

Involving Parents in a Summer Book Reading Program to Promote Reading Comprehension, Fluency, and Vocabulary in Grade 3 and Grade 5 Children

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Abstract

In this research, parents and children participated in a comprehensive book reading intervention designed to improve children's literacy. Over eight weeks during the summer, children in the intervention condition were encouraged to read one book weekly and parents were trained to foster reading comprehension. Forty-eight Grades 3 and 5 children were selected for their lower performance on expressive vocabulary and reading comprehension. Participating children were randomly assigned to the intervention or control condition. As predicted, children in the intervention condition made significantly greater gains than children in the control condition in reading comprehension, reading fluency, and receptive vocabulary.

Keywords: children, intervention, parents, reading, reading comprehension, vocabulary

Résumé

La recherche a été effectuée afin de vérifier si une approche globale de la participation des parents dans la lecture de livres améliorerait l'alphabétisation d'enfants de 3^e et 5^e année. Au cours d'une période de huit semaines durant l'été, les enfants du groupe expérimental ont été encouragés à lire un livre hebdomadairement, et les parents ont été formés afin de favoriser la compréhension de la lecture. Quarante-huit enfants ayant des résultats moindres en langues écrite et parlée, ont été aléatoirement affectés au groupe témoin ou d'intervention. Comme prévu, les enfants du groupe d'intervention ont fait des gains significativement plus élevés dans la compréhension de la lecture, sa fluidité, et le vocabulaire réceptif que les enfants du groupe témoin.

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Parents and educators hope that young children who are learning to read will become lifelong readers. It is hoped that children will be emotionally engaged in the material they read and draw satisfaction from the activity itself. Indeed, ideally reading will become an activity that children will want to do for pleasure. In addition, recreational reading can also be a source of learning (Krashen, 1989). The frequency of pleasure reading has been positively associated with strong reading skills, vocabulary, and world knowledge (Mol & Bus, 2011). For instance, Anglophone and Francophone Canadian children who report reading more for pleasure tend to have better vocabulary and literacy skills (Sénéchal & LeFevre, 2002; Sénéchal, 2006).

A necessary condition to foster independent voluntary reading, however, is that children understand what they read. Reading comprehension requires that children read the text with some fluency to integrate ideas, have sufficient vocabulary to interpret the information, and be engaged in the reading process to make active use of strategies. Children with poorer literacy skills might not read voluntarily because of weaknesses in one or more of these areas. In the present study, we trained parents as reading partners who encouraged, modelled, and coached their child to read during the summer holidays. Moreover, children were encouraged to independently read books matched to their interests and reading skills. The children had low to average levels of reading and vocabulary skills.

Interventions to Improve Reading: Summer Programs

There is some evidence that increasing voluntary reading can increase reading ability (Roman & Fiore, 2010). Moreover, some have suggested that the home literacy environment could be improved by increasing children's access to books (McQuillan & Au, 2001). Indeed, correlational research has shown that the number of books a child reads over the summer months is positively related to the child's achievement in the fall (e.g., Heyns, 1978; Kim, 2004; Phillips & Chin, 2004). Recent studies on summer reading, however, have shown that access to books might not be sufficient. Kim and White (2008) as well as Kim and Guryan (2010) reported no statistically significant difference in reading performance for children in Grades 3 to 5 receiving books matched to their reading level and interest as compared to children in a control condition. Although it might be the case that

children might need additional support from teachers, Kim (2007) reported that Grade 1 to Grade 5 children ($N = 279$) who received teacher training at the end of the school year and received books weekly did not perform differently from control children at the end of the summer months. Might it therefore be the case that involving parents is necessary?

Certainly, longitudinal correlational research with younger children has shown a robust and positive relation between the degree of parent involvement and child language and literacy outcomes. In three Canadian studies, the frequency with which parents reported reading books to their child was linked to child vocabulary knowledge, while the frequency of parent reports of teaching literacy skills was linked to children's early literacy and eventual reading fluency (for findings with French children, English children, and French-immersion children, respectively, see Sénéchal, 2006; and Sénéchal & LeFevre, 2002, 2014). Moreover, a meta-analysis of intervention studies found that parents could be effective literacy tutors (Sénéchal & Young, 2008). However, the research on involving parents to enhance reading through voluntary reading has yielded mixed results. First, sending a letter to parents encouraging them to listen to their child read did not increase reading performance in three large-scale studies with children in Grades 3 to 5 (Kim, 2006; Kim & White, 2008; Villiger, Niggli, Wandeler, & Kutzelnann, 2012). Second, children who were trained at school and whose parents received a letter describing how to scaffold oral reading and reading comprehension made greater gains in silent reading, but not oral reading, as compared to children in a control condition (Kim & White, 2008). The effect was small (Cohen's $d = 0.14$), but statistically significant. Third, Kim and Guryan (2010) tested whether training parents directly would be beneficial. However, parent participation was low, and children in the parent-training group did not show any reading benefits as compared to children in a control condition.

Although the findings are mixed, some limited evidence suggests that parents may need to play a more comprehensive role for reading benefits to occur. In the present research, we tested a summer reading program in which parents were trained, at the end of the school year, to use a number of evidence-based strategies to help their child with reading during the summer months. As described below, there is research showing that specific intervention programs can improve specific skills. The contribution of the present research is to ascertain whether a more comprehensive approach would also be beneficial.

Facilitating Learning Using Parent Involvement

Parents can be effective tutors in academic interventions (Resetar, Noell, & Pellegrin, 2006; Sénéchal & Young, 2008). Perhaps one of the most popular parent training programs used to foster children's reading is paired reading (Morgan, 1976), a program in which tutors (Ferguson, Currie, Paul, & Topping, 2011) or parents use positive reinforcement to enhance their child's reading fluency and the extraction of meaning from text (Fiala & Sheridan, 2003). In a review of research findings, paired reading has been reported to be effective with children between the ages of six and 14, and with children exhibiting reading delays, as well as in interventions as short as five weeks (Topping, 1986). Paired reading was used in the present intervention research and was supplemented with additional strategies specific to reading comprehension, fluency, and vocabulary as described below.

Strategies for Reading Comprehension

Comprehension strategies can be acquired informally, but for many students formal instruction in comprehension strategies is beneficial (National Reading Panel, 2000). Reciprocal teaching is an effective instructional approach to improve children's text comprehension that includes scaffolded instruction in four strategies: generating questions, summarizing the text, clarifying word meanings and confusing passages, and making predictions (Palincsar & Brown, 1984; for a review, see Rosenshine & Meister, 1994). During reading, a learned other (a teacher or fellow student) models the use of the strategies, provides knowledge about the strategies, and helps the children apply strategies to the text being read. In the present study, we tested whether parents could implement reciprocal teaching strategies during paired reading (also see Kim & White, 2008).

Strategies to Enhance Oral Reading Fluency

Children with poor reading fluency read haltingly, slowly producing one word at a time and very often with little expression. They tend to ignore punctuation, resulting in sentences becoming meaningless bundles of words that can limit comprehension (Hasbrouck, Ihnot, & Rogers, 1999). Reading fluency can be improved, however, by using a technique called repeated reading (Kuhn & Stahl, 2003; for a meta-analytic review, see Therrien, 2004). Moreover, reading with a model was found to be more effective for lower-skilled readers than reading without a model (Chard, Vaughn, & Tyler, 2002). For the purpose of

the present research, parents facilitated their children's oral reading fluency in two ways. First, children read aloud daily (up to five times a week) in paired-reading sessions with their parent and were asked to reread their favourite part aloud after completing the book. Second, parents were also encouraged to model oral reading during paired reading.

Strategies to Enhance Vocabulary

There are a number of strategies to aid children's vocabulary acquisition. For instance, there is evidence that including word-meaning explanations when reading orally to children is effective with primary-level children (Biemiller, 2003). Although direct explanation of words is effective, it is not as effective as having children infer the meaning of new words from spoken or written context (Nash & Snowling, 2006). In the current study, parents were trained to model and encourage their child to infer word meanings from the context as well as provide direct explanations of words. To facilitate this task, parents received, for each book, a list of potential novel words and their definitions.

The Present Study

The present study tested whether parent involvement in a comprehensive book reading intervention would improve the reading and vocabulary skills of their children. During interactive reading sessions with their child, parents utilized specific reading comprehension, oral reading fluency, and vocabulary strategies. The novelty of the present research was to integrate the various strategies into a cohesive whole. In addition, children were encouraged by their parents and by us to independently read the books that we sent weekly. These books were matched to the children's self-reported interests and teacher-assessed reading levels. Moreover, the intervention included a number of additional features. First, it was conducted in the summer to avoid confounds with schooling effects. Second, participating families spoke English as their primary home language to ensure that language per se would not be a barrier for parents to be actively engaged and engage their child when reading English-language books. Third, children were selected for their relatively low vocabulary and reading performance because post hoc analyses by Kim (2006) showed a small significant effect (Cohen's $d = 0.17$) for children whose pre-test reading fluency was below the sample mean, even though there was no overall effect of their summer intervention. Fourth, the intervention focused on children in Grades 3 and 5

for two reasons. In Grade 3, children make the greatest gains in reading comprehension (Aarnoutse, Van Leeuwe, Voeten, & Oud, 2001), and, therefore, intervening in the summer before Grade 4 might serve a preventive function. In Grade 5, children typically report reading less than children in the earlier grades (Clark & Foster, 2005), and, consequently, parents may play a key role in fostering voluntary reading at this point. Children in both grades, however, should benefit equally from the intervention given our focus on low- to average-achieving children.

We predicted that at the end of the eight-week intervention, children in the intervention condition would have made greater gains in reading comprehension, reading fluency, and vocabulary than would children in the control condition. Important to our research design, the children in the control condition could read over the summer if they wanted, and they certainly had access to their parents for attention and time. In that, the intervention and control conditions were similar. It is also possible that parents in the control condition might model reading for their children as well as apply some of the strategies that were promoted in the intervention. As a check for this, children in the control condition were interviewed on their summer reading at post-test, and their parents completed a survey at the end of the study.

Method

Participants

Children in Grades 3 and 5 and one of their parents participated in this study. All children were recruited from six elementary schools in a northern industrial Canadian city. Lower-achieving children were selected from an initial sample of 98 children in Grades 3 and 5 who had participated in a correlational study on reading motivation. The selection criterion was a lower score on reading comprehension and expressive vocabulary. This selection strategy resulted in 30 children whose families agreed to participate out of an eligible 57. An additional 18 lower-achieving children were recruited especially for the present research. The 48 participating children ($M_s = 95.9$ and 89.3 for reading comprehension and expressive vocabulary, respectively) performed at levels significantly below their non-participating peers on reading comprehension and vocabulary ($M_s = 105.7$ and 101.8 for reading comprehension and expressive vocabulary, respectively; Wilks' λ (2,

113) = .019, $p < .001$). Few participating children had standard scores at or above the test mean: 10 children had reading comprehension scores between 100 and 105, and three other children had expressive vocabulary scores between 100 and 103. Hence, the participating children were generally low- to average-achieving readers.

Participating children within each grade and gender were randomly assigned to either the intervention condition ($N = 24$) or the control condition ($N = 24$). The intervention condition included 11 Grade 3 students (M age = 8 years, 9 months; six girls) and 13 Grade 5 students (M age = 10 years, 10 months; five girls), whereas the control condition included 12 Grade 3 students (M age = 8 years, 10 months; six girls) and 12 Grade 5 students (M age = 10 years, 7 months; three girls). The imbalance across grades for the intervention condition and for gender in the control condition are due to experimenter error. Forty of the participating children were monolingual English speakers, and eight children were bilingual.

The demographic information provided by the 48 participating parents revealed that the education levels observed were generally lower than the provincial average, with one exception: More respondents reported having completed a community college degree. The distribution for the sample was as follows: 8% had some high school (vs. 14% province-wide for individuals aged between 25 and 64); 19%, a high-school diploma (vs. 25% province-wide); 52%, a college diploma or certificate (vs. 31% province-wide); and 21%, a university degree (vs. 31% province-wide).

The median household income, reported by 42 of the 48 parents, was over Can\$85,000 per year, with the following distribution: 13% earned up to \$20,000; 8%, between \$20,001 and \$40,000; 8%, between \$40,001 and \$60,000; 13%, between \$60,001 and \$80,000; and 46%, over \$80,000. The income for these families was generally similar to the provincial median for couples with children (\$87,960) (2006 census; Statistics Canada, 2007), and there was no difference between the intervention and control conditions on parent education and socioeconomic status ($ps = 0.14$ and 0.85 , respectively).

Materials

Reading Comprehension

Children's reading comprehension was assessed using the Passage Comprehension sub-test of the Woodcock Reading Mastery Tests–Revised (Woodcock, 1998). Children were asked to silently read a short passage and identify a key word missing from it. The publisher has reported a mean split-half reliability of 0.92 and 0.73 for Grade 3 and Grade 5 students, respectively.

Oral Reading Fluency

Children's oral reading fluency was assessed using a grade-appropriate passage taken from the *Rigby READS Teacher's Manual* (Farr, Beck, & Munroe, 2004), an informal tool to aid teachers in assessing children's reading skills. Children were asked to read a passage aloud and were stopped after one minute elapsed. A fluency score was obtained by subtracting the number of errors from the total number of words read in one minute. Children in Grade 3 and 5 read a 158-word and a 188-word narrative passage, respectively. The percentage of words read correctly was used in all analyses because the two narratives did not have the same number of words. Because the publisher did not report any information on reliability, we calculated the correlation between pre- and post-test. The correlation coefficient was strong, $r(48) = 0.88$, giving some indication of its reliability. To provide evidence of criterion validity, we examined whether, on pre-test, the correlation coefficient between fluency and reading comprehension would be comparable to other published reports using standardized tests of fluency, and it was, $r(48) = 0.66$ vs. 0.72 as reported in Fuchs, Fuchs, Hosp, and Jenkins (2001).

Receptive Vocabulary

Children's receptive vocabulary was assessed using the Peabody Picture Vocabulary Test-III (Dunn & Dunn, 1997). From arrays of four pictures, children were asked to point to the picture that best matched the word spoken by the examiner. The alternative forms used on pre- and post-test had reliability coefficients for raw scores that were reported to be between 0.95 and 0.96 for children aged seven to 11.

Expressive Vocabulary

Children's expressive vocabulary was assessed using the Expressive Vocabulary Test (EVT; Williams, 1997). The examiner presented a picture and a word and asked the child to give a synonym for the given word. The same form was used for pre- and post-test because there was no alternate form available for the EVT. The publisher has reported a mean split-half reliability of 0.91.

Parent and Child Feedback Survey

In addition to the weekly reports described in the subsequent intervention section, parents and children in the intervention were asked to complete a feedback survey for the program at the beginning of September following completion of the intervention. Parents and children were asked if they enjoyed the program and whether the books were a good choice for the child. They also indicated whether the program affected the child's reading frequency, desire to read, and attitudes towards reading. Finally, children, at post-test, were also asked, on a six-point rating scale, how many books they had read during the summer:

- 1 point = 1–2 books
- 2 points = 3–4 books
- 3 points = 5–6 books
- 4 points = 7–8 books
- 5 points = 9–10 books
- 6 points = 11 or more books

Summer Reading Questionnaire for the Control Condition

At the end of the intervention, parents of children in the control condition completed a telephone survey about their child's reading habits over the summer. Parents indicated whether they read with their child during the summer and, if so, whether they used specific strategies to enhance reading, vocabulary, and engagement. Children indicated the number of books they had read during the summer when they were post-tested in September.

Description of the Intervention

Children in the intervention condition were encouraged to read a book a week for eight consecutive weeks starting in July. In the month prior to the intervention, parents attended a 1.5-hour training session during which they actively participated in training exercises that allowed them to practise the strategies to be used during paired reading (as described in the introduction). Parents were encouraged to be positive role models and make reading fun. In addition, parents were provided with a parent-training booklet that could be

used as a quick reference guide to facilitate components of the intervention over the summer. Finally, parent support was provided during the intervention by periodic telephone calls to parents.

Once the intervention started, families received one book package per week by mail that consisted of a child and a parent component. The child component included (a) a new book matched to their interest and reading level; (b) a list of book titles that were similar to the given book to encourage additional reading; (c) a postcard that encouraged reading; and (d) a to-be-completed short questionnaire to assess whether the book was read. The number of books that children reported reading was used as an initial index of treatment fidelity.

The parent package included (a) a book summary with details about each book, suggestions for comprehension questions to be asked, specific vocabulary words they could watch for, and a list of books similar to the one sent; (b) a postcard that reminded them to encourage their child to read and send back the progress report; and (c) a checklist to be returned for each book identifying the strategies used during the week's paired-reading sessions. Two examples of a book summary, comprehension questions, vocabulary definitions, and suggested reading are presented in Appendix A. The number of checklists returned and the information provided on them were used to assess treatment fidelity.

Upon receipt of each new book, parents were asked to engage in paired reading with their child for five to 15 minutes each day for five days of the week, and to encourage their child to read independently after each session. At the start of the next paired-reading session on the following day, while their child was reading independently, the parent would ask the child what happened in the book (i.e., summary, *wh*-questions, and retell strategies used for improving reading comprehension) and to identify words that were unfamiliar or unknown (i.e., a vocabulary-building exercise). Also, parents were asked to encourage their child to predict what might happen next in the book and to make connections with past events in the book. Following this, parent and child would begin their paired-reading session for the day. This schedule and ordering of events remained constant over the eight-week intervention period. When the parent and child finished the book, the parent encouraged their child to choose their favourite part and reread a 100-word passage from the book to their parent or another family member (Kim, 2006, 2007). At the completion of a book, parent and child filled out their short questionnaires and

mailed them back to the researcher in a prepaid envelope provided. If the parent and child completed a book before the arrival of the next book package, the parent was asked to encourage their child to find another reading source and to continue reading.

Book Selection

Books reflected each child's preferred genre and reading level. All books were purchased through Scholastic Canada because of their online information, which included for each book the genre (e.g., mystery, humour, science) and reading level, as well as a book summary and number of pages.

Children's genre preferences were assessed prior to the intervention using an adapted form of a reading preferences survey from Summers and Lukasevich (1983) and Kim (2006). This survey asked children how much they enjoyed reading books from a list of 13 categories of children's book genres. Embedded in four of the categories were sub-categories providing further detail about specific interests, for example, the animal category was further divided into mammals, marine life, and reptiles. Each response option included a sad or a smiley face representing one of four options: (1) I don't like it; (2) It's okay; (3) I like it; and (4) I really like it. The I-really-like-it responses were used to select preferred book genres for each child.

Children's independent reading levels were obtained from teachers. That is, teachers conducted school-board mandated Developmental Reading Assessments (DRA) for all students to determine their reading level (Beaver, 1997). For this assessment, the child read to the teacher from a predetermined book, and the teacher scored the child's performance on a reading scale to reflect fluency, comprehension, and decoding ability. DRA scores range from 1 to 80, with each decade roughly corresponding to a grade level (e.g., scores in the 50s correspond to Grade 5 reading). The DRA scores for the last month of schooling before the summer holidays were used in the present study. Publishers such as Scholastic and Pearson have book collections categorized by reading levels, and this allowed us to select books according to children's reading levels. Because the intervention included independent reading, we selected books that were, on average, within 10 DRA points of each child's reading level to allow children to practise and apply the strategies learned from paired reading. Examples of book series and book titles are in Appendix B. Given the overlap of interest and reading level in the present study, a total

of 91 different books were selected. For each of these books, a book-specific information sheet was prepared (see examples in Appendix A).

Control Condition

The control condition children did not receive any books until the end of the study, at which point they received eight books that were matched to their interest and reading level. Moreover, parents received the parent-training booklet used during the intervention.

Procedure

Children's reading ability and oral language were tested individually. The 48 selected children completed the oral reading fluency test and the reading preferences survey in June. Testing on vocabulary and reading comprehension was conducted in December, January, and February for 30 of the children selected from a larger sample, while 18 additional children (38% of the sample) were tested in June. Preliminary analyses revealed that there were no statistically significant differences in raw scores for children tested earlier as compared to later in the school year (M_s for reading comprehension = 30.6 vs. 28.8, $p > .33$; M_s for receptive vocabulary = 123.7 vs. 125.6, $p > .70$).

The intervention was conducted in July and August, and post-testing was conducted within two weeks after the completion of the study, that is, when children returned to school at the beginning of September. Children were reassessed on the same measures and in the same order as on the pre-test, but with alternate test forms whenever possible, that is, for reading comprehension and receptive vocabulary. Children also reported on the number of books they had read over the summer. At post-test, children in the intervention condition completed the feedback survey, and their parents completed the feedback survey by phone. Finally, parents of children in the control condition completed the summer reading questionnaire by phone during the first two weeks of September.

At pre-test, the trained experimenters were blind to the experimental conditions. Post-testing was conducted by two experimenters blind to the experimental conditions as well as the first author, who was not blind to the condition assignment. Consequently, it was important to show that there was no difference in child performance as a function of tester status, and indeed there was none (all $p_s > 0.52$).

Results

Children in the intervention received books that were matched to their interest and reading level. Reported in Table 1 is the percentage of children who responded I-really-like-it on a checklist that included 13 different genre categories. Examination of the percentages revealed that children generally preferred fiction ($M = 64\%$) to non-fiction ($M = 50\%$). Within the fiction category, fantasy, humour, and mysteries were preferred by nearly all children, and within the non-fiction category, books about animals were most frequently preferred. Within each genre, books were selected to match children's reading level as measured by the Developmental Reading Assessment (DRA). Children's DRA scores for the end of the school year were obtained by teachers, and these scores were comparable across groups: Children in the intervention had a mean DRA score of 34.6 ($SD = 13.3$), and children in the control condition had a mean DRA score of 36.3 ($SD = 12.3$).

Children's reading performance on pre- and post-test is presented in Table 2 and their vocabulary performance in Table 3. Before testing for treatment effects, it was important to show that children in the intervention condition did not differ significantly from the children in the control condition. A preliminary MANOVA that included reading comprehension, fluency, and vocabulary measures revealed no significant group difference on pre-test scores ($p > .32$). Therefore, any post-test differences between conditions could not be attributed to pre-existing differences in the dependent variables. Indeed, the mean performance on pre-test was very similar across conditions for both literacy and vocabulary. A second MANOVA that included pre- and post-test performance revealed that grade level did not interact with condition ($p > .42$), time ($p > .46$), or with time and condition ($p > .73$). The absence of interactions with grade level suggests that grade did not moderate children's performance and, consequently, grade was not considered further.

Examination of the reading measures in Table 2 shows that the children in the control condition did not improve over the course of this study, as indicated by negative difference scores. In contrast, the children participating in the intervention did improve. ANCOVAs, using pre-test scores as a covariate, were conducted on the raw scores for each post-test measure. The analysis for reading comprehension showed that children in the intervention condition ($M_{\text{adjusted}} = 32.3$, 95% CI [30.8, 33.7]) had higher post-test scores than the control-condition children ($M_{\text{adjusted}} = 29.7$, 95% CI [28.3, 31.1]), $F(1, 45) = 4.49$, $MSE = 17.33$, $p = .04$, partial $\eta^2 = 0.09$. The same advantage was found for

reading fluency. That is, children in the intervention condition (adjusted mean = 51.8% of words read correctly, 95% CI [48.2%, 55.4%]) read more fluently on post-test than the control-condition children ($M_{\text{adjusted}} = 45.6\%$ of words read correctly, 95% CI [42.0%, 49.2%]), $F(1, 45) = 4.11$, $MSE = 0.01$, $p = .05$, partial $\eta^2 = 0.08$. Hence, the summer reading program enhanced children's reading.

Table 1: Child-Reported Reading Preferences As a Function of Book Genre and Popularity for the Entire Sample (N = 48) and Separated by Gender

| Book Genre | Percentage of Children Reporting "I really like it" | | |
|--|--|-------|------|
| | Overall | Girls | Boys |
| Fiction | | | |
| Fantasy: supernatural (e.g., magic) | 97.6 | 59.1 | 38.5 |
| Humor | 96.2 | 50.0 | 46.2 |
| Mystery | 92.3 | 50.0 | 42.3 |
| Traditional literature (e.g., legends) | 88.5 | 50.0 | 38.5 |
| Adventure | 74.1 | 31.8 | 42.3 |
| Fantasy: time travel | 67.2 | 36.4 | 30.8 |
| Fantasy: science-fiction | 37.4 | 18.2 | 19.2 |
| Romance | 30.4 | 22.7 | 7.7 |
| Poetry | 30.4 | 22.7 | 7.7 |
| Sports | 28.3 | 9.1 | 19.2 |
| Non-Fiction | | | |
| Animals: marine life | 77.6 | 54.5 | 23.1 |
| Animals: reptiles | 75.5 | 40.9 | 34.6 |
| Animals: mammals | 73.1 | 50.0 | 23.1 |
| Sport biographies | 58.7 | 31.8 | 26.9 |
| Technology | 48.2 | 13.6 | 34.6 |
| Science: earth science | 45.8 | 22.7 | 23.1 |
| Travel (non-fiction) | 42.7 | 27.3 | 15.4 |
| History/geography | 39.9 | 9.1 | 30.8 |
| Science: space | 32.8 | 13.6 | 19.2 |
| Children/family | 9.1 | 9.1 | 0.0 |

Table 2: Means and Standard Deviations for the Pre-Test, Post-Test, and Difference Scores for Reading Comprehension and Fluency as a Function of Condition

| Variable | Pre-Test | | Post-Test | | Difference | |
|---------------------------------|----------|------|-----------|------|------------|------|
| | M | SD | M | SD | M | SD |
| Intervention condition (N = 24) | | | | | | |
| Reading comprehension | | | | | | |
| Raw score | 29.3 | 7.6 | 31.5 | 9.9 | 2.2 | 4.5 |
| Standard score | 92.8 | 7.7 | 92.5 | 10.0 | | |
| Oral reading fluency* | | | | | | |
| Raw score | 45.1 | 20.6 | 48.4 | 18.8 | 3.7 | 10.1 |
| Control condition (N = 24) | | | | | | |
| Reading comprehension | | | | | | |
| Raw score | 30.6 | 4.1 | 30.5 | 6.6 | -0.1 | 4.1 |
| Standard score | 94.5 | 6.4 | 92.5 | 8.4 | | |
| Oral reading fluency* | | | | | | |
| Raw score | 41.7 | 19.8 | 40.0 | 19.0 | -1.7 | 11.2 |

* Percentage of words read correctly

Table 3: Means and Standard Deviations for the Pre-Test, Post-Test, and Difference Scores for Vocabulary Measures as a Function of Condition.

| Variable | Pre-Test | | Post-Test | | Difference | |
|---------------------------------|----------|------|-----------|------|------------|------|
| | M | SD | M | SD | M | SD |
| Intervention condition (N = 24) | | | | | | |
| Receptive vocabulary | | | | | | |
| Raw score | 124.2 | 15.9 | 132.1 | 16.3 | 7.9 | 11.7 |
| Standard score | 97.6 | 9.1 | 101.3 | 9.8 | | |
| Expressive vocabulary | | | | | | |
| Raw score | 81.2 | 12.6 | 89.0 | 12.1 | 7.9 | 6.8 |
| Standard score | 88.2 | 11.4 | 92.2 | 8.4 | | |
| Control condition (N = 24) | | | | | | |
| Receptive vocabulary | | | | | | |
| Raw score | 124.7 | 16.7 | 127.3 | 17.0 | 2.6 | 11.2 |
| Standard score | 98.5 | 10.1 | 99.3 | 10.9 | | |
| Expressive vocabulary | | | | | | |
| Raw score | 80.3 | 12.0 | 88.1 | 10.1 | 7.8 | 8.8 |
| Standard score | 88.0 | 10.7 | 92.8 | 7.8 | | |

Examination of children's vocabulary scores in Table 3 reveals some increase in vocabulary over the summer for both the control and intervention children. The analysis for receptive vocabulary showed that, at the end of the study, children in the intervention condition ($M_{\text{adjusted}} = 132.5$, 95% CI [128.5, 136.6]) had statistically significantly higher scores than the control-condition children ($M_{\text{adjusted}} = 126.8$, 95% CI [122.8, 130.8]), $F(1, 43) = 4.08$, $MSE = 95.64$, $p = .05$, partial $\eta^2 = 0.09$. In this ANCOVA, the three covariates were statistically significant ($p < .04$) and included receptive vocabulary pre-test, child DRA score, as well as whether the child was monolingual or bilingual (i.e., four bilingual children in each condition). There was no intervention advantage on expressive vocabulary ($p = .87$), with children in both conditions showing similar increases.

Treatment Fidelity

As a first indication of degree of participation in the intervention, we examined the number of weekly reports returned and found that families returned most reports. Specifically, 12 of the 24 parents returned all eight reports; seven returned seven reports; two returned five reports; and three parents did not return any reports. Most importantly, the responses for the 21 families who returned weekly reports revealed that 43% of children reported reading all eight books, 38% read seven, 5% read six, 5% read five, and 9% read four. On average, parents reported reading with their child between 15 and 20 minutes per weekday.

Additional information on treatment fidelity was ascertained by comparing the responses of parents and children in the intervention to those of parents and children in the control condition. At post-test, children in the intervention condition reported having read more books (median = 7–8 books) during the summer compared to the children in the control condition (median = 3–4 books, $p < .01$). The weekly reports of the 21 families who completed them were used to assess whether parents indicated implementing reading strategies at all, and whether they implemented them during at least four weeks of the eight-week program. Using an intent-to-treat approach, we calculated percentages out of 24 parents, rather than 21. As indicated in Table 4, 79% of the intervention parents reported implementing 13 of the 15 reading strategies at least once; and between 50% and 83% of them indicated implementing these 13 strategies for at least four weeks of the program. The strategies that were least likely to be implemented were to make connections to other relevant information and to look up words in a dictionary.

Table 4: Percentage of Parents in the Intervention Who Reported Using Reading Strategies in Their Weekly Reports and Parents in the Control Condition Who Indicated Using Strategies Over the Summer

| Strategy type | Intervention | | Control |
|--|---------------|-------------------------|---------|
| | At least once | For at least four weeks | |
| Specific behaviour | | | |
| Engagement strategies: Parent... | | | |
| remained a positive and tolerant role model | 87.5 | 83.3 | 16.7 |
| encouraged their child to discuss the book | 87.5 | 75.0 | 37.5 |
| made paired reading a fun activity | 87.5 | 50.0 | 29.2 |
| Reading comprehension strategies: Parent . . . | | | |
| asked child <i>wh</i> -questions | 83.3 | 66.7 | 4.2 |
| asked child to retell parts of the story | 87.5 | 66.7 | 29.2 |
| asked child to reread parts of the book <i>s/he</i> didn't understand | 87.5 | 70.8 | 25.0 |
| asked child to summarize what they had just read | 79.2 | 66.7 | 37.5 |
| asked child to make predictions about what would happen next | 79.2 | 58.3 | 8.3 |
| asked child to make connections to other relevant information | 70.8 | 33.3 | 4.2 |
| Fluency strategies: Parent... | | | |
| listened to their child read aloud | 87.5 | 83.3 | 12.5 |
| read aloud with their child | 87.5 | 66.7 | 41.7 |
| Vocabulary strategies: Parent... | | | |
| encouraged child to find unfamiliar words in the books | 83.3 | 50.0 | 0.0 |
| worked with child to figure out the meanings of words based on the context | 83.3 | 54.2 | 8.3 |
| gave child the meaning of the word | 79.2 | 62.5 | 20.8 |
| used a dictionary to define words | 50.0 | 25.0 | 4.2 |

Note: Using an intent-to-treat logic, the percentages are calculated out of 24, even though three parents in the intervention condition did not return their weekly reports and 2 parents in the control condition did not complete the telephone exit survey.

In contrast, parents in the control condition seldom indicated using these strategies with their child during the summer months (mode = 13%; with none exceeding 50%). Here, the strategy most likely to be implemented was to read with their child (42% of the parents in the control condition indicated using this strategy, as opposed to 88% of the intervention parents). These findings provide some evidence that the intervention was being implemented correctly. The reports of parents in the control also suggest that parents are not likely on their own to use a variety of strategies that might enhance reading and vocabulary.

Finally, parents and children in the intervention condition also completed a feedback questionnaire at the end of the intervention. Most parents and children enjoyed the summer reading program (84% of parents; 75% of children), liked the books selected (88% of parents; 84% of children), and thought that it increased the desire to read for fun (64% of parents; 80% of children). In sum, both parents and children felt positive about the program.

Discussion

In the present study, we trained parents as reading partners who encouraged, modelled, and coached their child to read during the summer holidays. Moreover, children received books that were matched to their interests and reading levels. The intervention was purposefully multi-pronged, including evidence-based components, because previous research on summer reading generally yielded null results (Kim, 2007; Kim & White, 2008; Kim & Guryan, 2010) and because the participating Grades 3 and 5 children in the current study were relatively weaker in many areas as compared to unselected children. As expected, children in the intervention condition had stronger reading and receptive vocabulary skills at the end of the summer months as compared to children in the control condition. The magnitude of the intervention effect was moderate for reading comprehension (Cohen's $d = 0.30$), reading fluency (Cohen's $d = 0.44$), and receptive vocabulary (Cohen's $d = 0.29$), but was not statistically significant for expressive vocabulary (Cohen's $d = 0.08$). Each of these findings is discussed in turn.

The finding that the intervention improved reading comprehension is consistent with previous research showing that strategies to build comprehension are especially

amenable to explicit teaching (National Reading Panel, 2000). Parents in the intervention condition were trained to model six reading comprehension strategies such as making predictions and connections, asking questions, rereading passages that cause difficulty, retelling, and summarizing. The present findings extend previous research by showing that parents, instead of teachers or peers, can model reading comprehension strategies (Hacker & Tenent, 2002). Indeed, 60% of parents in the intervention, on average, reported implementing all six strategies for at least four weeks. In stark contrast, only 18% of the control-group parents, on average, reported that they had used the six reading comprehension strategies at least once during the summer months. The latter result suggests that parents, in general, do not intuitively implement reading comprehension strategies.

Moreover, intervention parents reported modelling correct reading behaviour during the paired-reading sessions with their child, encouraging their child to read aloud to them, and to reread their favourite section of the book. That intervention children made gains in reading fluency is consistent with the National Reading Panel (2000) review showing that guided repeated oral reading has significant and positive impacts on fluency across a range of grade levels. In addition, our findings are consistent with those showing that reading with a model is especially effective for lower-skilled readers (Chard et al., 2002). During paired reading, parents can foster the child's development by serving as a model, teacher, and support for their child's efforts to read (Clarke-Stewart, 1998).

Children in the intervention also learned more receptive vocabulary than did children in the control condition. On its own, reading practice has been shown to be unreliable in promoting lower-achieving children's vocabulary growth; therefore, the intervention included opportunities for direct instruction and practice at inferring word meaning from context (Shany & Biemiller, 2009). In the present research, parents were helped in providing direct instruction because they received for each book 10 word definitions as well as the page number where the words appeared in the book (see Appendix A). Examples of words defined are *notorious*, *canopy*, and *famished*. Indeed, 62% of parents in the intervention condition reported providing definitions to their children. Moreover, 56% reported working with their child to figure out the meanings of words based on the context. Presumably, the inclusion of these components was sufficient to increase children's receptive vocabulary. The efficacy of these strategies did not generalize to children's expressive vocabulary, however. It is possible that, like younger children, the children in the present study needed more opportunities to speak the words. Indeed, Sénéchal (1997)

showed that to obtain substantial gains in expressive vocabulary, practice at retrieving the new words was necessary.

In designing the intervention, we purposefully trained parents on a number of evidence-based components. The comprehensive nature of the intervention, however, does not allow us to assess whether the effects are attributable to the multi-pronged nature of the intervention or to specific components. As such, the present intervention based on a multi-faceted approach is akin to dialogic reading used by parents or adults reading with younger children (e.g., Hargrave & Sénéchal, 2000; Mol, Bus, de Jong, & Smeets, 2008; Lever & Sénéchal, 2011). That is, it is impossible to know from dialogic reading research whether it is its comprehensive nature or whether it is a specific component of dialogic reading such as the use of questions, recasts, or praise that is responsible for the positive outcomes on child receptive vocabulary. Hence, we are careful in stating that our findings are consistent with past research that had individually assessed the specific components integrated in the present intervention. Importantly, our findings advance the research literature on summer reading, which had frequently failed to find any added value to summer book-reading programs (e.g., Kim, 2006; Kim & Guryan, 2010; Villiger et al., 2012). Future research could be conducted to assess whether the combination of components yields larger effects as compared to promoting a specific component. That is, future research could include alternative treatment conditions in addition to a control condition (Kim & White, 2008).

The present design had the advantage of showing that voluntary reading combined with parent involvement boosted children's reading comprehension and fluency in the absence of any instruction from school. As such, the present findings are not confounded with schooling effects. Future research, however, should be conducted to test whether the beneficial effects of the intervention are maintained over an extended period of time.

In the present study, there is an asymmetry in the timing of the pre-test that is not optimal but reflects the reality of conducting field rather than laboratory research. Importantly, the fact that all 48 children were tested on fluency in June and that we found intervention effects on this measure is certainly indicative of the benefits of this summer reading program. Moreover, we did find an advantage on reading comprehension and receptive vocabulary for the children participating in the intervention as compared to the children in the control. These are promising findings. Also of note in our design is that we targeted children in Grades 3 and 5 because these grades were an opportune time

for a shared reading intervention. We had not predicted and did not find that grade level moderated the efficacy of the intervention. However, the study included a relatively small sample size given the two grade levels, and, as such, the present findings should be replicated with a larger sample.

Conclusion

Overall, these findings have implications for summer programming and intervention programs designed for poor to average readers. The present study showed promising evidence that providing access to appropriate books and maximizing the role of parents could serve as an effective approach to improving literacy skills. After replication of the present findings in larger-scale studies, school boards could implement this type of intervention for children in Grades 3 to 6. That is, interested teachers could conduct the parent training because it is straightforward, and they could use publishers' collections that are classified by difficulty level and topic to suggest books that are at the appropriate reading level and of interest to each child.

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Appendix A

Examples of Book-Specific Information for Parents for Fiction and Non-Fiction Books

Fiction Book Titled Geronimo Stilton: The Mysterious Cheese Thief

Summary

Geronimo and his family take a trip to England to see where Stilton cheese is made. When they get there they find that all the Stilton cheese has been disappearing from the stores. It's up to Geronimo to find out who is the mysterious cheese thief, but can he do it? What an adventure.

Vocabulary

| Page | Word | Definition |
|-------------|-------------|--|
| 3 | Stammered | To make involuntary stops and repetitions in speaking |
| 8 | Obnoxious | Very unpleasant or rude |
| 9 | Famished | To be very hungry |
| 26 | Devoured | To eat up greedily or ravenously |
| 29 | Humiliating | Something that is extremely embarrassing |
| 42 | Notorious | Well known and talked about |
| 46 | Hygiene | The degree to which people keep themselves/their surroundings clean |
| 52 | Deserted | If a place is deserted, there are no people in it |
| 66 | Cascaded | A large amount of something that falls |
| 72 | Flattered | To feel very pleased and proud because someone has said good things about you or has made you feel important |

Comprehension questions

Page 5: Geronimo has been told he cannot use his last name anymore. What do you think will happen?

Page 9: Geronimo's cousin Trap wants to be a "cheeseologist". What is a cheeseologist and why do you think he wants to be one?

Page 24: How did Geronimo and his family get to England?

Page 25: What happens when they order Stilton cheese at the restaurant?

Page 30: What happens when they try to find Stilton cheese at the grocery store?

Page 30: Who do you think is stealing all the cheese?

Page 34: What do you think about Geronimo's cousin, Trap?

Page 62: It looks like the Shadow stole all the cheese in order to build a cheese-house. Where were the 3 places she stole the Stilton cheese from? [1) restaurant, 2) grocery store, 3) cheese factory]

Page 72: Who is Sally Ratmouzen? Why do Geronimo and Sally not get along?

Page 76: Oh, no! The Shadow knocked Geronimo out with a hammer. What do you think will happen next? Do you think Geronimo's family will find him?

Page 111: What happens at the end of the story?

If your child liked this book, here are similar books you could read

1. *Invisible Stanley* by Jeff M. Brown

Summary One morning, after a terrible storm, Stanley Lambchop is nowhere to be found. His family can hear him, and there is a lump under his covers, but no one can find him! Just where is that boy? Then they discover the truth—Stanley is invisible! At first, Stanley is very busy. There's so much for an invisible boy to do. But will he stay that way forever?

2. *Aliens for Breakfast* by Jonathan Etra & Stephanie Spinner

Summary It's been ten years since Richard Bickerstaff sat down to breakfast and an alien climbed out of his cereal bowl! Join Richard and Aric, a tiny, wisecracking creature from the planet Ganoob, as they battle to save the world from evil aliens.

Fiction Book Titled *World of Knowledge: Nature*

Summary

If you ever wanted to know all about nature, about plants and animals, this is the book for you. Packed with essential facts and key information combined with stunning photography and illustrations, this book serves as an excellent reference for the family and for homework.

Vocabulary

| Page | Word | Definition |
|------|-------------|---|
| 3 | Predators | An organism that lives by preying on other organisms |
| 3 | Timid | Lacking in self-assurance/courage/bravery; easily alarmed; shy |
| 4 | Sociable | Inclined to associate with or be in the company of others |
| 8 | Preserved | To keep in perfect or unaltered condition; maintain unchanged |
| 11 | Serrated | Having a notched edge or saw-like teeth, esp. for cutting |
| 12 | Beneficial | Producing or promoting a favorable result; advantageous |
| 14 | Cultivated | Prepared and used for raising crops |
| 18 | Canopy | The uppermost layer in a forest, formed by the crowns of the trees |
| 22 | Encased | To enclose in: We encased the ancient vase in glass to preserve it. |
| 28 | Permanently | Long-lasting or nonfading |

Comprehension questions

Pages 2–3: What is your favourite “unusual animal” from pages 2 and 3? Why?

Page 6: Why do you think butterflies only live a few weeks? Why don’t they live longer? In their short life span what do they have to do?

Page 9: What is the leading theory as to why dinosaurs went extinct?

Page 12: Some insects are pests and can cause problems but some insects help humans. Give some examples of how insects help humans.

Page 15: What are lichens? What do some animals use them for? What is interesting about them?

Page 18: Why do you think so much of the world’s animal and plant species live in the rainforest?

Page 20: Snakes are strange. They hear using small bones under their skin and smell with their tongue. What other interesting facts do you know about snakes?

Page 22: Why are spiders often mistaken to be insects? What are they really?

Page 25: How do zoos help prevent animals from going extinct?

The end: What chapter of this book was your favourite? Why? Least favourite? Why?

If you liked this book, here are similar books you could read

1. *How Do Frogs Swallow with Their Eyes? Questions and Answers About Amphibians* by Gilda Berger and Melvin Berger

Summary How do frogs swallow with their eyes? Easily. When swallowing a big mouthful of food, a frog blinks its eyes. The blinking pushes the frog's huge eyeballs down on top of its mouth. This helps squeeze the food in its mouth into its throat. Whoosh! Down goes its meal!

2. *Our Amazing Animal Friends* by Gene S. Stuart (National Geographic Series)

Summary A busy, wild world of sights, sounds, and activities unfolds through lively photographs of animals in summer. Children discover secrets of the animals they see every day and find out why summer is the time for newborns to learn about their world.

Appendix B

Examples of Children's Book Series and Book Titles Selected from Scholastics Canada

Examples of Book Titles (Author) and Award If Applicable

- *Stone Fox* (John Reynolds Gardiner); *New York Times* Outstanding Children's Book.
- *Charlie and the Great Glass Elevator* (Roald Dahl)
- *George's Marvelous Medicine* (Roald Dahl)
- *Hatchet* (Gary Paulsen); Newbery Honor Book
- *Brian's Winter* (Gary Paulsen)
- *Jesper* (Carol Matas)
- *The Giggler Treatment* (Roddy Doyle)
- *The Tunnel King* (Barbara Hehner)
- *The Fish in Room 11* (Heather Dyer)
- *Muggie Maggie* (Beverly Cleary)
- *Socks* (Beverly Cleary)
- *Pippi in the South Seas* (Astrid Lindgren)
- *Ghosthunters and the Incredibly Revolting Ghost!* (Cornelia Funke)
- *The Hundred Dresses* (Eleanor Estes); Newbery Honor Book

Book Series from which Some Books Were Selected

- A to Z Mysteries
- Geronimo Stilton
- Flat Stanley
- The Boxcar Children
- Animal Ark Pets
- The Secrets of Droon
- Captain Underpants
- The Shadow Children Series
- Deltora Quest
- Jack Russell Dog Detective
- Horrible Harry
- The Screech Owl Series
- Horrible Histories
- Everest Series
- The Adventures of the Bailey School Kids
- Encyclopedia Brown