

Continuity and Change in the Home Literacy Environment as Predictors of Growth in  
Vocabulary and Reading

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**Abstract (120 words)**

110 English-speaking children schooled in French were followed from kindergarten to grade 2. The findings provided strong support for the Home Literacy Model (Sénéchal & LeFevre, 2002) because in this sample the home language was independent of the language of instruction. The informal literacy environment at home predicted growth in English receptive vocabulary from kindergarten to grade 1 whereas parent reports of the formal literacy environment in kindergarten predicted growth in children's English early literacy between kindergarten and grade 1 and growth in English word reading during grade 1. Further, 76% of parents adjusted their formal literacy practices according to the reading performance of their child, in support of the presence of a responsive home literacy curriculum among middle-class parents.

*Keywords:* early literacy, reading, vocabulary, parent teaching, shared reading, home literacy experiences

## Continuity and Change in the Home Literacy Environment as Predictors of Growth in Vocabulary and Reading

Young children enter grade 1 with a variety of skills that facilitate their acquisition of reading. Individual differences in the quality of these skills are present early and remain relatively stable over time (e.g., Butler, Marsh, Sheppard, & Sheppard, 1985). Children who struggle with learning to read in grade 1 often have difficulty in other school domains, and are less likely than their peers to complete high school or pursue education beyond high school (Alexander, Entwisle, & Horsey, 1997; Entwisle, Alexander, & Olson, 2005). Given the stability of the pathways towards efficient reading and academic success, it is essential to understand the development of these differences so that intervention can be done early (Hart & Petrill, 2009; Landry, Smith, Swank, & Guttentag, 2008). In the present research, we examined the role of the home literacy environment in prediction of language and literacy development for young English-speaking children as they entered kindergarten, learned to read in grade 1, and became more fluent readers in grade 2. The novelty of this research is that the children were schooled in French but spoke English at home, thus allowing for a test of the relation between English home-literacy activities and the children's progress in English literacy that was independent of school-based English-language instruction.

### **The Home Literacy Model**

Sénéchal and LeFevre (2002) used longitudinal findings to elaborate a model of the relations between the home literacy environment and the acquisition of language and literacy. In the Home Literacy Model, the home literacy environment consists of two dimensions, with each playing different roles in the development of language and literacy. Sénéchal and LeFevre labeled these dimensions informal and formal literacy experiences. Informal literacy experiences

are those where print is present but is not the focus of the parent-child interaction. In contrast, formal literacy activities are those where the attention is on the print itself.

Shared reading between parents and children is often used to index informal literacy activities because observational studies of parent-child interactions during shared reading revealed that parents focus on the storyline or pictures and seldom make references to print (Deckner, Adamson, & Bakeman, 2006), and that children rarely look at the print during the activity (Evans, Saint-Aubin, & Landry, 2009; Evans & Saint-Aubin, 2005). In contrast, asking parents how frequently they tutor their young child in activities such as teaching the alphabet, printing, or reading words is often used to index formal literacy. The usefulness of general questions about teaching is highlighted by the fact that parents report teaching about early literacy in a number of activities. Of the 18 activities included in their survey, Martini and Sénéchal (2012) found that parents, on average, selected 13 activities during which they reported teaching about literacy to their 5-year-old children. It seems that parent-teaching events prior to grade school are discrete moments of instruction in a variety of contexts rather than a single structured activity.

The findings from a range of studies are consistent with the predictions of the Home Literacy Model: Informal literacy experiences such as shared reading have a robust association with general aspects of children's knowledge and language whereas parental involvement in teaching or tutoring literacy skills has a reliable association to early literacy skills such as word reading. Home literacy experiences, however, were indirectly related to phoneme awareness through their relations to children's early literacy and vocabulary (Hood, Conlon, & Andrews, 2008; Sénéchal, 2006; Sénéchal & LeFevre, 2002).

Further support for the distinct roles played by formal and informal home activities in

children's language and literacy acquisition as proposed in the Home Literacy Model comes from two recent meta-analyses of intervention studies. First, the powerful role of shared reading becomes evident when focusing on oral language outcomes. In their synthesis of shared-reading intervention studies, the National Early Literacy Panel (2008) found that shared reading (i.e., informal activities) enhanced oral vocabulary acquisition ( $ES = .60$ , 9 studies) and conceptual knowledge about print ( $ES = .51$ , 4 studies), but not alphabet knowledge ( $ES = -.06$ , 2 studies) or phoneme awareness ( $ES = .11$ , 2 studies). Second, the powerful role played by parent instruction (i.e., formal activities) was evident in Sénéchal and Young (2008), who found that parent tutoring ( $ES = 1.18$ , 6 studies) and parent listening to child read ( $ES = .58$ , 7 studies) enhanced early literacy (e.g., alphabet knowledge or reading readiness or beginning reading or invented spelling) and reading skills whereas the effects of the three studies in which parents read books to the children did not produce statistically significant effects on these outcomes. Thus, according to the Home Literacy Model, the informal literacy environment is related to children's oral language development, which will eventually be important for reading comprehension. Formal literacy in the preschool and early school years, in contrast, is specifically helpful for helping children master the mechanics of the reading process and become fluent readers.

Importantly, the Home Literacy Model has been replicated as well as generalized to other cultures and to other academic domains. For example, it has been replicated for English-speaking children in Australia (Hood et al., 2008) and Canada (Levy, Gong, Hessels, Evans, & Jared, 2006; Stephenson, Parrila, Georgiou, & Kirby, 2008); for Korean children (Lee, Sung, & Chang 2009); for Chinese children (Chen, Zhou, Shao & Davey, 2010); for Spanish-speaking children in the United States (Farver, Xu, Lonigan, & Eppe, 2013); and has received partial support for Finnish children (Silinskas, Leppanen, Aunola, Parrila, & Nurmi, 2010). The basic tenets of the

model have been successfully extended to children's home numeracy experiences (LeFevre, Polyzoi, Skwarchuk, Fast, & Sowinski, 2010; LeFevre et al. , 2009). Thus, the home literacy model is robust across a wide range of cultures, languages, and countries.

Despite the extensive support obtained so far for the Home Literacy Model, the findings have been limited to concurrent links between home literacy and child outcomes in preschool, kindergarten, or the beginning of grade 1. Longitudinal analyses have shown that home literacy did not predict development (i.e., growth) for outcomes measured later in grade 1, or beyond, once auto-regressor variables were taken into account (e.g., Hood et al., 2008; Sénéchal, 2006; Sénéchal & LeFevre, 2002). At present, there has not been any test of whether the Home Literacy Model would predict growth in child outcomes at the transition from kindergarten to grade 1. Such tests are necessary to show that the direction of the associative relations goes from home literacy to child outcomes. Accordingly, the first goal of the present research was to test whether home literacy would predict growth in child outcomes. Parents completed questionnaires at the beginning of their child's kindergarten year, and children were assessed on vocabulary and early literacy in kindergarten and at the beginning of grade 1. Similarly, parents completed questionnaires at the beginning of grade 1 and child reading and vocabulary were assessed at the end of grades 1 and 2. This design allowed us to include auto-regressor variables in our analyses and therefore test for growth in reading and vocabulary skills.

The second goal of the present study was to investigate the evolution of parent teaching over time. The frequency of parent teaching is positively associated with children's early literacy in kindergarten (e.g., Sénéchal & LeFevre, 2002), but parent help with homework is negatively related to achievement later on (for a meta-analysis, see Hill & Tyson, 2009). It has been hypothesized that poor achievement may, in fact, increase the level of parent involvement

(Eccles, 2007). In the studies on home literacy listed previously, the home literacy environment was assessed only once, most often in kindergarten. One study stands out, however: Silinskas, Leppanen et al. (2010) conducted a time-lag study of Finnish children in kindergarten, beginning and end of grade 1. They found that mothers' reports of teaching to recognize and write letters were positively related to each other between kindergarten and grade 1,  $r(161) = .42$ ; but that children's reading performance at the beginning of grade 1 was negatively related to parent reports of teaching at the end of grade 1,  $r(161) = -.31$ . As suggested by Silinskas, Leppanen et al., teaching the alphabet may have decreased because the children had mastered letter names and sounds, resulting in the observed shift from positive to negative correlations in their study. Different results might be obtained by focusing on mothers' teaching of more advanced skills because these have been shown to be more predictive of child outcomes (Martini & Sénéchal, 2012; Silinskas, Parrila et al., 2010). In the present study, we described in detail the pattern of change in associations between parent teaching and children's reading performance to determine whether parents of children making slower progress increase their teaching and/or whether parents of children who were progressing well decreased their teaching behaviors.

A third goal of this study was to provide a strong test of the model by examining a group of children for whom the effects of schooling on reading instruction in English were minimized. The Home Literacy Model has most frequently been tested in families for which the language at home and at school is the same, and, consequently, where children were learning about early literacy skills at school as well as at home, making it harder to isolate the unique influence of home literacy experiences. The Model has also been tested in families who might not have had access to as many resources as families speaking the dominant language because they speak a minority language at home. In the present study, we tested the Home Literacy Model in a group

of children who spoke at home the majority language of their community (English) but were schooled in a minority language (French). English reading instruction was not provided until grade 2. As a consequence, we hypothesized that most of their experience with English-literacy skills would come from home, thus providing a stronger test of the Home Literacy Model than in previous research.

### **English-Speaking Children Schooled in French: The Canadian Experience**

Canada is officially a bilingual English-French country. English is the majority and French a minority language in nine of the 10 provinces, whereas the reverse is true in the province of Québec. The ideal of speaking both English and French is promoted by the federal government and espoused by many Canadians. As such, many parents of English-speaking children enrol their children in French Immersion programs to promote bilingualism. These programs are available in public schools and are designed for English-speaking children in provinces where French is a minority language. In 2010, 337,488 students were enrolled in a variety of French immersion programs (Parents for French, n.d.) with the popularity of French Immersion being the highest in provinces adjacent to Québec. In the school board where the present research was conducted, 62% of all children in kindergarten were enrolled in Early French Immersion programs in 2012 (Ottawa Carleton District School Board, 2012). The fact that French Immersion is tailored for English-speaking children in provinces where English is the dominant language means that the socio-cultural context for these children is quite different from that of minority-language children such as Spanish-speaking families in the United States (Farver, Xu, Lonigan, & Eppe, 2013). For instance, the availability of parenting resources, reading material, and educational programming in English far surpasses what is available in minority languages. Consequently, a rich home literacy environment in English for French



Immersion children might be associated with strong English language and literacy skills (Deacon, Wade-Woolley, & Kirby, 2007; Jared, Cormier, Levy, & Wade-Woolley, 2011).

Although French immersion programs vary across cities and provinces, Early French Immersion programs emphasize the development of French-language skills in kindergarten and provide academic instruction exclusively in French for up to three years of grade school. In the present study, the children were taught exclusively in French in kindergarten and grade 1, and then, received 60 minutes daily in English reading instruction starting in grade 2. Given the structure of these early French Immersion programs, any reading instruction in English during kindergarten and grade 1 should come from home activities.

### **The Present Research**

In the present study, a sample of English-speaking children and their parents were followed from kindergarten to the spring of grade two. Children's vocabulary, reading, and invented spelling were measured in kindergarten and at the beginning of grade 1; and their reading assessed at the end of grades 1 and 2. Parents completed home-literacy questionnaires in kindergarten, at the beginning of grade 1, and the end of grade 2. This research design afforded a strong test of the home literacy model by assessing both the longitudinal links between home literacy and child outcomes and the continuity and change in home literacy practices. Specifically, we hypothesized that parents' reports of the informal literacy environment would predict growth in children's English vocabulary development, whereas parents' reports of formal literacy would predict growth in children's English word-reading skills. Moreover, the relation between the home literacy environment and phoneme awareness would be mediated through children's early literacy and vocabulary. Finally, we hypothesized that parents' reports of formal literacy practices would be related to the development of children's word reading skill, such that

parents' would modify their activities in response to their child's reading development.

## Method

### Participants

A sample of 143 kindergarten children from Early French Immersion programs and their parents were recruited from six public schools in a large Canadian city. Of the original 143 families who participated, 110 spoke English exclusively at home. Hence, 110 children (64 girls) participated in kindergarten; 96 children (62 girls) were followed at the beginning of grade 1; 93 (61 girls) at the end of grade 1; and 84 (54 girls) at the end of grade 2.

Attrition was 24% from kindergarten to grade 2. The majority of the 26 children lost between kindergarten and the end of Grade 2 transferred out of French Immersion into English programs ( $n = 21$ ; 81%); one child transferred to a French school after kindergarten, and four moved out of the school district between kindergarten and grade 1. We tested whether children who did not complete the study were different from those who remained at two test points. The 14 children who dropped out by the beginning of grade 1 did not differ from those who remained in the study in their kindergarten performance or their home literacy (multivariate  $ps = .08$  and  $.64$ , respectively). However, the 12 children who dropped out between grade 1 and grade 2 performed less well than the remaining children (multivariate  $ps > .05$  in kindergarten and beginning of grade 1), but did not differ in their home literacy environment (multivariate  $ps = .49$  and  $.15$  in kindergarten and grade 1, respectively).

Our sample includes more girls than boys –an imbalance typical of French Immersion programs. Children enrolled in Early French Immersion included, on average 54% girls between 2006 and 2012 (Statistics Canada Table 477-0027). Our initial sample included 58% girls, which was not different from the population value of 54%,  $\chi^2(1, N = 110) = .77, p = .38$ .

However, because boys were more likely to drop out of French Immersion than girls,  $\chi^2(1, N = 110) = 5.44, p = .020$ , by the end of the study 64% of the sample were girls. Recent studies on French Immersion showed similar gender imbalances (e.g., 68% girls in Comeau, Cormier, Grandmaison, & Lacroix, 1999; 66% in Deacon et al., 2007; and 57% in Jared et al., 2011). The causes of this imbalance are not documented by school boards, but beliefs that girls have stronger language skills than boys and that boys have different needs than girls may contribute to these differences in participation rates by gender (Kissau & Turnbull, 2008).

Importantly for the generalizability of the findings, we did not find any gender differences in home literacy environment (multivariate  $ps = .42$  to  $.84$ ), nor did we find gender differences in performance in kindergarten (multivariate  $p = .26$ ), or at the end of grades 1 (multivariate  $p = .22$ ) or grade 2 ( $p = .08$ ) for the retained sample. At the beginning of grade 1, girls outperformed boys on one task, phoneme awareness (multivariate  $p = .01$  and univariate  $p = .03$ ). Given the lack of gender differences on our key variables, gender was not a confound in the present study.

Respondents to the parent questionnaire in kindergarten included mothers (93%), fathers (6%), 1 great aunt, and 1 unknown. The demographic information provided revealed that the majority of 109 respondents who reported this information had completed a university degree. This educational attainment was higher than the provincial level (2006 census; Statistics Canada, 2007). The distribution for the sample (city and province) was as follows: .9% some high school (vs. 8% city; 14% province for individuals aged between 25 to 64); 15% high-school diploma (vs. 20% city; 25% province); 28% college diploma or certificate (vs. 27% city; 31% province) or some university (vs. 5% city; 5% province); and 56% university degree (vs. 40% city; 26% province).

Missing data analysis revealed that they were missing completely at random (i.e., a non-significant Little's test,  $\chi^2(920) = 876.54, p = .85$ ). Missing data on any variable for the children's data ranged from 2 to 3% in kindergarten, 13 to 16% in grade 1, and 24% in grade 2 and, for parents, from 0.9 to 9.1% in kindergarten, 17.3 and 20.0% in grade 1, and 34 to 36% in grade 2. Given the level of missing data, multiple imputations (i.e., five imputations using EM in SPSS) were used to estimate missing data and pooled results are reported for correlations and regression analyses (McCartney, Burchinal, & Bub, 2006).

### **Procedure**

To assess the consistency and change in home literacy practices, parents completed, at home, the home literacy questionnaires in October of kindergarten and grade 1, and in May of grade 2. Children were tested individually in their school four times: from November to February in kindergarten; October to November in grade 1, and April to May in grades 1 and 2.

### **Materials**

**Parent measures of home literacy practices.** The parent questionnaires included a wide variety of items about the home environment. Only those relevant to the goals of the present research are reported and presented in the appendix.

**Formal literacy.** The kindergarten questionnaire on formal literacy included 5-point rating scales about the frequency of parent teaching the alphabet, printing words, and reading words. Based on Martini and Sénéchal (2012), who showed that teaching more advanced skills is a stronger predictor of child literacy outcomes than teaching about the alphabet, parent teaching about reading was used as a measure of teaching at all test times (i.e., kindergarten, grade 1, and grade 2). We used a generic question about teaching to read rather than questions about where, when, and how teaching occurred. This decision is justified in light of Martini and

Sénéchal's (2012) finding that parents of kindergartners report teaching about literacy across many activities, selecting, on average, 13 of the 18 home activities included in a checklist. This finding makes sense when one thinks of early child learning. Young children might benefit optimally from frequent exposure to short learning events given their limited attention spans and the complexity and extent of the task of learning to read. Assuming it is the cumulative exposure to these events that boosts learning, a generic index of the overall frequency of parent teaching should be a better predictor of early literacy experiences than any one home literacy activity.

In addition to reporting on teaching frequency, parents also indicated that they thought it important for their child to have learned to read a few words prior to grade 1. This question was included in light of Martini and Sénéchal's (2012) finding that a broader conceptualization of the Home Literacy Model, one that includes more than literacy activities, adds to its predictive power. It is important to note that parent expectations were not a measure of how well their child was doing or will do in school as is often used in the literature (e.g., Stephenson et al., 2008; Storch & Whitehurst, 2001). Most parents know how well their child is performing and, as such, it is not surprising that such variables are extremely predictive. At the same time, these questions may not be very informative about home activities. In contrast, the question about parent expectation used in the present research can be viewed as an index of the home curriculum, that is, what skills and knowledge that parents think are important to know prior to formal reading instruction in grade 1. Hence, the kindergarten measure of formal literacy included these two questions (parent teaching to read words and parents' expectations about their child's reading before grade 1) averaged into a single variable (inter-item reliability:  $\alpha = .50$ ). Although this correlation is somewhat low, preliminary analyses revealed that the combined measure was superior than separate variables. In grades 1 and 2, parents were also

asked to indicate how frequently they listened to their child read as an index of more advanced parent involvement (Sénéchal & Young, 2008). These two questions (parent teaching to read words and listening to their child read) were averaged to form a single index of formal literacy (inter-item reliability:  $\alpha = .71$  and  $.82$  for grades 1 and 2, respectively).

***Informal literacy.*** In kindergarten and at the beginning of grade 1, informal literacy was documented with four items, namely, the frequency of parents reading with their child at bedtime, the number of children's books in the home, and two checklist measures of parent exposure to children's literature. The children's authors and titles checklists are assumed to index parents' familiarity with children's books, presumably through shared reading, by requiring parents to select the items they recognize from a list that also contains foils (see Sénéchal, LeFevre, Hudson, & Lawson, 1996). Informing parents that the checklists included foils minimized guessing. The Children's Titles Checklist had 40 titles of popular children's books and 20 foils; and the Children's Author Checklist had 40 authors of children's books and 20 foils. The checklists were scored by subtracting the percentage of foils selected from the percentage of targets selected. The Spearman-Brown reliability coefficients for the Children's Titles and Authors checklists were  $.88$  and  $.90$ , respectively (Sénéchal, LeFevre, Thomas, & Daley, 1998).

A single measure of informal literacy was obtained by summing the standardized scores for the two questions (shared reading and number of books) with the averaged standardized scores on the two checklists (correlations among items ranged from  $.33$  to  $.38$  in kindergarten and  $.34$  to  $.42$  in grade 1, respectively). In grade 2, parents reported separately on the frequency with which they read their child picture books and chapter books and reported on the number of books in the home. Responses to these questions were not statistically significantly inter-

correlated ( $r_s = -.07$  to  $.17$ ). Using these two questions separately in further analyses, versus combining them did not change the pattern of results, thus, only the combined results are reported.

**Parent literacy.** In the present research, we used parents' knowledge of adult literature as an indicator of the parents' own literacy level (Stanovich & Cunningham, 1992). The Canadian version of the adult author checklist was developed by Sénéchal et al. (1996), and the format and scoring are identical to that of the checklists for children's literature. Sénéchal et al. (1998) reported a Spearman-Brown reliability coefficient of  $.94$  for this measure.

**Child measures (and testing time).**

**Alphabet knowledge (Kindergarten and beginning of grade 1).** Children completed the Alphabet Subtest of the Woodcock Reading Mastery Tests-Revised (WRMT-R; Woodcock, 1998). Because the alphabet is taught in kindergarten, alphabet knowledge was included as a control variable rather than an outcome variable. The inter-item reliabilities were excellent, Cronbach's alphas =  $.94$  (95% CI  $.92$  to  $.95$ ), and  $.89$  (95% CI  $.85$  to  $.92$ ), for kindergarten and grade 1, respectively.

**Word reading (All four test times).** Word reading was measured with the Word Identification subtest of the Woodcock Reading Mastery Tests-Revised (WRMT-R; Woodcock, 1998). This test requires children to read isolated words of increasing difficulty. The inter-item reliabilities were excellent: Cronbach's alphas =  $.98$  (95% CI  $.98$  to  $.99$ ) for kindergarten and grade 1; and  $.97$  (95% CI  $.96$  to  $.98$ ) for grade 2.

**Invented Spelling (Kindergarten, beginning of grade 1).** Invented spelling was assessed with a task consisting of 10 words (bed, name, fish, boat, color, angry, people, rough, chain and lady) that encourage children to use their developing knowledge of letter names and letter-sound

knowledge (Mann, Tobin, & Wilson, 1987). The experimenter repeated each word twice and the children were asked to write each word as best they could. If the child had difficulty writing the entire word, the experimenter encouraged the child to write down any sounds or letters that belonged in the word. Children were given as much time as required to spell each word. Testing was discontinued if a child refused to write three consecutive words.

As in Mann et al. (1987), each response was scored on a rating scale whereby 1/2 point was awarded when the child represented a phoneme in the word other than the initial phoneme (e.g., d for bed); one point for the initial phoneme (e.g., b for bed); two points for the initial and final phonemes in the correct order (e.g., bd for bed); three points for the phonetic structure of the whole word in a preconventional manner (e.g., ruf for rough); and four points for an accurate spelling. The maximum score was 40. Inter-item reliability were excellent, Cronbach's alphas = .94 (95% CI .91 to .95) and .89 (95% CI .85 to .92) for kindergarten and grade 1, respectively.

***Receptive Vocabulary (Kindergarten, beginning of grade 1, end of grade 2).*** Receptive vocabulary was measured with the Peabody Picture Vocabulary Test – Revised (PPVT-R; Dunn & Dunn, 1981; inter-item reliability  $\alpha = .77$ ) in kindergarten and beginning of grade 1. In grade 2, receptive vocabulary was assessed with the Peabody Picture Vocabulary Test –Third Edition (PPVT-III; Dunn & Dunn, 1997; inter-item reliability  $\alpha = .97$ ). The inter-item reliabilities were excellent, Cronbach's alphas = .96 (95% CI .95 to .97), .94 (95% CI .92 to .96), .91 (95% CI .88 to .93), and .93 (95% CI .90 to .95), for kindergarten, grade 1, and grade 2, respectively.

***Phonological awareness (all four testing times).*** Children completed the sound-matching subtest of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen & Rashotte, 1999) in kindergarten and grade 1. In the sound-matching subtest, children were shown a row of four pictures that were labelled by the experimenter, and the child was asked to



choose, from the last three pictures, the one that started with the same sound as the first picture. For example, children were asked to choose the picture that started with the same sound as *neck* from an array of three pictures that included *nut*, *bed* and *cake*. Children completed the elision subtest at all four testing times. For this task, the experimenter said a word to the child, and the child was asked to say the word that remained after a specified consonant was deleted from the beginning or medial portions of one- or two-syllable words (e.g., saying *mat* without /m/). The two subtests were combined in kindergarten and grade 1. The inter-item reliabilities for the sound-matching subtest were good, Cronbach's alphas = .82 (95% CI .77 to .87), and .75 (95% CI .67 to .82), for Kindergarten and Beginning of Grade 1, respectively, as were those for the elision subtest, Cronbach's alphas = .79 (95% CI .72 to .84), .80 (95% CI .73 to .85), .91 (95% CI .88 to .93), and .92 (95% CI .89 to .94), for kindergarten, beginning and end of grade 1, and grade 2, respectively.

### Results

Mean levels of formal and informal home literacy are shown in Table 1. Parents reported teaching their kindergarten child to read words between *sometimes* and *often*; and mean levels of reported teaching remained constant from kindergarten to grade 2. In addition, parents reported that it was important to them that their child could read a few words before starting grade 1. Parents, on average, reported that they sometimes listened to their child read at the beginning of grade 1, and that they often listened to their child read at the end of Grade 2.

In kindergarten, children were read to at least once a day, and they had, on average, over 70 children's books at home. In grade 1, parents continued to report shared reading on a daily basis and reported that they had over 80 children's books at home. In grade 2, shared reading of chapter books occurred about four times per week and the number of children's books increased

slightly. Thus, children experienced frequent formal and informal literacy experiences.

Means and standard deviations for the various child outcomes are shown in Table 1. These English-speaking children, schooled in French, were performing well in both reading and oral language as evidenced by standardized reading and vocabulary scores that were at the test mean or above (i.e., standardized test means = 100; *SDs* = 15). In grade 2, children were receiving 60 minutes per day of English reading instruction and their word reading scores were nearly one standard deviation above the test mean.

### **Tests of the Home Literacy Model**

Associations among variables, pooled across the five imputed datasets, are reported in Table 2 (and the complete table in appendix). As in previous research, the formal and informal literacy components in kindergarten and grade 1 were associated with most child outcomes at all test points. By grade 2, however, the relative strengths of the concurrent associations between home environment and child outcomes had decreased to a point where there were no longer statistically significant or were negative.

As reported in Tables 3 to 5, tests of the longitudinal relations among the home literacy activities and later child outcomes were conducted with a series of stringent multiple regression analyses. Presented in these tables are the pooled beta weights and their significance (i.e., indicated when the CIs do not include the value zero) as well as the zero-order correlations between each predictor variable and the outcome, the partial correlation (i.e., partialling out the other variables), and the percentage of unique variance explained by each variable when entered last in the equation (i.e., the squared part correlation multiplied by 100).

**Beginning of grade 1: Early literacy, vocabulary, and phonological awareness.** The first multiple regression analysis, in Table 3, tested whether home literacy activities would

explain unique variance in children's early literacy, vocabulary, and phonological awareness at the beginning of grade 1. As predicted by the Home Literacy Model, parent reports of teaching and their expectations of child reading prior to grade 1 were a statistically significant predictor of children's early literacy scores one year later, accounting for 2% unique variance (see Model 1). This is a strong test because the relation held in a very stringent model that included parent education and literacy (as indexed by the knowledge of adult book authors), child vocabulary, as well as a composite literacy measure that included kindergarten word reading, invented spelling, alphabet knowledge, and phoneme awareness (i.e., the averaged standardized scores). This latter composite literacy measure was the strongest unique predictor, explaining 34% unique variance in early literacy at the beginning of grade 1. In contrast, shared reading did not account for a significant amount of variance in child early literacy.

The regression results for vocabulary (Model 2) showed that shared reading explained 4% statistically significant unique variance whereas parent teaching and expectations was not a statistically significant predictor. In this stringent model, vocabulary in kindergarten accounted for 19% unique variance in children's vocabulary nine months later. Taken together, these findings are the strongest test supporting the Home Literacy Model because they showed that the formal literacy component predicted growth in early literacy only whereas the informal literacy component predicted growth in vocabulary only.

As in previous research, the results for phoneme awareness (Model 3) showed yet a different pattern: Neither informal or formal home literacy experiences predicted children's phonological awareness in grade 1 once other child variables were entered in the equation. In this final model of Table 3, the kindergarten literacy composite and vocabulary accounted for 31% and 3% unique variance, respectively, in phoneme awareness.

**End of grade 1: Reading.** Table 4 shows the regression results for the prediction of outcomes at the end of grade 1. The first model in Table 4 replicates previous findings showing that although kindergarten home literacy measures are related to reading at the end of grade 1 ( $r = .23, p = .05$ ), they are no longer statistically significant predictors when entered in a stringent model of growth (Hood et al., 2008; Sénéchal & LeFevre, 2002). Only reading and phonological awareness measured at the beginning of Grade 1 predicted reading at the end of Grade 1. In Model 2, we tested whether home literacy practices measured at the beginning of grade 1 would explain unique variance in reading at the end of Grade 1. Assessing home literacy practices at the beginning of grade 1 allowed us to include the frequency with which parents listened to their child read in the parent-teaching variable. This novel measure of home literacy proved fruitful: Parent reports of teaching and listening to their child read explained 3% unique variance in children's word reading growth at the end of grade 1. In this analysis, word reading and phoneme awareness at the beginning of grade 1 accounted for 46% and 3% of unique variance in the growth of children's reading scores, respectively.

**End of grade 2: Reading and vocabulary.** The grade 2 pattern of results for reading, in Table 5, was similar to that between kindergarten home literacy and reading at the end of grade 1. That is, the formal measure of parent teaching and listening, measured at the beginning of grade 1, was correlated with word reading at the end of grade 2 ( $r = .28, p = .01$ ), and, in fact, uniquely predicted 4% of the variance in reading performance (Model 1). However, parent teaching and listening was no longer a statistically significant predictor of reading once the auto-regressor was entered in the model as indicated in Model 2 and thus formal experiences did not predict growth in reading. As can be seen in Model 3, although shared reading in grade 1 was correlated with grade 2 vocabulary scores ( $r = .25, p = .05$ ), it was not a significant predictor in a

regression analysis that included the auto-regressor (i.e., vocabulary in grade 1). It might be the case that by grade 2, children are learning vocabulary from a variety of sources beyond shared reading at home. Finally, we did not conduct regression analyses for phoneme awareness at the end of grades 1 and 2 because home literacy measures were not statistically significantly correlated with this child outcome (all  $r$ s < .15).

**Summary.** These analyses provide strong support for the key prediction of the Home Literacy Model whereby it is the formal literacy environment (e.g., parent teaching) that predict growth in reading and it is informal literacy (e.g., shared reading) that predict growth in oral language during the transition from kindergarten to the end of grade 1. These robust associations with home literacy activities are no longer present by the end of grade 2.

### **Continuity and Change in Formal Literacy Activities**

The second goal of the present paper was to examine the continuity and change in parents' formal literacy activities from kindergarten to grade 2 by looking at the trajectories of the specific questionnaire items, namely, the frequency of teaching composite scores. In this section, all correlation coefficients reported in the text are statistically significant at  $p < .05$ , unless otherwise specified. Informal literacy measures did not show variability in their relation to children's outcomes over time and thus were not analyzed.

As can be seen in Table 1, the average frequency of reports of parent teaching were stable from kindergarten to grade 2. However, the pattern of association with child reading changed dramatically over time. As reported in Table 2, the composite measures of teaching in kindergarten and grade 1 were positively and significantly associated with child early literacy and reading ( $r$ s ranging from .23 to .43). Grade 2 reports of teaching, however, were *negatively* related to reading at the end of grade 1 ( $r = -.23$ ) and 2 ( $r = -.24$ ). To examine this pattern

further, we conducted two multiple regressions predicting parents' reports of teaching in grade 2 from parents' reported teaching behaviors as well as child reading at the preceding time point. Model 1 in Table 6 shows that kindergarten reports of teaching and child word reading explained, respectively, 13% and 4% unique variance in parent reports of teaching at the beginning of grade 1. The beta weights are positive, showing that parents who taught more frequently and whose children tended to do well continued to report teaching and listening to their child read at the beginning of grade 1. A different pattern emerged for grade 2 teaching. Although grade 1 reports of teaching and child reading explained 8% and 7% unique variance in grade 2 teaching, the beta weight for child reading was negative. Hence, lower reading scores at the beginning of grade 1 were predictive of *more* frequent teaching at the end of grade 2 whereas higher scores were predictive of *less* teaching.

The regression results were supplemented by further analyses of the patterns of change for the 67 families who had complete data. We evaluated whether parents increased, decreased, or maintained the same frequency of teaching over time, and whether changes were linked to child reading performance. Interestingly, approximately equal percentages of parents in the sample increased, decreased, or stayed the same with respect to their frequency of teaching: 30%, 36%, and 34%, respectively. The average increase was from *teaching sometimes* to *teaching often* whereas the reverse was true for the parents who decreased their teaching frequency. The parents who reported no change in teaching frequency, on average, reported *teaching often*.

These changes in teaching frequency were linked to child reading. Post hoc analyses revealed that children of parents who decreased their teaching had significantly higher reading scores at the end of grade 1 ( $M = 111.3$ ) than did the children of parents who decreased their

teaching ( $M = 89.8$ ) or children of parents who continued to teach *often* ( $M = 103.9$ , Scheffe  $ds > 7.30$ ,  $ps > .01$ ). Although there was some variability in the three groups of parents, they did not differ significantly on their education level or the literacy index ( $ps > .42$ ). It then becomes of interest to assess whether these parents would also modify the frequency with which their reported listening to their child read. Interestingly, only one group did: The parents who increased their teaching also increased the frequency with which they listened to their child read from listening *rarely* in grade 1 to *often* in grade 2,  $t(20) = 7.31$ ,  $p = .01$ . In contrast, parents who taught less in grade 2 or made no change in teaching frequency reported listening to their child read *often* at both test times. Taken together, these results suggests that parents are sensitive to their child's reading performance and adjust their formal literacy activities accordingly.

### Discussion

The goal of this research was to assess continuity and change in the pattern of associations among the components of the Home Literacy Model and child outcomes. In the present study, children were followed from kindergarten until grade 2, and parents reported on the literacy activities at home on three occasions. We studied reading development of English-speaking children schooled in French. This design allowed for a stronger test of the links between home literacy environment and reading in English than has been presented in previous research. Because reading instruction in English did not start at school until grade 2, we hypothesized that early growth in English reading is as likely or more likely to be influenced by home activities and less by school than in typical samples where the home and school language are shared. The longitudinal findings are discussed below.

The findings from kindergarten to the beginning of grade 1 provided strong support for

the Home Literacy Model (Sénéchal & LeFevre 2002; Sénéchal, 2006): The formal literacy environment is linked to growth in reading whereas informal literacy is linked to growth in oral language. We found that parent reports of teaching and their expectations for children's reading, measured in kindergarten, were a robust predictor of growth in child early literacy, whereas parent reports of shared reading were a robust predictor of growth in child vocabulary from kindergarten to the beginning of grade 1. These findings were obtained from stringent analyses controlling for the auto-regressors (i.e., kindergarten literacy performance or vocabulary), other child variables, and parent education and literacy. Hence, these findings provide stronger evidence of the direction of the associations than has been provided by previous tests of the Home Literacy Model. As such, the present findings add an important piece of evidence to the literature on the role of home literacy environment and are consistent with the idea that what parents do at home matters.

The Home Literacy Model has provided direction to the field of early literacy development because its two dimensions have distinct relations with early literacy and vocabulary, as been shown here and elsewhere. Importantly, this distinction is not intended to imply that shared reading is not associated with early literacy or that parent teaching is not associated with child vocabulary. In fact, the correlations in Table 2 show that weak associations do exist. The regression analyses indicate that these associations are mediated through their influence on child outcomes (e.g., Hood et al., 2008). Thus, shared reading no longer predicts early literacy and parent teaching no longer predicts child vocabulary when included in stringent models that control for the other component of the model. These findings indicate that one should be prudent when interpreting zero-order correlations in order to avoid misinterpretations.

A second contribution of the present research was the addition of parent listening as an



additional measure of the formal literacy component of the Home Literacy Model. Previous research using the model as well as the present study have shown that formal literacy measures in kindergarten are not predictive of reading at the end of grade 1 (see Model 1 in Table 4). In the present research, we included a measure of the frequency with which the parents listened to their child read as an additional measure of parent teaching once children are learning to read in school. The inclusion of this more advanced measure of formal literacy proved fruitful because parent teaching and listening to the child read, measured at the beginning of grade 1, was a robust predictor of child reading at the end of grade 1. This finding extends the home literacy model beyond the kindergarten years. Taken together, the obtained findings on formal literacy are consistent with those of intervention research showing that parents can be effective literacy tutors for their children (see the meta-analytic review by Sénéchal & Young, 2008).

By grade 2, however, home literacy measured in grade 1 was no longer a significant predictor of reading growth. In contrast, Griffin and Morrison (1997) found that kindergarten measures of home literacy predicted reading at the end of grade 2, even after controlling for prior reading in kindergarten. In the present research, our analyses were more conservative because the reading auto-regressor from grade 1 was more strongly correlated with Grade 2 reading ( $r = .71$ ) than was the kindergarten measure ( $r = .35$ ). A reanalysis of our results using only the kindergarten reading measure as the auto-regressor replicates the findings of Griffin and Morrison. That is, the formal literacy environment in kindergarten predicted reading at the end of grade 1 and formal literacy activities in grade 1 predicted reading at the end of grade 2. Further examination of our data showed that, in kindergarten, 54% of the children could not read any words, and an additional 15% could read only one word. This constrained range in performance surely accounts for the weaker correlations between kindergarten reading and later

reading performance, and could explain the discrepancy between studies.

In the present research, shared reading measured at the beginning of grade 1 did not predict growth in vocabulary from grades 1 to 2. Griffin and Morrison (1997) also did not find that home learning environment predicted growth in vocabulary from kindergarten to grade 2. The absence of a robust link may suggest that children's vocabulary growth in grade school is influenced by a wider variety of sources than is the case when the children are younger (Biemiller & Slonim, 2001).

It is also important to note that, although both dimensions of home literacy were related to phoneme awareness, home literacy did not predict growth in phoneme awareness in the stringent analyses conducted. These longitudinal findings replicate concurrent analyses (Hood et al., 2008; Sénéchal, 2006; Sénéchal & LeFevre, 2002). As shown here and suggested elsewhere, growth in phoneme awareness seems more strongly linked to child variables such as early literacy and vocabulary than to the home literacy environment. It is possible that parents might lack knowledge about phoneme awareness to provide opportunities for growth. Nevertheless, it is encouraging that parents can provide an environment that enhances early literacy and vocabulary – skills important for growth in phoneme awareness (Sénéchal, LeFevre, Smith-Chant, & Colton, 2001).

A third contribution of the present research is the longitudinal demonstration of the continuity and change in the association between parent formal literacy practices and child reading. From kindergarten to grade 1, the concurrent and longitudinal correlation coefficients between parent reports of literacy practices and child early literacy are moderate and positive. In contrast, the correlation coefficients with parent reports of teaching and listening in grade 2 become negative. A detailed analyses of parent teaching revealed that parents of children whose

reading was below average in grade 1 reported more teaching in grade 2 whereas parents with children who were better readers reported less teaching in grade 2. As such, these patterns clarify previous interpretation of the change from positive to negative links between parent teaching and child outcomes (Eccles, 2007; Hill & Tyson, 2009; Silinskas, Leppanen et al., 2010). The results support the notion of a responsive ‘home curriculum’ among middle-class parents. These findings extend previous results showing that existence of change in the home learning environment from when children are 36 to 54 months (Son & Morrison, 2010).

Whether the increased support provided by parents of children who are performing less well is efficacious cannot be determined in a correlational study because it is impossible to know whether children would be doing more poorly had their parents not increased their teaching.

In the present report, we contend that children’s growth in English vocabulary and word reading would be linked to variation in the home literacy environment because English instruction at school only began in grade 2 for one hour per day, and because English was the dominant language in the community. However, there is a possibility that children might have transferred skills from French to English because there is substantial overlap in orthography and cognates between these two languages. In their review of available evidence on cross-linguistic transfer, Oller and Jarmulowicz (2007) show that vocabulary learning does not seem to transfer across languages such that minority children learning a majority language lag behind native speakers. A similar pattern is evident in French Immersion whereby French vocabulary skills lag behind those in English (Deacon et al., 2007). In contrast, Oller and Jarmulowicz (2007) demonstrated that decoding skills seem to transfer across languages such that minority children show decoding or word reading skills that are comparable to those of monolingual children. The key difference between these findings and ours, however, is that children in our study were

majority-language speakers learning a second language. Indeed, examination of recent longitudinal studies on French Immersion show that the direction of transfer seems to be from English to French. For example, Jared et al. (2011) found that kindergarten English literacy skills in English predicted French reading skills in grade 1. In addition, Comeau et al. (1999) and Deacon et al. (2004) showed that grade 1 children had superior reading skills in English than in French in grade 1. Whereas Comeau et al. found equivalent performance in grade 2, the children in Deacon et al. continued to do better in English than in French in grades 2 and 3. Hence, this pattern of findings make it necessary to examine, as we did, the role of the home environment for these children.

There are limitations to the current study that are noteworthy. First, the parents in this sample were mostly well educated and children were generally performing well. Nevertheless, there was variability across families, thus lending support to Sénéchal's (2006) argument that socio-economic status (SES) may moderate effects of the home literacy environment on children's learning. Importantly, although initial findings on the Home Literacy Model were obtained from families with high SES levels, they were replicated in studies with more diverse samples as was described in the introduction. A second possible limitation is the reliance on regression analyses rather than more sophisticated analyses. Our decision to use regression rather than, for example, structural equation modeling, was based on several factors: first, the regression analyses were adequate to test the predictions made (Fritz & MacKinnon, 2007); second, we were extending a single model rather than contrasting different models; third, we used single measures for each child outcome; and fourth, our sample size was large enough to obtain stable correlation coefficients (Maxwell, Kelley, & Rausch, 2008). A third limitation of the current study is that we relied on parent questionnaires rather than making direct

observations. Hence, we did not measure the quality of parent-child interactions during home literacy events (Levin & Aram, 2012; Roberts, Jurgens, & Burchinal, 2005). Doing so might be an important consideration for future research because it might add to the explanatory power of the Home Literacy Model. A fourth limitation is that the present research (and the home literacy model) is focussed on reading and does not explicitly consider the role of the home environment on the development of children's writing skills. The present findings, however, provide a working framework to hone the types of observations that should be made.

In sum, we found evidence of long-term associations between parent home literacy practices and child reading and vocabulary. First, parent reports of teaching and parent expectations about reading in kindergarten were a robust predictor of growth in child early literacy from kindergarten to the beginning of grade 1. Second, parent reports of teaching and listening to their child read was also a solid predictor of growth in word reading from the beginning until the end of grade 1. Third, most parents who increased the reported amount of teaching from grade 1 to grade 2 had children whose reading was below average in grade 1 whereas most parents who decreased their teaching had children whose reading was above average. Finally, parent reports of shared reading in kindergarten predicted growth in child vocabulary from kindergarten to grade 1. Taken together, the present findings provided strong support for the key prediction of the Home Literacy Model, namely, that formal and informal literacy practices have different links to the development of children's oral and written language skills. The findings extend the model by showing that most parents adjust their formal literacy practices according to the reading performance of their child.

### References

- Alexander, K.L., Entwisle, D.R., & Horsey, C. (1997). From first grade forward: Early foundation of high school dropout. *Sociology of Education, 70*, 87–107.
- Biemiller, A., & Slonim, N. (2001). Estimating root word vocabulary growth in normative and advantaged populations: Evidence for a common sequence of vocabulary acquisition. *Journal of Educational Psychology, 93*, 498-520. doi: 10.1037/0022-0663.93.3.498
- Butler, S. R., Marsh, H. W., Sheppard, M. J., & Sheppard, J. L. (1985). Seven-year longitudinal study of the early prediction of reading achievement. *Journal of Educational Psychology, 77*, 349-361.
- Chen, X., Zhou, H., Zhao, J., Davey, G. (2010). Home literacy experiences and literacy acquisition among children in Guangzhou, South China. *Psychological Reports 107*, 354-366.
- Comeau, L., Cormier, P., Grandmaison, E., & Lacroix, D. (1999). A longitudinal study of phonological processing skills in children learning to read in a second language. *Journal of Educational Psychology, 91*, 29-43.
- Deacon, S. H., Wade-Woolley, L., & Kirby, J.(2007). Crossover: The role of morphological awareness in French Immersion children's reading. *Developmental Psychology, 43*, 732-746.  
Doi: 10.1037/0012-1649.43.3.732
- Deckner, D. F., Adamson, L. B., & Bakeman, R. (2006). Child and maternal contributions to shared reading: Effects on language and literacy development. *Journal of Applied Developmental Psychology, 27*, 31-41.
- Dunn, L. M., & Dunn, L. M.(1981). *Peabody Picture Vocabulary Test -Revised*. Circle Pines, MN: American Guidance Service.
- Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test (3rd ed.)*. Circle Pines,

MN: American Guidance Service.

- Eccles, J. S. (2007). Families, schools, and development: Achievement related motivations and engagement. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 665–691). New York: Guilford.
- Entwisle, D. R., Alexander, K.L., & Olson, L.S. (2005). First grade and educational attainment by Age 22: A new story. *American Journal of Sociology, 110*, 1458–1502.
- Evans, M. A. & Saint-Aubin, J. (2005). What children are looking at during shared storybook reading: Evidence from eye movements. *Psychological Science, 16*, 913-920.
- Evans, M. A., Saint-Aubin, J., & Landry, N. (2009). Letter names and alphabet book reading by senior kindergarteners: An eye movement study. *Child Development, 80*, 1824-1841.
- Farver, J. M., Xu, Y., Lonigan, C. J. & Eppe, S. (2013). The home literacy environment and Latino head start children's emergent literacy skills. *Developmental Psychology, 49*, 775-791.  
doi: 10.1037/a0028766
- Fritz, M. S., & MacKinnon, D. P. (2007). Required Sample Size to Detect the Mediated Effect. *Psychological Science, 18*, 233-239.
- Griffin, E.A., & Morrison, F.J. (1997). The unique contribution of home literacy environments to differences in early literacy skills. *Early Child Development and Care, 127-128*, 233-243.
- Hart, S. A., & Petrill, S. A. (2009). The genetics and environments of reading: a behavioral genetic perspective. In Y. Kim (Ed.) *Handbook of behavior genetics Part II* (pp. 113-123). New York: Springer.
- Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology, 45*, 740-763.

- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review, 26*, 55-88.
- Hood, M., Conlon, E., & Andrews, G. (2008). Preschool home literacy practices and children's literacy development: A longitudinal analysis. *Journal of Educational Psychology, 100*, 252-271.
- Jared, D., Cormier, P., Levy, B. A., & Wade-Woolley, L. (2011). Early predictors of biliteracy development in children in French immersion: A 4-year longitudinal study. *Journal of Educational Psychology, 103*, 119-139.
- Kissau, S., & Turnbull, M. (2008). Boys and French as a second language: A research agenda for greater understanding. *Canadian Journal of Applied Linguistics/Revue canadienne de linguistique appliquée, 11*, 151-170.
- Landry, S. H., Smith, K. E., Swank, P. R., & Guttentag, C. (2008). A responsive parenting intervention: The optimal timing across early childhood for impacting maternal behaviors and child outcomes. *Developmental Psychology, 44*, 1335-1353.
- Lee, K., Sung, M., & Chang, Y. E. (2009, April). *Relations of home literacy environments to preschoolers' vocabulary and reading*. Poster presented at the biennial meeting of the Society for Research in Child Development, Denver, Colorado.
- LeFevre, J., Polyzoi, E., Skwarchuk, S. L., Fast, L., & Sowinski, C. (2010). Do home numeracy and literacy practices of Greek and Canadian parents predict the numeracy skills of Kindergarten children? *International Journal of Early Years Education, 18*, 55-70.
- LeFevre, J., Skwarchuk, S. L., Smith-Chant, B. L., Fast, L., Kamawar, D., & Bisanz, J. (2009). Home numeracy experiences and children's math performance in the early school years. *Canadian Journal of Behavioural Science, 41*, 55-66.



- Levin, I., & Aram, D. (2012). Mother–child joint writing and storybook reading and their effects on kindergartners’ literacy: An intervention study. *Reading and Writing, 25*, 217-249. doi 10.1007/s11145-010-9254-y
- Levy, B. A., Gong, Z., Hessels, S., Evans, M., & Jared, D. (2006). Understanding print: Early reading development and the contributions of home literacy experiences. *Journal Experimental Child Psychology, 93*, 63–93.
- Mann, V. A., Tobin, P. & Wilson, R. (1987). Measuring phoneme awareness through invented spellings of kindergarten children. *Merrill-Palmer Quarterly, 33*, 365-391.
- Martini, F., & Sénéchal, M. (2012). Learning literacy skills at home: Parent teaching, expectations and child interest. *Canadian Journal of Behavioral Sciences, 44*, 210-221.
- Maxwell, S. E., Kelley, K. & Rausch J. R. (2008). Sample size planning for statistical power and accuracy in parameter estimation. *Annual Review of Psychology, 59*, 537-563.
- McCartney, K., Burchinal, M. R., & Bub, K. L. (2006). Best practices in quantitative methods for developmentalists. *Monographs of the Society for Research in Child Development, 71*, (3, Serial No. 285).
- National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Washington, DC: National Institute for Literacy.
- Oller, K. D., & Jarmulowicz, L. (2007). Language and literacy in bilingual children in the early school years. In E. Hoff & Shatz, M. (Eds.) *Blackwell Handbook of Language Development* (Ch. 7 pp. 368-386). West Sussex, UK: Wiley.
- Ottawa-Carleton District School Board. (2012). *30 March 2012 Enrolment Report*. Retrieved from <http://www.ocdsb.ca/ab-ocdsb/f-n-f-qs/Pages/default.aspx>.
- Parents for French (n.d.). Annual FSL enrolment in Canada 2006-2011: National summary

- statistics. Retrieved 25 February 2013 from <http://cpf.ca/en/files/CPF-FSL-Enrolment-Stats.pdf>.
- Roberts, J., Jurgens, J., & Burchinal, M. (2005). The role of home literacy practices in preschool children's language and emergent literacy skills. *Journal of Speech, Language, and Hearing Research, 48*, 345-359.
- Sénéchal, M. (2006). Testing the home literacy model: Parent involvement in kindergarten is differentially related to grade 4 reading comprehension, fluency, spelling, and reading for pleasure. *Journal for the Scientific Study of Reading, 10*, 59-87.
- Sénéchal, M., & LeFevre, J. (2002). Parental involvement in the development of children's reading skill: A 5-year longitudinal study. *Child Development, 73*, 445-460.
- Sénéchal, M., LeFevre, J., Smith-Chant, B. L., & Colton, K. (2001). On refining theoretical models of emergent literacy: The role of empirical evidence. *Journal of School Psychology, 39*, 439-460.
- Sénéchal, M., LeFevre, J.-A., Thomas, E., & Daley, K. (1998). Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly, 32*, 96-116.
- Sénéchal, M., LeFevre, J.-A., Hudson, E., & Lawson, P. (1996). Knowledge of picture-books as a predictor of young children's vocabulary development. *Journal of Educational Psychology, 88*, 520-536.
- Sénéchal, M., & Young, L. (2008). The effect of family literacy interventions on children's acquisition of reading from kindergarten to grade 3: A meta-analytic review. *Review of Educational Research, 78*, 880-907.
- Silinskas, G., Leppanen, U., Aunola, K., Parrila, R., & Nurmi, J. (2010). Predictors of mothers'

- and fathers' teaching of reading and mathematics during kindergarten and Grade 1. *Learning and Instruction*, 20, 61-71. doi: 10.1016/j.learninstruc.2009.01.002
- Son, S., & Morrison, F. J. (2010). The Nature and Impact of Changes in Home Learning Environment on Development of Language and Academic Skills in Preschool Children, *Developmental Psychology*, 46, 1103-1118.
- Stanovich, K. E., & Cunningham, A. E. (1992). Studying the consequences of literacy within a literate society: The cognitive correlates of print exposure. *Memory & Cognition*, 20, 51-68.
- Statistics Canada (2007). *2006 Community Profiles, 2006 Census* (Catalogue no. 92-591-XWE), Ottawa: Statistics Canada. Released March 13, 2007. <http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E>
- Statistics Canada. *Table477-0027 - Enrolments in minority and second language programs offered in public elementary and secondary schools, by type of program, grade and sex, Canada, provinces and territories, annual (number)*, CANSIM (database). (accessed: 2013-08-02). <http://data.gc.ca/data/en/dataset/ace16118-96fe-4ca9-8129-f542208b2a92>
- Stephenson, K. A., Parrila, R. K., Georgiou, G. K., & Kirby, J. R. (2008). Effects of home literacy, parents' beliefs, and children's task-focused behavior on emergent literacy and word reading skills. *Scientific Studies of Reading*, 12, 24-50.
- Storch, S. A., & Whitehurst, G. J. (2001). The role of family and home in the literacy development of children from low-income backgrounds. In P. Rebello Britto & J. Brooks-Gunn (Eds.), *The role of family literacy environments in promoting young children's emerging literacy skills* (pp. 53-71). San Francisco: Jossey-Bass.
- Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (1999). *Comprehensive Test of Phonological Processing*. Austin, TX: PRO-ED.

Woodcock, R. W. (1998). *Woodcock Reading Mastery Tests –Revised*. Circle Pines, MN:  
American Guidance Service.

## Appendix

### Selected Home Literacy Questions

#### Formal Literacy

(a) During a typical week, how often do you and your child engage in the following activities in **English**? [*3 questions*] In English, I teach my child: the names of alphabet letters; how to read words; how to print words.

(b) **In the past year**, how often did you and your child engage in the following activities in **English**? [*1 question*]. During a typical week, I listen to my child read in **English**.

Scale for questions a and b: 1(never) 2 (rarely) 3 (sometimes) 4 (often) 5 (very often)

#### Informal Literacy

(c) Please estimate the number of books in **English** that are available in the household: **Children's** books: Scale: 0, 1-20, 21-40, 41-60, 61-80, 81-100, more (please estimate).

(d) How frequently do you, or other members of the family:

(K and Grade 1) read in **English** to your child in a **typical** week

(Grade 2): read **English picture books** to your child in a **typical** week?

(Grade 2): read **English chapter books** to your child in a **typical** week?

Scale for questions c and d: at bedtime, never, once, 2, 3, 4, 5, 6, 7, times.

(e) Parent expectations. In your opinion, how important is it for your child to achieve the following benchmarks BEFORE starting Grade 1?

[*5 questions*]: know some alphabet letters; know all 26 alphabet letters; print his/her name; print all 26 alphabet letters; read a few words.

Scale for question e: 1 (not important), 2, 3 (moderately important), 4, 5 (very important).