes read storybooks to their preschool child, and parents sometimes taught their child about literacy. Of interest, book reading was a regular part of daily routines for only 3 children, but teaching about literacy was a regular activity for 11 of the 24 children. For these families, reading books and teaching children were two different domains of activity.

Consistent with Teale's (1986) findings, Sénéchal, LeFevre, Thomas, and Daly (1998) found that children's experiences with printed materials could be divided into two distinct categories, namely, informal and formal literacy experiences. Informal literacy experiences are those that expose children to written language incidentally, such as when children listen to an adult read a storybook. During these experiences, the focus of the interaction is the orally rendered text as well as the pictures in the book. These literacy experiences may promote language development because of the richness of the texts in books (Hayes & Ahrens, 1988); parents' use of questions, expansions, and definitions during book reading (Whitehurst et al., 1988); and repeated exposure to specific books (Sénéchal, 1997). Although parents may take advantage of book reading to highlight the written words, observational data show that they seldom do (e.g., Sénéchal, Cornell, & Broda, 1995).

In contrast to informal literacy experiences, formal experiences focus directly on the written language. Examples of such experiences include parents teaching their child the names of letters and teaching their child to print their names. The term *formal* is used to indicate that the focus of the activity is on the structure of the written language, but it does not imply that parents necessarily engage their child in formally structured activities (e.g., preschool workbooks). Indeed, Purcell-Gates (1996) reported that parents frequently engaged their child in literacy activities while they went about their daily chores such as cooking or shopping. In most instances, parents adopt an educational role when engaging their child in formal literacy activities. As such, the frequency with which parents report tutoring their child should be related to the development of early literacy skills. The limited evidence supports this hypothesis. Sénéchal et al. (1998) showed that the frequency with which parents reported teaching their child to print and read words was related to early literacy measures such as alphabet knowledge, beginning reading, and invented spelling. Similarly, Evans, Shaw, and Bell (2000) found

that the frequency with which parents reported teaching the alphabet was related to their child's knowledge of letter names and sounds.

In sum, parents can make a significant contribution to their child's reading achievement through informal and formal literacy experiences. First, parents can promote their young child's vocabulary when they read books to their child (e.g., Hargrave & Sénéchal, 2000; Jordan, Snow, & Porche, 2000; Lonigan & Whitehurst, 1998; Sénéchal, 1997; Whitehurst et al., 1988), and, in time, children's vocabulary skills will facilitate their reading comprehension (e.g., Jorm, Share, Maclean, & Matthews, 1984; Roth, Speece, & Cooper, 2002; Snow, Tabors, Nicholson, & Kurland, 1995; see also the synthesis by Scarborough, 1998, 2001). Second, parents can tutor their child to learn the alphabet, read, and print words (e.g., Ebey, Marchand-Martella, Martella, & Nelson, 1999; Kraft, Findlay, Major, Gilberts, & Hofmeister, 2001; Lopez & Cole, 1999), and the resulting early literacy skills will provide the building blocks for the successful acquisition of literacy skills (see the reviews by Scarborough, 2001; Whitehurst & Lonigan, 2001). In this study, informal and formal literacy experiences are assessed with measures of storybook exposure and parent teaching about literacy, respectively.

### THE HOME LITERACY MODEL

Sénéchal and LeFevre (2002) presented a summary of their findings on home literacy experiences that serves as the framework for this research (see also Sénéchal et al., 1998). According to the Home Literacy Model, storybook exposure and parent teaching about literacy are distinct types of activities in most homes. Therefore, one should not expect an association between storybook exposure and parent tutoring about literacy. The lack of relation suggests that some parents who read also tutor their child to learn early literacy skills, but some parents do not. It is expected that parents differ in the types of literacy activities that they include at home (Anderson, 1995; Teale, 1986).

The second aspect of the model is that the two types of literacy experiences are differentially related to language, early literacy, and phoneme awareness. According to the Home Literacy Model, storybook exposure promotes the development of language skills, whereas parent tutoring about literacy promotes the acquisition of early literacy skills. Storybook exposure and parent teaching, however, are not directly related to phoneme awareness. Specifically, the association between home literacy activities and phoneme awareness is mediated by children's language and early literacy skills. Sénéchal and LeFevre (2002) demonstrated that it is necessary to consider the two types of home activities as well as to consider language, early literacy, and phoneme awareness separately to disentangle the pattern of relations (see also Sénéchal, LeFevre, Smith-Chant, & Colton, 2000). Failure to consider the entire pattern of relations may lead to the conclusion that storybook exposure and teaching

about literacy have a wider range of associations to reading rather than a more focused impact (Burgess, Hecht, & Lonigan, 2002; Bus, van IJzendoorn, & Pellegrini, 1995; de Jong & Leseman, 2001).

The third aspect of the model concerns the longitudinal relations between the home literacy activities measured prior to Grade 1 and eventual reading outcomes. The Home Literacy Model indicates no direct or indirect link between informal literacy and reading in Grade 1 (cf. de Jong & Leseman, 2001). Not until more advanced reading skills are achieved do informal literacy experiences become indirectly associated to reading through their relation to early language skills. The pattern of findings is different for formal literacy activities. The model shows a series of indirect pathways: Parent teaching is related to early literacy, which, in turn, is associated to Grade 1 reading, and Grade 1 reading predicts more advanced reading skills. The goals of this study are to extend the Home Literacy Model to other literacy variables and to another linguistic group.

## MEASURING DIFFERENT ASPECTS OF LITERACY

A comprehensive model of the effect of home literacy on reading should encompass a wide variety of child literacy outcomes. The importance of elaborating precise models can be illustrated by comparing the results in Sénéchal et al. (1998) and those in Sénéchal and LeFevre (2002). Sénéchal et al. reported that storybook exposure predicted children's language as measured by vocabulary and phoneme awareness. In contrast, Sénéchal and LeFevre found that separating the two language measures produced different results in their follow-up study: Storybook exposure predicted children's vocabulary but not their phoneme awareness. This comparison highlights the need for a precise understanding of the role of home literacy on a variety of skills. In time, such fine-grained analyses will provide valuable information necessary to the elaboration of evidence-based interventions. In this research, a variety of literacy measures are included and are examined separately to extend the Home Literacy Model. In addition to early literacy, word recognition, and reading comprehension, this study included measures of spelling, reading fluency, and reading for pleasure. Some measures were included in kindergarten, and others were assessed in Grades 1 or 4. The inclusion of these measures allows a test of whether other literacy variables also have indirect relations to home literacy experiences.

## UNDERSTANDING THE ACQUISITION OF LITERACY FOR DIFFERENT LINGUISTIC GROUPS

Most research on reading has been conducted with English-speaking children. Extending current findings to other linguistic groups allows for tests of whether the

Home Literacy Model generalizes to other cultures. The limited evidence suggests that parent beliefs and expectations about academic skills vary across linguistic groups (Louvet-Schmauss & Prêteur, 1993; Stevenson et al., 1990), as do the frequency and type of parent-child literacy activities (Bruck, Genesee, & Caravolas, 1997; LeFevre, Clarke, & Stringer, 2002). This study was conducted with French Canadian families. In Canada, French is the primary language spoken by approximately 24% of the population. Canada is officially a bilingual country where federal institutions provide services in English and French. In addition, most French-speaking children have access to schooling in their first language.

The limited evidence on the role of home literacy on children's language and literacy are equivocal with regards to the relations proposed in the Home Literacy Model. Sénéchal (2000) found that storybook exposure explained unique variance in the vocabulary skills of French-speaking preschool children after controlling for parent education and literacy and child analytic intelligence. This finding is in accord with the Home Literacy Model. In contrast, LeFevre et al. (2002) showed that English-speaking parents reported teaching about literacy more frequently than did French-speaking parents. The case may be that in French parent tutoring is not a significant contributor to children's early literacy skills; if so, the Home Literacy Model would not generalize entirely to the home environment of French Canadian children.

## THIS STUDY

The goal of this study is to extend the Home Literacy Model to other literacy outcomes (i.e., reading fluency and spelling) and to another linguistic group (i.e., French-speaking families). According to the Home Literacy Model, book exposure at home is directly related to language development but not to early literacy skills. In contrast, the frequency of parent teaching is directly related to early literacy skills but not language. Finally, home literacy experiences are indirectly related to phoneme awareness and to future reading outcomes at the end of Grades 1 and 4. That is, home literacy experiences are directly related to child language and early literacy, which, in turn, are directly related to later reading outcomes. This study tests whether the same indirect relations held with a different linguistic group as well as with other literacy outcomes. In addition, this study includes a measure of the frequency of reading for pleasure in Grade 4 because it was of interest to test whether early home literacy experiences would contribute to individual differences in children's motivation to read. At present, the Home Literacy Model does not make any predictions on the nature of the relations (either direct or indirect).

In this study, French Canadian families participated in the spring of their child's kindergarten year, and children were tested again in the spring of Grades 1 and 4. Home literacy experiences were reported in kindergarten only. Children's early literacy, language, and phoneme awareness skills were measured at the end of kin-

dergarten; word recognition, decoding, spelling, and phoneme awareness skills were measured at the end of Grade 1; and reading fluency, reading comprehension, spelling, and the frequency with which children reported reading for pleasure were measured at the end of Grade 4.

## METHOD

### Participants

Ninety children (56 girls, 34 boys) were tested in kindergarten ( $M$  age = 6.0 years,  $SD$  = 3 months) and Grade 1 ( $M$  age = 7.1 years,  $SD$  = 3 months). Of these children, 65 ( $M$  age = 10.0 years,  $SD$  = 3 months; 43 girls, 22 boys) were followed until the end of Grade 4. These French-speaking children and their parents were recruited from five schools in two suburban cities adjacent to Ottawa, Canada. One city was in the province of Québec, where French is a dominant language, and the other city was in the province of Ontario, where French is a minority language. French was the language used at home by all the children, and French was spoken exclusively at home for 87% of the sample. French and English were spoken at home for 12% of the sample, and, in one family, parents spoke another language. All children were instructed in French at school.

The first phase of this study was conducted at the end of kindergarten. Informal interviews with the participating teachers revealed that the kindergarten curriculum was such that children were encouraged to learn the names and sounds of the alphabet but were not expected to have mastered the alphabet by the end of the school year.

The education level of the parents was generally superior to the national average: 43% of the sample pursued university-level education, 40% pursued collegial studies after high school, and 17% completed high school only. The proportion of postsecondary education is similar to the region of Ottawa, in which 70% of adults between the ages of 25 and 45 have pursued studies after high school (Ottawa-Carleton Economic Development Corporation, 1996; Statistics Canada, 1993). The average of mother and father education was used as a control variable in this study.

The attrition rate of 26% in this study is similar to other long-term studies (Leseman & de Jong, 1998; Lonigan, Burgess, & Anthony, 2000; Sénéchal & LeFevre, 2002). Tests conducted to assess potential differences between the children who were retained ( $n = 65$ ) and those that were lost ( $n = 25$ ) revealed that the lost children typically had lower scores on kindergarten and Grade 1 literacy measures. No statistically significant differences existed in education level or home literacy experiences. The attrition constrained the distribution of literacy scores and, consequently, resulted in more conservative tests of the relations among home literacy experiences and child outcomes.

In this sample, girls outnumbered boys. Preliminary analyses were conducted to assess whether gender differences existed on any of the variables. Multivariate analyses of variance conducted for each phase of the study failed to reveal any gender differences (all  $ps \geq .13$ ).

## Materials

### *Literacy Experiences*

*Storybook exposure.* Two measures were used to gather information from the parents about storybook exposure. First, parents answered two questions about their child's experience with books. Parents were asked how frequently they read storybooks to their child in a typical week (at bedtime and other occasions) and to indicate number of children's books available in their home on a 6-point scale ranging 0 (*none*), 1 (*1 to 20*), 2 (*21 to 40*), 3 (*41 to 60*), 4 (*61 to 80*), and 5 (*more than 80*). The parents who indicated they had more than 80 books were asked to estimate the number of books at home. The estimated values were then recoded on the same scale as the initial question, such that the final scale had 26 points. A second measure of storybook exposure consisted of asking parents to identify which titles they recognized from a list of popular French children's books (Sénéchal, 2000; Sénéchal, LeFevre, Hudson, & Lawson, 1996). However, preliminary analyses revealed that performance on this measure was at floor for this sample, and, consequently, it was not analyzed further.

*Parent teaching about literacy.* In this study, parent teaching was assessed by asking parents to indicate on a 5-point scale the frequency with which they (a) taught their child how to name the letters of the alphabet, (b) taught their child how to read words, and (c) taught their child how to print words, ranging 1 (*never*), 2 (*seldom*), 3 (*sometimes*), 4 (*often*), and 5 (*very often*).

### *Kindergarten Measures*

*Letter-name knowledge.* To assess letter-name knowledge, children were asked to identify all the letters of the alphabet one at a time in random order. The 16 capital letters shown were A, C, D, Y, E, I, K, T, P, S, N, Q, U, Z, G, and L. The 10 lowercase letters shown were m, o, r, f, h, b, w, j, v, and x. One point was given for every correct answer.

*Reading/letter-sound knowledge.* Children attempted to read one practice word (the child's name) and five target words. The items were one-syllable words that had a consonant-vowel-consonant (CVC) structure. These words were *lac*, *bol*, *fine*, *mur*, and *page*. All the words were printed in capital letters on individual index cards. The children who were unable to read and did not attempt to decode

were given help by the experimenter, who asked them to identify the sound made by each letter and to blend the sounds together to read a word. All the letter sounds and words the children correctly identified on their own or with the help of the experimenter were scored in one of two ways. Children received 1 point for each letter-sound correctly decoded (maximum = 17, representing 14 letter sounds) and, second, they received 1 point for blending the sounds correctly on their own or with the help of the experimenter (maximum = 5). Only the score for letter-sound knowledge was used in subsequent analyses because of a floor effect on the blending score.

*Phoneme awareness.* A phoneme deletion task was developed that required children to say what word was left after the initial target consonant was deleted from a one-syllable word. For example, children were asked to say the word *peau* and then they were asked to say what word was left when the initial consonant /p/ is deleted from the word. Children were given feedback after the administration of two practice items only. The 10 test items included 6 words for which the initial phoneme was a consonant singleton—(*f*)il, (*v*)eau, (*p*)ort, (*b*)oeuf, (*v*)ache, (*d*)oigt—and 4 words for which the initial phoneme was part of a consonant blend—(*p*)laque, (*c*)lou, (*f*)rire, and (*f*)ront. One point was given for every correct answer (maximum = 10).

*Vocabulary.* Children's receptive vocabulary was assessed using the Échelle de vocabulaire en images Peabody (Dunn, Thériault-Whalen, & Dunn, 1993), the French Canadian version of the Peabody Picture Vocabulary Test–Revised (Dunn & Dunn, 1981). Standardized scores were used in the analyses.

### Grade 1 Measures

*Word recognition.* To assess word reading, children were administered the 24 items of Form B of the Reading subtest of the Batterie d'évaluation du langage écrit et de ses troubles (BELEC; Mousty, Leybaert, Alegria, Content, & Morais, 1994). Children were asked to read aloud words of increasing difficulty that were presented six at a time on index cards. The test began with short words (frequently and infrequently used words in French) ranging from 4 to 5 letters and consisting of one or two syllables. The task continued with longer words (frequently and infrequently used words in French) ranging from 9 to 12 letters and consisting of three or four syllables. Children were administered six practice items for which they were given feedback. Testing was discontinued after six consecutive incorrect responses. One point was given for every word read correctly. Raw scores were used because there are no Canadian norms for this test.



*Decoding.* Children were administered the Pseudoword Reading subtest of the BELEC (Mousty et al., 1994). The task included 6 practice items and 24 test items. Children were informed that the words were not real words. They were asked to read the pseudowords aloud, and they were encouraged to read the more difficult pseudowords. Children were presented with 6 pseudowords simultaneously on index cards. Testing was discontinued when a child made six consecutive incorrect responses. One point was given for every pseudoword read correctly. Raw scores were used because there are no Canadian norms for this test.

*Spelling.* To assess children's spelling skills in Grade 1, children were asked to print 10 words. The words were *sel, peur, femme, ciseau, girafe, poupée, percé, décolle, chemise, and grande*. Children were asked to write the words as best they could and were told that they should write as many of the sounds in the word as possible and any of the letters if they did not know how to spell the whole word. The experimenter repeated each word twice, and the children wrote down each word as the experimenter named it. Children were given as much time as required to write down each word. To prevent a child from feeling frustrated, testing was stopped if a child refused to attempt to write three consecutive words. One point was given for each correctly spelled word (maximum = 10).

*Phoneme awareness.* A phoneme deletion task was developed for the study. The task included 2 practice items—(p)eau and (m)oi—and 14 test items of increasing difficulty—(p)ile, (b)eau, (f)ort, (n)euf, (f)lou, (t)ache, (f)ois, (p)rirent, (t)ronc, cal(m)er, vent(r)e, hi(v)er, s(c)olaire, and pi(t)re. Children were asked to say what word is left after a specified phoneme is deleted from the beginning or medial portions of one- or two-syllable words. Children were given feedback after the administration of each practice item. One point was given for every correct answer.

#### *Grade 4 Measures*

*Reading comprehension.* Reading comprehension was assessed with the Level A Comprehension subtest of the Test de Rendement pour Francophones (Sarrazin, 1995). The test included 40 multiple-choice questions that assessed children's comprehension of various types of texts such as prose, expository texts, and functional messages such as advertising and street signs. The test is group administered and has a maximum duration of 30 min. Because Level A is used to assess children in the first to the fourth grade and the Grade 4 children in this study were assessed at the end of the school year, ceiling effects were possible. To avoid ceiling effects on the reading comprehension measure, children also completed the nine multiple-choice questions for the fifth and sixth texts from the Level B (Grades 5 to 8) of the Reading Comprehension subtest. Time constraints did not

permit the administration of the entire Level B subtest. One point was given for every correct answer on the combined measure (maximum score = 49).

*Reading fluency.* The test *Alouette* (Lefavrais, 1967), a measure of oral reading rate, was used to assess reading fluency. In this timed test, children are to read a 265-word text in 3 min. According to Lefavrais, the text includes words that vary in difficulty but that should be easy to read from age 7. As children read aloud, the experimenter noted on an answer sheet the location in the text after 1, 2, and 3 min of reading. The experimenter also noted children's errors including mispronunciations, skipped words, added words, or anything else that was not identical to the text. A corrected reading rate was obtained by subtracting the number of errors from the total number of words read in 3 min. Given that the *Alouette* norms are from France and that no norms are available in Canada, raw scores were used in the analyses.

*Spelling.* Spelling was assessed with the two group-administered Spelling subtests of the *Test de Rendement pour Francophones* (Sarrazin, 1995). The two tests represented two difficulty levels, Level A (Grades 1–4) and Level B (Grades 5–8), and were used to ensure that good spellers were not at ceiling on the first level. Level A included 32 words to be spelled. For each word, the experimenter said the word, said it in a sentence, and then repeated the word. Testing stopped after 15 min. The Level B subtest consisted of 45 sets of 4 words. For each set, children were to choose the word that was misspelled. The sets of words represented a variety of orthographic and morphological patterns. Testing stopped after 25 min.

*Reading for pleasure.* Children were asked to indicate the frequency with which they read for pleasure at bedtime and other times during a typical week. Children were also administered a title checklist to measure book exposure, but their performance on this task was at floor, presumably because the books included in the list were not appropriate for this sample.

## Procedure

Testing occurred during April and May for each stage of the study. Parents completed the home literacy questionnaire and storybook exposure checklist at home in the spring of their child's kindergarten year. Instructions requested that the parent who read to their child most frequently complete the questionnaire and the checklist. Children were tested in their schools.

Test order at each grade level was designed to balance the difficulty level of the tests. Tests administered in kindergarten were presented in the following order: letter-name knowledge, reading/letter-sound knowledge, vocabulary, and phoneme awareness tasks. The following test order was used in Grade 1: phoneme awareness, spelling, word recognition, and decoding. In Grade 4, the order of test and

task administration was reading comprehension, spelling, reading fluency, and the questions about reading for pleasure.

## RESULTS

### Descriptive Statistics

The descriptive results for the parent questionnaire are reported in Table 1. Parents reported that literacy activities occurred frequently when their child was in kindergarten. On average, parents reported reading books to their child seven times a week. Parents also reported often teaching their child the alphabet and to print words and reported sometimes teaching their child to read. In this sample, 69 parents reported having less than 80 books at home, and the remaining 21 parents estimated having between 80 and 500 children's books at home. The original question was therefore recoded to accommodate parents' estimations, but the resulting 26-point scale produced extreme values, and, consequently, the scale was Winsorized to a 7-point scale as is reported in Table 1 (Cohen, 2000). The end point of the scale (101 to 120 books) includes the 5 parents who estimated having between 101 and 120 children's books as well as the 10 parents who estimated having more than 120 books. This 7-point scale was used in subsequent analyses.

The descriptive statistics for the child measures and the inter-item reliability coefficients are presented in Table 2. The sample of children had, on average, good vocabulary skills and early literacy skills. At the end of kindergarten, children knew many but not all of the 26 letter names as well as many of the 17 letter sounds presented to them. Nonetheless, they were not yet readers because they could only read on average one of the five CVC words presented to them. In fact, 67% of the sample could not read any words. At the end of Grade 1, children made progress in phoneme

TABLE 1  
Descriptive Statistics for Parent Reports of Home Literacy Experiences  
in Kindergarten

	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Range</i>
Frequency of storybook reading at bedtime/week	4.1	2.1		
Frequency of storybook reading at other times/week	2.7	1.8		
No. of children's books in the home <sup>a</sup>			3	1–6
Parent teaches child the alphabet <sup>b</sup>			4	2–5
Parent teaches child to read words <sup>b</sup>			3	1–5
Parent teaches child to print words <sup>b</sup>			4	1–5

<sup>a</sup>0 (none), 1 (1 to 20), 2 (21 to 40), 3 (41 to 60), 4 (61 to 80), 5 (81 to 100), 6 (101 to 120). <sup>b</sup>1 (never), 2 (seldom), 3 (sometimes), 4 (often), 5 (very often).

TABLE 2  
Descriptive Statistics and Interitem Reliability Coefficients (Cronbach's  
Alpha) for the Child Measures as a Function of Grade Level

	<i>M</i>	<i>SD</i>	<i>Reliability</i>
End of kindergarten <sup>a</sup>			
Vocabulary <sup>b</sup>	114.3	16.0	.81 <sup>c</sup>
Phoneme awareness (10)	3.1	3.2	.88
Early literacy			
Letter-name knowledge (26)	21.7	5.4	.97
Letter-sound knowledge (17)	11.5	5.6	.94
Reading with help (5)	1.3	2.0	.96
End of Grade 1 <sup>a</sup>			
Phoneme awareness (14)	7.8	3.4	.87
Word recognition (48)	20.4	12.5	.96
Decoding (24)	8.2	6.5	.93
Spelling (10)	3.7	2.1	.79
End of Grade 4 <sup>d</sup>			
Reading fluency (265)	209.8	46.2	—
Reading comprehension (49)	39.2	5.5	.81
Spelling: Production test (32)	14.9	4.2	.75
Spelling: Error detection test (45)	20.7	5.5	.70
Frequency of reading at bedtime/week	4.1	2.2	—
Frequency of reading at other times/week	4.6	2.1	—

*Note.* Maximum score is listed in parentheses.

<sup>a</sup>*n* = 90. <sup>b</sup>Standardized score. <sup>c</sup>Reported in the test manual. <sup>d</sup>*n* = 65.

awareness and reading, and they correctly spelled 37% of the words. The Grade 4 children reported reading for pleasure slightly more than four times per week.

### Data Reduction

To test the predicted relations among the key constructs, the number of variables was reduced. To do so, factor analyses (i.e., principal components with varimax rotations) were conducted, and factor scores were used for variables for which the factor loadings were superior to .70. In each factor analysis conducted, a single factor was obtained.

The storybook exposure factor included the questions about reading frequency and the number of children's books. The teaching factor included the questions about the frequency of teaching the alphabet, and teaching to print and read words. The use of parametric statistics such as factor analysis with ordinal variables (e.g., the teaching questions) is controversial because ordinal variables do not meet all the assumptions of parametric statistics. At the heart of the controversy is whether parametric tests are robust to the use of ordinal variables (Velleman & Wilkinson, 1993). To ensure that the conclusions drawn in this study are not erroneous, the regression

analyses used in the study were run twice: once with each home literacy variable entered separately and once with the composite measures. Comparisons of the findings from the two series of analyses revealed that in all cases the amount of variance explained was similar across analyses but that the corresponding loss of power when variables are entered separately often resulted in statistically nonsignificant results. Because the use of factor analysis did not alter the pattern of variance explained, composite measures of storybook exposure and parent teaching were used.

Composite measures of literacy were also used when appropriate. The kindergarten alphabet knowledge factor scores included the letter-name and letter-sound knowledge measures. In Grade 1, the reading factor scores were obtained from the word recognition and decoding tasks. In Grade 4, the spelling measure included the two spelling subtests, and the reading for pleasure composite included the questions about the frequency of reading at bedtime and at other times during a typical week.

### Correlation Coefficients

The correlation coefficients are reported in Table 3. According to the Home Literacy Model, storybook exposure and parent teaching about literacy should be relatively independent from each other. As expected, the storybook exposure measure was not significantly related to parent reports of teaching early literacy skills. Storybook exposure, however, was significantly related to vocabulary scores in kindergarten (i.e.,  $r = .26, p < .05$ , controlling for whether French was the dominant language), reading comprehension in Grade 4, as well as the frequency with which children reported reading for pleasure in Grade 4. As predicted, the reported frequency of teaching in kindergarten showed a different pattern of relations than that for storybook exposure. The frequency with which parents reported teaching literacy in kindergarten was related to children's early literacy skills in kindergarten; Grade 1 reading, spelling, and phoneme awareness; and Grade 4 reading fluency and spelling.

Examination of the child variables in Table 3 reveals that they are generally related to each other. Kindergarten alphabet knowledge and phoneme awareness skills are related to subsequent literacy skills, and kindergarten vocabulary is a particularly strong predictor of reading comprehension in Grade 4. Grade 1 reading is also a very good predictor of Grade 4 literacy skills. In all, the pattern of correlations obtained with French speaking children is very similar to those obtained in English.

A series of hierarchical regression analyses was conducted to test the predictions of the Home Literacy Model. The regression analyses provided a conservative test of the predicted relations because they controlled for parent education level as well as the other child variables. Preliminary analyses revealed that the linguistic status of French in the community (i.e., majority or minority status) suppressed the pattern of significant findings for kindergarten vocabulary and, consequently, was entered as a control variable in the analysis for this variable but omitted from the other analyses because it did not alter the pattern of significant

TABLE 3  
Correlations Among Variables for the Sample in Kindergarten and Grade 1 and for the Follow-Up Sample in Grade 4

Variable	BEx	Tch	Voc	AK	PA	Rd:1	Sp:1	PA:1	Cp:4	Fl:4	Sp:4	RP:4
Storybook exposure in K (BEx)	—											
Parent teaching in K (Tch)	.17	—										
K vocabulary (Voc)	.20	.13	—									
K alphabet knowledge (AK)	.08	.39	.19	—								
K phoneme awareness (PA)	.02	.24	.20	.56	—							
G1 reading (Rd:1)	.10	.38	.28	.56	.62	—						
G1 spelling (Sp:1)	.05	.29	.25	.36	.45	.62	—					
G1 PA (PA:1)	.13	.27	.21	.46	.55	.59	.50	—				
G4 reading comprehension (Cp:4)	.34	.21	.67	.49	.46	.54	.27	.42	—			
G4 reading fluency (Fl:4)	.12	.47	.22	.35	.24	.63	.27	.19	.37	—		
G4 spelling (Sp:4)	.05	.26	.29	.41	.52	.60	.40	.37	.45	.60	—	
G4 reading for pleasure (RP:4)	.35	.02	.25	.03	.14	.22	.05	.13	.31	.22	.20	—
Parent education (Edu)	.31	.13	.17	.21	.10	.22	.10	.22	.25	.10	.14	.01

Note. In kindergarten and Grade 1,  $r = .20$ ,  $p = .06$  and  $r \geq .21$ ,  $p = .05$ ; in Grade 4,  $r \geq .26$ ,  $p = .05$ . Grade 1,  $n = 90$ ; Grade 4,  $n = 65$ . K = kindergarten; G = grade.

findings for the other variables. Finally, child measures entered as control variables were reduced to a single measure whenever appropriate to limit the number of variables entered in each equation. These single measures were the factor scores obtained from the previously mentioned principal components factor analyses with varimax rotation. In all cases, the factor analyses produced a single factor with loadings of .70 or greater. The analyses for each dependent variable are described in the following discussion. All models presented in Tables 4 to 8 accounted for a statistically significant amount of variance ( $ps < .05$ ).

### Kindergarten Vocabulary, Alphabet Knowledge, and Phoneme Awareness

The regression results for the kindergarten variables are presented in Table 4. According to the predictions of the Home Literacy Model, storybook exposure should explain unique variance in children's vocabulary only and parent teaching should predict literacy skills only. As expected, storybook exposure explained 5% of the unique variance in child vocabulary after controlling for parent education level, ethno-linguistic status, child alphabet knowledge, and phoneme awareness, as well

TABLE 4  
Hierarchical Regression Analyses for Vocabulary, Alphabet Knowledge,  
and Phoneme Awareness in Kindergarten

<i>Criterion Order</i>	$R^2$	$\Delta R^2$	$\Delta F$	$p$
Vocabulary				
Parent education	.03	.03	2.48	.12
Linguistic status	.11	.08	7.61	.01
Phoneme awareness	.14	.03	3.32	.07
Alphabet knowledge	.16	.03	2.58	.11
Parent teaching about letters and words	.17	.01	< 1.00	.33
Storybook exposure	.22	.05	4.76	.03
Alphabet knowledge				
Parent education	.04	.04	4.01	.05
Vocabulary	.07	.03	2.41	.12
Phoneme awareness	.34	.28	36.18	.00
Storybook exposure	.35	.00	< 1.00	.81
Parent teaching about letters and words	.40	.06	8.30	.01
Phoneme awareness: Model 1				
1. Parent education	.01	.01	< 1.00	.34
2. Vocabulary	.04	.03	3.10	.08
3. Parent teaching about letters and words	.09	.05	4.22	.04
Phoneme awareness: Model 2				
3. Alphabet knowledge	.33	.28	36.18	.00
4. Parent teaching about letters and words	.33	.00	< 1.00	.82

Note.  $n = 90$ .

as parent teaching. In this analysis, parent teaching did not account for a statistically significant amount of variance. The pattern of findings was different for children's alphabet knowledge. As predicted, parents' report about teaching contributed 6% unique variance to children's alphabet knowledge skills, but storybook exposure did not account for any unique variance.

According to the Home Literacy Model, home literacy experiences should be indirectly linked to phoneme awareness in kindergarten. Examination of Table 3 shows that parent teaching about literacy is related to phoneme awareness ( $r = .24$ ) but that storybook exposure is not ( $r = .02$ ). Hence the analyses were conducted with the parent-teaching variable only. As can be seen in Model 1, parent teaching explained a statistically significant 5% of unique variance in phoneme awareness after controlling for parent education and child vocabulary. Model 2, however, revealed that all the variance explained by parent teaching was shared with children's alphabet knowledge. The results support the predictions of the Home Literacy Model by showing that parent teaching about literacy was indirectly related to children's phoneme awareness through children's alphabet knowledge. Taken together, the findings in kindergarten are consistent with the Home Literacy Model.

The regression analyses in Table 4 also inform us about the relations among the child measures. For instance, the strong predictive relation between alphabet knowledge and phoneme awareness was clearly demonstrated in the last two models, whereas the relation between phoneme awareness and vocabulary did not reach statistical significance ( $p = .08$ ).

### Grade 1 Literacy

The findings for the hierarchical regression analyses predicting reading, spelling, and phoneme awareness in Grade 1 are shown in Table 5. Storybook exposure was not entered in these analyses because it was not associated with Grade 1 literacy. According to the prediction of the Home Literacy Model, an indirect relation should exist between parent teaching in kindergarten and Grade 1 literacy skills. Two regression models were tested for each Grade 1 measure to assess the indirect relation between teaching and literacy. The first model controlled for parent education and kindergarten vocabulary to show the initial contribution of parent teaching. A second model controlled for kindergarten alphabet knowledge and phoneme awareness to assess whether these early skills would mediate the relation between parent teaching and Grade 1 literacy.

The analyses for Grade 1 reading revealed that parent teaching explained a statistically significant 11% of variance after controlling for vocabulary and parent education. Examination of the results for Model 2 showed that kindergarten alphabet knowledge and phoneme awareness partially mediated this relation but that parent teaching still accounted for a small 3% unique variance. Contrary to the prediction of the Home Literacy Model, parent teaching in kindergarten and Grade 1



reading seem to have a direct relation. The analyses for Grade 1 spelling and Grade 1 phoneme awareness, however, were in accord with the Home Literacy Model. That is, parent teaching predicted unique variance in less stringent models (i.e., Model 1: 7% and 5% unique variance for spelling and phoneme awareness, respectively), but the amount of variance explained by parent teaching dropped to a nonsignificant level once kindergarten alphabet knowledge and kindergarten phoneme awareness were entered in the equations (i.e., Model 2: 2% and 1% unique variance for spelling and phoneme awareness, respectively).

The regression analyses in Table 5 provide information about the relations among the child measures. Kindergarten vocabulary, alphabet knowledge, and phoneme

TABLE 5  
Hierarchical Regression Analyses for Reading, Spelling,  
and Phoneme Awareness in Grade 1

<i>Criterion Model Order</i>	<i>R<sup>2</sup></i>	<i>ΔR<sup>2</sup></i>	<i>ΔF</i>	<i>Final β for Model 2</i>
Grade 1 reading				
Model 1				
1. Parent education	.05	.05	4.27*	.09
2. K vocabulary	.11	.06	6.04*	.12
3. Parent teaching about letters and words	.22	.11	12.20**	
Model 2				
3. K alphabet knowledge	.35	.24	31.75**	.21*
4. K phoneme awareness	.47	.12	19.75**	.42**
5. Parent teaching about letters and words	.50	.03	4.16*	.17*
Grade 1 spelling				
Model 1				
1. Parent education	.01	.01	< 1.00	.01
2. K vocabulary	.07	.06	5.18*	.15
3. Parent teaching about letters and words	.13	.07	6.53**	
Model 2				
3. K alphabet knowledge	.16	.10	9.72**	.07
4. K phoneme awareness	.24	.08	9.10**	.34*
5. Parent teaching about letters and words	.26	.02	2.53	.16
Grade 1 phoneme awareness				
Model 1				
1. Parent education	.05	.05	4.66*	.13
2. K vocabulary	.08	.03	3.03 <sup>†</sup>	.07
3. Parent teaching about letters and words	.14	.05	5.23*	
Model 2				
3. K alphabet knowledge	.24	.16	18.29**	.16
4. K phoneme awareness	.36	.12	15.39**	.41**
5. Parent teaching about letters and words	.37	.01	1.00	.09

Note.  $n = 90$ . K = kindergarten.

<sup>†</sup> $p = .08$ . \* $p = .05$ . \*\* $p = .01$ .

awareness were predictive of Grade 1 literacy when entered early in the equations, but examination of the final beta weights revealed that only kindergarten phoneme awareness predicted unique variance across all three Grade 1 literacy measures.

### Grade 4 Literacy

The three measures of literacy in Grade 4 were reading comprehension, reading fluency, and spelling. The Home Literacy Model predicts that any relation among home literacy experiences in kindergarten and later literacy skills should be mediated through early language and literacy skills. The analyses for reading comprehension, reported in Table 6, provides partial support for this prediction. An initial regression analysis shows that parent teaching accounted for 4% variance and that storybook exposure explains a statistically significant 6% of unique variance in children's reading comprehension in Grade 4 after controlling for parent education. The analysis in Model 2, however, demonstrates the shared variance between kindergarten alphabet knowledge, phoneme awareness, and parent teaching. That is, parent teaching did not explain any variance once the early literacy variables were entered. In contrast to parent teaching, storybook exposure continued to predict a significant 4% unique variance in reading comprehension after controlling for early literacy as well as Grade 1 reading (see Models 2 and 3). As expected, Model 4 revealed that the inclusion of kindergarten vocabulary reduced the contri-

TABLE 6  
Hierarchical Regression Analyses for Reading Comprehension in Grade 4

<i>Model Order</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	$\Delta F$	<i>Final <math>\beta</math> for Model 4</i>
<b>Model 1</b>				
Parent education	.06	.06	4.33*	
Parent teaching about letters and words	.10	.04	2.84 <sup>†</sup>	
Storybook exposure	.17	.06	4.61*	
<b>Model 2</b>				
1. Parent education	.06	.06	4.33*	.13
2. K alphabet knowledge and PA <sup>a</sup>	.33	.26	24.24**	.24*
3. Parent teaching about letters and words	.33	.00	< 1.00	
4. Storybook exposure	.37	.04	4.23*	
<b>Model 3</b>				
3. G1 reading	.41	.08	8.70**	.23*
4. Storybook exposure	.45	.04	4.52*	
<b>Model 4</b>				
4. K vocabulary	.62	.21	34.18**	.47**
5. Storybook exposure	.64	.02	2.82	.13

*Note.*  $n = 65$ . G = grade; K = kindergarten; PA = phoneme awareness.

<sup>a</sup>Factor scores.

<sup>†</sup> $p = .08$ . \* $p = .05$ . \*\* $p = .01$ .

TABLE 7  
Hierarchical Regression Analyses for Reading Fluency and Spelling  
in Grade 4

<i>Criterion Model Order</i>	$R^2$	$\Delta R^2$	$\Delta F$	<i>Final <math>\beta</math> for Model 2</i>
Reading fluency in Grade 4				
Model 1				
1. Parent education	.01	.01	< 1.00	.04
2. K vocabulary	.05	.04	2.83	-.04
3. Parent teaching about letters and words	.24	.18	14.72**	
Model 2				
3. K alphabet knowledge and PA <sup>a</sup>	.13	.08	5.36*	-.12
4. G1 reading	.40	.27	27.36**	.62**
5. Parent teaching about letters and words	.51	.11	13.57**	.36**
Spelling in Grade 4				
Model 1				
1. Parent education	.02	.02	1.32	.10
2. K vocabulary	.10	.08	5.18*	.07
3. Parent teaching about letters and words	.14	.04	2.76 <sup>†</sup>	
Model 2				
3. K alphabet knowledge and PA <sup>a</sup>	.27	.17	14.12**	.18
4. G1 reading	.40	.13	13.38**	.45**
5. Parent teaching about letters and words	.40	.00	< 1.00	.07

Note.  $n = 65$ . G = grade; K = kindergarten; PA = phoneme awareness.

<sup>a</sup>Factor scores

bution of storybook exposure to a statistically nonsignificant 2%. The results indicate that vocabulary may partially mediate the relation of storybook exposure to reading comprehension, although the absolute amount of variance accounted for by storybook exposure was small.

The results for reading fluency and spelling are presented in Table 7. In these analyses, storybook exposure was not considered because it was not associated significantly with fluency ( $r = .12$ ) or spelling ( $r = .05$ ). The findings for reading fluency showed a different pattern to those for reading comprehension. A comparison of Models 1 and 2 demonstrated that, contrary to the predictions of the Home Literacy Model, parents' reports of teaching their child about literacy in kindergarten were directly related to children's reading fluency in Grade 4. Specifically, teaching explained a significant 18% unique variance in children's reading fluency after controlling for parent education and kindergarten vocabulary (Model 1), but it still explained a significant 11% unique variance after controlling for kindergarten and Grade 1 literacy as well (Model 2).

The analyses for spelling in Grade 4 were consistent with the Grade 1 spelling results in that parent teaching was no longer related to spelling once early literacy measures were entered in the equation. That is, the 4% variance in spelling explained by kindergarten teaching (Model 1) was completely shared with earlier lit-

eracy measures (Model 2). In fact, entering the kindergarten literacy measures or Grade 1 reading in separate analyses yielded the same pattern of findings—that is, parent teaching no longer explained any unique variance.

Examination of the final beta weights for the language and literacy predictors is also instructive because it reveals whether these variables account for a significant portion of unique variance in Grade 4 literacy. As indicated in Tables 6 and 7, different patterns emerged for each Grade 4 literacy measure. Kindergarten vocabulary and early literacy were particularly strong predictors of reading comprehension, whereas Grade 1 reading was most predictive of Grade 4 reading fluency and spelling.

### Grade 4 Reading for Pleasure

Grade 4 children reported reading, on average, four times a week at bedtime and five times a week at other times (see Table 2). Examination of the correlation coefficients in Table 3 revealed statistically significant correlations between the frequency of reading for pleasure and three variables, namely, Grade 4 reading comprehension ( $r = .31$ ), kindergarten vocabulary ( $r = .25$ ), and kindergarten storybook exposure ( $r = .35$ ). It was of interest to assess whether the frequency with which children report reading for pleasure predicted reading comprehension after controlling for concurrent reading fluency and whether early experiences and skills predicted the frequency with which children report reading for pleasure. The results presented in Table 8 are straightforward. The frequency of reading reported by the children explained a significant 6% of unique variance in reading compre-

TABLE 8  
Hierarchical Regression Analyses Testing the Relations Among Reading Comprehension, Reading for Pleasure, and Storybook Exposure

<i>Criterion Order</i>	$R^2$	$\Delta R^2$	$\Delta F$	<i>Final <math>\beta</math></i>
G4 reading comprehension				
Parent education	.06	.06	4.33	.22*
G4 reading fluency	.25	.19	7.69	.29*
G4 reading for pleasure	.32	.06	5.65	.24*
G4 reading for pleasure				
Parent education	.00	.00	< 1.00	-.16
K alphabet knowledge and PA <sup>a</sup>	.01	.01	< 1.00	-.16
K vocabulary	.06	.06	3.86*	.08
Parent teaching about letters and words	.07	.00	< 1.00	-.08
Storybook exposure	.17	.11	7.76**	.33*
G1 reading	.21	.03	2.29	.18
G4 reading comprehension	.22	.01	< 1.00	.18

*Note.*  $n = 65$ . G = grade; K = kindergarten; PA = phoneme awareness.

<sup>a</sup>Factor scores.

\* $p = .05$ . \*\* $p = .01$ .

hension after controlling for parent education and concurrent reading fluency. The findings indicate that children who read for pleasure more frequently tended to have good reading comprehension skills.

The next analysis reported in Table 8 assessed the contribution of early experiences to the reported frequency of reading to extend the Home Literacy Model. It revealed that storybook exposure, but not parent teaching, explained 11% of variance in the frequency with which children report reading for pleasure after controlling for parent education and kindergarten alphabet knowledge, phoneme awareness, and vocabulary. The predictive value of storybook exposure remained statistically significant even after controlling for Grade 1 reading and Grade 4 reading comprehension. The findings in Table 8 extend the Home Literacy Model by showing another role of storybook exposure: Children who are read to more frequently prior to formal schooling report reading for pleasure more frequently, which, in turn, is associated with better reading comprehension skills.

## DISCUSSION

This study extended the Home Literacy Model to other child variables and to another linguistic group. The findings for kindergarten, Grade 1, and Grade 4 obtained from French-speaking children are generally consistent with the model elaborated with English-speaking families (Sénéchal & LeFevre, 2002). As predicted by the Home Literacy Model, this study shows that (a) parent book reading and teaching about literacy are distinct domains of home literacy experiences; (b) book reading is directly related to children's language skills such as vocabulary but is not related to child early literacy or phoneme awareness; (c) parent teaching about literacy is directly related to children's early literacy skills, is indirectly related to phoneme awareness, and is not related to children's vocabulary; and (d) storybook exposure is indirectly related to more advanced reading comprehension in Grade 4. Each of these findings is discussed in turn.

One contribution of the Home Literacy Model is that it distinguishes between different types of home literacy experiences, namely, storybook exposure and parent teaching. The lack of relation between storybook exposure and parent teaching suggests that they are distinct home literacy experiences. This finding is consistent with that of others and supports the idea that parents engage their child in literacy experiences at home that expose them to print incidentally as well as experiences with the print itself as the focus of the interaction (Evans et al., 2000; Sénéchal et al., 1998). It is important to keep in mind that the relation between storybook exposure and teaching was not statistically significant, which indicates that some parents engaged their child in both types of home literacy activities, whereas others preferred one of these, and yet others seldom did any of these activities. It is also possible for parents to use shared book reading to teach explicitly about reading,

although these findings as well as observational findings suggest that this does not occur as frequently as one would think (e.g., Sénéchal et al., 1995).

Research on home literacy experiences has long examined the role played by shared book reading, but the contribution of parent teaching has received less attention or has been ignored. The following three examples illustrate the latter. First, researchers who have developed home literacy indexes have essentially focused on shared reading (e.g., Burgess et al., 2002; Payne, Whitehurst, & Angell, 1994). Second, Teale (1986) found that parent literacy teaching was more frequent than parent storybook reading in his sample of 22 low-income families. Nonetheless, Teale neither fully described the parent teaching interactions nor considered parent teaching in the discussion of findings. Third, Sonnenschein, Brody, and Munsterman (1996) did not include parent tutoring as one of the 10 common characteristics of the home environment related to positive reading outcomes, even though the prekindergarten children included in the Early Childhood Project (Baker, Sonnenschein, Serpell, Fernandez-Fein, & Scher, 1994) also worked with alphabet books, flash cards, and worksheets designed to promote literacy. This aspect of children's home literacy experiences warrants further study.

Another contribution of the Home Literacy Model is that it shows distinct associations among child outcomes, storybook exposure, and parent teaching experiences. The role of storybook exposure in enhancing oral language has long been the focus of observational, correlational, and intervention studies. The findings of the present study add converging evidence to this literature by showing the positive relation between storybook exposure and child vocabulary, and, at the same time, it constrains the literature by showing that storybook exposure is not related to written language. This pattern of findings is consistent with a recent intervention study conducted by Jordan et al. (2000), which found a positive effect of shared reading on oral but not written language. In the present study, storybook exposure also had an indirect long-term relation to reading comprehension in Grade 4. Policymakers and practitioners should certainly continue their work on promoting shared reading, but they will have to inform parents of the specific contribution of this activity. The often-cited statement that the best thing a parent can do to prepare their child for success in reading is to read to them (Anderson, Heibert, Scott, & Wilkerson, 1985) may not be quite correct. It would be more appropriate to say that shared reading is an important activity because it can enhance children's vocabulary, which in turn, will be a strong predictor of children's comprehension in later grades.

As indicated previously, we know little about the role of parent teaching that occurs naturally in the home before the onset of formal schooling in Grade 1. The findings of this study demonstrate that middle-class parents report teaching their young child about literacy and the frequency with which they report teaching is a good predictor of their child's early literacy skills, which, in turn, predicts word reading in Grade 1. This finding is consistent with those of Evans et al. (2000), Sénéchal and LeFevre (2002), and Sénéchal et al. (1998). Contrary to previous re-

search, however, the findings of this study also support a small, direct relation between the frequency of parent teaching in kindergarten and word reading in Grade 1 that is not entirely mediated by alphabet knowledge and phoneme awareness. Researchers will want to understand better why and how some parents teach their child how to read and print words as well as how these parents may continue to provide support for word reading once the children enter Grade 1. Policymakers and practitioners will want to know whether parents should be encouraged to teach their young child. At present, it is too early to make recommendations to parents.

In this study, parent teaching about literacy did not predict unique variance in children's phoneme awareness in kindergarten or in Grade 1. This finding is consistent with those of Foy and Mann (2003), Sénéchal and LeFevre (2001), and Sénéchal et al. (1998). It is, however, inconsistent with the finding of Evans et al. (2000), who reported a direct link between letter activities at home and phoneme awareness in kindergarten. The Evans et al. analysis, however, was less stringent than those in the other reports because it did not control for alphabet knowledge, and this omission probably accounts for the apparent discrepancy in findings. That is, no direct link exists between parent teaching and phoneme awareness when alphabet knowledge is taken into account as was clearly shown in Table 4.

The findings of this study extend the Home Literacy Model in three other ways. First, storybook exposure was not related to spelling, and parent reports of teaching were indirectly related to children's spelling skills in Grades 1 and 4. Spelling is apparently a domain that is not as strongly related to the home literacy activities that were measured in this study. It is also possible that the parent questionnaire was not tapping what parents do to help their child learn to spell accurately or that parents had not initiated those behaviors in kindergarten.

Second, the distinct predictive links between different types of home literacy activities and child outcomes continue into Grade 4. Parent reports of teaching but not storybook exposure were directly linked to child reading fluency in Grade 4 after controlling for all the appropriate variables. What is it about these early experiences that have such a pervasive impact? Perhaps they are markers of different types of orientations toward reading acquisition (Anderson, 1995). Parents who teach frequently may value school performance and provide the support for learning. It may also be the case that parents who taught frequently in kindergarten continue to provide more support for learning in the form of listening to their child read aloud, and it is these continued experiences that are the building blocks for reading fluency. Parent orientation toward early literacy and the type of home experiences they provide can be explored in future research (e.g., Evans, Fox, Cremaso, & McKinnon, 2004).

The study findings extend the Home Literacy Model in a third way by showing a long-term relation between storybook exposure in kindergarten and the frequency with which Grade 4 children reported reading for pleasure. This prospective demonstration that shared reading before the onset of formal schooling has a long lasting association with reading motivation will be of interest to educators and

parents. Of interest, the frequency of reading for pleasure proved to be a good concurrent predictor of Grade 4 reading comprehension. This finding is consistent with those of Allen, Cipielewski, and Stanovich (1992), who showed that reading frequency outside school predicted reading comprehension in Grade 5 students. These results are correlational in nature and, therefore, do not tell us about the direction of the relation. The case may be that strong reading comprehension skills are necessary for children to engage in reading for pleasure. Children's reported frequency of reading for pleasure, however, was not reliably related to spelling or reading fluency in this study. The lack of relation between reading frequency and spelling is inconsistent with the hypothesis that children who read frequently build stronger orthographic representations of words, which, in turn, should be reflected in stronger spelling skills (Cunningham & Stanovich, 1991; Stanovich & West, 1989). However, Bosman and Van Orden's (1997) review of experimental evidence suggested that mere exposure to print might not be sufficient to build accurate orthographic representations. The study of precursors of spelling development certainly warrants further attention.

In this study, parents were asked to report on storybook exposure and literacy teaching once, in the spring of their child's kindergarten year. Hence, the findings speak to the long-term relations between preparatory experiences at home and eventual success in literacy. It is possible, however, that the nature of the relations between home activities and child outcomes change over time. In a recent study, LeFevre and Sénéchal (2002) found a strong relation between parent reports of home literacy activities from the beginning of kindergarten to the beginning of Grade 1, but the strength of the relations decreased from Grade 1 to the end of Grade 2. This highlights the need to document how parents are adapting their home activities to their child's growing competencies.

Although the objective of this study was to test the Home Literacy Model, it does provide information about the nature of the relations among the literacy skills measured. The study shows that literacy skills and phoneme awareness measured at the end of kindergarten or Grade 1 are very good predictors of Grade 4 literacy for French-speaking children as they are for English-speaking children (Juel, 1988; Storch & Whitehurst, 2002). Further examination of these data reveals that most children who were having difficulty at the end of Grade 1 were still having difficulty at the end of Grade 4. Specifically, 81% (13 of 16) of children in the bottom quartile of the distribution for reading in Grade 1 (using the factor scores for word recognition and decoding) were still in the bottom third for reading fluency, 56% (9 of 16) were in the bottom third for reading comprehension, and 50% (8 of 16) were in the bottom third for spelling in Grade 4. This pattern of relative stability highlights the importance of providing successful learning opportunities for young children to promote the acquisition of proficient literacy skills.

The analyses conducted reveal a strong predictive role for kindergarten vocabulary to reading comprehension in Grade 4. At first glance, this finding appears con-



tradictory to that of Schatschneider, Fletcher, Francis, Carlson, and Foorman (2004), who reported no relation between kindergarten vocabulary and reading comprehension in Grade 2 in a sample of 189 children. However, the Schatschneider et al. findings may be the result of testing reading comprehension before the period of greatest growth in this skill. Specifically, Aarnouste, Van Leeuwe, Voeten, and Oud (2001) found that the greatest growth in word reading occurred in Grade 2, whereas the greatest growth in reading comprehension occurred in Grade 3 in their study of three cohorts of 900 children from Grades 1 to Grade 6. Hence, the strong predictive role of kindergarten vocabulary may not appear until Grade 3 or 4.

This study examined the impact of literacy experiences at home on children's reading and spelling performance in a sample of mostly middle-class families. Parent education level was included as a control variable in all analyses. One could argue, however, that the results are not representative of the entire population because most of the parents in the sample were highly educated. This important issue needs serious consideration and is best discussed in terms of proximal versus more distal causes. The view adopted in this research is that home literacy experiences are proximal variables that can affect child outcomes directly, whereas socioeconomic status (SES; i.e., parent education and income) are distal causes that can moderate the impact of home literacy experiences. Some evidence exists that suggests that distal variables such as SES play a moderating role for more proximal variables such as home literacy activities (Majoribanks, 1979). That is, it appears that the strength of the relations among home literacy experiences and child outcomes varies as a function of different SES levels. Tests of the moderating effect of SES on home literacy activities, however, require representative samples of the different levels of SES. Unfortunately, sample sizes rarely reach the appropriate level to provide adequate tests of the moderating role of SES. As a consequence of small sample sizes, SES levels may appear to play a mediating role in the link between home literacy and child outcomes (for a clear presentation of mediator vs. moderator variables in correlational research, see Baron & Kenny, 1986). In studies for which it is not feasible to test representative samples for different SES levels, it is best to limit the sample to one SES level to gain a better understanding of the role of proximal variables. In addition, a focus on proximal variables should provide more explanatory power than one on more distal variables (Hess, Holloway, Price, & Dickson, 1982).

This 5-year longitudinal study was correlational, and, therefore, statements about causation should not be made. This study, however, includes strict controls to test the predicted direct and indirect relations among early experiences and children's eventual literacy performance in Grade 4. The relations found existed after controlling for parent education as well as longitudinal relations among literacy behaviors. In this study, storybook exposure directly predicted kindergarten vocabulary and the frequency with which children reported reading for pleasure in Grade 4, whereas parent literacy teaching in kindergarten directly predicted kindergarten alphabet knowledge, Grade 1 reading, and Grade 4 reading fluency.

Moreover, parent teaching also predicted phoneme awareness indirectly and story-book exposure predicted Grade 4 reading comprehension indirectly. The Home Literacy Model proposed by Sénéchal and LeFevre (2002) and extended here seems to capture a real distinction in the early experiences of young children.

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