

Links Between Parent-Child Storybook Reading and Children's Vocabulary Acquisition and
Writing Skills

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ABSTRACT

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In this study, 55 parents completed a Title Recognition Test (TRT) to measure their familiarity with children's books, serving as a proxy for children's exposure to storybooks at home. At school, children participated in three shared storybook reading sessions, with each session focusing on a new target vocabulary word. After each storybook reading at school, children were asked to write a response reflecting what they learned from the book. The story responses were later scored for lexical diversity (Type-Token Ratio) and invented spelling sophistication (using an adaptation from Gentry and Ouellette's Monster Test, 2019). Vocabulary learning was also assessed by directly measuring target word definitions during a post-test activity. The findings revealed that children whose parents scored better on the TRT showed significantly greater lexical diversity in their responses. In addition, they demonstrated better learning of the target vocabulary introduced during the reading sessions at school. Conversely, children's invented spelling was unrelated to their parents' TRT scores. These results suggest that spelling may be more influenced by explicit instruction in letters and sounds, as found in previous research. Taken together, this study enriches our understanding of how parent-child shared reading experiences relate to children's vocabulary use in writing. It also promotes free writing activities as valuable tools for assessing early literacy development.

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Introduction

Parents play a crucial role in their preschool children's early language and literacy development, acting as their first educators and most influential guides (Barbarin, 2008; Mol & Bus, 2011; Patel et al., 2021; Reese et al., 2010). Extensive research has demonstrated a positive association between children's literacy achievements and the literacy practices they experience at home (Bus et al., 1995; Scarborough & Dobrich, 1994; Sénéchal & LeFevre, 2014). In particular, parent-child storybook reading improves children's vocabulary knowledge (Arnold et al., 1994; Huebner, 2000) and listening comprehension. However, less is known about whether storybook reading predicts children's later writing skills. On the one hand, it is posited that storybook reading does not impact children's writing because the attention to oral communication in this activity overshadows the written text found in the books (Martin-Chang & Gould, 2012). On the other hand, writing composition could be influenced by the improvements in children's vocabulary and listening comprehension (Sénéchal & LeFevre, 2014). Thus, the present study explores whether the frequency of storybook reading at home is linked to the sophistication of children's written responses after story-time at school. I am especially interested in whether children who are read to more at home are better able to (1) learn the target vocabulary used in the reading sessions, (2) write with greater lexical diversity, and (3) demonstrate more advanced invented spelling.

Children's Focus During Storybook Reading

Shared storybook reading strongly impacts children's vocabulary knowledge and listening comprehension (Meyer et al., 1994). Parent-child storybook reading exposes children to rich vocabulary and complex sentence structures, which are crucial for language acquisition and

literacy (Mol & Bus, 2011). However, during storytime reading, children tend to look at the illustrations rather than the print (Evans & Saint-Aubin, 2013; Liao et al., 2020).

As a case in point, using eye-tracking data, Evans and Saint-Aubin (2005) revealed that children's visual attention was overwhelmingly directed toward pictures during parent-child storytime. Children demonstrated minimal fixations on text, even when features like bold letters or decorated fonts were included. In their first experiment, five 4-to 5-year-old children participated. The results showed that children followed the plot by looking at relevant pictures (e.g., fixating on a bird when "bird" was read), suggesting that children engage more with the semantics conveyed through illustrations rather than the orthographic features of written language (Evans & Saint-Aubin, 2005). A second experiment involving 10 children aged 4- to 5-year-olds replicated these findings, confirming that during shared reading, children's visual focus is driven by the meaning rather than by the print. The results align with previous studies that found shared reading more strongly correlated with vocabulary and comprehension skills than print-specific knowledge (Bus et al., 1995; Phillips & McNaughton, 1990; Scarborough & Dobrich, 1994).

Yet other studies have documented that children's understanding of written language symbols is enhanced during shared storybook reading (Justice & Ezell, 2004; Meyer et al., 1994). With frequent joint shared reading, some researchers have suggested that children between 3-to 5-year-old begin to understand that specific letter like forms, single letters, repeated letters, and misspelled letters do not constitute valid printed words (Bialystok, 1995; Landsmann & Karmiloff-Smith, 1992; Pick et al., 1978). One reason for these different findings could be that children may pay more attention to print when readers gesture toward the text (Evans & Saint-Aubin, 2013). The lack of adults' print-referencing during storybook reading sessions may

prevent children from engaging with the written text, missing opportunities to increase their print awareness (Justice & Ezell, 2000).

Adult Guidance Within Storybook Reading

The metalinguistic focus of storybook reading interactions can be enhanced through print referencing (Justice & Ezell, 2004). Children can learn about print, including letter-sound correspondence and sight vocabulary, by fingerpointing or following the print as they read the story (Meyer et al., 1994). Print referencing draws children's attention to written text using spoken prompts and gestures during shared reading. (Justice & Ezell, 2004). This approach helps children recognize written language's forms, functions, and conventions (Justice & Ezell, 2002). Justice & Ezell (2000) examined the non-verbal references to print between 24 mother-child dyads during shared storytime reading with 4-year-olds. They used a pre-test and post-test group design. The 12 adults in the experimental group watched a video that illustrated how to integrate verbal and non-verbal references, such as tracking and pointing to print during storytime reading. Both groups showed minimal attention to non-verbal cues in the shared reading activity in the pre-test. However, during the post-test, the experimental group used more references to print, leading to a corresponding increase in the number of children who looked at print than children with no parental instruction.

Print referencing uses adult mediation to form a bridge for children in their zone of proximal development, helping children move from dependent to independent mastery of print concepts. (Vygotsky, 1978; Justice & Ezell, 2001). Home observational research suggests that parents often mediate their children's reading, and these interactions positively affect children's phonological awareness, spelling, phonics, print awareness, and word-reading skills (Simmons et al., 2023). For example, when children interact with print instead of passively listening to stories, it has

been shown to be more successful in developing literacy skills (Feitelson et al., 1993). For example, Martin-Chang and Gould (2012) analyzed mother-child interactions across reading sessions with 40 dyads. Interactions during both adult-to-child and child-to-adult reading sessions were videotaped in participants' homes and coded for book-related themes, maternal feedback, and child engagement. They found that graphophonemic cues, in which mothers pointed to and named letters and added their sounds, were positively linked to children's engagement during reading sessions. But they did not see a direct link between graphophonemic cues children's literacy skills, such as reading or writing ability.

The Simple View of Writing

Writing involves conveying meaningful ideas through written text (Graham, 2019). Early writing development involves two primary components, *spelling*, and *ideation*, which contribute distinctly to a child's writing proficiency (Juel et al., 1986). Spelling is an important skill that helps children write words accurately to share their ideas clearly (Berninger et al., 2002). It is an essential skill that involves translating speech into written form by ordering letters to form words (Ehri, 2000). Ideation, sometimes called composition, is where a writer generates and organizes ideas (Juel et al., 1986). Further, Berninger and Swanson (1994) proposed that transcription skills would develop initially in early writers, while the planning and reviewing stages would not come into play until the writer reached a more advanced level.

Later, the Simple View of Writing was proposed (Berninger et al., 2002). In this model, transcription is viewed as generating language using symbols (i.e., the Roman alphabet in English). It includes writing mechanics, including handwriting and spelling, which are critical for encoding language in written form (Berninger et al., 2002). Conversely, composition is perceived as the process of forming ideas through language (Berninger et al., 2002; Graham &

Eslami, 2022). Thus, writing comprises two interrelated processes: transcription, which includes spelling and handwriting (or typing), and text generation (Berninger & Graham, 2002). These processes work together and are all essential for writing to occur (Graham & Eslami, 2022).

Invented Spelling in Children's Writing

Invented spelling is the process by which children independently attempt to translate spoken language into written form (Ouellette & Sénéchal, 2017) even before mastering reading skills (Gentry, 2000). Invented spelling marks a key milestone in writing development, reflecting children's phonemic awareness and grapho-phonemic skills (i.e., linking letters with sounds to create meaningful words) (Zhang et al., 2017).

Zhang et al. (2017) studied the associations among emergent literacy skills, executive function, and invented spelling in 123 preschoolers. Data were collected at two-time points in the academic year (fall and spring) to evaluate the 4-year-old children's skills in developmental early reading and invented spelling. Children's language abilities were assessed via phonological awareness, letter-sound knowledge, and vocabulary, and their executive function was measured with the Head-Toes-Knees-Shoulders task that measures self-regulation skills. Children were asked to spell simple, monosyllabic words to evaluate name writing, letter fluency, and invented spelling. These results highlighted the role of phonological awareness in predicting invented spelling. Word sound awareness during fall strongly predicted spring-invented spelling ability, emphasizing the very early role of sound-letter connections in early writing development. Although executive function did not directly predict invented spelling, it did predict letter-sound knowledge growth, which, in turn, supported invented spelling.

Similarly, Ouellette and Sénéchal (2017) conducted a longitudinal study examining the contribution of invented spelling to early literacy development. The researchers tracked 171 5-

year-old children to see if their ability to create self-directed spellings could predict reading and spelling skills in Grade 1. At the start of kindergarten, children were assessed on invented spelling, phonological awareness, knowledge of the alphabet, and oral vocabulary. Follow-up assessments in Grade 1 measured their reading and conventional spelling abilities. The results showed that invented spelling functions as more than an outcome of phonological awareness. It independently predicts literacy skills, supporting the idea that it helps bridge phonological and orthographic knowledge needed for reading and spelling development. Given that orthographic knowledge continues to develop over time (Treiman & Bourassa, 2000), it raises the question of how invented spelling manifests in older children.

Orthographic knowledge deepens in older children as they learn advanced spelling conventions (Treiman & Bourassa, 2000). Spelling knowledge grows progressively through school years, expanding to include morphological awareness that supports spelling accuracy (Bear & Templeton, 1998). High-quality lexical representations, which integrate phonological, orthographic, and semantic knowledge is a process that continues with ongoing reading and writing experiences (Perfetti, 2007). Drawing on research that suggests spelling development occurs in identifiable phases, Gentry (1978) created an assessment designed to identify children's spelling phases called The Monster Test.

The Monster Test

The Monster Test assesses children's developmental spelling phases by examining their invented spellings of common words (Gentry & Ouellette, 2019). The 10 words in the test cover various phonetic elements. For example, long vowels (*eighty*), short vowels (*dress*), nasalized vowels (*stamp*), -ed endings (*hiked* /t/), affricates (*truck* /ch/), and intervocalic flaps (*bottom*). The test provides insights into phonics knowledge without requiring memorization or perfect

spelling. Administered up to four times a year, it helps educators track progress and determine appropriate reading levels (Gentry, 1978). This test is grounded in the idea that children move through five developmental phases in a specific order over time: Non-alphabetic spelling, pre-alphabetic spelling, partial alphabetic spelling, full alphabetic spelling, and consolidated/automatic alphabetic spelling (Ehri & McCormick, 2006; Gentry & Ouellette, 2019).

Non-alphabetic Spelling. In this phase, readers and writers lack alphabetic knowledge and are unable to use letters accurately (Dich & Cohn, 2013). Spellers may attempt letter-like shapes or approximations, but they do not yet know the letters of the alphabet, resulting in the absence of recognizable letters (Share & Gur, 1999) or correspondence with any sounds (Gentry, 1982). Children's drawings often include random symbols and shapes that mimic the visual characteristics commonly found in printed text as they try to replicate these features (Perruchet & Pacton, 2006). Moreover, when trying to read, children at this phase do not rely on letters to help with reading because they do not understand the alphabet. For instance, when Xepsi is shown printed on Pepsi's red and blue logo, preschoolers still read it as Pepsi. They could not identify the mistake, even after being directly asked about it (Ehri, 2020), indicating that children in the pre-alphabetic phase were not yet focusing on individual letters (Share & Gur, 1999).

Pre-alphabetic Spelling. During this phase, children explore the structure and principles of written language (Stellakis & Kondyli, 2004). This phase is also referred to as the babbling phase of spelling (Gentry & Ouellette, 2019) because early writing often begins with scribbles and forms that resemble letters (Dich & Cohn, 2013; Stellakis & Kondyli, 2004). In this phase, children mimic writing by replicating groups of letters arranged in a horizontal line (Guo & Mackenzie, 2015), and they usually engage in "pretend writing" (Levin & Bus, 2003).

At times, the scribbles may contain recognizable letters, but these letters do not correspond to the sounds of the words the child is trying to spell (Ehri, 2020). For example, a child might write “OPSPS” to represent “eagle” showing their early exploratory interaction with written language before phonetic awareness solidifies (Gentry & Ouellette, 2019).

Partial Alphabetic Spelling. For children to progress into the partial alphabetic phase, they must acquire knowledge of some letter shapes, names, and their corresponding sounds (Ehri, 2020). However, this knowledge remains partial, and mastering the alphabetic principle (the written letters represent sounds in speech) in writing is a gradual process rather than an immediate achievement (Dich & Cohn, 2013). In early spelling attempts, children often include just a few letters of the word they intend to write rather than representing each individual sound (Treiman, 1998), and they start to develop an awareness that speech sounds have corresponding printed forms (Bowman & Treiman, 2002). Children frequently abbreviate the words by including only the initial or final sounds. For instance, they might write “EG” to represent “eagle” (Gentry & Ouellette, 2019). Children’s writing remains partially alphabetic at this phase, as they use letters to represent only some sounds within a word (Read, 1975). In an effort to represent sounds, they often write only the consonants, such as “CT” for “cat” (Gentry, 2006). Furthermore, they can use letter names to represent whole syllables, such as writing “MT” to represent the word “empty” (Gentry, 2006).

Full Alphabetic Spelling. At this phase, children can establish grapheme-phoneme associations that allow them to read and spell familiar words from memory (Ehri, 2020). In this phase, children recognize and include all phonemes in their spellings, although the spellings may not be conventional (Dich & Cohn, 2013). Children in this stage often employ “finger spelling” to count the sounds in a word. Children represent all the sounds of the word in their writing

(even though it is not the same number of symbols). This process is usually slow and requires short-term memory skills, such as saying the sound aloud, selecting the appropriate letter, and recalling how to form it (Gentry & Ouellette, 2019). For example, a child attempting to spell the word “elephant” might write “L-F-N-T” or “EL-EF-ANT.” While this spelling is not conventional, it demonstrates their recognition and representation of each sound in the word.

Consolidated alphabetic spelling. Children begin to recognize and use larger units of sound and letter patterns in their spelling rather than representing each sound individually (Ehri, 2005). This phase marks a shift where children store letter patterns as units, enabling faster and more accurate spelling (Bear et al., 2020). They focus on the visual appearance of words and develop a visual memory for common spelling patterns, which they can retrieve easily from long-term memory. Examples of spelling in this phase include “EIGHTEE” for eighty or “FREND” for “friend” (Gentry & Ouellette, 2019).

In summary, the Monster Test provides a valuable framework for assessing developmental spelling phases (Bear et al., 2020; Gentry, 1982). Evaluating spelling through distinct phases helps identify where children are in their spelling development and tailor interventions to effectively support their progress (Henderson & Templeton, 1986). The test’s structured yet adaptable approach has ensured its enduring relevance in research and educational practice (Gentry, 2000).

Vocabulary and Lexical Diversity in Children’s Writing

By age 6, children know approximately 10,000 words (Anglin, 1993). It has been estimated that elementary school children gain around 3,000 new words per year through exposure to reading and daily language interactions (Nagy & Anderson, 1984). In particular, Hargrave and Sénéchal (2000) examined the impact of storybook reading on vocabulary acquisition in

preschool children with limited expressive vocabulary skills. Utilizing a sample of 36 children between the ages of 3 and 5 from low-income families, the researchers implemented a 4-week intervention involving two reading conditions: a regular shared reading format and a dialogic reading approach. The dialogic reading group received training to engage children actively through open-ended questioning and feedback, promoting interactive dialogue during reading sessions. Vocabulary acquisition was assessed using standardized measures, including the Peabody Picture Vocabulary Test (PPVT-R) and the Expressive One-Word Picture Vocabulary Test (EOWPVT-R), alongside a specific test for newly introduced vocabulary. Findings from this intervention reveal that children in the dialogic reading condition demonstrated significantly greater vocabulary gains than those in the regular reading condition, particularly in their expressive vocabulary scores. Although both groups showed some degree of vocabulary acquisition, the dialogic group exhibited substantially larger gains.

These findings echo a study on vocabulary acquisition among preschoolers by Sénéchal (1997). It explored how different storybook reading approaches affect young children's receptive vocabulary and expressive vocabulary (words children can actively use in speech). The study involved 60 children between the ages of 3 and 4, divided into three experimental conditions: single-reading, repeated-reading, and questioning. Each child was read the same story individually, with those in the repeated-reading and questioning groups experiencing three reading sessions of the book. The questioning condition further included prompts for children to label certain items using the new vocabulary presented. The findings indicated repeated exposure to the book and questioning significantly contributed to vocabulary development. Children in both repeated-reading conditions showed improved receptive vocabulary, suggesting that multiple exposures helped reinforce word comprehension. However, the questioning condition

particularly supported expressive vocabulary, as children prompted to label words demonstrated a more remarkable ability to recall and produce the new terms. This study underscored the benefits of interactive reading techniques, showing that asking children to respond actively can be especially effective for developing expressive vocabulary. Sénéchal (1997) concluded that while repeated exposure builds understanding, prompting children to use new words may be essential in helping them integrate and retrieve language actively.

Similarly, Sénéchal and LeFevre (2002) conducted a five-year longitudinal study with 168 kindergarteners through Grade 3. They investigated the role of parental involvement in children's emergent literacy skills and reading development. The study focused on two early home literacy experiences: informal literacy activities, such as shared storybook reading, and formal literacy activities, where parents actively taught their children to read and write. While informal literacy activities, such as storybook reading, primarily enhanced children's receptive vocabulary (words children understand but may not produce), formal literacy activities, including writing instruction, were more directly associated with letter recognition and word reading (Sénéchal & LeFevre, 2002).

The researchers used the Title Recognition Tests (TRT) as a proxy for home storybook reading. Parents were presented with a checklist containing 40 genuine children's book titles and 20 plausible foils and were asked to identify the titles they recognized. This test allows researchers to assess parents' familiarity with children's literature, a key indicator of the literacy environment provided at home (Sénéchal et al., 1996). For children, a separate task was used to measure book recognition. Participants were presented with key illustrations from 37 well-known children's books and asked to identify the titles.

The researchers found significant positive connections between parents' familiarity with children's books and children's recognition of book illustrations with key literacy outcomes. Parents' scores on the TRT were positively correlated with children's vocabulary, invented spelling, and decoding skills, suggesting that a rich home environment with exposure to children's literature enhances these early literacy abilities. Similarly, children's ability to recognize book illustrations was linked to their invented spelling, indicating that engagement with books supports phonological awareness, which could help with spelling development. It is noteworthy that the assessment of invented spelling was conducted using a controlled list of ten words in Grade 1. Children were instructed to spell each word or as many of the sounds in the words as possible. Their responses were then scored on a four-point scale, reflecting how well they captured the words' phonological aspects and adherence to conventional spelling rules. The findings revealed a positive correlation, indicating that children with higher vocabulary scores tended to achieve higher scores in invented spelling. However, this study did not measure children's use of invented spelling during compositions, leaving unexplored the potential impact of home reading frequency on this aspect of emergent writing.

The Present Study

Research suggests that shared storybook reading plays a significant role in enhancing children's understanding of written language symbols and vocabulary acquisition (Sénéchal, 1997; Sénéchal & LeFevre, 2002). Studies indicate that children benefit from frequent exposure to new words and the modeling of language structures during these sessions, which can support vocabulary growth (Wasik & Bond, 2001). While much of the research has focused on vocabulary, less attention has been given to how at-home storybook reading influences other aspects of language use, such as invented spelling and integrating new vocabulary into written

compositions at school. This study examines the influence of home reading frequency on children's written responses to story-time reading sessions in a classroom setting. My main objectives are to determine (1) whether children in second and third grade come from a home that reads more storybooks, are better able to learn the target vocabulary used in the reading sessions at school; (2) write with greater lexical diversity, and (3) demonstrate more advanced invented spelling in their compositions after storytime reading.

Methods

Participants

The present study comprised 56 parent-child dyads, with children aged 7 to 9 years enrolled in either second or third grade. One dyad was excluded from the final analysis due to missing data, as the child did not complete two of the three-story response tasks. The final sample, therefore, included 55 dyads and formed part of a larger, ongoing investigation into early literacy development. The participants represented a linguistically diverse population, with families reporting a wide range of home languages, including Akan ($n = 1$), Arabic ($n = 3$), Assamese ($n = 1$), Bengali/Bangla ($n = 2$), English ($n = 21$), French ($n = 5$), Italian ($n = 1$), Japanese ($n = 3$), Korean ($n = 10$), Marathi ($n = 1$), Persian ($n = 1$), Portuguese ($n = 1$), Spanish ($n = 5$), Swedish ($n = 1$), Ukrainian ($n = 1$), and Urdu ($n = 1$). All participants were fluent in English.

Families also differed in reported annual household income. Income was assessed on a 9-point ordinal scale (0 = no income; 1 = less than \$20,000; 2 = \$20,000–\$29,999; 3 = \$30,000–\$39,999; 4 = \$40,000–\$59,999; 5 = \$60,000–\$79,999; 6 = \$80,000–\$109,999; 7 = \$110,000–\$149,999; 8 = \$150,000 or more). The responses showed that 16 of the participants reported no

income (code 0), while the most frequently reported income category was \$150,000 or more ($n = 17$), followed by \$110,000–\$149,999 ($n = 7$), and \$80,000–\$109,999 ($n = 5$).

Materials

Demographics

Questionnaire. Parents were asked to fill out a demographic questionnaire at the start of the study, which gathered details about the child and their household characteristics. This questionnaire collected data on the child's age, grade level, and home language(s), as well as family-related variables such as annual household income. The information obtained through this measure was used to describe the sample and to explore potential patterns or associations between demographic variables and children's responses to the reading tasks.

Print Exposure

Title Recognition Test. The TRT was used to assess parents' familiarity with children's books, serving as a proxy of children's exposure to storybook reading at home (e.g., Sénéchal and LeFevre, 2002). Parents were presented with a list of 50 children's book titles, comprising 38 authentic titles and 12 foils. To reflect true familiarity and reduce the impact of random guessing, the TRT score was computed by taking the percentage of correctly identified titles and subtracting the percentage of foils selected, based on the formula $[\text{Number of correct titles identified} / \text{total number of correct titles}] - [\text{Number of foils selected} / \text{total foils}]$.

Target vocabulary pre-test

The children were asked to explain the meaning of six words (persistence, grit, growth mindset, alliteration, homophones, and onomatopoeia). The research assistant recorded their responses in a booklet. The same scoring procedure done for the post-test (see below) was followed for the pre-test.

Target vocabulary post-test

After all storybook sessions were finished, children were asked again the meaning of the six target words. Responses were recorded in the same way as the pre-test. The day after all three storybook sessions were finished, the children were asked if they knew the meaning of the three target words. Additionally, they were asked if they knew the meaning of three target words they had not been exposed to. The children's answers were recorded by research assistants in response booklets and later transferred into Excel. The quality of their vocabulary definitions was rated on a four-point scale ranging from 0-3. For example, for the word *homophone*, the responses ranged from 0 (e.g., "I don't know") to 3 (e.g., "Words that have the same sound (1 point) and different spelling (1 point), dear and deer" (1 point). Because the children scored 0 for the three words they were not explicitly taught, the final score was divided over nine (total maximum points they could get by defining the three target words they were trained in).

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

The DIBELS test is a set of brief, one-minute assessments designed to evaluate key literacy skills in students from kindergarten through eighth grade. The assessments focus on components of reading, such as phonemic awareness, phonics, fluency, and comprehension (University of Oregon, 2021). For the purposes of this study, the school administered the test and later provided the children's DIBELS scores.

Storybooks

Half the children were read storybooks focusing on wordplay topics (see Appendix A). These stories incorporated elements such as onomatopoeia, homophones, and alliteration. The second group was read three storybooks about overcoming struggles (see Appendix B). These included narratives emphasizing persistence, grit, and growth mindsets.

Writing task

Following each read-aloud session, children were invited to respond to the prompt, “What did you learn from the story?”. They were provided with a response sheet with a large rectangle at the top, allowing children to create a drawing related to the story if they chose to do so. Below the rectangle, there were nine evenly spaced lines for the children to write their thoughts about the story (see Appendix C). They could choose to focus on writing, drawing, or a combination of both. They had 10 minutes to complete the task.

Lexical Diversity

Type-Token Ratio. In this study, children’s lexical diversity was measured by using the type-token ratio. It is a quantitative measure used to assess lexical diversity within a text (Templin, 1957). It was calculated by dividing the number of unique words (types) by the total number of words (tokens) in the given sample (e.g., Bestgen, 2024). A higher ratio indicates greater lexical variety, while a lower ratio suggests repetition. The type-token ratio is sensitive to text length; as the number of tokens increases, the ratio typically decreases due to the natural repetition of words. Thus, it is particularly well-suited for analyzing short text samples (Hess et al., 1984).

To score the type-token ratio, each child’s exact response was transcribed, letter-by-letter, including misspellings into Excel (e.g., pepol for people). The target text using conventional spelling was listed in the column beside each response (e.g., people). Grammar was not corrected in the conventional spelling transcription, ensuring that only spelling adjustments were made (e.g., she **trys** again and she **do** it). To facilitate analysis, I used the “Text to Columns” function to separate each word into individual cells. I then applied a formula to count each composition’s total number of tokens (words). To determine the number of types (unique words), I first used

conditional formatting to highlight repeated words automatically. Next, I created a macro to count the highlighted words and generated a pivot table to isolate the number of unique words, ensuring that only distinct words were counted. Finally, I calculated the Type Token Ratio by dividing the number of types by the total number of tokens.

Invented Spelling Coding

The Monster Scoring System. A variation of the Monster scoring system (Adapted from Gentry & Ouellette, 2019) was used to assess children's invented spelling. Unlike the original Monster Test, which focuses on individual words, this adaptation scored each syllable written during the story response based on a five-point scale adapted from Gentry and Ouellette's phases of spelling development (2019).

- a) Non-Alphabetic Spelling (1 point): Random letters or symbols unrelated to phonemes or words.
- b) Pre-Alphabetic Spelling (2 points): Some visual or phonetic cues are represented, but there is no systematic correspondence between letters and phonemes.
- c) Partial Alphabetic Spelling (3 points): Key phonemes are represented, but the spelling is incomplete (e.g., "DG" for "dog").
- d) Full Alphabetic Spelling (4 points): Most phonemes are represented with conventional spellings, though occasional errors may occur (e.g., "DAWG" for "dog").
- e) Consolidated/Automatic Alphabetic Spelling (5 points): Words are spelled correctly and effortlessly.

Spelling

To score invented spelling, I first divided the child's written text into individual words and placed the target text in conventional spelling next to it in another column. I then assigned a score of 1 for each word spelled perfectly and 0 for any errors. To obtain the "spelling score", I summed the number of correctly spelled words.

To ensure that children received extra points for spelling more difficult words correctly (e.g., onomatopoeia), I recorded the number of syllables in each word (e.g., on/o/mat/o/poe/ia = 6). I then multiplied the number of correctly spelled words by their syllable count, ensuring that more complex words contributed more to the overall score. To align with Gentry and Ouellette's scoring system, I multiplied this value by 5, the highest possible score for a perfectly spelled word.

Invented Spelling

For words that included invented spelling, I scored each syllable individually based on Gentry and Ouellette's Scoring system. For example, as shown in Table 1, in the word "persistens" (intended as (per/sis/tence), which has three syllables, I assigned 5 points to the first and second syllables because they were spelled correctly. The third syllable received 4 points because most phonemes were represented correctly but with minor errors. This resulted in a total score of 14 out of a possible 15 points for the word. To calculate a Gentry and Ouellette phase score per story, the score for the total number of syllables was summed, as well as the total number of syllables the child wrote in the response. Then, these results were divided [syllables score/number of syllables], resulting in the final Gentry and Ouellette phase score ranging from 1 (Non-Alphabetic Spelling) to 5 (Consolidated Alphabetic Spelling). In the example below, the

calculation would read $[39 / 9] = 4.33$, indicating that for this response, the child was entering the Full Alphabetic Spelling phase for this response.

Table 1

Example of Invented Spelling Scoring.

Invented spelling	Conventional orthography	Syllable 1	Syllable 2	Syllable 3	Syllable 4	Total
In/vez/i/pel	In/vis/i/ble	5	4	5	3	17
Per/sis/tens	Per/sis/tence	5	5	4		14
Learnd	Learned	4				4
That	That	5				5
Total						40

The analyses below were run using the average invented spelling scores of the three stories. I decided to score each syllable to provide a more accurate reflection of a child's spelling development, as it accounts for the effort involved in writing more complex words, where more syllables often indicate greater difficulty.

Procedure

The study was conducted with two groups of children, each participating in structured storybook reading sessions tailored to specific themes. The two groups were designed as part of a larger project to explore the influence of different types of stories on literacy development.

Group Assignments and Story Themes

Each storybook was read to the children in a classroom setting. During the reading sessions, key elements of the stories were explained to enhance comprehension. These explanations occurred at specific, predetermined points in each story to ensure consistency across all sessions. The researcher concisely delivered the explanations and did not involve a

back-and-forth discussion, focusing on the story's narrative flow. Children were read a total of three stories: one story per day over three days. A different target word was introduced during each story. This resulted in the children being exposed to three new words throughout the experiment.

Post-reading activity

After each reading session, the children were given a simple, open-ended task to capture their responses to the story. They were asked to write about what they learned from the story, encouraging them to reflect on and articulate their thoughts. Additionally, they were offered the option to create a drawing as part of their response, allowing for a more expressive and creative outlet. The class was told that spelling did not matter and to “try their best.” They wrote a response for each story; therefore, they wrote a total of three responses. The responses were written individually in a class setting. Ten minutes were given to complete their responses after each reading session.

To account for the fact that the book covers were projected onto the smartboard during the response activity, the visible words were excluded from the scoring (see Appendix D). This ensured that the scoring system focused on assessing the children's independent spelling and writing abilities rather than their ability to copy text directly from the book cover.

Design

This study employed a correlational design to explore the relationship between parents' TRT scores and their children's writing and vocabulary outcomes. Specifically, the children's written compositions were evaluated based on two measures: the Type-Token Ratio for lexical diversity and a modified version of Gentry and Ouellette's scoring system, adapted to assess invented spelling within story responses. The TRT here served as a proxy for the frequency of

home storybook reading (e.g., Sénéchal & LeFevre, 2002). By examining the associations between parent's TRT and children's writing outcomes, I explored whether more frequent storybook reading at home is linked to greater lexical diversity, more advanced spelling development, and better vocabulary learning in children.

Results

This study examined whether the frequency of shared storybook reading at home, as indicated by the Title Recognition Test (TRT), was associated with two distinct dimensions of preschool children's written responses to classroom story-time: lexical diversity and invented spelling development. In addition, I was interested in whether children who are read to more at home will be better equipped to learn new vocabulary presented to them within the context of a storybook reading activity at school.

Lexical diversity was measured through the average type-token ratio across three independent writing tasks, while invented spelling was assessed using a developmental phase-based rubric inspired by Gentry and Ouellette's phases of spelling development. Table 2 presents the descriptive statistics for all key variables included in the subsequent analyses.

Table 2

Descriptive Statistics for Parent and Child Measures

		<i>Mean</i>	<i>S.D.</i>	<i>Range</i>
Parents measure	TRT	.10	.10	-.08 - .33
Children's measures	Target Vocabulary	.37	.42	.00 - 1.00
	Type-Token Ratio	.84	.11	.56 – 1.00
	Invented Spelling	4.67	.39	3.46 – 5.00
	DIBLES	361.17	33.26	306 - 434

*Note. TRT= Title Recognition Test; Target Vocabulary= Target Vocabulary
Post-test.*

Target Vocabulary

As Table 3 shows, a significant positive partial correlation was found between parental TRT scores and the number of target words children correctly defined during the post-test. Only post-test scores were analyzed, as all children scored zero on the pre-test, indicating a floor effect. The result suggests that children whose parents are more familiar with children's books tend to learn more of the vocabulary explicitly taught during the shared reading sessions.

Lexical Diversity

As reported in Table 3, a statistically significant partial correlation was observed between parental TRT scores and children's lexical diversity scores. This suggests that children whose parents recognized a greater number of children's book titles tended to use a more diverse set of words in their writing. This confirms my hypothesis concerning the vocabulary children use in their writing. No other significant correlations were found between lexical diversity and the other variables of interest.

Invented Spelling

In contrast to lexical diversity scores, the correlations in Table 3 revealed no significant relationship between TRT scores and children's invented spelling performance. This non-significant correlation suggests that more frequent shared reading at home, as measured by the TRT, is unrelated to children's spelling development. At the time of the analysis, the DIBLES scores were unavailable for 19 children. Therefore, they were not included in Table 3. However, Pearson's correlation between invented spelling and the available DIBLES scores for the remaining 36 children revealed a statistically significant positive relationship between children's

invented spelling scores and their DIBELS scores. This suggests that higher early literacy skills, as measured by DIBELS, were moderately associated with more advanced invented spelling.

Table 3

Partial Correlations Between Parental TRT scores, Children's Vocabulary measures and Invented Spelling.

	1	2	3	4
1. Parent's TRT	-			
2. Target Vocabulary	.4***	-		
3. Type-Token Ratio	.33**	.09	-	
4. Invented Spelling	.16	.15	-.08	-

Note. Children's age, parental education, and household income were controlled for in the analyses. *TRT*= *Title Recognition Test*; *Target Vocabulary*= *Target Vocabulary Post-test*
 * $p < .05$, ** $p < .01$, *** $p < .001$, 2-tailed.

The whole sample was included in Table 3. However, it is worth noting that the same pattern of results was shown when analyzing dyads whose first language was restricted to English and French.

Discussion

A growing body of research has shown that shared storybook reading supports multiple aspects of early language and literacy development, especially vocabulary acquisition (e.g., Arnold et al., 1994; Huebner, 2000; Mol & Bus, 2011). However, much less is known about how frequent exposure to books at home might influence children's writing. Specifically, little is known about whether parent-child reading is linked to lexical diversity or invented spelling in classroom settings. The current study aimed to address this gap by investigating whether joint

storybook reading at home was linked with better outcomes in how children (1) write with greater lexical diversity, (2) learn the target vocabulary used in the reading sessions at schools, and (3) demonstrate more advanced invented spelling.

Consistent with my hypothesis that shared reading may predict children's lexical diversity, my data showed a significant positive correlation between parents' TRT scores and the Type-Token Ratio in children's written responses. As such, it aligns with the existing literature, whose findings suggest that higher print exposure is related to children's better outcomes in expressive and receptive vocabulary (Mol & Bus, 2011; Sénéchal & LeFevre, 2002; Simmons, 2023). Though the previous studies focused on oral language, the new results indicate that the benefits of shared reading may also extend to children's written output. In addition, to date, the majority of the studies in the field have used standardized measures of vocabulary (e.g., PPVT-R; EOWPVT-R); in contrast, I examined children's writing during a task that would be frequently encountered in regular classroom activities. Furthermore, the children in my study children were not prompted to use different words, allowing for more naturalistic responses. Accounting for the fact that I worked with an older population than the previous studies (e.g., Sénéchal, 1997), I can conclude that the benefits of storybook reading regarding vocabulary extend beyond the 4-5 years-old range where they are commonly studied.

What is more, Dawson et al. (2023). The study showed that books for older children use a greater variety of words. They found that the frequency of unique complex words (types) significantly increases as children enter and proceed through school, resulting in richer lexical input. This could imply that parents with higher TRT scores may expose their children to richer texts. If the books that parents read to their children contain more advanced vocabulary, that might help explain why older children, like the ones participating in this study, produced writing

that showed greater lexical diversity. This could also explain why the higher parents' TRT scores were, the more successful children were in learning the specific vocabulary targeted in storybook sessions. In this sense, higher print exposure may not directly teach target words (as indicated by the lack of a correlation between the TRT scores and the pretest target word scores), but it may build the skills needed to learn new vocabulary when it is explicitly introduced and discussed, as it was in the current study sessions. One possibility is that children from print-rich home environments come to realize how the structure of storybooks work (e.g., repetition, illustrations, narrative cues) are used to bring attention to key target words.

Following my last hypothesis, whereas some studies have found that children's invented spelling correlates with parents' TRT scores (e.g., Sénéchal & LeFevre, 2002), my data showed no significant correlation between these variables. The difference in these findings could be due to the different ages between the populations. Sénéchal & LeFevre (2002) tested children at the beginning of Kindergarten and Grade 1, while I worked with second and third graders. In addition, other findings demonstrate spelling tends to be more influenced by explicit instruction in letters and sounds rather than passive exposure to print materials during parent-child storybook reading (Evans & Saint-Aubin, 2005; Justice & Ezell, 2002; Justice & Ezell, 2004). Because my measures did not capture the quality of print-focused interactions happening within the home (e.g., pointing out words or drawing attention to letters), my data may not have reflected these important experiences for spelling development.

A second consideration is the fact that I used a novel iteration of scoring method for the invented spelling task first proposed by Gentry and Ouellette (2019). Thus, it is possible that the new scoring method affected my ability to detect associations between the children's invented spelling and their shared storybook reading experience at home. However, the fact I found a

positive correlation between children's DIBELS scores with invented spelling makes me more confident in my scoring method. Prior studies have highlighted the role that early writing plays in fostering phonological awareness (e.g., Ouellette and Sénéchal, 2017; Zhang et al., 2017). Because DIBELS tests children's ability to hear and manipulate sound in words, and decode letters, real words and non-word letter strings, it captures skills that directly happen in invented spelling, such as segmenting words into phonemes and connecting those sounds to letters. This could mean that children with stronger word-sound awareness are, therefore, better equipped to represent those sounds in writing, even though they may not yet be able to spell conventionally.

Limitations

One limitation of this study is that the data was collected for a larger literacy project, and I, therefore, did not have the opportunity to ask parents about their reading practices at home. Thus, I am not able to comment on whether the lack of correlation between invented spelling and TRT scores results from absent interactive book reading strategies (like dialogic reading or print referencing). With this information available, I would have conducted an analysis of how these different practices while joint reading might be related to children's early spelling development.

Although a strength of the study was that it included children from a wide range of backgrounds, the large number of children who were English or French learners might have impacted my findings. Because the TRT includes just English book titles, it may not reflect parents' actual exposure to children's literature if titles were unfamiliar due to cultural or linguistic differences, rather than a lack of reading experience. However, the fact that I observed the same pattern of results with just English and French speakers makes me feel more confident about my results. Nevertheless, this might provide an avenue of research in the future. In further studies, we might allow space for parents to add their own favorite storybook titles.

A further limitation concerns the visibility of the book titles during the writing activity. As the titles were shown on the smart board, I excluded any words that appeared in them from scoring to avoid inflating spelling scores due to copying. However, it is possible that some children knew how to spell those words independently. Had the titles not been visible, I could have included those words in the responses scores and gotten a larger picture of each child's invented spelling.

Finally, while the vocabulary analysis provided useful insights into children's more naturalistic responses, the study would have been strengthened by including a widely used standardized vocabulary measure (e.g., PPVT-R; EOWPVT-R). This would have allowed for a broader validation of the results and made it easier to compare findings with previous research in the field.

Implications

Based on my findings, I would encourage parents to engage in shared storybook reading frequently. My results show that as parents become more familiar with children's books titles (a proxy of shared reading experience), their children become better at learning new vocabulary words and using a more diverse range of vocabulary in their writing. For parents who want to encourage early learning at home, knowing that shared reading supports children in expanding their vocabulary (Sénéchal & LeFevre, 2002; Mol & Bus, 2011) may offer a simple yet effective way to support their child's language growth in everyday life.

Teachers may find it encouraging that children's free writing can be used to reveal important aspects of their literacy development. Children's responses can complement more formal assessments and help capture early progress in a way that more authentically reflects classroom learning. Future researchers may also be interested in this approach to explore how

home joint reading predicts children's literacy outcomes in more naturalistic, classroom-like conditions.

Ultimately, these findings point to the power of shared reading as more than just a bonding activity. Parent-child storybook reading enriches children's vocabulary in everyday interactions. Encouraging storybook reading at home may be one of the most practical and lasting ways to foster children's literacy skills from the earliest years.

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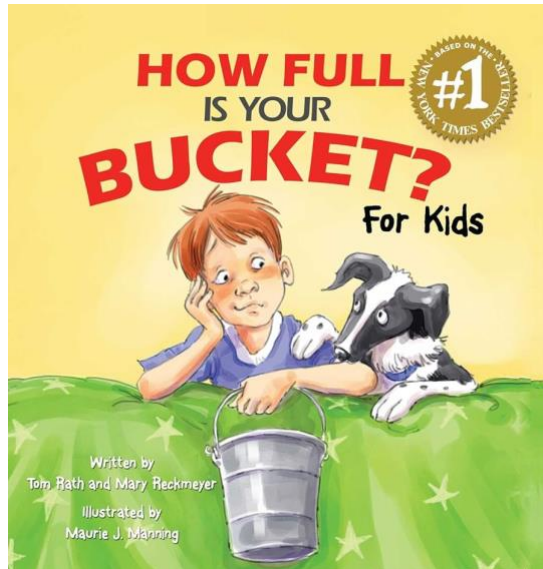
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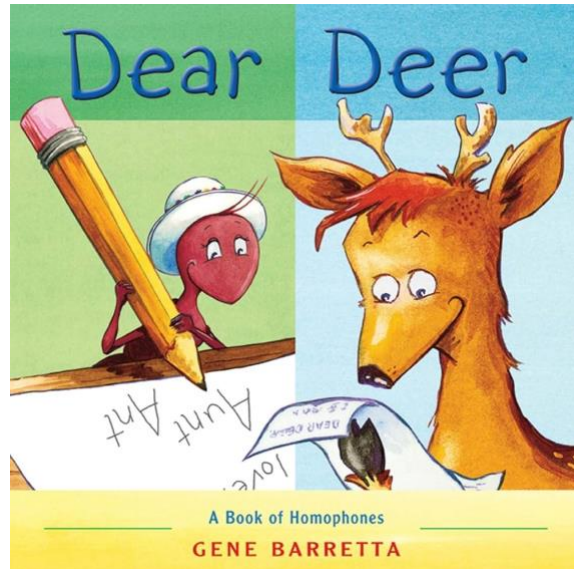
Appendix A

Storybooks focusing on wordplay topics



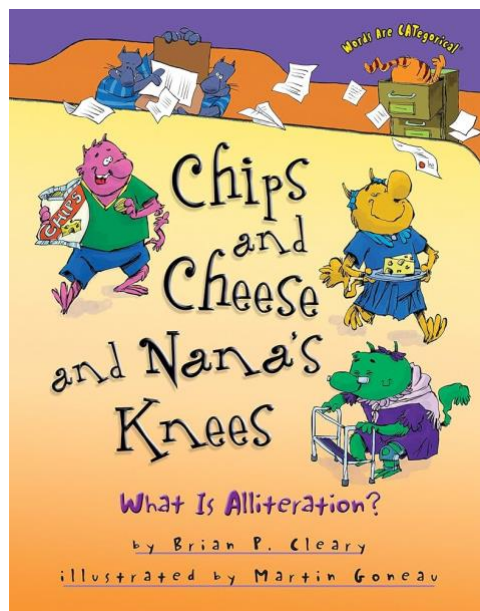
Onomatopoeia topic

Note. Retrieved from: <http://surl.li/riryge>



Homophones topic

Note. Retrieved from: <http://surl.li/pwfaqte>

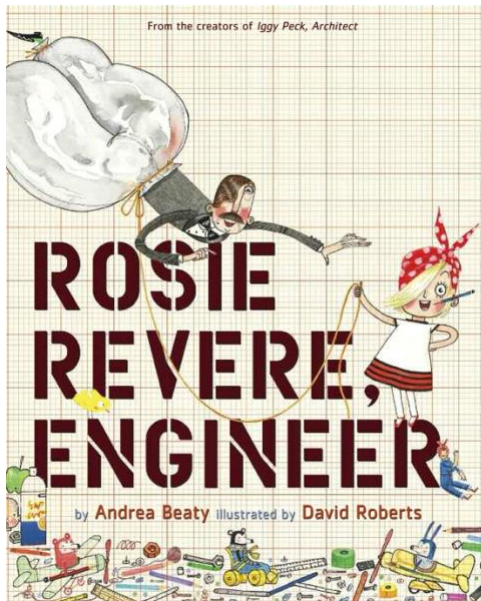


Alliteration topic

Note. Retrieved from: <http://surl.li/takajr>

Appendix B

Storybooks focusing on overcoming struggles



Persistence topic

Note. Retrieved from:

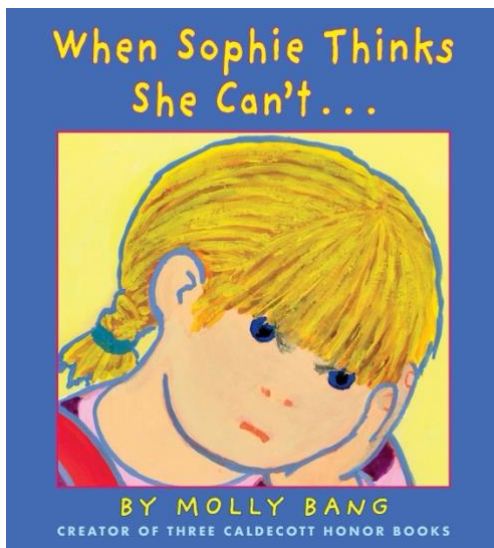
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Grit topic

Note. Retrieved from:

<https://tinyurl.com/ypjfyzz6>



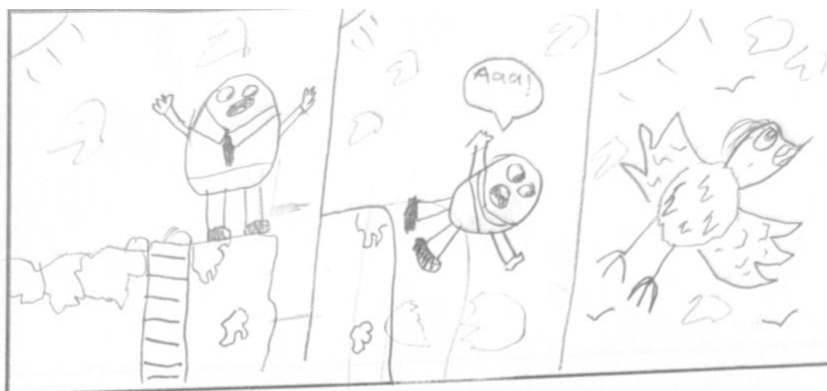
Growth mindset topic

Note. Retrieved from:

<https://tinyurl.com/mryypdbt>

Appendix C

Sample of Writing Task



at first he was afraid of climbing the
ladder and one day he had to go up the
ladder and when he gets to the top he turns
into a bird.

ID# #9 / DOB _____

DATE: Feb 14

Appendix D

Excluded Words from Scoring

Book	Words		
1. After the Fall	After	Fall	Humpty
	Dumpty	Got	Back up
	Again		
2. Rosie Revere	Rosie	Revere	Engineer
Engineer			
3. When Sophie Thinks She Can't	When	Sophie	Thinks
	She	Can't	By
	Molly	Bang	
4. Chips and	Chips	Cheese	Nana's
Cheese and Nana's	Knees	What	Alliteration
Knees			
5. Dear Deer	Dear	Deer	Book
	Homophones		
6. How Full is your	How	Full	Bucket
Bucket	For	Kids	Illustrated