Information Book Read-Alouds in Head Start Preschools and the Development of Preschoolers' Vocabulary and Emergent Literacy Skills

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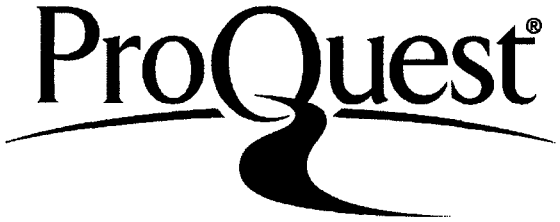

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Abstract

This thesis presents two studies examining the relationship between the genre of picture books read to children by their teachers (fictional storybooks or nonfiction information books) and preschoolers' vocabulary and pretend-reading skills. Teachers were randomly assigned to one of three conditions: (1) Read Aloud classrooms in which teachers used information and storybook read-alouds (2) Read Aloud Plus classrooms in which teachers used the read-alouds as well as extension activities, and (3) Control classrooms. Teachers in 26 classrooms and their 278 students participated in this 12-week program. Study 1 investigated whether children learned vocabulary introduced and instructed in information books and storybooks at a similar rate. Results suggest that when vocabulary instruction is embedded in read-alouds and extension activities, the genre of the book in which the word is introduced does not matter. However, if the child's only exposure to the word is during read-alouds, children learn slightly more words from storybooks than information books, on average. Study 2 used a sub-sample of 10 children from the control condition and 10 children whose teachers were faithful to the Read Aloud program. This study explored whether children demonstrate an emergent understanding of genre in their pretend-readings of information books and storybooks. Results suggest many children used emergent informational language in their pretend-readings of information books, but none used this language in their pretend-readings of storybooks. In addition, English language learners who participated in the Read

Aloud Program were similar, on average, in their use of emergent informational language to their monolingual peers in the Read Aloud Program, when controlling for initial use of this type of language. However, English language learners who did not participate in the Read Aloud Program were had lower use of emergent informational language, on average, than their monolingual peers in the control condition, controlling for their initial use of this type of language. These studies suggest that information book read-alouds can support children's language and emergent literacy development and that these read-alouds may be especially important for English language learners' emergent literacy development.

Preface

This dissertation is organized into four chapters. The first and final chapters consider the larger issues explored in the dissertation, while the second and third chapters each present a separate empirical research study that addresses those issues. The first chapter argues for the need for research into the use of nonfiction in preschool, and specifically for studies that investigate whether using nonfiction picture books in preschools is feasible and beneficial for children. The second and third chapters provide empirical evidence to address this question. The second chapter presents a study into the relationship between children's vocabulary development and the use of nonfiction in preschools. The third chapter presents a study exploring the use of genre markers in preschoolers' pretend-readings of nonfiction and fiction books. Each of these empirical chapters presents a complete study including literature review, methods, results, and discussion sections. Finally, the fourth chapter explores the implications of the dissertation as a whole.

With this organization, each chapter can be read separately or the whole dissertation can be read together. There is some replication of language and tables in the literature reviews of the first three chapters.

Chapter 1. Nonfiction in Early Childhood Education: Problems and Possibilities

Children need to be able to comprehend text at a high level in order to be successful in school. However, many children do not reach high levels of comprehension of written texts by the middle grades (e.g., Sweet & Snow, 2006). This problem is particularly acute for English language learners (e.g., August & Shanahan, 2008). Policymakers and researchers have devoted considerable attention to this issue and have identified several key areas of concern. One area of concern is children's failure to master the complexities of academic language, or the types of discourses valued in school (e.g., Bailey, 2007). An important subset of academic language is the discourse associated with expository or nonfiction texts. Nonfiction uses specialized vocabulary, builds on prior knowledge of the wider world outside the book, and has distinctive discourse structures. These discourse structures are quite different from those found in oral language or in fictional narratives. However, evidence suggests that younger children have much less exposure to nonfiction than they do to oral language or fictional narratives (e.g., Yopp & Yopp, 2006). Some researchers have called for an increased attention to nonfiction in the early years of schooling, even as early as preschool, in order to remedy this deficiency (Duke, 2004; Neuman, 2006). However, there is little empirical evidence that early exposure to nonfiction will improve reading comprehension as children move through school. Before

longitudinal studies can investigate this possible link, it is important to understand whether it is feasible and productive to use nonfiction books with young children in the short term. While there are a few small-scale studies that suggest that young children can develop language and emergent literacy skills with nonfiction books, it is important to develop a more robust research base before beginning large-scale longitudinal studies that require changes in curriculum and teacher practice.

The Characteristics of the Nonfiction Genre

Nonfiction is a large genre encompassing many types of narrative and non-narrative texts—from phone books to narrative informational picture books to encyclopedias to biographies. This enormous variation encompasses a number of important common characteristics. The Merriam Webster Dictionary defines nonfiction simply as "literature or cinema that is not fictional." The Oxford English Dictionary's definition is more elaborated: "prose writing that is informative or factual rather than fictional." The distinctive characteristic of nonfiction is, therefore, its claims about truth. While fiction may include some factual content (e.g., historical fiction), readers do not expect fictional content to be accurate, while nonfiction is expected to be accurate. The primary purpose of nonfiction, first and foremost, is to provide information or facts - this is a different purpose than fiction. Some nonfiction uses some of the structures or characteristics associated with fiction in order to convey this information. For example, biographies and many historical works typically use a narrative

structure to convey information in a temporal sequence. Frequently, however, the different purpose of much nonfiction—to convey factual information—is associated with a different structure and format than fiction.

Pappas and Pettigrew (1998) are among those who argue that understanding the purposes and associated structures of a genre like nonfiction is important to readers as they approach and comprehend or produce a text. They suggest that familiarity with a genre is critical to providing a reader or writer with this important contextual information about what constitutes a prototypical text in a given genre. Each genre has its own rules for what comprises a description, for example, and those rules would look quite different in each genre. When children do not have sufficient experience with the genres valued in school, including nonfiction, they will likely not know how to use the genre effectively. Others agree. In trying to understand the comprehension problems of third graders, Best, Floyd and McNamara (2008) found some empirical evidence for Pappas and Pettigrew's theory. They assessed third graders' comprehension of both fiction and nonfiction texts. They found that children had a higher degree of comprehension of the fiction than the nonfiction texts, and that different skills were related to the comprehension of the two genres. Specifically, comprehension of the nonfiction texts was related more to the reader's world knowledge and less to the readers' decoding skill than was comprehension of the fictional text (Best, Floyd, & McNamara, 2008). Other

studies also find that children have more difficulty in comprehending nonfiction texts (e.g., Cote, Goldman, Saul, 1998).

Vocabulary knowledge is vital to a reader's ability to comprehend a text effectively. In order to understand what is written, the reader must know what the words mean. While children learn many words from oral language interactions, reading exposes them to many more words, including many technical or rare words that are not often used in oral language. Nonfiction may be a particularly important source for new vocabulary words because one of its purposes is to convey information that the reader is not expected to know prior to encountering it in the book. Studies of reading comprehension, however, suggest that children need to comprehend 95% of the words in a text (or 19 of 20 words) in order to comprehend the text itself. If nonfiction books differ from fiction books in the number and frequency of rare words, or in the nature of the words used, this will likely have implications for reading comprehension. Gardner (2004) explored this issue in an analysis of the words used in 28 narrative and 28 expository fifth grade children's books. She found that the genre of the book was related to the presence of academic vocabulary in these texts directed at fifth-graders. Specifically, the expository texts contained more words found frequently in a range of adult-level academic texts than the narrative texts. In addition, the expository texts contained a greater diversity of word types—including a greater variety of general as well as academic vocabulary word types. Finally, Gardner found that the words used in the expository texts were

different words from those used in the narrative texts. Between 10 and 42% of the words used in the texts of one genre were used in the texts of the other genre (the lower range tended to include technical words, and the higher range tended to include high-frequency words). For example, the narrative texts used more words about people and human qualities, and the expository texts used more scientific words and words about different content areas or topics. She found that the words used in the expository books "tend not only to be more cognitively challenging and thematically salient than their narrative counterpoints, but they are also embedded in contexts that require readers to negotiate a greater proportion of specialized words" (p. 28). Gardner argued that the genre of the books children are exposed to has a profound influence on the nature of the vocabulary that they develop and on the extent of their world knowledge (developed in part through vocabulary). Children who are not regularly exposed to nonfiction may not develop the vocabulary and knowledge needed for them to comprehend nonfiction in the future and the gap may only widen over time.

Nonfiction in Early Schooling

In spite of this evidence that exposure to nonfiction may be critical to children's learning and to their later effective use of the genre, evidence suggests that nonfiction texts are not emphasized in early education. The Home School Study (Dickinson, 2001), which investigated experiences of low-income preschoolers, found that just 7% of the teachers of 3-year olds and 43% of the teachers of 4-year-olds reported reading books with informational content in

their classrooms. None of the teachers of 3-year olds and only 5% of the teachers of 4-year olds identified the informational content of the book as a feature to consider when selecting books to read-aloud. More recently, Yopp and Yopp (2006) asked a sample of 1,144 teachers to record the names of all the books they had read aloud to their classes the day before. They found that 5% of read-alouds reported by preschool teachers were of informational nonfiction. The percentage of read-alouds reported by kindergarten through third grade teachers in the study to be of informational books ranged from 5 to 9% (Yopp & Yopp, 2006). In contrast, between 67-89% of the read-alouds of the preschool through third grade teachers were of narrative fiction books. Duke (2000) found that information texts were used an average of 3.6 minutes per day over four days in her sample of 20 first grade classrooms. The percentage of books in first grade classroom libraries that were informational texts was just 6.9% for low-income classrooms, and 12.7% for higher-income classrooms (Duke, 2000). Although these studies are based on a limited data, their findings converge on a remarkable paucity of informational text in young children's lives.

The Importance of Narrative

Overall, teachers appear to favor fiction books. So do researchers. The vast majority of studies investigating the vocabulary development and emergent literacy skills of young children use narrative fictional picture books (e.g., Beck & McKeown, 2007; Whitehurst & Epstein, 1994). The emphasis on narrative fiction is so widespread that most studies fail to explain why they used this type of

book. The few researchers (e.g., Duke, 2001) who have investigated the use of nonfiction in early education suggest a narrative bias; that there is an (often implicit) assumption that narrative is primary.

Many note the work of Kieran Egan, including a 1993 article "Narrative and Learning: A Voyage of Implications" (Egan, 1993). In this article, Egan suggests that researchers should use more narrative tasks to understand the nature of young children's development. He critiques the use of non-narrative tasks and structures in early childhood as failing to build on the child's natural tendencies towards myth and fantasy. This article was immediately controversial and spurred a flurry of responses (e.g., Gardner, 1993; Pappas, 1993). However, the enormous disparity between the use of narrative and non-narrative books in early childhood by teachers and researchers suggests that a preference for narrative when working with young children is not unusual.

Young Children's Experiences with Nonfiction

We have little empirical information with which to settle the question of whether nonfiction books are appropriate to use with young children. We know that nonfiction books are more difficult for children to comprehend later in elementary school due to their vocabulary and perhaps their text structure. We know that early education teachers read storybooks much more often with their students than they read nonfiction books. We wonder if more exposure to nonfiction books in the early years of schooling would support children's use of the genre later in school. The little evidence we have from small-scale studies, to

be reviewed below, suggests that young children can begin to use the discourse features associated with nonfiction even in preschool and that children can learn vocabulary from nonfiction under certain circumstances.

Information books. Nonfiction is an enormous and varied genre, but one particular type of nonfiction book has been prominent in studies of nonfiction in early childhood. The information book is a type of non-narrative nonfiction picture book that uses many of the discourse structures typical of topical nonfiction books used by older children and adults. See Table 1.1 for a list of the characteristics of information books. Notably, these books contain the syntax associated with nonfiction, including generalized nouns and eternal present tense. These books are also organized topically rather than temporally. There is usually a larger topic and the text is frequently organized by sub-topics (e.g., trains and the parts of a train). Procedural texts that guide the reader in how a process unfolds (e.g., how to cook a dish using a recipe or how cloth is made) are not considered "information books" since they use a temporal sequence (similar to a narrative). While they are certainly informative, the sub-genre "information books" is defined in part by its nonnarrative structure. Smolkin and Donovan (2004) note that these books tend to be multi-modal and include text, photographs, illustrations, charts, diagrams, and other representations. The illustrations are very prominent in information books directed at young children just as they are in storybooks directed at young children. However, the illustrations are typically photographs rather than drawings or paintings.

Table 1.1

Selected information book storybook features

Information book features	Storybook features
Communicates information about the natural or social world	Tells a narrative story
Factual content expected	Fictional content expected
Timeless verb constructions	Varied verb constructions
Generic noun constructions	Specific noun constructions
Defining words and using noun classes or categories (i.e. mammals)	May have less explicit definitions and focus on particular characters rather than classes or categories
Frequent repetition of the topical theme	Character and plot development, usually sequenced in time

Note. Adapted from "3.6 minutes per day: The scarcity of informational texts in first grade," by N.K. Duke, 2000, *Reading Research Quarterly, 35*(2), p. 202.

Information books are useful to early literacy researchers because they share a set of common features, most of which distinguish them from storybooks. The differences between storybooks and information books are starker than between storybooks and other types of nonfiction picture books. In addition, information books are mass marketed by large publishers and are available as trade books. These trade books, with more interesting topics, more compelling text, and better illustrations, are typically more appealing than nonfiction books developed only for the school market. These high-quality books are therefore comparable to the best storybooks in production quality and visual appeal.

Young children's knowledge and use of information book features. Some evidence suggests that even young children are capable of reproducing the

text and linguistic features of information books when they have been exposed to these books through read-alouds. Duke and Kays (1998) asked one classroom of low-income kindergarteners to "pretend-read" an unfamiliar wordless information book. Pretend-reading involves asking a child individually to look through an unfamiliar book and then asking them to "pretend to read – say what you think the book might say" (Duke & Kays, 1998, p. 302). When pretend-reading, children demonstrate their understanding of the concepts of print as well as text and genre features (Elster, 1994; Sulzy, 1985). Duke and Kays (1998) found that kindergartners' pretend-readings included more information book language after three months of near-daily read alouds in the genre. Specifically, children were using more genre-related discourse features such as timeless verb constructions.

Two small-scale exploratory studies of the group retellings of preschool children suggest that preschoolers can also understand and reproduce the features of information books. For these studies, small groups of children were pulled out of their classrooms to retell, as a group, books they had recently heard. The authors then conducted discourse analyses of the retellings, looking for evidence of a broad array of genre features (for example, using the word "know" as evidence of a knowledge stance). The first study (Shine & Roser, 1999) selected nine articulate preschoolers from one low-income classroom. The authors found that preschoolers' retellings of information books began to show what the researchers termed an "information book stance" by reporting factual

sequences of events, using the illustrations to gain knowledge, reporting factual knowledge and referring to classes rather than individuals in the retellings. Tower (2002) replicated some aspects of the study with seven urban Head Start preschoolers. She found that the preschoolers talked about objects and events, and made many connections between the information in the text and their prior knowledge.

Young children's vocabulary learning through information book read-alouds. Many studies have found that high quality storybook read-alouds result in children learning the vocabulary of the book, and can also boost their general vocabulary knowledge (e.g., Dialogic Reading, 2007; Wasik & Bond, 2001, 2006; Whitehurst & Epstein, 1994). Books provide particularly rich contexts for vocabulary learning since the words in the books are often different from those used in oral language, and the text and pictures of the book (along with the scaffolding of a talented adult book reader) provide a supportive context for word learning.

The relationship between read-alouds of information books and children's vocabulary development, however, has rarely been studied. One exception is a recent small-scale study of 32 urban preschoolers. Leung (2008) investigated whether participation in a science unit composed of read-alouds, hands-on activities, and retellings, was related to children's vocabulary learning. Children's expressive vocabulary scores grew as a result of the intervention, as did their knowledge of target words such as *violet*, *bounce*, and *translucent*. Effects

differed by age (with 4 year olds learning more words than 3 year olds) and initial vocabulary level (with those children with higher incoming vocabularies learning more words). However, the small power of this study leaves open the question of whether children's receptive vocabulary (which was not associated with significant growth in this study, though it often is in studies involving storybooks) may grow in response to read-alouds of information books. In addition, this study was an assessment of an intensive science unit composed of many types of overlapping activities rather than an investigation of the relationship between read-alouds and vocabulary learning.

These small studies converge on the idea that young children may be able to learn vocabulary from nonfiction even in the earliest years of schooling. However, the study sample sizes are very small and the studies do not investigate whether the findings are true for both monolingual and dual-language learners. Since dual-language learners appear to have particular trouble comprehending the academic language of many nonfiction texts, it is important to understand whether these learners can use nonfiction as well as monolingual learners in their early years.

Need for Research

The research agenda on the use of nonfiction in early education must begin with small-scale studies that investigate feasibility and short-term outcomes of using nonfiction books in early education classrooms. It is important to establish whether preschool and kindergarten teachers can use nonfiction

books effectively, and whether young children can learn from the books in the short-term. Specifically, can young children develop early language and emergent literacy skills from nonfiction read-alouds in preschool classrooms? Can young English language learners develop skills in the vocabulary and discourse associated with nonfiction at an early age? An understanding of these issues is necessary before we attempt longitudinal studies investigating possible associations between nonfiction exposure in preschool and kindergarten and children's comprehension of nonfiction later in school when they are readers.

The two studies presented here address these questions. The first study explores whether young children can develop early language skills, specifically, vocabulary knowledge, by participating in read-alouds of both information books and storybooks. This study examines whether children learn the words introduced in the read-alouds of information books and of storybooks at similar rates. In addition, this study looks at whether participating in extension activities using the words outside of read-aloud context supports children's learning of the words.

The second study explores whether young English-only and English-language-learning children differentiate their pretend readings of information books and storybooks by genre. For this study, 3-, 4- and 5- year old children pretended to read an unfamiliar information book and an unfamiliar storybook. Their pretend-reading discourse was analyzed for the use of informational language and the use of thematic vocabulary words. Some children then

participated in 12 weeks of information book and storybook read-alouds, while others participated in regular classroom activities (including read-alouds). The study explores whether participating in this book-reading program supported children's use of informational language or the use of thematic vocabulary. In addition, the study looks for any differences in children's pretend readings related to age, gender, language status or topic.

These studies provide evidence that information book read-alouds are appropriate for Head Start preschool classrooms, and that they may be important to supporting young English language learners, in particular, in gaining early literacy skills. However, these studies are just a beginning. More work is needed to establish if children's exposure to and use of nonfiction in early childhood is related to children's comprehension and production of written and oral academic language later in school. These studies set the foundation for this important work by suggesting that young children are capable of making meaning from nonfiction and that teachers, with appropriate supports, are capable of using these texts effectively with English-only and English-language-learning preschoolers.

Chapter 2. Preschoolers' Vocabulary Knowledge of Words Instructed During Teachers' Read-alouds of Storybooks and Information Books

The preschool years have been the focus of increasing attention from researchers and policymakers due to the robust research findings linking preschoolers' knowledge and skills to their later success in school and beyond (e.g., Shonkoff & Phillips, 2000). Specifically, reading aloud to children is one of the most widely recommended practices for teachers and parents to support preschoolers' language and literacy development (e.g., Ezell & Justice, 2005; Snow, Burns, & Griffin, 1998). Evidence suggests that the genre of picture books most frequently read aloud to preschoolers is fictional narrative (i.e. storybooks) (e.g., Duke, 2000; Yopp & Yopp, 2006). This emphasis may be due, in part, to the fact that most research conducted on the effects of reading aloud books to preschoolers has used storybooks (e.g., Whitehurst, 1994). It is an open question whether nonfiction book readings have similar effects on preschoolers' vocabulary as book readings of storybooks. This study is an effort to answer that question.

Literature Review

Young Children's Vocabulary Learning Through Picture Book Read-alouds

It is well-established that high quality storybook read-alouds can support children's general vocabulary knowledge as well as their knowledge of specific words in the book (e.g., Beals, De Temple, & Dickinson 1994; Sénéchal, LeFevre, Hudson, & Lawson, 1996; Wasik & Bond, 2001, 2006; Whitehurst & Epstein,

1994). This vocabulary learning does not result solely from the child hearing the words in the context of a book reading, but from the joint attention and positive interaction between reader and listener. Readers who use the practices associated with dialogic reading, including sharing responsibility for dialogue, asking and answering questions, and otherwise involving the listener in the reading of the book are particularly successful (Whitehurst, 1994; What Works Clearinghouse, 2007).

Readers can use a variety of research-based instructional techniques, in addition to dialogic reading, to support children's vocabulary development during read-alouds. Research suggests that supplementing the text of a picture book by defining target words, discussing the words, and having children repeat back the words can support children's learning of target words during read-alouds (Beck & McKeown, 2007; Silverman, 2007).

In a series of studies, Wasik, Bond, and colleagues built on the work of Whitehurst (1994) to develop interactive book-reading and language development programs for Head Start teachers. These programs include the provision of numerous materials (e.g., books, boxes of props, and scripts) as well as extensive teacher training and coaching. For the first study (Wasik & Bond, 2001), teachers were trained over four weeks to define words in the books and support children to use those words, ask open-ended questions and facilitate extended responses from children, and provide a language-rich environment in which children were hearing and using a lot of talk. The program included four

days of activities per week including the use of the props, read-alouds on three days, and center activities. Children in these classrooms learned more target words and had higher receptive and productive vocabulary scores, on average, than children whose teachers read the same books but did not participate in the program.

In their follow up study, Wasik, Bond, and Hindman (2006) provided teachers in their 9-month program with 22 boxes of books, props, and lesson plans. Teachers also participated in a series of 2-hour instructional modules with follow-up coaching of approximately 2 hours a month. The program was based on similar principles to those guiding their earlier program, including interactive and vocabulary-rich book reading with associated activities, oral language development, active listening, and rich language models. Implementation of the program varied and the effectiveness of the intervention was related to the level of implementation. Teachers in the intervention condition, on average, used more of the research-based instructional techniques taught in the program and their students performed significantly better in receptive and expressive vocabulary development than the control group. However, the books used in these studies were exclusively storybooks and the interventions were very intensive.

Vocabulary instruction that includes a picture book read-aloud but extends outside of the read-aloud time and carries over to other parts of the school day is associated with greater vocabulary gains than vocabulary

instruction that takes place only during a read-aloud activity. Silverman and Crandell (2010) found that teachers' use of vocabulary strategies outside of read-aloud time predicted children's learning of target words. Children whose teachers used more vocabulary strategies outside of read-aloud time learned more target words, on average, than children whose teachers used fewer vocabulary strategies outside of read-aloud time.

The amount of high-quality vocabulary instruction seems to be particularly important for word learning. Beck and McKeown (2007) found that kindergarteners and first graders at a low-achieving elementary school who received "More Rich Instruction" – more frequent vocabulary instruction that continued for a longer period of time – learned twice as many words, on average, as children with high-quality instruction during only read-aloud time. Teachers contextualized target words for students in the content of the story, defined the words, asked children to repeat the words, provided examples of the words in other contexts, asked children to construct and judge examples of the words, and asked children what the words meant. Both groups receiving this instruction learned more words than children in a control group.

The relationship between read-alouds of information books and children's vocabulary development, however, has rarely been studied. One exception is a recent small-scale study of 32 urban preschoolers. Leung (2008) investigated whether participation in a science unit composed of read-alouds, hands-on activities, and retellings, was related to children's vocabulary learning.

Children's expressive vocabulary scores grew as a result of the intervention, as did their knowledge of target words such as *violet, bounce,* and *translucent.* Effects differed by age (with 4-year olds learning more words than 3-year olds) and initial vocabulary level (with those children with higher incoming vocabularies learning more words). There was no statistically significant growth in children's general receptive vocabulary. This study, however, was an assessment of an intensive science unit composed many types of overlapping activities rather than an investigation of the relationship between read-alouds and vocabulary learning. There was also no control or comparison group.

Information Books and the Early Years

A lack of attention to nonfiction books in the early years of education is hypothesized to be one reason why many children hit a "fourth grade slump" in reading (Neuman, 2001). Many scholars have called for greater attention to nonfiction texts in early schooling (Duke, 2007; Hall, Sabey, & McClellan, 2005; Pappas, 2006; Smolkin & Donovan, 2001). Nonfiction makes different demands on readers' vocabulary and reading comprehension than storybooks do (Best, Floyd, & McNamara, 2008; Gardner, 2004). In addition, some children find nonfiction books a more accessible entrée to literacy than storybooks (Caswell & Duke, 1998). A growing line of research suggests that preschool, kindergarten, and primary grade children may benefit from more guided experience with nonfiction texts (e.g., Duke & Kays, 1998; Purcell-Gates, Duke, & Martineau,

2007). However, empirical work on the use and effects of nonfiction reading in preschools is still very circumscribed.

The limited empirical research done to date supports the contention that information books and other nonfiction texts are not emphasized in preschool classrooms. The Home School Study (Dickinson, 2001), which investigated experiences of low-income preschoolers, found that just 7% of the teachers of 3-year olds and 43% of the teachers of 4-year-olds reported reading books with informational content in their classrooms. None of the teachers of 3-year olds and only 5% of the teachers of 4-year olds identified the informational content of the book as a feature to consider when selecting books to read-aloud. More recently, Yopp and Yopp (2006) asked a sample of teachers to record the names of all the books they had read aloud to their classes the day before. They found that 5% of read-alouds reported by preschool teachers were of informational nonfiction. The percentage of read-alouds reported by kindergarten through third grade teachers in the study to be of informational books ranged from 5 to 9% (Yopp & Yopp, 2006). Duke (2000) found that information texts were used an average of 3.6 minutes per day over four days in her sample of 20 first grade classrooms. The percentage of books in first grade classroom libraries that were informational texts was just 6.9% for low-income classrooms, and 12.7% for higher-income classrooms (Duke, 2000). Although these studies are based on a limited data, their findings converge.

Information Book and Storybook Features and Why They Matter

Nonfiction books and storybooks offer children qualitatively different literacy experiences, and it is unknown whether the differences between the genres may be related to how children learn words during read-alouds of each type of book. Nonfiction is a large genre encompassing many types of narrative and non-narrative texts—from historical chronicles to instructional manuals. Narrative nonfiction includes biographies and other books that convey information using story elements including characters and plot. Non-narrative nonfiction, in contrast, is organized differently, often topically. Information books are one important type of non-narrative nonfiction text that is commonly studied by researchers of the language and literacy development of young children.[1] Duke (2000, p. 205) has described the specific features of information books using the criteria in Table 2.1.

[1] The proposed study looks at information books. Some of the reviewed studies may include a wider array of nonfiction texts. When this is so, the term nonfiction book is used in place of information book.

Table 2.1

Selected Information Book and Storybook Features

Information Book Features	**Storybook Features**
Communicates information about the natural or social world	Tells a narrative story
Factual content expected	Fictional content expected
Timeless verb constructions	Varied verb constructions
Generic noun constructions Defining words and using noun classes or categories (i.e. mammals)	Specific noun constructions May have less explicit definitions and focus on particular characters rather than classes or categories
Frequent repetition of the topical theme	Character and plot development, usually sequenced in time

Note. Adapted from "3.6 minutes per day: The scarcity of informational texts in first grade," by N.K. Duke, 2000, *Reading Research Quarterly, 35*(2), p. 202.

These numerous, specific features may relate to how children learn words from the books. Smolkin and Donovan (2004) suggest that information books have a "multi-modal" nature, including both verbal and visual features. These include text, photographs, illustrations, charts, diagrams, and other representations. These features may support children's word learning by providing additional context for what words mean. Alternatively, these features may prove daunting to young children who have had less exposure to such books than to storybooks.

Evidence suggests that adults read books of different genres aloud to young children using slightly different techniques. Smolkin and Donovan (2000) found that in one first grade classroom read-alouds of expository texts were

associated with many more discourse moves--including summarizing and examining the text structure--than storybooks (354 compared to 42). Parents of preschoolers vary the focus of their read-alouds, depending on genre (storybook or alphabet book), with more talk about content in storybooks than alphabet books, and more talk about print in the alphabet books than the storybooks (Stadler & McEvoy, 2003). In a study of 62 3- and 4-year old children and their parents reading storybooks and expository books together, the content, diversity in vocabulary, and length of extratextual utterances differed depending on whether the books were stories or expository books, with the talk surrounding expository books tending to be longer and more diverse (Price, van Kleeck, & Huberty, 2009).

Affective aspects of read-aloud style may vary according to genre as well. In one study, kindergarten teachers read aloud four books – two storybooks and two informational texts (one narrative and one expository) (Moschovaki, Meadows, & Pellegrini, 2007). Their read-aloud styles demonstrated more intonation, dramatization, and personal involvement when they read storybooks than when they read informational books (both narrative and non-narrative). Children's affective reactions differed accordingly. While the differences in this study were associated with genre, there was considerable within-genre difference as well. Unfortunately, the books were all on different topics: "Winnie the witch," "The three little wolves," "Fire," and "Life under Earth," though differentiating the roles of topic and genre is clearly desirable. If genre is related

to how teachers read and how children respond to information books, it is important to understand if children can learn vocabulary from both types of books.

Lack of exposure to informational texts in the early years may contribute to later problems with comprehension. A study involving third graders found that comprehension of nonfiction texts was predicted by the readers' "world knowledge," while comprehension of narrative texts was predicted by their decoding skill (Best, Floyd, & McNamara, 2008). The authors suggest that a lack of familiarity with the nonfiction genre, insufficient world knowledge (reflecting infrequent nonfiction reading), and a lack of attention to the comprehension of nonfiction texts in school may be some reasons why many children struggle with comprehension. If sustained exposure to nonfiction can feasibly begin in preschool, some of these problems may be minimized.

The Present Study

While the relationship between storybook read-alouds and the vocabulary development of preschoolers has been extensively researched, existing studies typically do not involve books of other genres. Even when such books are included, the studies have not examined whether the robust relationship between vocabulary development and storybook read-alouds is true for read-alouds of information books, as well. Since success in school is dependent on children's comprehension of nonfiction, and nonfiction differs in substantive ways from fiction in purpose, structure, and vocabulary, it is important to

understand whether information book read-alouds can also support preschoolers' vocabulary development. This study is designed to investigate this issue.

The research questions guiding this study are as follows:

(1) What is the relationship between children's knowledge of words introduced and instructed during read-alouds of storybooks and information books and the genre of the book in which the words were introduced?

(2) How does this relationship differ depending on whether the teachers also reinforced the vocabulary words during extension activities outside of the read alouds?

(3) How do teachers' attitudes toward storybooks and information books, and their fidelity to program implementation, inform these findings?

To answer the research questions above, we developed and conducted a twelve-week book-reading program in 26 Head Start preschool classrooms. Participating classrooms were randomized to one of three conditions: Read Aloud (RA), Read Aloud Plus (RAP) and control. We provided teachers in the two intervention conditions with 24 books (12 storybooks and 12 information books) per classroom and scripts to use when reading the books. Four storybooks and four information books were provided on each of three topics (Transportation, Animals, and Food) in order to control for children's interest in the topic. We also assessed children's knowledge of the target vocabulary before

and after the program using a curriculum-based vocabulary assessment. We analyzed the relationship between the genre of the books in which the words were introduced to the children and the children's knowledge of the words after completing the program, controlling for the words they knew at pre-test and demographic variables. We also investigated whether the relationship depended on whether the children's teachers provided extension activities outside of the read-aloud, or only used the words with the children in the context of the read-aloud. The goal of the study was to understand whether preschoolers in a Head Start context learn words from information books as they do from storybooks.

Method

Participants

The sample consists of 278 three-, four-, and five-year old children who attended one of 26 participating preschool classrooms at Head Start centers in the urban ring surrounding a major Northeastern city. Children were recruited to take part in the study in the fall and winter of the 2008-2009 school year through letters sent home to their parents in English, Spanish, and Portuguese. All children who attended classrooms involved in the study were invited to participate; parental permission was received for nine to eighteen children per classroom. While 29 classrooms originally participated, three classrooms were dropped from the study. The lead teacher in one classroom left her job and a permanent replacement was not found before the read-aloud program began. The lead teacher in the second classroom was not comfortable with whole-group

read-alouds, making it impossible to collect valid assessment data. The children in the third classroom were very young (an average age of 3.8 years) with low levels of English language skill. All but one was an English language learner, and they had a very low average standardized PPVT score (76). This teacher found the read-alouds and associated activities were too difficult for her children. The final sample consists of children from 26 classrooms.

Eighty percent of children were English language learners. Fifty four percent of children were male. The racial and ethnic composition of the sample of children was 56.5% Latino, 17.3% White, 6.5% Black, 2.5% Asian. Nearly 15% percent of children had a racial or ethnic background other than the above, and the racial or ethnic background for the remaining 2.5% of children is not known (numbers do not add to 100 due to rounding).

While all children were enrolled in Head Start centers, nearly 10% of children did not occupy Head Start slots at those centers. Approximately 60% of children were enrolled in a part-time program (either four or fewer days per week, or in morning-only slots). The remaining 40% of children were enrolled in a full-time preschool program.

Teachers were invited to participate in the study. They were told that the goal of the study was to understand the role of picture book read-alouds in preschoolers' vocabulary learning. They were told that some teachers would be asked to keep records of their read-aloud practices, while other teachers would be asked to read aloud a specific set of books to their classes, and a third group of

teachers would be asked to conduct some activities in addition to reading the books aloud. Teachers were also asked to help organize the parental permissions process and the child assessment process. Finally, they were told that their classrooms would be observed twice. Teachers were paid a small honorarium for their participation and were given the 24 new picture books used in the study to keep in the classroom after the study was over. The lead teachers, teachers, and assistant teachers in 29 classrooms volunteered to participate.

Demographic information was collected for the lead teachers. All lead teachers were female. They had an average of 13.5 years of teaching experience (SD=8.8). Their teaching experience ranged from two to thirty-eight years. Thirty-five percent of teachers spoke more than one language. Eight teachers spoke Spanish and other bilingual teachers spoke Italian, Greek, or Arabic in addition to English. All teachers were high school graduates, and 76% had an associate's degree or other advanced degree. Half of the lead teachers had graduated from college, and ten percent had a master's degree.

Procedures

The investigators conducted a 2-hour session on oral language development in the fall for all teachers in participating centers as part of the centers' professional development series. At this time, teachers were asked if they would like to participate in the study. Those teachers who expressed interest were randomized into one of three groups: (1) Read Aloud (RA), (2) Read Aloud Plus (RA), or (3) Control. See Table 2.2 for a description of these

three groups. Teachers were asked to choose a colored card from a box, with the colors indicating the group to which they were assigned. Unfortunately, this did not result in an even distribution of teachers within centers (see Table 2.3).

Table 2.2

Project Sample and Components

Group	Sample	Teacher training	Program activities
Read Aloud Plus	Teachers and students from 10 randomly-assigned classrooms	1 2-hour oral language session 1 2-hour program overview 1 1-hour follow-up meeting (after 4-6 weeks)	12 weeks of repeated read-alouds of 12 researcher-selected information books and 12 researcher-selected storybooks[a] Teachers keep read-aloud log
Read Aloud	Teachers and students from 10 randomly-assigned classrooms	1 2-hour oral language session 1 2-hour program overview 1 1-hour follow-up meeting (after 4-6 weeks)	12 weeks of repeated read-alouds of 12 researcher-selected information books and 12 researcher-selected storybooks[3], along with related researcher-designed activities Teachers keep read-aloud log
Control Group	Teachers and students from 9 randomly-assigned classrooms	1 2-hour oral language session 1 2-hour overview of general language enrichment	12 weeks of regular read-aloud practices Teachers keep read-aloud log

Note. [a] Books were selected to be typical of each genre. Teachers were provided with short scripted guides for each book and each extension activity (see Appendix B).

Table 2.3

The Distribution of Classrooms Across Conditions and Centers

Center	Read Aloud	Read Aloud Plus	Control
Center A	1	2	1
Center B	4	4	0
Center C	1	1	5
Center D	2	2	2
Center E	1	1	1
Center F	1	0	0
Center G	0	0	2

Teachers were separated into groups for the second professional development session that was held immediately before the program began. Teachers who were in the Read Aloud (RA) and Read Aloud Plus (RAP) conditions received a 2-hour training on reading aloud storybooks and information books in preschool settings and learned how to use the books and scripts. In addition, they received a set of books and binders containing supporting documentation. While the teachers in the experimental conditions were participating in this overview, teachers in the control condition were watching *Reading Rockets: Toddling Toward Reading* (Gilleland, 2008), a video on the importance of reading to children. They also learned how to record their daily classroom practices in binders provided by the investigators.

The book reading program. Teachers in the experimental conditions participated in a 12-week book-reading program, though because of school vacations and snow days the program extended over 15 to 16 weeks in most classrooms. This program was considerably less intensive than similar programs (e.g., Wasik et al., 2006). The program was split into three units in order to standardize the topics of the books across genres: Transportation, Animals and Food. See Appendix A for a list of books in each genre. At the beginning of each unit, each teacher in the RA and RAP conditions received four storybooks and four information books on the theme, as well as a binder. Teachers read one storybook and one information book per week according to a predetermined schedule. Each book was read twice during that week.

The binder contained scripts for reading each book. See Appendix B for a sample script. Other programs investigating the impact of vocabulary instruction during read-alouds also used scripts (e.g., Beck & McKeown, 2007; Wasik, et al., 2006). The script was designed to reflect good book-reading practices and to standardize the use of the vocabulary words and techniques across the book readings. Each book reading included an equal number of questions and each target word was used ten times in each book reading. Teachers defined target words an equal number of times across book readings and children repeated the target words in each book reading.

Teachers in the RAP condition were asked to do all the same things as the RA teachers (see above) and were also provided with scripts for Morning

Meeting, Center Time, and Small Group Time activities. The Morning Meeting activity involved defining the target words and illustrating the words using different pictures from those in the books. The Center Time activities included suggestions for dramatic play, sand and water box centers, and block centers. Finally, the Small Group Time activities involved writing or drawing related to the words. See Appendix B for a sample script for the extension activities.

Teachers in the RA condition were asked to use the target words only during the book readings, following the script. This was to minimize the impact of differential frequency of the use of target words by teachers across classrooms and within classrooms by genre or unit. Teachers in the RAP condition were asked to use the target words only during the scripted book readings and accompanying activities so the specific contribution of these activities to word learning would be clear. All teachers were told, however, that they should respond to children's use of the words as they would to any other words. However, they were asked not to introduce or review the words outside of the program.

Book selection. The books used in the read-aloud program are listed in Appendix A. The books were chosen to be prototypical of their genre. For example, storybooks had a clear narrative structure and fictional characters. Information books were nonfiction, topical and possessed a non-narrative structure. Due to the nature of information books available for this age, some of the information books illustrated information with fictional characters (e.g.,

illustrated camels cooking a meal). However, none of the information books included fictional material (e.g., cooking a meal was presented as an example of what camels do *not* do).

Another important consideration was the books' perceived attractiveness to children and their general quality. Of books reviewed by the Horn Book Guide, only books rated three or above were included (Horn Book Online, 1999-2007). Only books with colorful, inviting illustrations, accessible language, and interesting topics or stories were considered for use. Books also needed to be appropriate for a range of ages (ages three to five). When length was an issue, teachers were given suggestions in the book guides about pages to skip. Finally, the books had to have interesting and varied vocabulary words.

Target word selection. Target words were selected from the books in the program (see Table 2.4). A frequency list was generated for the words in each book and in the books of each genre. Tier 2 words (Beck & McKeown, 2007) were then chosen from each book. Each potential target word was a Tier 2 word in that 1) the word was not so common and simple that children were likely to learn it incidentally (e.g., dog), and 2) the word was not technical or domain-specific (e.g., mammal).

Each possible target word was compared to the list of words introduced in books of the other genre. If a word was present in the books of the other genre, it was eliminated from consideration as a target word. In addition, each potential target word needed to be clearly pictured in the book. This served two purposes

1) each word meaning was supported by the pictures of the book, 2) the pictures in the books could be used to create the assessment.

Table 2.4

Target Words Introduced in Storybooks and Information Books

Storybooks	Information Books
apron	bitter
bank	burrow
bundle	cargo
bury	dye
coral	field
decorate	glide
engineer	harbor
gasp	harvest
graze	hatch
gross	haul
knead	passageway
list	passenger
marsh	patrol
pound	plow
pyramid	prepare
rig	ray
route	roost
scrub	snail
slice	sour
steep	spin
swamp	stalk
thrill	stroll
unload	swoop
van	territory

The words introduced in storybooks and the words introduced in information books were also equivalent on a variety of measures (see Appendix C). While word attributes related to genre may be an important part of vocabulary learning, this study attempted to minimize these differences in order to understand the possible effects of other differences between information

books and storybooks. A final list of words was generated following pilot-testing (see Appendix C).

Measures

Trained research assistants assessed each child on two vocabulary measures before and after the book-reading program. Research assistants spent between one and three hours in each classroom before assessing children in that classroom so that children would feel comfortable with them. Children were individually asked to accompany the research assistants to a quiet area outside of the classroom to "play some word games." Children were typically assessed on only one assessment per testing session. They could take breaks when needed and were given stickers as appreciation.

Target vocabulary assessment. The target vocabulary assessment (TVA) is a researcher-developed measure with a format that is based on the PPVT-IV (Dunn & Dunn, 2007) with full-color four picture panel displays. One of the two target words per book was randomly chosen to be part of the TVA. The words to be introduced in information books and the words to be introduced in storybooks were assessed in a random and consistent order. The child was asked to point to the picture that showed the word prompted by the assessor. All four of the pictures on each panel were taken from the book in which the word was introduced, to preclude using illustration style as a clue to the word. Other studies of three- and four-year olds' vocabulary have assessed children's learning of target vocabulary words using pictures from the books in which the

words were introduced (e.g., Hargrave & Sénéchal, 2000; Leung, 2008). Foils were chosen to be as dissimilar as possible from the target word.

The pretest results of the TVA (n=265) were analyzed for internal consistency using the Kuder-Richardson coefficient of reliability, which is appropriate for assessments like the TVA, with one correct answer for each multiple choice question. The Kuder-Richardson co-efficient for the pre-test full TVA is low (.47), which is understandable given the small number of items, the youth of the children, and difficulty of the items (which were intended to be new words for the children). The Kuder-Richardson coefficient for the portion of the TVA assessing only the words in each genre is even lower (.25 for storybooks and .38 for information books). The results for the post-test TVA are higher, with a Kuder-Richardson coefficient of reliability of .69 for the full assessment, .52 for the storybook portion of the assessment, and .46 for the information book portion of the assessment. See Appendix D for full information on internal reliability. In order to deal with the very low internal reliability of the portions of the pre-test associated with each genre, statistical models will explore whether the full pre-test is a better covariate than the reduced pre-test in the models.

An alternative version of TVA was constructed to deal with the low internal reliability of pre-test TVA as well as with differences in difficulty between TVA items associated with storybooks and those associated with information books. In spite of efforts to equalize the difficulty of TVA items across genre, the Kuder-Richardson test determined that the words introduced in

information books were somewhat easier than those introduced in storybooks (using only the pre-test administration of TVA). This problem was confirmed when models were created using only the control group; children in the control group learned slightly more of the words introduced in information books than words introduced in storybooks, on average. We therefore created an alternative 16-item version of TVA by dropping items poorly correlated with the entire instrument as well as items that were responsible for the differential difficulty of words across genres. The full TVA and the reduced TVA are strongly correlated ($r=.78$, $p<.0001$). However, because findings from the alternative version of the TVA are similar to those from the whole instrument, the original version is used in the findings reported below.

A small group of 12 children participated in a test-retest several days apart. The assessments given to the children were identical. The two administrations were moderately to strongly correlated ($r=.61$, $p<.004$). This moderate correlation illustrates the challenges to assessing very young children's vocabularies.

The construct validity of the TVA is based on its similarity to the Peabody Picture Vocabulary Test (PPVT-IV). The format of the two tests is identical. The raw pre-test TVA score is moderately correlated with the raw pre-test PPVT score ($r=.57$, $p<.0001$) for the full pre-test TVA and ($r=.44$, $p<.0001$) for the reduced pre-test TVA. An important difference between TVA and PPVT-IV is that PPVT-IV is a developmental vocabulary assessment with words of

increasing difficulty, whereas the words in the TVA were chosen to be unknown by the children at pre-test rather than for developmental purposes.

Peabody picture vocabulary test IV. The Peabody Picture Vocabulary Test IV (PPVT) was administered to children at pre-test (Dunn & Dunn, 2007). The PPVT is an age-normed receptive vocabulary assessment and its format is described above. The PPVT provides raw scores and standard scores (mean = 100; standard deviation = 15). Standard scores were used in analyses in this study. The median internal consistency of the measure is .95 in the sample described by Dunn & Dunn (2007). The median split-half reliability in that sample is .94, and the median alternate-form and test-retest reliabilities are .94 and .92, respectively. The assessment correlates (.91) with the Wechsler Intelligence Scale for Children (WISC-III) measure of verbal ability, verbal IQ in the sample described by Dunn & Dunn (2007), as well.

Teacher surveys. Teachers were given surveys before and after the read-aloud program. These surveys asked teachers about their classroom read-aloud practices, their educational beliefs, and their demographics and experiences. The post-test surveys also asked teachers about their experiences in the read-aloud program.

Fidelity. Teachers' fidelity to the program was an important consideration, especially since fidelity was variable in previous studies with Head Start preschool teachers (e.g., Wasik, et al., 2006). Several measures were taken to support faithful implementation of the program: 1) a two-hour overview

was presented to the teachers immediately preceding the program, 2) a binder was given to the teachers with information from the trainings and with scripts for reading the books, 3) a one-hour follow-up meeting with teachers one month into the program to answer questions and sustain engagement with the program, 4) two morning-long observations of teachers' practices, and 5) records kept by teachers about their progress with the intervention in the binders provided.

Every classroom was visited on at least two occasions to monitor fidelity to the intervention. RAs were trained on filling out the observation forms. Each observer accompanied the observer-trainer on at least one observation before conducting observations herself. The observation forms were designed with low levels of interpretation in order to minimize bias (see Appendix E for more information on fidelity).

The teachers were told that the RA wanted to see a typical Morning Meeting, Read Aloud time, Center Time, and Small Group Time, including a read-aloud of one of the books in the program if the teacher was in an experimental condition. The observations lasted about two to three hours, depending on how long those activities took. One of the observations included the teacher reading an information book, while the other observation included the teacher reading a storybook. The observers recorded the schedule of observed activities, and whether certain behaviors were present or absent during each activity.

Analytic Approach

Investigating the Relationship Between Vocabulary Development and the Genre of the Book in which Target Words were Introduced

The vocabulary assessed in the TVA consisted of words introduced in storybooks and information books in the experimental conditions. Every child was assessed on both sets of words. The interclass correlation suggests that 60% of the variance in post-test score was within children and 40% was between children. When the data is nested in both children and classrooms, the interclass correlations reveal that 25% of the variance in the posttest is between classrooms, and 56% is between children. Because both classroom and individual variance are important to the research questions, and because the interclass correlations for both levels of nesting are high, I conducted multi-level analysis with three levels (test scores nested in children nested in classrooms) in STATA using xtmixed.

The models included important covariates, including initial standardized vocabulary level (pre-test standardized PPVT) and initial knowledge of the target words (pre-test TVA). Student demographic variables were included as controls. These variables include gender, age and language background (1=English Only, 0=Speaker of more than one language). Race/ethnicity was coded as Black, Latino, White, and Other. Participation in the Head Start program was the measure of SES included in the study, Head Start = 1, non-

Head Start = 0. Finally, participation in a full-time preschool program was included as a categorical variable (Full-time = 1, Part-time = 0).

In spite of the randomized design, children in different conditions differed in their vocabulary knowledge at pre-test so pre-test vocabulary is included as a covariate in all models. Children in the control condition had an average standardized PPVT score of 90 at pre-test, while children in the RA condition had an average standardized score of 84.5 at pre-test and children in the RAP condition had an average standardized score of 84.4 at pre-test. This difference is statistically significant ($p<.001$). In addition, children in the control condition knew an average of 3.96 target words at pretest (out of 12 words introduced in each genre), while children in the RA condition knew an average of 3.53 target words and children in RAP condition knew an average of 3.75 target words at pre-test. This difference is not significant however, at a .05 alpha level ($p<.05$).

Assignment to conditions was not correlated with children's performance on the initial TVA; however children in the different conditions differed in their type of preschool program, language status, and children's racial group at pre-test (see Table 2.5 and Table 2.6). Slightly fewer children in the control condition were participating in a full-time program ($r=-.18$, $p<.05$) or Latino/Latina ($r=-37$, $p<.05$) and slightly more children in the control condition were monolingual English speakers ($r=.23$, $p<.05$), were White ($r=.32$, $p<.05$), or a race other than White, Black, or Latino ($r=.18$, $p<.05$). Alternatively, slightly fewer children assigned to the Read Aloud condition participated in a full-time program ($r=-.30$,

$p<.05$) or were White ($r=-.18$, $p<.05$), and slightly more children were Black ($r=.16$, $p<.05$). Finally, more children in the Read Aloud Plus condition were participating in a full-time program ($r=.48$, $p<.05$) and some more were Latino/Latina ($r=.29$, $p<.05$). These variables are therefore important covariates.

In general, children in all conditions knew more target words at post-test than at pre-test (see Table 2.6). Children in all conditions knew more of the words to be introduced in information books than words to be introduced in storybooks at pre-test, on average. Indeed, the genre of the book in which the words were to be introduced is correlated with children's vocabulary knowledge at pre-test ($r=.25$, $p<.05$). This could have been a problem for interpreting the findings. To account for this, I included the pre-test scores as a covariate, which controlled for these initial differences in word knowledge according to genre. However, this would not address any differences in whether words introduced in information books were "easier" than words introduced in fiction books, which would have complicated the analysis. To address this possibility, I replicated the analysis with a reduced assessment that used the internal reliability of the item at pre-test to equalize the difficulty of words (see Appendix F). The findings were similar whether this reduced assessment or the full assessment was used. In addition, the multi-level models used the control group as a reference group that could model typical learning of the assessed words. In these models, the post-test word knowledge of children in the RA and RAP

conditions is compared to the post-test word knowledge of children in the control group, controlling for each child's pre-test scores.

The relationship between initial performance on TVA and children's demographics were explored through correlations. Children's initial knowledge of the target words was related to their age, with older children knowing more words ($r=.24$, $p<.05$). In addition, children who spoke only English knew slightly more of the target words at pre-test than children who spoke more than one language ($r=.17$, $p<.05$). Latino status was slightly negatively correlated with performance on the initial assessment ($r=-.12$, $p<.05$), though this may be related to the strong and negative correlation between Latino status and speaking only English (r=.-.52, $p<.05$). No other demographic variables were related to initial performance on the assessment. Gender was not correlated with any other variable.

Table 2.5

Correlations Between Post-test Score and Covariates

	Post-TVA	Pre-PPVT	Pre-TVA	RA Only	RAP	Control	Age	Male	Head Start	Full Time	Only English	White	Black	Latino	Other
Post-TVA	1.00														
Pre-PPVT	.50*	1.00													
Pre-TVA	.37*	.34*	1.00												
RA	-0.04	-.08	-.08	1.00											
RAP	.19*	-.08	.00	-	1.00										
Control	-.15*	.15*	.08	-	-	1.00									
Age	.30*	-.08	.24*	-.08	.13	-.05	1.00								
Male	.02	-.01	.01	.05	.01	-.06	-.06	1.00							
Head Start	-.04	-.22*	-.04	.01	.08	-.08	.17*	-.08	1.00						
Full Time	.14~	.07	.01	-.30*	.48*	-.18*	.03	.04	-.38*	1.00					
Only English	.17*	.52*	.16*	-.08	-.15~	.23*	-.20*	-.01	-.30*	.02	1.00				
White	.13	.45*	.13	-.18*	-.14~	.32*	-.10	-.09	-.13	-.06	.71*	1.00			
Black	.00	.05	.04	.16*	-.13	-.02	-.11	.07	-.28*	.07	.13	-	1.00		
Latino	-.04	-.31*	-.12	.09	.29*	-.37*	.14	.03	.20*	.17*	-.52*	-	-	1.00	
Other	-0.01	-0.07	0.00	-0.04	-0.14~	.18*	0.00	.01	.06	-.21*	-.12	-	-	-	1.00

~p<.10, *p<.05

Table 2.6
Descriptive Statistics of TVA-Story and TVA-Information by condition

Condition	n	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean Gain
					TVA-Story					
		Pre-test				*Post-test*				
Control	98	3.56	1.81	0	8	4.26	1.81	1	10	0.7
Read Aloud	95	2.87	1.44	0	7	4.85	2.39	0	11	2.0
Read Aloud Plus	90	3.48	1.74	0	7	5.38	2.34	1	12	1.9
					TVA-Information					
		Pre-test				*Post-test*				
Control	98	4.37	2.04	1	10	4.84	1.98	1	10	0.5
Read Aloud	95	4.20	1.84	0	9	4.92	1.85	1	10	0.7
Read Aloud Plus	90	4.03	1.93	0	9	5.83	2.40	1	11	1.8

Note. TVA-Story is the child's knowledge of the items of the Target Vocabulary Assessment (TVA) that were introduced during storybook read-alouds to children during the read aloud (and read aloud plus) programs. TVA-Information is the child's knowledge of the items of the TVA that were introduced during information book read-alouds to children during the programs.

Children's post-test knowledge of the target words was similarly correlated to children's age (r=.30, p<.05) and English-only status (r=.17, p<.05), though it was no longer related to any racial category. In addition, participation in a RAP classroom was positively related to their post-test score (r-.19, p<.05) and participation in a control classroom was negatively related to their post-test score (r=-.15, p<.05), while participation in a RA classroom was not related to post-test score (r=.04). The correlation between the children's initial standardized PPVT score and their score on the Target Vocabulary Assessment is larger at post-test (r=.50, p<.05) than at pre-test (r=.34, p<.05). This suggests that children's vocabulary level at the beginning of the year may be related to their performance on the post-test TVA. This will explored in the multi-level models by including an interaction.

Model building began with the decision to nest assessment scores in both children and classrooms (using a three-level model). Following the intercept-only model, demographic variables were included. Pre-test covariates were added next. Then the conditions were included. Following that, the question predictor (information) was included. Because interactions between covariates and the question predictor were conceptually important, even non-significant predictors were carried through to this step in order to test for interactions. Only significant main effects, main effects accompanied by a significant interaction, or main effects conceptually linked to significant main effects (i.e. when dummy variables were created of which only some are significant) were retained in the final model. Joint hypothesis testing also informed the decision to retain non-significant effects (e.g., demographic characteristics). The final model was chosen based on the best fitting model identified by significant coefficients and the smallest -2LL. I explored the normal probability plots of the studentized residuals of the final model to determine whether the model met the assumptions. The residuals were examined separately for levels 2 and 3 (Child and Classroom). We cannot reject the hypothesis that the residuals are normally distributed (Wilks-Shapiro, $p<.05$). The standardized residuals appear homoskedastic (see Appendix F).

Understanding Teachers' Beliefs and Practices

The teachers' beliefs and practices regarding information books were summarized descriptively. In addition, a correlational analysis was conducted

between teachers' beliefs and practices and their experimental condition. Teachers' fidelity to the intervention was examined. Fidelity was determined by whether observers saw teachers 1) reading the assigned books and 2) using the target words. This data was triangulated with responses on the teacher survey reporting how they implemented the program. See Appendix E for a more detailed explanation of this process.

Additional sets of models were built in order to account for alternative explanations for the findings (see Appendix G). One set of models was built with a reduced set of classrooms in order to account for fidelity. Another set of models was built which included RA and RAP teachers as a single intervention condition to account for fidelity. A third set of models was built in order to account for problems with instrument reliability by removing items on pre-test TVA to improve reliability and equalize difficulty across genres. The final set of alternative models dealt with this issue by using the full TVA measure as the pre-test rather than the genre-related subtest. The results of those sets of models are consonant with the final model reported here.

Results

Relationship between knowledge of target words and the genre of the book in which the words were introduced

Children in the RA and RAP conditions learned more words, on average, than children in the control condition (see Table 2.6). Children in the RA and RAP conditions learned a similar number of the words introduced in storybooks,

about two words, on average, compared to a mean of less than one word learned by children in the control group. However, children in the RAP condition learned about two of the words introduced in information books on average, more than their peers in the Read Aloud (.7 words) or control condition (.5 words).

Children in the control group learned a similar number of words regardless of the book genre (.5 versus .7 words). This is expected, since the children in the control group did not participate in the Read Aloud program and therefore were not instructed in the words during book readings of the book used in the program. Children in the RAP condition learned about two words, regardless of the genre of the book in which the words were introduced. However, children in the RA condition learned more than twice as many of the words introduced in storybooks (about two words), on average, as they did words that were introduced in information books (about .7 words on average).

The relationship between the genre of the book in which the word was introduced and target vocabulary knowledge was small and depended on whether the children participated in extension activities using the words or learned the words only in a read-aloud context (see Table 2.7). Children in the control condition, modeling typical vocabulary development without explicit exposure to the words, learned slightly more words introduced to children participating in the read-aloud program in their information books than words introduced in their storybooks. The difference was less than half a word,

however. Since the children did not learn the words from the books, the genre of the book was not responsible for this small difference. The children in the RAP condition learned more words overall, but with the same relationship to book genre as children in the control group, suggesting that their word learning was similarly unrelated to the genre in which they initially learned the words. There was a small negative interaction between the genre of the book in which the word was introduced and the vocabulary knowledge of children in the RA condition, however. This difference is small (less than half word) and not statistically significant to an alpha level of .05. This suggests that they learned slightly fewer of the words introduced in the information books than expected.

This finding holds up in alternate specifications of the model (see Appendix F). For example, the findings are the same when the TVA is reduced to account for the low reliability of the genre-specific pre-test TVA or when full pre-test TVA is included. In addition, the finding is statistically significant when three classrooms with low fidelity are dropped from the model. When the two experimental conditions are considered as one "program" condition, the interaction is not statistically significant.

Table 2.7

Taxonomy of Fitted Multilevels Models Describing the Relationship Between the Genre of the Book in Which Words Were Introduced During Read-Alouds and Children's Knowledge of Target Words at Posttest, Controlling for Pretest Score, General Vocabulary Level, Demographic Variables, and Test Condition for the Full Dataset and Full Measure (n=278)

Predictor	M1 (uncond.)	M2 Demographics	M3 Pretests	M4 Conditions	M5 Question	M6 Interactions	M7 Final
Intercept	5.02***	-1.01	-5.71***	-6.30***	-6.51***	-6.59***	-6.54***
Age		1.16***	.96***	.98***	1.00***	1.00***	1.00***
Only English		1.07***	-.09	-.08	-.08	-.08	-.08
Head Start		.36	.32	.15	.15	.15	.15
Full Time		.45	.27	.02	.01	.02	.02
Male		.20	.16	.15	.15	.15	.15
White		.28	-.24	-.05	-.06	-.06	-.06
Black		.12	-.02	.08	.09	.09	.09
Other Race		-.09	-.09	.05	.06	.05	.05
prePPVT			.06***	.06***	0.06***	.06***	.06***
preTVA			.16***	.16***	.14***	.14***	.14***
raonly				.69*	.68*	.96***	.93***
raplus				1.21***	1.22***	1.28***	1.21***
information					.23~	.45*	.38***
infoxraonly						-.55~	-.48~
infoxraplus						.14	
∂^2_ϵ	1.36	1.38	1.36	1.36	1.35	1.35	1.35
∂^2_μ	0.78	.59	.54	.34	.34	.34	.34
∂^2_i	1.54	1.41	.92	.92	.93	.93	.93
-2LL	-1159.17	-1088.1353	-1028.31	-1021.98	-1021.37	-1020.20	-1019.98

****p<.001, **p<.01, *p<.05, ~p<.10*

Note: u is associated with classroom-level variance, i is associated with student-level variance, € is associated with residual variance.

Teachers' beliefs and practices

Teacher self-reports about teaching practices were collected on teacher surveys. As expected, teachers reported reading storybooks more frequently than information books at pre-test and post-test. At pre-test all but one lead teacher reported reading stories aloud to their children almost daily; this teacher reported reading stories aloud a few times a week. In contrast, only 10 of the 28 teachers reported reading books with informational content almost daily (see Figure 2.1). At post-test, teachers reported reading information books an average of 2.5 times/week in large groups, in contrast to reading storybooks an average of 5 times/week. Teachers reported reading information books an average of less than 3 times/week in small groups, in contrast to 4 times/week for storybooks. Finally, teachers reported reading information books one-on-one an average of 3 times a week, in contrast to 5 times a week for storybooks.

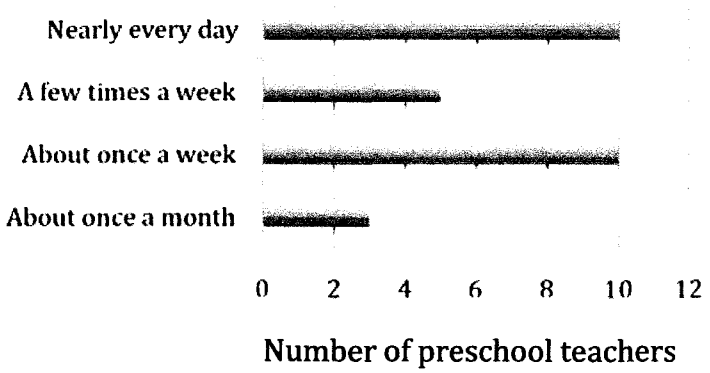

Figure 2.1. Preschool lead teachers' self-reports of the frequency of their information book read-alouds.

Teachers in the RA and RA Plus conditions reported liking the books and scripts provided as part of the program. However, they reported liking the

storybooks more, on average (see Figure 2.2). Most teachers agreed that the scripts helped them to read both the storybooks and the information books regardless of genre. Finally, most teachers in the experimental condition agreed that they would read information books more often to their class after participating in this program, though three teachers disagreed.

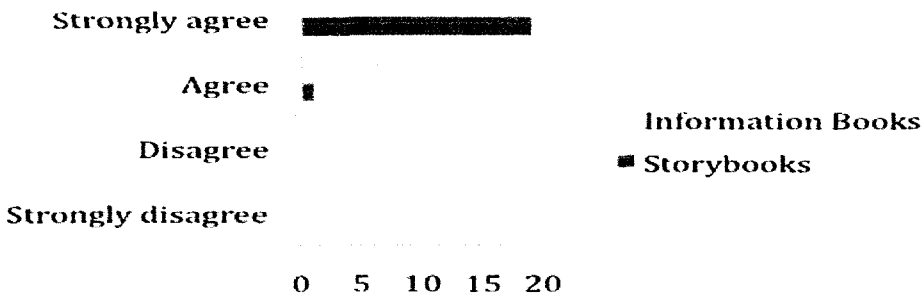

Figure 2.2. Preschool lead teachers in the experimental conditions responses' to whether they liked the picture books in the program, by genre.

Fidelity

Teachers reported how faithfully they followed the intervention. Forty five percent of teachers reported following the program *exactly* ("We followed the binder for all the books, and taught the target words exactly as they said—no more or less"). Fifty-five percent of teachers reported *mostly* following the intervention ("We mostly followed the binder, but we changed some of the language and some of the ways of teaching the target words to make it fit our class"). No teachers reported making "a lot of changes to make it fit our class" or "using the books in a way that made sense to us, not using the binder."

Teachers in the RAP condition seemed to be more faithful implementing the program, and more engaged in teaching the words. For example, two RA teachers reported *almost never* using the scripts, while none of the RAP teachers reported this (see Figure 2.3). RA teachers reported teaching the words in their own way, rather than relying on the scripts. In addition, 3 RA teachers (43%) reported that they *almost always* "did not really emphasize the target words in each book, but focused on other important things" while all RAP teachers (100%) reported *never* doing this.

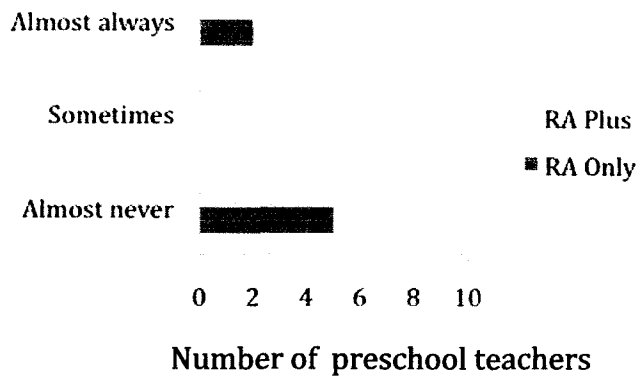

Figure 2.3. Preschool lead teachers in the experimental conditions responses to whether they read the books in the program without using the scripts.

The classroom observations confirm that RAP teachers were more faithful to the RA portion of the intervention, though these differences were small and not statistically significant. Several items on the classroom observation instrument were analyzed to determine fidelity to the Read Aloud portion of the intervention (see Table 2.8). The mean sum of the fidelity scores was 5.76 out of 9,

with a standard deviation of 2.63. The mean for RA classes was 5.55 and the mean for RAP was 5.95. This difference was not significant. Teachers' fidelity to the intervention during storybook observations did not differ from fidelity during information book observations.

Table 2.8

Teachers' fidelity to Read-Aloud practices (n=16)

Activity	Read Aloud	Read Aloud Plus	Difference
The teacher introduces the book.	100%	90%	10%~
The teacher stops to define 2 target words, X and Y.	66.67%	55%	11.67%
The teacher stops to discuss the book 4-6 times.	100%	89.5%	10.5%~
The teacher has children say word X at least 2 times.	40%	35%	15%
The teacher has children say word Y at least 2 times.	33.3%	40%	6.67%
The teacher reviews word X at the end.	66.67%	90%	23.3%*
The teacher reviews word Y at the end.	72.2%	90%	17.7%~
The teacher asks children a question about word X at the end.	55.5%	73.7%	18.1%
The teacher asks children a question about word Y at the end.	55.5%	73.7%	18.1%

*p<.05, ~p<.10

Teachers in the RAP condition, though, were less faithful, in general, to implementing the extension activities than the read-aloud activities. For example, no RAP teachers had low fidelity to RA activities, but two teachers had low

fidelity on all three sets of extension activities. Their classrooms may have functioned more like RA classrooms than RAP classrooms.

Discussion

This exploratory study investigates the relationship between the genre of books (storybooks and information books) read to children and their learning of instructed words introduced in the books. The findings discussed below help us understand whether the solid research base behind the use of storybook read-alouds to support preschoolers' vocabulary development may be generalized to read-alouds of other types of picture books. The sample of three-, four- and five-year olds includes mainly children enrolled in Head Start (90%) and English language learners (80%).

Preschoolers' Vocabulary Learning from Information Books and Storybooks

Preschoolers' knowledge of target words introduced in picture book read-alouds and instructed during those read-alouds and during extension activities was not related to whether the words were introduced in storybooks or in information books, controlling for pre-test score, general vocabulary knowledge, and demographic characteristics. They learned words introduced in storybooks and information books in similar proportions, on average, to children who learned the words in the course of natural development rather than from the books. The age and gender of the child were not related to children's word learning of information books, specifically, nor was their initial vocabulary level or their status as English language learning or English-only students.

Children who learned the words both in the course of interactive read-alouds and during extension activities learned more words than children who learned the words only during read-aloud time or children who learned the words in the course of natural development. These findings support existing work demonstrating that teaching words during both read-aloud time and during extension activities is related to learning more words than teaching words during read-aloud time alone (e.g., Leung, 2008; Silverman & Crandell, 2010; Wasik et al., 2006).

The children in these RAP classrooms heard the words in the course of interactive read-alouds, heard the words defined, repeated the words back, and generated examples of how the words could be used. Based on observations and surveys, their teachers generally followed the same read-aloud practices, using the same books and scripts. The children heard each book read aloud two days over the course of a week. In addition, the children heard the words used outside of the read-aloud context on those two days. Many children in these classrooms had opportunities to see the words pictured on cards, hear the words defined, and say the words aloud during morning meeting, and to draw or write the words during small group time or to act out the words during dramatic play, sand box time, or water play. Teachers' fidelity to these extension activities varied, but children in these classrooms had repeated exposure to the words over the course of the two days on which the book was read to them.

Preschool children's knowledge of target words introduced in picture book read-alouds and instructed only during those read-alouds, however, was related to whether the words were introduced in storybooks or in information books, when controlling for pre-test score, general vocabulary level, and student demographics. Children learned slightly more of the words introduced to them in storybooks, on average, than words introduced to them in information books when compared to children who learned the words in the course of natural development (not from the books). This modest relationship between book genre and vocabulary development did not vary according to the child's gender, age, general vocabulary level, or status as an English language learning or English only student.

These children heard the words in the course of two read-alouds of each book and heard the words defined, repeated the words back, and generated examples of how the words could be used during each read-aloud. The children heard each book read aloud once per day for two days over the course of a week, and their teachers only used the target words with them during these read-alouds. Based on observations and surveys, their teachers varied in how closely they followed these same read-aloud practices, which were scripted for them.

These results suggest that interactive information book read-alouds may be important settings for vocabulary instruction in preschool classrooms with large numbers of English language learners. Previous work has found that some interventions are less effective with low--income students or ELLs (e.g.,

Whitehurst). While students in this study learned only a few words, the intensity of the vocabulary instruction was low (just two days of instruction per word), the support provided to teachers was much lower than in previous studies (e.g., Wasik et al., 2001, 2006), and the pre-test post-test differences were statistically significant compared to a control group. The evidence of word learning among these largely low-income ELL students, therefore, is especially promising.

Several studies have noted that children learn more words, learn words more fully, and retain their knowledge of words better when they have multiple exposures to words across several days or more (e.g., Beck & McKeown, 2007). In this study, children with extended instruction learned more words in total, on average, than children who were only instructed in the words during the read alouds. In addition, when extended instruction was available, children learned words at roughly the same rate from both information books and storybooks as children in the control condition.

The finding that children may learn more words introduced and instructed exclusively during storybook read-alouds than words introduced and instructed exclusively during information books read-alouds is puzzling. There are several possible explanations for this finding, though more research will need to be done to unpack its meaning. First, the narrative structure of storybooks may provide a better environment for vocabulary learning than the topical structure of information books. While extension activities may close that gap, the

gap may persist when the only exposure to the word is in the context of the read-aloud.

Second, teachers may have conducted higher-quality read-alouds of the storybooks because of their greater familiarity and comfort with that type of book. Surveys of teachers in this study suggest that they used storybooks more often than information books and enjoyed using them more. Several studies have found that teachers' read-aloud styles can have an important impact on whether and how children learn words from a read-aloud (e.g., Dickinson, 2001). Also, the fidelity of teachers to the read-aloud scripts varied in the RA condition more than in the RAP condition. It may be that teachers who relied primarily on their own read-aloud practices were more effective at supporting vocabulary development in the context of storybook readings than in the context of information book readings. RAP teachers, who stuck more faithfully to interactive reading scripts that were similar for both types of books, may have used more similar strategies when reading books of each genre. In particular, they may have been more effective at supporting vocabulary development when they read information books to the children.

Alternatively, the additional supports (activities, materials) provided with the RAP program may have facilitated teachers' engagement in the program. Since the RAP program included activities and materials (picture cards) for morning meeting, and ideas for small group and center activities, teachers may have centered more of their classroom activities around the program. In contrast,

teachers in the RA condition may have had insufficient materials to structure their day around the read-alouds and so may have been running a parallel curriculum. On surveys, three RA teachers and three RAP teachers reported that the themes of the books in the program *never* matched their classroom themes, five RA and 2 RAP teachers reported that they *sometimes* matched their classroom themes, and no RA teachers and four RAP teachers reported that they *always* matched their classroom themes. Teacher engagement with and commitment to the program may therefore have been higher among RAP teachers, possibly resulting in higher-quality read-alouds.

This study also confirms other work suggesting that information book read-alouds, when embedded in extension activities, can be related to vocabulary learning. Leung (2008) found that interactive read-alouds of nonfiction books, when conducted in the context of hands-on science activities and book retellings, were associated in growth in children' expressive but not receptive vocabulary. It may be that the vocabulary instruction strategies used in the scripted read-alouds discussed here supported children's receptive vocabulary more effectively than those used in the scripted read-alouds in Leung's study. For example, teachers in Leung's study asked children to repeat target words and pointed to illustrations of target vocabulary words. However, it is not known if they used other important strategies like explicitly defining words or connecting the words to personal experiences. Finally, the target words used in Leung's

study (e.g., photons) are more technical than those used in this study (e.g., underground) and may be more difficult for preschool children.

Preschool Teachers' Use of Information Books

The findings of this study confirm other work showing that teachers use information books less often and enjoy them less than storybooks (Yopp & Yopp, 2002).When teachers were asked to rank their favorite kinds of books to read to children in their class (i.e. stories, poetry, information books, reference books including dictionaries, alphabet books and counting books), 68% of teachers ranked information books as one of their three least favorite genres. Only 28% of teachers ranked it in their top two. In contrast, all but 1 teacher ranked stories as one of their top 2, with 86% ranking it as number one.

It is, of course, not necessary that teachers prefer information books to other types of books in order to use them effectively. I found evidence that participating in this program, which provided some support for using information books, may have made some teachers more comfortable with books of this genre. While teachers reported liking the storybooks they used in this program more than they liked the information books, on average, more than 70% of teachers reported that they would use information books more in the future after participating in this program.

When asked what they would tell other teachers about how to use information books with preschoolers, many teachers emphasized the importance of knowing your children and their interests. One teacher explained, "Use

pictures and children's interests to lure in their curiosity." Another teacher noted, "I might use information books when needed such as including in curriculum or during the year when children might experience the information – birds in spring, fish in summer."

Some teachers, when asked the question, reported on strategies emphasized in the program that they found helpful. One teacher suggested, "First I would tell them to use open questions to see what children know and what they don't about the book or information." Another teacher wrote "take time to explain the book and the information within book is for [sic] children to understand more."

Limitations

The study design minimizes differences in how teachers read storybooks and information books aloud to children in order to better understand whether information book read-alouds might result in vocabulary learning that is similar to that resulting from storybook read-alouds. Scripts were used to help ensure that teachers' read-alouds were of similar quality in spite of preschool teachers' lack of experience with information books. The use of scripts, however, leaves open the possibility that the findings would be different in naturalistic settings without support from scripts or similar intervention. The findings, therefore, may be associated with environments that provide substantial support to teachers in conducting read-alouds of different genres.

In spite of efforts to ensure that the target words introduced in the storybooks were equivalent to the words introduced in the information books by looking at word attributes (i.e., frequency) and through pilot-testing, children's knowledge of the words was not equivalent across genres at pre-test. In addition, the children in the control condition's knowledge of the target words differed across genre at post-test, even though they were not introduced to the words in the books. This suggests that it is possible that differences in the children's word learning by genre could be due to other differences and not genre-related factors. While controlling for pre-test scores and comparing the word knowledge of children in the read-aloud conditions to the word knowledge of children in a control group minimizes this possibility, these findings should be explored in future research in which the same words are introduced in books of different genres, or with some other research design that accounts for this possibility.

Children did not learn many of the instructed words even in the RAP condition. This may be due to the low dosage of vocabulary instruction, with words instructed only during limited and specified times. Even in the RAP condition, children were only instructed in the words during specific times over the course of two days. While controlling the amount of vocabulary instruction was important to the study design, effective vocabulary instruction should result in the learning of more instructed words.

Finally, it may be increased exposure to the vocabulary words (regardless of setting) that is responsible for the children in the RAP classrooms learning

more words than children in the RA classrooms. Perhaps if children in the RA classrooms heard the words used the same number of times as children in RAP classrooms, their word learning may have been more equivalent even without extension activities. Dosage may be particularly important to learning new words from a less familiar discourse structure, like information books. These issues should be explored in future work.

Conclusions

This study suggests that preschool children in Head Start settings learn words introduced in both storybook and information book read-alouds. When those words are introduced during the read-alouds and reinforced in other classroom activities over the course of two days, there appear to be no differences in the rate at which children learn the words. However, there is some evidence that children may learn slightly more words introduced in storybooks than in information books if the children's only exposure to the words was during two read-alouds. These findings suggest that information books are appropriate for preschoolers, especially when in the context of vocabulary instruction that extends throughout the day. Head Start preschool teachers who participated in a 12-week scripted program were able to generate useful suggestions regarding the use of information books in settings like theirs. More support for preschool teachers to use the less familiar and beloved nonfiction genre would help their students be prepared to learn to read, and read to learn.

Chapter 3. Preschoolers' Pretend-readings of Information Books: An Exploration of the Use of Genre-related Language Features

While children will encounter many different types of books as readers, including fiction and nonfiction, adults tend to read mainly fictional stories to young children (Yopp & Yopp, 2006). Since children rely on adult mediators to provide access to texts before they can read themselves, young children may have little exposure to nonfiction in the years before they can read on their own. Some scholars, notably Duke (2000), Neuman (2006, 2001), and Pappas (1998), have argued that this lack of experience with nonfiction may be among the reasons some children struggle with reading in the later elementary years when they are expected to read both fiction and nonfiction texts on their own. Many readers and writers, including many English language learners, need additional support in these later years in mastering academic language, the types of oral and written discourse that are valued in most school and professional settings, including nonfiction expository discourse (see August & Shanahan, 2008; Bailey, 2007; Snow & Uccelli, 2009). This academic language differs significantly from oral language and from the storybook language young children are exposed to in fictional picture books. Some researchers hypothesize that early exposure to and use of nonfiction starting in preschool could increase children's knowledge and understanding of this type of academic language and therefore support children's ability to make meaning from this type of text (Neuman, 2006, 2001;

Smolkin & Donovan, 2003). This may be particularly important for English language learners, who frequently struggle to master academic language.

Literature Review

We have some evidence that young children may be able to appropriate nonfiction expository discourse, suggesting that it may be beneficial to include more nonfiction in preschool read-alouds. When children participate in read-alouds of nonfiction picture books with expository discourse, some are able to replicate aspects of written expository language during their retellings and "pretend" or emergent readings of nonfiction texts (Duke & Kays, 1998; Shine & Roser, 1999; Tower, 2002). However, existing studies rely on very small samples (typically including the students in only one classroom) and do not investigate the relationship of language status (single or dual language learner), age, or gender to young children's use of informational or academic discourse in pretend-readings. In addition, the only existing work in preschool relies on a group retelling methodology that makes it difficult to understand whether children's discourse was influenced primarily by short-term memory or their understanding of genre.

The current study is designed to explore young children's emerging understanding of genre, specifically nonfiction, through the analysis of preschoolers' pretend-reading discourse. I examine the discourse used by twenty 4-year old and 5-year old children enrolled in several Head Start preschool classrooms when individually pretending to read nonfiction texts and

storybooks. The diversity of the sample across gender, language status, age, and exposure to a Read Aloud program involving regular read-alouds of informational texts allows me to investigate the possible influences of these characteristics on preschool children's pretend-reading discourse and understanding of genre.

Information Books as a Sub-genre of Nonfiction

Nonfiction is not a simple genre. For one thing, it encompasses many sub-genres including biographies and other narrative nonfiction, as well as procedural texts (that describe how to do something or how something works) and topical information books. In addition, its purposes and structures are quite different from stories, the genre that may be most familiar to many children. Information books are a genre of picture book created for young children that has distinctive attributes detailed in Table 3.1. The current study uses information books as representative of nonfiction, because they include many important aspects of nonfiction (factual content) and have a very different discourse pattern from storybooks (non-narrative versus narrative). Because they differ so much in structure and purpose from storybooks, and yet include engaging illustrations and are frequently on topics of high interest to preschoolers, reading aloud information books to young children might be an important way of providing early exposure to nonfiction and of broadening their experiences with academic language. However, we have little evidence about whether preschool-aged children attend to genre differences and can make sense

of non-narrative books. We have even less evidence about whether preschool-aged English language learners can demonstrate an understanding of genre differences. The evidence appears to converge on the idea that even young children can use some aspects of information book language when they are supported by repeated, engaging read-alouds of information books by skilled adult readers.

Table 3.1

Selected information book storybook features (Duke, 2000, p. 205)

Information Book Features	Storybook Features
Communicates information about the natural or social world	Tells a narrative story
Factual content expected	Fictional content expected
Timeless verb constructions	Varied verb constructions
Generic noun constructions	Specific noun constructions
Defining words and using noun classes or categories (i.e. mammals)	May have less explicit definitions and focus on particular characters rather than classes or categories
Frequent repetition of the topical theme	Character and plot development, usually sequenced in time

Note. Adapted from "3.6 minutes per day: The scarcity of informational texts in first grade," by N.K. Duke, 2000, *Reading Research Quarterly, 35*(2), p. 202.

Informational Academic Language and Informational Picture Books

Young children begin to acquire oral language soon after birth and by the preschool years many children possess impressive oral language skills (e.g., Snow, Burns Griffin, 1998). Oral language includes a wide variety of

components, including vocabulary, pragmatics (e.g., turn-taking), syntax, as well as production of narratives and explanations, skills that are developed in large part through interaction with others. Children's first exposure to more "academic" or formal written language may be through informational, nonfiction picture books. One reason that adults are encouraged to read books to young children is that it exposes them to a range of new vocabulary words not typical in oral language, as well as to new discourse patterns including decontextualized language (see McKeown & Beck, 2003 and other essays in van Kleeck, Stahl, Bauer, 2003). Depending on the language communities in which the children have been raised, these new discourse patterns (or genres) may differ significantly from the oral language that the child is already mastering (see Heath, 1983), and nonfiction picture books provide an opportunity for young children to interact with the language of school. If children can use the discourse associated with these books, they may gain important knowledge about the language of school, which is of particular important to children from language minority groups.

Stories, or fictional narratives, are the genre most frequently read aloud to children (Dickinson, 2001; Duke, 2000; Yopp & Yopp, 2006), the genre most frequently researched by early literacy researchers (Beck & McKeown; Whitehurst & Epstein, 1994, etc.), and may be the genre favored by publishers (Robinson, 2008). There is strong evidence that even this familiar genre helps children bridge the world of home with the world of school. In a series of studies,

Sulzby (1985) suggested that in the course of their emergent literacy development, after hearing stories read frequently and repeatedly, young children learned what to expect from the text of stories even though they could not yet read them themselves. She asked 24 kindergarteners who could not yet read print to "read" or "tell" her their favorite storybook, using the book as a prompt. She was able to identify a developmental continuum beginning with retellings that resembled oral language to retellings that more closely resembled written language. The retellings that resembled written language used decontextualized language that did not depend on the illustrations in the book. Sulzby also coded the use of the past tense as an indicator of written storybook language. In this study, Sulzby demonstrated that over time children form expectations about the nature of written language used in storybooks, and that children's discourse can be an important source of information for researchers about those expectations.

However, stories are only one of the many genres children are expected to be able to comprehend and produce as they move through school. What are the implications of children's read-aloud experiences, and their notions about text, being formed primarily by stories? Pappas and Pettegrew (1998) argued that genre is an important aspect of reading skill. They suggested that familiarity with a genre provides the reader with important information that will guide text comprehension--understanding the purpose of a text and the type of discourse that will be used. To demonstrate this, they suggested comparing a description

across several written genres: in a topical information book, in narrative fiction, in an advertisement, etc. Each genre has its own rules for what comprises a description. When children do not have sufficient experience with the genres valued in school, including nonfiction, they will likely not know how to use the genre effectively. Pappas and Pettegrew suggested that the emphasis on stories in the early grades denies children rich experiences with the full variety of written forms that they will encounter.

Others agree. In trying to understand the comprehension problems of third graders, Best, Floyd and McNamara (2008) found some empirical evidence for Pappas and Pettegrew's theory. They assessed third graders' comprehension of both fiction and nonfiction texts. They found that children had a higher degree of comprehension of the fiction than the nonfiction texts, and that different skills were related to comprehension of the two genres. Specifically, comprehension of the nonfiction texts was related more to the reader's world knowledge and less to the readers' decoding skill than was comprehension of the fictional text. Best and colleagues argued that insufficient world knowledge may be attributed in part to paucity of nonfiction reading, and a lack of attention to the comprehension of expository texts may be an important reason why many children struggle with reading comprehension, even after they have mastered decoding (Best, et al., 2008). If very young children can begin to use nonfiction books effectively in preschool, it could prove important to their reading comprehension later in school.

Kindergarteners' use of informational language using information books. Kindergarteners can use informational language in their retellings or pretend-readings of information books. Pappas (1993) and Duke and Kays (1998) each conducted small-scale studies in which they examined how kindergarteners' discourse during their retellings or pretend-readings of information books reflected genre-related discourse patterns (see Table 3.1). While Pappas used a methodology in which the children retold books they had just heard, and Duke and Kays asked children to pretend to read unfamiliar books, they had similar findings.

Specifically, they found that kindergarteners referred to classes (generic noun constructions) rather than individuals (specific noun constructions) in their discourse when using information books. For example, the child might say "squirrels eat nuts" rather than "that squirrel ate nuts." Related to this, Pappas noted that most of the children in her sample retold the information books using a co-classification structure; they talked about a class (a type rather than an individual) and then went on to use implicit devices (like pronouns) to refer to that class. In addition, kindergartners' discourse during the information book retellings and pretend-readings was more likely to be in timeless present tense than in past tense. The written language associated with information books uses timeless present tense (e.g., "squirrels eat nuts"), while stories are typically told in past tense (e.g., "that squirrel ate nuts"). While Pappas noted that information book retellings were associated with technical vocabulary related to the theme

(e.g., underwater, circular, sidewalls), Duke and Kays did not find that these differences were statistically significant in their sample.

Finally, Duke and Kays examined not only children's use of genre-related discourse in their pretend-readings, but also whether children's use of these features changed after three months of repeated re-readings of information books. They found that, indeed, children's use of generic noun constructions and timeless present tense was higher, on average, at post-test than at pre-test ($p<.05$).

This study, however, did not include a control group that could model children's normal development of informational discourse so it is difficult to know whether the improvement in children's use of informational discourse was related to the read-aloud intervention or to children's normal development. In addition, kindergarteners formed the sample in this study and we do not know whether preschoolers might experience similar development.

Preschoolers' use of informational language using information books. While there is wide variation in preschoolers' vocabulary knowledge and experience with print, preschoolers can be expected to have less vocabulary knowledge and experience with print, on average, than kindergartners. They are typically three- to five-years old rather than five- to six-years old. Several studies document changes over the kindergarten year in the development of children's narrative skills, knowledge about print, and vocabulary (e.g., Dickinson & Tabors, 2001). The findings of how kindergartners use informational language,

therefore, cannot be generalized to preschoolers. Two small-scale studies of preschoolers, however, use a group retelling methodology to explore how these young children understand genre (Shine & Roser, 1999; Tower, 2002). These studies suggest that these very young children have an emergent understanding of genre that is expressed more through their stance towards the book than through syntax.

Specifically, these studies found that preschoolers are inconsistent in their use of genre-related features, sometimes referring to classes and sometimes referring to individuals in their retellings of information books. Tower describes this as "trying out" information book features. Children in these studies connected the books to their existing knowledge, with what Shine and Roser called an "information book stance." They describe children asking and answering their own questions during the retellings and even shouting out "I know!" In addition, Shine and Roser document differences in how children retold books of different genres, including poetry, narrative fiction, and nonfiction books - children retold books of other genres differently, without this "information book stance."

These exploratory studies suggest that preschoolers do notice genre, but they are just developing their understanding of what to expect from information books. This seems to result in preschoolers being less consistent in their use of genre-related discourse features than kindergarteners. The retelling methodology used in these studies leaves open the question of how preschoolers would

approach an unfamiliar book they knew to be informational rather than fictional, and whether more exposure to information books would support preschoolers in using genre-related discourse features. In addition, neither the kindergarten nor the preschool studies explored the relationship of gender, language status (English language learning or English only) or general vocabulary knowledge to children's use of genre-related discourse features.

The Present Study

The research questions guiding this study are as follows:

(1) Do preschoolers produce pretend-readings of information books that are different from their pretend-readings of storybooks in their use of informational language and other genre-related features?

(a) Is participation in repeated readings of information books related to preschoolers' use of informational language and other genre-related features in their pretend-readings?

(b) Is a child's age, gender, language status (monolingual or English language learner), or vocabulary level related to preschoolers' use of informational language and other genre-related features in their pretend-readings?

To answer the research questions above, a sub-sample of children participating in a larger book reading and vocabulary development program was identified. For this program, Rebecca Silverman and I developed and conducted a twelve-week book-reading and vocabulary development program for Head Start preschool classrooms. Classrooms were assigned to participate in the

program or to the control group. We provided teachers in the intervention conditions with 24 books (12 storybooks and 12 information books) per classroom and scripts to use when reading the books. We assessed teachers' faithfulness to reading the assigned books with the scripts. We also assessed the vocabulary knowledge of the children in these teachers' classrooms before the program. I invited a sub-sample of children (the criteria are explained below) to pretend-to-read a storybook and an information book on one of two topics (firefighters or snakes) before and after the program. Each child pretended to read the books of one topic. I analyzed the relationship between the genre of the book the child pretended to read and various discourse features, controlling for vocabulary level and demographic variables. I also investigated whether the relationship depended on the child's age, gender, vocabulary level, language status (monolingual or English language learner), topic, or participation in the read-aloud program. The goal of the study was to understand whether preschoolers in a Head Start context can pretend to read information books using genre-related discourse features.

Methods

Participants

The sample consists of a sub-sample of 20 children from a larger sample of 278 three-, four-, and five-year old children who attended one of 26 participating preschool classrooms at Head Start centers in the urban ring surrounding a major Northeastern U.S. city. Children were recruited to take part in the study in the

fall and winter of the 2008-2009 school year through letters sent home to their parents in English, Spanish, and Portuguese. As in other studies, purposeful sampling was used in order to identify a group of children who might be successful at and enjoy the activity (Shine & Roser, 1999; Tower, 2002). The sub-sample was chosen by working with teachers to identify a group of children who 1) would enjoy pretending to read books with the data collector, 2) had good oral language English skills and 3) were at least four years old.

The goal was to have an equal number of children in the control group and each of two intervention groups. In the larger study, there were two intervention groups. The teachers in the Read Aloud condition read assigned books to children, and the teachers in the Read Aloud Plus condition read the same books, but also did extension activities outside of the read-alouds. These extension activities included looking at picture cards and providing prompts for dramatic play. The differences between the two program groups were not considered relevant to this study, as the intervention of interest was the teachers reading books to children.

The sub-sample was further refined when analysis of the program assignment and demographic characteristics revealed that there were significant differences among the three groups of children in the sub-sample. First, the children in the Read Aloud condition possessed a higher vocabulary level at pre-test than children in the control group. Second, children in the Read Aloud Plus group were much older (an average of 6 months older) than children in the

control group. An alternative program group was formed comprised only of those children in classrooms whose teachers were found to be faithful to the Read Aloud component of the intervention, based on observations and surveys (see Appendix E). This group was chosen because it was important that the children in the program condition heard the books read aloud faithfully during the intervention. This program group was larger than the control group and was also older, on average, than the control group. The oldest children in the program group, and the youngest child in the control group, were dropped. The resulting program and control groups were equal in size and their vocabulary levels and ages did not differ significantly ($p>.05$).

The average age of the children was 4.5 years at pre-test; the youngest was 3.7 years old and the oldest was 5.1 years old. Sixty-five percent of children were dual language-learners. Thirty percent of children were male. The racial and ethnic composition of the sample of children was 55% Latino, 20% White, 10% Other, 5% Asian, 5% Black, and 5% of Mixed Race. The average standardized PPVT-IV level of the children in this sample is 105, with a standard deviation of 12. The raw PPVT-IV score was 78, with a standard deviation of 19.

Procedures

The investigators conducted a 2-hour session on oral language development in the fall for all teachers in participating centers as part of the centers' professional development series. At this time, teachers were asked if they would like to participate in the study. Those teachers who expressed

interest were randomized into one of three groups: (1) Read Aloud, (2) Read Aloud Plus, or (3) Control. Teachers who were in the Read Aloud (RA) and Read Aloud Plus (RAP) conditions received a 2-hour training on reading aloud storybooks and information books in preschool settings and learned how to use the books and scripts. In addition, they received a set of books and binders containing supporting documentation. While the teachers in the experimental conditions were participating in this overview, teachers in the control condition watched a video on the importance of reading to children. They also learned how to record their daily classroom practices in binders provided by the investigators.

The book reading program. Teachers and students in the experimental conditions participated in a 12-week book reading program though, because of school vacations and snow days, the program took 15 to 16 weeks in most classrooms. The program was split into three units in order to standardize the topics of the books across genres: Transportation, Animals and Food. See Appendix A for a list of books in each genre. At the beginning of each unit, each teacher in the RA and RAP conditions received four storybooks and four information books on the theme, as well as a binder. Teachers read one storybook and one information book per week chosen by the research team. Teachers read the same books in the same order. Each book was read twice during that week.

The binder contained scripts for reading each book. See Appendix B for a sample script. Other programs investigating the impact of read-alouds also used

scripts (e.g., Beck & McKeown, 2007; Wasik, et al., 2006). The script was designed to reflect good book reading practices and to standardize the use of the vocabulary words and techniques across the book readings. Each book reading included an equal number of interactive questions, as well as other supports.

Book selection. The books were chosen to be prototypical of their genre (see Appendix A). For example, storybooks had a clear narrative structure and fictional characters. Information books were nonfiction, topical and possessed a non-narrative structure. Due to the nature of information books available for this age, some of the information books illustrated information with fictional characters (e.g., depicted camels cooking a meal). However, none of the information books included fictional material (e.g., the camels cooking a meal was included as an example of what camels do *not* do).

Another important consideration was the books' perceived general quality and attractiveness to children. Of books reviewed by the Horn Book Guide, only books rated three or above were included (Horn Book Online, 1999-2007). Books with colorful, inviting illustrations, accessible language, and interesting topics or stories were included. Books also needed to be appropriate for a range of ages (ages three to five). When length was an issue, teachers were given suggestions in the book guides about pages to skip. Finally, the books had to have interesting and varied vocabulary.

Measures

Trained research assistants assessed each child on a general vocabulary measure before the book reading program began. In addition, they invited children to pretend-to-read books to them before and after the book reading program. Research assistants spent between one and three hours in each classroom before assessing children in that classroom so that children would feel comfortable with them. Children were individually asked to accompany the research assistants to a quiet area outside of the classroom to "play some word games" or "look at some books with me." Children were typically assessed on only one assessment per testing session. They could take breaks when needed and were given stickers as thanks.

Peabody Picture Vocabulary Test IV. The Peabody Picture Vocabulary Test IV (PPVT) was administered to children at pre-test. The PPVT is an age-normed receptive vocabulary assessment. The PPVT provides raw scores and standard scores (mean = 100; standard deviation = 15). Standard scores were used in analyses in this study. The median internal consistency of the measure in the sample described in the manual is .95. The median split-half reliability for that sample is .94. The median alternate-form and test-retest reliabilities are .94 and .92 for that sample, respectively. The assessment correlates (.91) in that sample with the Wechsler Intelligence Scale for Children (WISC-III) measure of verbal ability, verbal IQ.

Pretend-reading task.

Materials. Children's picture books were used to elicit children's pretend-readings. One fictional narrative storybook and one non-narrative information book was selected for each of two topics: firefighters and snakes (see Table 3.2). The information books were non-narrative nonfiction trade books illustrated with photographs. The text in the books matched the qualities of information book language as described in Table 3.1. The fictional narrative storybooks were illustrated with cartoon-like drawings and the characters in the books were anthropomorphized animals to make the fictional aspects of the stories clearer. In addition, the storybooks possessed a clear narrative arc. In the storybook about firefighters, a girl pig character witnessed firefighters save her house from a fire. In the storybook about snakes, an elderly woman adopted a snake as her pet, and the snake saved her from a robber.

Table 3.2

Books used in the Pretend-Reading Task

Genre	Firefighter Topic	Snake Topic
Information Book	Firefighter (Miller, 2003)	Slinky Scaly Snakes (Dussling, 1998)
Storybook	Poinsettia and the Fire Fight (Bond, 1984)	Crictor (Ungerer, 1983)

All four books were modified. Titles of the book were simplified when necessary. The covers, title pages, and ten pages of each book were color copied and spiral bound to form the pretend-reading books. The ten pages were chosen

to a) provide varied pages for the informational text and b) to retain the narrative arc of the stories. All text other than the title, author and publication information on the title and cover page was obscured with black marker. These modifications were designed to minimize the differences between the books other than the genre. The children readily accepted the pretend-reading books as books, though many children questioned the obscured text. Most children readily accepted the explanation provided for the obscured text as the task was introduced: "These books have the words crossed out so that I remember to listen to the words you say rather than read the words in the books." Some children needed additional explanation about why the words were being hidden, which was provided by the assessor.

Procedures. The data elicitation procedures were based on those used by Duke and Kays (1998). The children were invited to leave their classroom individually to "look at books" with a trained research assistant. The research assistant followed a protocol (see Appendix H). The child was assigned to read either the books about firefighters or the books about snakes. The research assistant alternated the order across subjects. Each child read both an information book and a storybook on the topic, and the order in which they read the books was also alternated.

The research assistant then told the child about the task.

> What I want you to do is to pretend to read some books to me. Now, it's okay if you can't really read yet. That's okay, I just want you to pretend to read - say what you think the

> book might say. I have two books for you to pretend to read. These are two different kinds of books. This book is a storybook. It tells a story about (a snake named Sam/a pig named Pam). . . . . Do you know this story? This is not a storybook. This book tells about something that is real. It tells you lots of information about (snakes/firefighters).

After this introduction, the research assistant led the child in a "picture walk" of the book. The research assistant and the child briefly looked at all of the pages of the book to familiarize the child with the entire book before the pretend-reading began. The final directions for the pretend-reading were "OK, now it's time for you to pretend to read to me. Remember, the name of the book is XX." If it was a storybook, the research assistant added, "It is a storybook. It isn't real." If it was an information book, the research assistant added, "It is a book with information about (snakes/firefighters). It tells you about snakes/firefighters)."

The research assistants were directed to be encouraging and positive, but to not lead the children. They were provided with a list of prompts to use when the child said nothing or just a few words or a sentence about a given page (see Appendix H). These prompts were designed to be neutral with respect to book genre. Examples include: "What do you think the book might say?" or "What do you see in the picture?"

Each child was asked to pretend to read one storybook and one information book on the same topic (firefighters or snakes) at the pre-test administration and the same two books at the post-test administration a few

months later. In one case, the child was asked to pretend to read one different book than she read at post-test.

Data preparation. The pretend-readings were audiotaped. They were then transcribed by one of the research assistants who conducted the pretend-readings or by a speech pathologist who had considerable experience with children of this age and who had reviewed many pretend-readings prior to transcribing. The transcripts were all then reviewed by another transcriber. The transcriber and reviewer of a transcript were always different people. The transcripts were formatted using CHAT conventions (MacWhinney, 2000).

Coding Procedures

All transcripts of pretend-readings, both of storybooks and of information books, were coded using the same procedures. The coding scheme developed by Duke and Kays (1998) for the kindergarten study was a basis for the informational language code. The categories were also informed by the findings of Shine and Roser (1999) and Tower (2002). The final coding scheme was developed through an iterative process, with the findings of previous studies combined with readings of the transcripts, resulting in the identification of two levels of informational language used in the transcripts. This coding is described further below.

Lexical coding. Transcripts were coded in three ways. One type of coding investigated the basic attributes of pretend-reading discourse including length, lexical diversity and the use of rare words. The transcripts were analyzed using

the CLAN facilities of the Child Language Data Exchange System (MacWhinney, 2000). CLAN generated the length of each transcript in words. CLAN also produced two measures of lexical diversity: type-token ratio and VOCD. The type-token ratio is a commonly used measure of lexical diversity that is limited in accuracy when used with samples of varying length. VOCD is an alternative measure of lexical diversity generated by CLAN that accounts for length of sample by using statistical modeling (see McKee, Malvern & Richards, 2000). Both measures are used in this study. CLAN was also used to eliminate the 3000 most commonly used words from the transcripts (Beals and Tabors, 1993). The remaining words were considered "rare" and the number of rare words used in each transcript was a variable in the analysis. This lexical coding was included in order to understand whether young children's pretend-readings of information books shared lexical attributes with their pretend-readings of storybooks.

Emergent informational language coding. The second type of coding investigated the use of qualities associated with informational language. Because of the youth and diverse language status of this sample, informational language was broadly defined. These qualities include 1) showing a knowledge stance (e.g., talking about what they know about the topic), 2) referring to classes or prototypical examples rather to individuals or characters, 3) presenting information about a topic that was generalizable beyond the book itself, and/or 4) any syntax associated with traditional definitions of informational language (i.e., eternal present tense and generalized nouns). Each transcript was

holistically coded on a three-point scale. A score of 0 was applied when the transcript failed to demonstrate any characteristics associated with informational language. A score of 1 was applied when the transcript demonstrated a few characteristics associated with informational language, but these qualities were not sustained or characteristic. A score of 2 was applied when the transcript demonstrated several of the characteristics of informational language or used them in a sustained way. See Table 3.3 for more information on the codes.

Two researchers independently coded the transcripts. One is the author of this study and the other is a researcher unfamiliar with the books the children pretended to read. The agreement between raters across the 80 transcripts was 80%. Both coders coded all transcripts. All discrepancies were resolved through discussion and consensus.

Table 3.3

Pretend-reading Informational Language Code Descriptions and Examples

Pretend-reading Code Book		Examples from Coding	
Code	Description	Examples from "Firefighters"	Examples from "Slinky, Scaly Snakes"
2	**The child uses the pretend-reading to provide information on a topic or topics.** The child focuses on the topic of the book throughout most of the book reading. The child may explain the attributes or function of people or objects. While there is likely to be description, it is usually providing information relevant to the topic and generalizable outside of the book. One marker is the use of informational language (generalized noun or eternal present tense) though this isn't strictly necessary. If it is consistently in informational language, it can be describing the picture. Typically: • Present tense	Transcript A *CHI: the firefighters. *CHI: one carries the baby outside. *CHI: they use water things to make the fire go away. *CHI: they fire at the fire, they fire with the water hose. *CHI: these are three things that you should know. *CHI: the fire fighters slid down. *CHI: the end. Transcript B *CHI: this might say that firefighters blow water out to take the fire out and I, I already know that. *INV: you already know that. *INV: what else? *CHI: firefighters hug people. *INV: ah, good job. *CHI: firefighters wear these, so the fire won't stay, close to them. *INV: that's, I think, smart.	Transcript E ... *CHI: they crawl on the floor. *INV: very good, very good. *CHI: and mmm they crawl in there because he need it to run from the snake[?]. *INV: nice, very nice. *CHI: he was crawling in the stick um he could catch the other animals. *INV: uh huh very good, anything else that you want to tell me. *CHI: it was climbing up the stick cause it wanted to eat. *INV: let's take a look at this picture. *CHI: a snake was crawling because he stick his tongue out and he was try to look for food. ... *CHI: snake open his mouth because he was trying to eat and

	• Focus on attributes, processes or procedures • A character represents a class or type • General nouns • Showing what they know • Interpretation-information that is not pictured	*INV: what about that page? *CHI: these are what they use to take out the fire. *INV: what about that page? *CHI: this is the fire. *CHI: these are what they go swinging down to get to the fire truck. *CHI: xxx they also eat too and sleep.	he opened his mouth really bad. *INV: oh the last page, what do you think the book might say here? *CHI: the snakes are real but they don't bite. Transcript F. .. *CHI: and the lizard is a type thing that have sharps and climb in a tree. *CHI: and this snake have a long tongue, that is so long. ... *CHI: this snake has no tongue. *CHI: this one don't have no mouth. *CHI: this one it has sharp teeth. *CHI: this one goes around. *CHI: this one got teeth. *CHI: this one goes a lot around.
1	**The child provides information a few times but this is not sustained** nor does it characterize the pretend-reading. There is a lot of superfluous description that is not connected to the topic and relevant mainly to the book, rather than applicable to the wider world.	Transcript C *CHI: they were blowing the hose. *INV: what else? *CHI: and they holding the hose. *INV: yeah. *CHI: and they put their mask on and everything so they can help the because I think they're helping a house. *INV: oh yeah let's see what happens on the next page.	Transcript G *CHI: uh, that's a snake. *CHI: a xxx he looks to look like it [?]. *INV: anything else? *CHI: and he, he not moving xxx. *INV: he's moving? *CHI: and, and he's in the ground. *INV: he's in the ground?

*CHI: they were helping the baby.
*INV: hmm.
*CHI: and the baby was crying.
. . .
*CHI: he burned the hose.
*CHI: way from over there.
*CHI: from here.
*INV: and what's happening here?
*CHI: there was a fire and somebody was camping and and they left the fire um uh still out and they was more burning.
*INV: oh yeah.
*CHI: and now they're back they're back home and then the next day they're
going to another fire.
*INV: oh yeah.
*CHI: and now they're having dinner and going to sleep and look at the
doggy.

*CHI: there's, there's no snakes here because it's empty.
*INV: interesting, what do you think the book says here?
*CHI: this one is a big one, but he's slower.
*INV: oh, anything else?
*CHI: this one too because he moves slow.
*CHI: and, he have a tongue.
*INV: yeah.
*CHI: and, and this one is not a snake because, because, because he is a animal.
*INV: you're doing a good job.
*CHI: and this one don't have tongue and, and he's green.
*CHI: and he's and he's a and he's a snake and this one too.
*CHI: this one is a lot of snakes.
*INV: anything else?
*CHI: that is done.

0 **There is no informational language and utterances are not focused on the topic.** Utterances are largely descriptive or storylike and are not generalizable.

Transcript D
*CHI: a firefighter.
*INV: oh right, very good, anything else?
*CHI: fire hydrant.
*INV: oh wow.
*CHI: like the fire truck.
*INV: yeah.

Transcript H
*CHI: snake, and snake in flowers.
*CHI: here is flowers.
*CHI: snake, snake where is he?
*CHI: he's poking out right there!
*CHI: look it there, little.

*CHI: up xxx the fire.
*INV: oh, anything else?
*INV: you're doing a good job.
*CHI: the fire station.
*INV: the fire station.
*CHI: fire dog.
*INV: oh yeah.
*CHI: he's so cute.
*CHI: them having dinner.
*INV: and them sleeping with the dog, there.
*CHI: snake, where did he go?
*CHI: you don't know.
*INV: ok, what about the next page.
*CHI: snake is looking in the tree.
*CHI: boogy boogy boogy.
*CHI: and he's walking on the ground.
*INV: oh yeah.
*CHI: xxx.
*CHI: the snake is eat, eat his lunch.
*CHI: it's water, he's thirsty.
*CHI: and then this is cold [?] drinking the.
*CHI: look he's gonna eat snake.
*CHI: turn the page.
*CHI: once upon a time this snake go back to eat like his friends today.
*CHI: and this one go walk it, walking outside and scaring all the friends.
*CHI: and two snake go home to see this movie.
*CHI: the end.

Thematic vocabulary coding. The final codes examined the use of thematic vocabulary words. Existing studies note that using vocabulary related to the topic or theme is an important characteristic of information books (e.g., Duke & Kays, 1998). The number of different word types related to the theme was therefore of interest in this study. Two lists of thematic vocabulary words were selected from the list of all words spoken by the children during the pretend-readings. The list of words on the firefighter theme included words such as "rescue" "clothes" and "hydrant." The list of words on the snake theme included words such as "mouth," "slide" and "feed." A complete list of thematic words is included in Appendix I. I created a variable representing the number of different theme-related word types used in each transcript.

Analytic Approach

The intercept-only model was examined to obtain estimates of the variance between and within subjects. Multi-level regression models included important covariates, including initial standardized vocabulary level (pre-test raw PPVT). Student demographic variables were included as controls. These variables include gender, age and language background (1=English language learner, 0=English only). Race and ethnicity was included as Latino, White, and Other because only 25% of children were not Latino or White. Because interactions between covariates and the question predictor were conceptually important, even non-significant predictors were carried through to this step in order to test for interactions. All covariates and controls were retained in the final

model. The final model was chosen based on the best fitting model identified by significant coefficients and the smallest -2LL.

Results

Children's pretend-readings were brief -- between 93 and 130 words in length (see Tables 3.4 and 3.5). Differences in the length and lexical diversity of the pretend-readings were small across genre, condition, and time.

Table 3.4

Means and Standard Deviations of Pretend-reading Qualities by Genre for Children in the Control Group (n=10)

	Pre-test		Post-test	
	Info	Story	Info	Story
Length (tokens)	93.3 (.54)	103.2 (.44)	89.4 (.37)	117.8 (.33)
Vocabulary (types)[a]	43.7 (.53)	49.7 (.35)	45.3 (.33)	53.3 (.33)
Lexical diversity (TTR)[b]	.49 (.18)	.50 (.16)	.53 (.18)	.47 (.28)
Lexical diversity (VOCD)[b]	27.90 (.45)	31.47 (.55)	27.66 (.46)	29.56 (.64)
Thematic words (tokens)	11.8 (.43)	7.8 (.44)*	11.6 (.20)	9.3 (.23) *
Thematic words (types)	5.7 (.54)	4 (.58) ~	7 (.40)	4.1 (.57) *
Total rare words	1.1 (.9)	1 (1.05)	1.3 (.52)	1.4 (.84)
Total non-theme rare words	.4 (1.75)	.2 (2.1)	.7 (1.51)	.7 (1.91)
Informational language	.3 (.48)	0	.5 (.85)	0

*p<.05, ~p<.10

Note. [a]Vocabulary (types) refers to the number of different words in the transcript. [b]Lexical diversity refers to the variety of words used in the transcript. TTR and VOCD are two different ways of measuring this quality.

Table 3.5

Means and Standard Deviations of Pretend-reading Qualities by Genre for Children in the Control Group (n=10)

	Pre-test		Post-test	
	Info	Story	Info	Story
Length (tokens)	116 (.44)	130.1 (.92)	113.4 (.71)	112.3 (.39)
Vocabulary (types)[a]	52.2 (.34)	56.2 (.48)	53.2 (.46)	52.7 (.29)
Lexical diversity (TTR)[b]	.47 (.16)	.54 (.29)	.51 (.16)	.49 (.13)
Lexical diversity (VOCD)[b]	26.34 (.22)	33.23 (.49)	31.32 (.34)	25.08 (.26)~
Thematic words (tokens)	16.8 (.45)	9.7 (.77)*	18.4 (.46)	8.5 (.51)*
Thematic words (types)	8.6 (.30)	4.3 (.60)*	10 (.45)	4.3 (.70)*
Total rare words	1.7 (.88)	1.3 (1.09)	1.22 (.89)	1.8 (.78)
Total non-theme rare words	.4 (1.29)	.8 (.8)~	.2 (2.11)	1.2 (1.17)*
Informational language	.6 (.69)	0	1.3 (.82)	0

*p<.05, ~p<.10

Note. [a]Vocabulary (types) refers to the number of different words in the transcript. [b]Lexical diversity refers to the variety of words used in the transcript. TTR and VOCD are two different ways of measuring this quality.

The Use of Informational Language in the Children's Pretend-readings of Information Books and Storybooks

The children used informational language during about half of their pretend-readings of information books (47.5%) and never during their pretend-readings of storybooks (0%). About 20% of the pretend-readings of information books could be characterized as having sustained use of informational language, and 27.5% of the pretend-readings of information books used some informational language. More pretend-readings on the topic of firefighters contained informational language (60%) than pretend-readings about snakes (35%). In

addition, more of the information book pretend-readings contained informational language at post-test (55%) than at pre-test (40%). The age of the child was correlated with the use of informational language in the pretend-readings (see Table 3.6). Older children were more likely to use informational language ($r=.27$, $p<.05$). The child's gender, language status and vocabulary level were not correlated with the use of informational language.

Participation in a read-aloud program involving repeated readings of information books and storybooks supported English language learners' use of informational language, but not monolingual students use of informational language (see Table 3.7). English language learners who participated in the read-aloud program had a similar level of informational language in their pretend-readings at post-test, on average, compared to their monolingual peers when controlling for their use of informational language at pre-test and their vocabulary level, as well as other demographic characteristics. In contrast, English language learners who did not participate in the Read Aloud Program had predicted scores about .75 points lower than their monolingual peers ($p<.10$). Therefore, participating in the Read Aloud Program supported English language learners in using informational language at about the same rate as their monolingual peers. Participating in the read aloud program was not related to differences in monolingual children's use of informational language.

Table 3.6

Correlations between demographics and pretend-reading attributes

	Age	Male	ELL	Pro-gram	Post	Snake	Info Book	Types[a]	Tokens[b]	TTR[c]	VOCD[c]	Theme Type[a]	Theme Tokens[b]	Info language
Age	1.00													
Male	.13	1.00												
ELL	-.01	.02	1.00											
Program	.20	-.00	.10	1.00										
Post	.00	.00	.00	.00	1.00									
Snake	-.26*	-.45*	.08	.03	.03	1.00								
Info Book	.00	.00	.00	.00	.00	-.03	1.00							
Types[a]	.21~	-.03	.16	.14	.02	-.08	-.11	1.00						
Tokens[b]	.20~	-.12	.19~	.14	-.02	.90*	-.10	.90*	1.00					
TTR[c]	-.14	.14	-.11	.03	.00	-.32*	0.00	-.36	-.62*	1.00				
VOCD[c]	.02	.05	-.02	-.01	-.06	-.37*	-.05	-.36*	.00	.69*	1.00			
Theme Type[a]	.21~	.16	.07	.23*	.10	-.41*	.52*	.44*	.35*	-.07	.27*	1.00		
Theme Tokens[b]	.23*	.05	.16	.25*	.03	-.18	.45*	.47*	.56*	-.40*	-.06	.80*	1.00	
Info Language	.27*	.04	-.18	.21~	.17	-.19~	.52*	.09	.06	.00	.07	.56*	.52*	1.00

*<.05, ~<.10

Note. [a]Types refers to the number of different words used in the transcript. [b]Tokens refers to the number of words in the transcript. [c]TTR and VOCD are two measures of lexical diversity.

Table 3.7
Taxonomy of Fitted Multilevel Models Describing the Relationship Between Book Genre and Use of Informational Language, Controlling for Initial Use of Informational Language, Demographics, General Vocabulary Level and Participation in a Read-Aloud Program

Coefficient	M1 (unconditional)	M2 (Demographics)	M3 (Predictors)	M4 (Interaction)
Intercept	.45***	-0.89	.63	.96
Male		-.05	.04	.05
ELL		-.49	-.25	-.75~
White		.07	.12	-.21
Latino		-.18	.02	-.07
Age		.58	-.05	-.03
Vocabulary		-.01	.00	-.01
Program[a]			.31	-.28
Pre-informational language			.93***	1.02***
Snake[b]			.02	.05
Information			.48*	.44*
ProgramxELL				.80*
∂^2_{ϵ}	.78	.81	.49	.49
∂^2_{μ}	0	0	.18	0
-2LL	-47.63	-50.26	-36.29	-34.14

***p<.001, **p<.01, *p<.05, ~p<.10

Note: [a]Program refers to participation in the read-aloud program. [b]Snake refers to the topic of the books (1=Snakes, 0=Firefighters). u is associated with individual-level variance, € is associated with residual variance.

The use of thematic words in the children's pretend-readings of information books and storybooks. Children used more words related to the theme of the book (r=.52, p<.05) and more different word types related to the theme (r=.45, p<.05) in their pretend-readings of information books than their pretend-readings of storybooks. Children used between eight and eighteen thematic words per book reading, on average. They used about four to ten more thematic words, on average, in information books than in storybooks. They also

used more different thematic word types in their pretend-readings of information books than their pretend-readings of storybooks.

The relationship between the genre of the pretend-readings and the use of thematic words depended on the topic of the books read. Children used about three more different types of thematic vocabulary words in their pretend-readings of books about firefighters than in their pretend-readings of books about snakes at post-test, on average, controlling for their usage at pre-test and other covariates. When pretend-reading books about firefighters, genre was not related to how many words they used at post-test, when controlling for how many they used at pre-test. However, children used an additional 2 or 3 more theme-related vocabulary word types in their pretend-readings of information books about snakes than in their pretend-readings of storybooks about snakes at post-test, controlling for their demographics and initial use of thematic vocabulary (see Table 3.8). In addition, the English language learners who participated in the program used a greater variety of thematic vocabulary words during their pretend-readings than those not participating in the program (more than 4 different word types), on average, controlling for demographic characteristics and initial use of thematic words.

Table 3.8

Taxonomy of Fitted Multilevel Models Describing the Relationship Between Book Genre and Thematic Word Types, Controlling for Initial Use of Thematic Words, Demographics, General Vocabulary Level and Participation in a Read-Aloud Program

Coefficient	M1 (unconditional)	M2 Demographics	M3 Predictor	M4 Interaction	M5	M6
Intercept	6.35	-5.29	.30*	.58	1.62	1.78
Male		.39	-.99	-1.04	-.99	-1.03
ELL		.56	1.49	1.45	1.51	-1.31
White		-1.4	1.95	2.09	.27	.52
Latino		-1.11	2.10	2.00	1.65	1.58
Age		2.59	-44	-.28	-.18	-.05
Vocabulary		.01	.02	.02	.02	.02
Snake[a]			-2.05	-3.50*	-1.99	-3.36*
Program[b]			.76	.85	-2.67	-2.30
pre-thematic words			.67***	.66***	.71*	.70***
Information			2.19*	.63	2.08*	.64
Informationxsnake				3.02*		2.82*
ProgramxELL					4.76*	4.4*
∂^2_ϵ	3.90	3.9	2.23	2.04	2.23	2.04
∂^2_μ	.70	1.52	1.72	1.74	1.18	1.34
-2LL	-110.83	-103.98	-84.67	-81.04	-80.66	-77.34

***p<.001, **p<.01, *p<.05, ~p<.10

Note. [a] Snake refers to the topic of the books (1=Snakes, 0=Firefighters). [b]Program refers to participation in the read-aloud program. u is associated with individual-level variance, € is associated with residual variance.

The use of rare words in the children's pretend-readings of information books and storybooks. Children did not use many rare words in the pretend-readings. They used an average of about one or two rare words per pretend-reading. The children's use of rare words did not differ according to the genre of the pretend-reading.

Discussion

This study investigated whether preschool-aged children enrolled in Head Start centers can use genre-related discourse in their pretend-readings of information books. In addition, the study examined whether demographic characteristics (e.g., age and language status) or participation in a read-aloud program are related to how children pretend to read information books. A sample of 20 children pretended to read storybooks and information books, and transcripts of these pretend-readings were analyzed. Ten of these children were enrolled in classrooms participating in a read-aloud program involving regular read alouds of information books and storybooks; the other ten were enrolled in classrooms conducting their regular read-aloud practices. The study had two main findings: first, preschoolers were capable of producing emergent informational language in connection with nonfiction books; and second, that participating in a read-aloud program with regular read-alouds of both information books and storybooks supported English language learners in their development of emergent informational language.

Preschool Children's Pretend-Readings of Information Books Versus Storybooks

The first major finding is that preschoolers' pretend-readings of information books and storybooks often demonstrated sensitivity to genre. While many of their pretend-readings of information books used informational language, none of their pretend-readings of storybooks used this type of language. The informational language used by these preschool children might be termed "emergent informational language" or "emergent academic language" because it shares important similarities with written nonfiction or academic language. This language includes a focus on sharing knowledge, making hypotheses about what things are and how they work, and the use of some of the syntax and grammar associated with formal academic nonfiction language.

Emergent informational language can be contrasted with storybook language. The pretend readings excerpted in Table 3.9 demonstrate that these children were beginning to understand that the discourse used when a book conveys information is different from the discourse used in stories. Both children focused the storybook reading on main characters engaging in a series of events. In contrast, the emergent informational language stayed on a single topic and provided information on that topic. This information is either factual (in that it is true beyond the book itself) or focused on attributes (the distinctive characteristics or defining qualities of the topic).

The emergent informational language used by the children had a knowledge stance, like the group retellings documented by Shine and Roser (1999) and Tower (2002). For example, some children commented on what they knew: "these are three things that you should know" or "I already knew that." Some children noted what was real; e.g., "the snakes are real but they don't bite."

Children's emergent informational language also showed what they knew, thought they knew, or were concluding based on the pictures. They described processes. For example, the child might note "they put their mask on everything so they can help . . . because I think they're helping a house" or "a snake was crawling because he stick his tongue out and he was trying to look for food." Many children noted attributes. One child noted of one snake "this snake has no tongue;" of the next, "this one don't have no mouth;" of the next "this one it has sharp teeth."

While many children did not use prototypical grammar and syntax associated with the informational language used in nonfiction books, including timeless present tense or generalized nouns, others did. For example, children said "the snakes are real but they don't bite" and "this might say firefighters blow water out to take the fire out." Other studies have noted that very young children use discourse types inconsistently (e.g., Tower, 2002).

In addition, children used more words related to the theme of the book, on average, in their reading of information books than in their reading of storybooks. For example, children used "attacked," "feeding" and "teeth" during

their pretend-readings about snakes and "rescues," "burned" and "jacket" during their pretend-readings about firefighters. These differences in children's use of these terms across genres were statistically significant. These findings are in line with other work suggesting that even young children are able to demonstrate an awareness of genre in their pretend-readings (e.g., Duke & Kays, 1998).

Table 3.9

Children's Pretend-readings of Storybooks and Information Books at Post-test

Child	Storybook pretend-reading discourse	Information book pretend-reading discourse (score of 2)
4.5 year old male African-American English language learner	*CHI: pam sees. *CHI: she went to to to night time and and shut off her light and. *CHI: and went back to sleep. *CHI: when the sun was morning, she woke up. *CHI: she sees fire fireman burn. *CHI: burning up the fire. *INV: can you tell me about this page? *CHI: pam, she tried to go back to sleep. *CHI: but they they watered their tree and pam shaked fireman's hand. *CHI: and she jumped and and the fireman and she said bye and jumped. *CHI: on her bed. *CHI: and bye. *CHI: the end.	*CHI: um, what does firemans do? *INV: You tell me. *CHI: they water fire. *INV: ok what about this page? *CHI: they they save babies from fire, too. *INV: really, oh, I'm learning a lot from you, what about this page? *CHI: they mark everywhere. *INV: oh. *CHI: and they wear fire costumes. *CHI: they take the hose and spray all the water. *CHI: all the fire. *CHI: they're watering, they're watering the fire. *INV: oh, how about this picture? *CHI: hmm, fire fire trucks.
4.9 year old English language learning Latina	*CHI: a lady was, um, getting her stitching done. *INV: how about this page? *CHI: and an old man come to the lady. *CHI: and then her saw the snake!	*INV: what do you think the book might say here on the first page? *CHI: um, the snake goes around like a, like a slide or something. *CHI: there's no snake, but

*INV: what else do you see on this page, anything else?
*CHI: and her dropped the thingy in the floor and her get scared.
*CHI: and they're drinking a bottle.
*CHI: and then they're walk, they're walk for a minute.
*CHI: a snake reading a book to the grandma.
*CHI: and then, a a quiet man sneak.
*CHI: sneaking in her house.
*INV: what do you think?
*CHI: and then the snake saw him.
*CHI: and get the girl, tied her up and her arm and her leg and.
*CHI: and tied him up up.
*CHI: and saw the snake he gets the man [?].
*CHI: then the snake got him and the the police get him.
*CHI: and shoot the man.
*CHI: and he's the winner!
*CHI: the end.

there's try, but there's a hole where snakes can get in so so so they're can be cold.
*CHI: and then this snake is so, really big.
*CHI: they might catch him.
*CHI: but he go to a stick xxx.
*CHI: this a lizard.
*CHI: what do you call it?
*CHI: again?
*CHI: what what they're called this?
*INV: you said it right, yes exactly what you said.
*CHI: and the lizard is a type thing that have sharps and climb in a tree.
*INV: how about this page?
*CHI: and this snake have a long tongue, that is so long.
*CHI: this snake has no tongue.
*CHI: this one don't have no mouth.
*CHI: this one it has sharp teeth.
*INV: oh good, very nice, let's turn the page, oh this is the last page, what do you think the book might say here on the last page?
*CHI: this one goes around.
*CHI: this one got teeth.
*CHI: this one goes a lot around.

Participation in a Read-aloud Program and its Relationship to Genre-sensitive Pretend-readings

The second major finding is that English language learners who participated in a read-aloud program in which their Head Start teachers read and reread one storybook and one information book per week for twelve weeks had higher scores on the use of informational language and used more thematic

words in their pretend-readings, on average, than their English language learning peers who did not participate in the read-aloud program. This relationship was especially important to the development of English language learners' use of emergent informational language. English language learners in the read-aloud program had about the same level of use of emergent informational language, on average, as their monolingual peers. However, English language learners in the control condition had post-test scores, on average, almost one point lower (.75) than their monolingual peers in the typical classrooms. These models controlled for initial scores on these pretend-reading elements, as well as vocabulary level and demographic characteristics including age and gender. Participation in the read-aloud program was not related to the pretend-reading qualities of monolingual children.

This is an important finding, because English language learners frequently struggle with academic language later in school (e.g., August & Shanahan, 2008; Bailey, 2007). While the informational language used by the children in this study was not full-fledged academic language, it demonstrated an awareness of the features and purpose of the nonfiction genre. According to Pappas and Pettigrew (1998), this awareness is a critical skill readers need in order to comprehend text. When these children demonstrate that they understand that an information book conveys information rather than telling a story, and can provide information themselves when pretending to read the text of a book, they

are demonstrating an emergent understanding of genre and of the differentiation of language registers that may aid them in comprehending text.

Older children tended to produce longer pretend-readings with more thematic vocabulary and higher scores on the use of informational language. However, gender and language status were not related to the qualities of children's pretend-readings. These findings are not surprising, but it is notable that age differences in pretend-reading skill emerge even before age five. These skills are developing even for these very young children.

Limitations

The findings of this study are tentative due to its small sample size. In addition, the teachers in the Read Aloud Program used a short scripted book guide to support their read-alouds of storybooks and information books. These teachers were also faithful to the Read Aloud Program. It is possible that the children in the Read Aloud Program experienced higher quality read-alouds because of these circumstances than they would have been exposed to otherwise. In addition, this study found that topic was related to children's pretend-reading skills. In order to better understand the relationship between topic and genre and their influence on children's developing understanding of genre, it will be important to include multiple books within a given topic and genre in future studies of this kind.

This study also used a very broad measure of emergent informational language. The validity of the codes will need to be established through

longitudinal work that examines whether "emergent informational language" or "emergent academic language" is a precursor of mature academic language skills. After all, much of the informational language used by the children in this study is a particular kind of description. It is possible that what we termed "informational language" is only a sophisticated description of the pictures. We coded emergent informational language based on whether 1) the child was making inferences beyond what may have been pictured and/or 2) the child was providing information true beyond the pages of the book and/or 3) the child was using some type of syntactic marker. Longer-term longitudinal studies of academic language development are clearly needed.

Finally, the purposeful sample used in this study included Head Start monolingual and English language learning students with relatively strong verbal skills. This sample was chosen in order to ensure that children could be successful at the task. It is likely that a sample with a more typical distribution of vocabulary levels, especially for English language learners, would not have produced the same results.

Implications

These findings suggest that even young children may have an emergent sense of genre and that many preschoolers make good assumptions about what an "information book" reading will sound like. In addition, these findings suggest that regular readings of information books, even just twice a week, may support English language learning preschoolers in developing an understanding

of the information book genre. While participating in the read-aloud program had little impact on monolingual children, English language learners' pretend-readings of information books were more likely to resemble those of their monolingual peers at post-test if they participated in the read-aloud program.

Many English language learners struggle with academic language, including the comprehension and production of nonfiction texts. If exposure to read-alouds of information books in preschool can help young English language learning children to become more comfortable with and adept at using nonfiction texts, the implications may be substantial. Future research should investigate whether the informational language used by the preschoolers in this study is a truly an emergent level of understanding of genre that can predict or support children's comprehension and production of nonfiction later in school.

Conclusion

Some preschoolers enrolled in Head Start settings can show in their pretend-readings of information books that they understand the purpose of the genre and have learned some aspects of "informational language," a type of academic language used frequently in school settings. In addition, Head Start preschool teachers can support English language learners' development of informational language by reading information books to children. The findings suggest that not only are high-quality information books appropriate in Head Start preschool settings, but they may be very important to supporting genre-related early literacy skills in young bilingual children. Head Start preschool

teachers should be provided with materials and related supports to use information books effectively with their students.

Chapter 4. Nonfiction in Early Childhood Education: Summary and Implications

The findings of these studies suggest that three-to-five year old preschoolers enrolled in Head Start classrooms can learn vocabulary and discourse skills from a read-aloud program that includes regular and repeated read-alouds of information books and storybooks. In sum, the studies found that that it is feasible and productive to use nonfiction picture books with young children. There appear to be real benefits to using information books in these settings and little reason to restrict preschool book readings to stories. Indeed, English language learning preschoolers might particularly benefit from information book read-alouds. These findings set up future work that should investigate possible links between this early exposure to, and instruction with, nonfiction and children's understanding and production of expository academic language later in school.

Importantly, the findings of this study confirm previous work that information books are read less often to preschoolers than stories (Dickinson, 2001; Yopp & Yopp, 2006). In fact, teachers in this study initially expressed some reluctance to read more information books. They reported not liking information books much and certainly not as much as stories. However, the teachers who participated in the read-aloud program subsequently reported that they were more likely to read information books after experiencing the supports provided

by the read-aloud program. This suggests that the types of supports provided by the program may be important to facilitating teachers' use of information books in their classrooms. We do not know if the findings would hold if teachers had not received the professional development, scaffolded lessons, and incentives to persist with the information books. To realize the benefits described here, it is likely that teachers need support.

The book reading program

This program was carried out over three months by Head Start preschool teachers provided with a variety of supports including the provision of engaging books of both genres, training sessions, simple scripts, and stipends. Initially, the researchers modeled how to read information books using research-based interactive and vocabulary strategies and provided scripts to support the teachers' use of these strategies independently. Importantly, we directly addressed some teachers' initial discomfort with this type of book by acknowledging that teachers had a big role in making these books fun for children and by encouraging them to take ownership of the read-alouds by skipping around and using their own and children's interests to decide where in the read-aloud to linger and where to speed up. The scripts were flexible enough to provide autonomy for teachers to be responsive to children (see Appendix B). In addition, we asked teachers for their feedback on the specific books throughout the program, and encouraged them to be book critics – telling us why they thought some books worked better than others (and laughing with

them when the book that was the "best" in one classroom was the "worst' in another). Soliciting and acknowledging teachers' feedback was an important part of the read-aloud program.

This read-aloud program used modeling, in combination with scripts, as a way to provide teachers with guidance and practice on using interactive and vocabulary instructional reading strategies. While scripting was useful for the purposes of research in that it helped make it more likely that the read-alouds were similar across genre and classroom, and they provided teachers with practice on the techniques, this strategy has significant shortcomings, as well. While some scripting seems to be effective in giving novice teachers practice in strategies, it is unrealistic and undesirable to expect all book readings to use scripts. The focus should be on generalizing beyond scripted read-alouds to other read-alouds. Ideally, this support would include modeling, observation, and feedback.

Promising strategies for using information books in preschool classrooms

Feedback from teachers and classroom observations made it clear that some strategies were particularly important in ensuring readings of information books that were engaging to teachers and to students (see Table 1). Using information books in the context of thematic units in which vocabulary instruction occurs during both book readings and extension activities is particularly important for the development of vocabulary (see Chapter 2 of this thesis). Thematic units provide an important anchor for the use of books of a

variety of genres, including stories, poetry, and nonfiction, along with other activities.

Table 4.1

Promising strategies for successful use of information books in preschool

Long- or short-term instructional themes chosen by the teacher that involve books of many genres and hands-on activities
Information books that are high-quality, accurate, engaging, and relate directly to children's personal experiences
Interactive reading strategies (especially links to personal experience and hands-on activities)
Vocabulary instruction strategies (e.g., defining words, repeating words)
Selective reading (skipping around and emphasizing some sections over others)
Linking to storybooks (e.g., using similar words, themes, and connections to experience)
Carrying the topic and vocabulary over to other parts of the day

English language learners and information books

Emerging evidence suggests that young English language learners may benefit disproportionately from language and literacy exposure and instruction in a variety of supportive contexts including video, narrative read-alouds, and read-alouds of information books (see Silverman, 2007 and Chapter 3 of this thesis). In the pretend-reading study described in Chapter 3, the read-aloud program supported English language learners in their use of emergent informational language, an early type of academic language. This important

finding suggests that early exposure to nonfiction could support English language learners in their academic knowledge. If young English learners could begin to internalize the purposes, structure, and vocabulary of nonfiction at a young age, this could support their comprehension and production of academic language as they read and write later in school. Future longitudinal research should examine this possibility.

Information book pretend-readings as useful tools for educators

Preschoolers' pretend-readings or retellings of information books may be helpful as informal assessments of children's understanding of genre and academic discourse, as well as an important instructional technique for solidifying the development of vocabulary, genre knowledge, and other concepts. Children's pretend readings of information books were found to contain emergent informational language. A child's use of emergent informational language in their pretend readings of information books may suggest that they are developing knowledge about genre and facility with an important type of academic discourse. Other studies have found that children's group retellings contain similar information (Shiner & Rose, 1999; Tower, 2002). In addition, one recent study found that children's individual retellings may support their learning (Leung, 2008). The use of pretend-readings and retellings as an instructional or assessment strategy should be explored in future work.

Conclusion

The findings of this study support the claims of prominent researchers (Duke, 2004; Neuman, 2006) that children should be exposed to more nonfiction in the earliest years of school. These studies provide evidence that information book read-alouds, when part of a read-aloud program involving read-alouds of both information books and storybooks on common themes, can support preschoolers' vocabulary development and their use of emergent informational language, an early literacy skill. Preschool teachers should be provided with access to high-quality information books, as well as support for how to use this genre of book. Future research needs to investigate the relationship between early exposure to and instruction with nonfiction and later reading skills including reading comprehension, vocabulary development, and writing.

Appendix A

Books Used in the Book Reading Program

Table A1

Books (and authors) used in the study by genre and unit

Unit	Information Books	Storybooks
Food	The Food We Eat	Bunny Cakes (Rosemary Wells)
	Where Does Food Come From? (Shelly Rotner)	The Little Red Hen Makes a Pizza (Philomen Sturges)
	Does a Camel Cook? (Fred Ehrlich)	The Grasshopper's Lunch (Sweeney, Alyse)
	The Vegetables We Eat (Gail Gibbons)	Eat Your Peas, Ivy Louise (Leo Landry)
Transportation	On the Go (Ann Morris)	The Trucker (Brenda & Mark Weatherby)
	What Do Wheels Do All Day? (April Prince)	Chugga Chugga Choo Choo (Kevin Lewis)
	On the Move (DK)	Bus Route to Boston (Maryann Cocca-Leffler)
	Trains (Gail Gibbons)	My Truck is Stuck (Kevin Lewis)
Animals	Wonderful Worms (Linda Glaser)	Home for Hermit Crab (Eric Carle)
	Beautiful Bats (Linda Glaser)	Harry the Dirty Dog (Gene Zion)
	Starfish (Edith Thatcher Hurd)	Fish is Fish (Leo Lionni)

Chickens Aren't the Only Ones
(Ruth Heller)

One Duck Stuck
(Phyllis Root)

Appendix B

Sample Script Used in the Read Aloud Program

Transportation Book 5
What Do Wheels Do All Day?
by April Jones Prince

Summary:

This handsome, large-format picture book points out common uses of wheels in a short, rhyming text, brightly illustrated with distinctive collage illustrations. (from www.amazon.com)

Target Vocabulary:

- **Patrol** – To **patrol** is to go back and forth watching over something carefully to keep it safe.

- **Stroll** – To **stroll** is to walk slowly for a short time.

Notes:

What Do Wheels Do All Day?
Day 1

Pre-Reading-

- *Remember that the theme we're learning about is transportation. Transportation is a way of getting from one place to another.*
- *Who can tell me what a wheel is? Where do we see wheels?*
- *Today we will read an information book about wheels and how they are used everyday.*
- **(Hold up the book cover)** *This information book is called What Do Wheels Do All Day? By April Jones Prince.*

During Reading-

- **p. 1-2 (Read) (Point as you describe)** *When you push, pull, pedal or tow, you help move something from one place to another.*
- ***p.* 3-4 (Read) (Point as you describe)** *The car, scooter, tricycle,* ***stroller****, and wheelchair all have wheels. Wheels help them to move.*
- ***p.* 5-6 (Read)**
- **p. 7-8 (Read)**
- **p. 9-10 (Read)**
- **p. 11-12 (Read)**
- ***p.* 13-14 (Read)**
- **p. 15-16 (Read)**
- **p. 17-18 (Read)**
- **p. 19-20 (Read)** *This man, I think he's a dad, is* ***strolling*** *with his son in a* ***stroller****. Say "****stroll****". (***Wait***) To* ***stroll*** *is to walk slowly for a short time. When you* ***stroll****, you don't walk very fast, and you usually don't go very far.*
- **p. 21-22 (Read)** *These police officers are on* ***patrol****. Say "****patrol****". To* ***patrol*** *means to go back and forth watching over something carefully to keep it safe. These officers are* ***patrolling*** *this shopping area to keep it safe.*

- **p. 23-24 (Read).** *Twirl is just another word for turn or spin.*

- **p. 25-26 (Read).** *This is a Ferris wheel. Have any of you ever ridden on a Ferris Wheel? This is a special ride you can get on at fairs or amusement parks like Six Flags or Disney World.*

- **p. 27-28 (Read).**

- **p. 29 (Read).** *Wheels sure do stay busy! They help us do lots of fun and important things!*

Post-Reading-

- *We learned two important words today – **stroll** and **patrol**. To **stroll** is to walk slowly for a short time. Say "**stroll**."* **(Wait)** Have you ever been on a **stroll** before? Where did you go?

- *The other word we learned is **patrol**. Say "**patrol**".* **(Wait)** *To **patrol** is to go back and forth watching over something carefully to keep it safe. Police officers **patrol** neighborhoods or communities. Who **patrols** our school to keep it safe? **(security guard, principal)***

- *Great listening and learning words today!*

What Do Wheels Do All Day?
Day 2

Pre-Reading-

- *We are going to read this information book called What Do Wheels Do All Day? By April Jones Prince again.*
- *Remember, we talked about these two words yesterday:* ***stroll*** *and* ***patrol.***
- *Say "**stroll.**"* To **stroll** is to walk slowly for a short time. **(Wait)**
- *Say "**patrol.**"* To **patrol** is to go back and forth watching over something carefully to keep it safe.
- *Do you all think you can help me turn the pages of this book by moving your arms around and around like wheels, like this?* **(Motion with hands)** *Okay, so every time I need to turn the page, I'd like you to help me by moving your arms like wheels. Are you ready? Let's read!*

During Reading-

- **p. 1-2 (Read)** *Remember, these are different ways wheels help transportation to move.* **(Turn page, prompt children to motion like turning wheel)**
- **p. 3-4 *(Read)* (Turn page, prompt children to motion like turning wheel)**
- ***p. 5-6*** **(Read)** *Help me make these funny sounds! Everyone, say "whiz"!* **(Wait)** *See how the zzz sound at the end of the word makes your tongue feel funny? Now, say "whir"!* **(Wait)** *That's a cool word, too!* **(Turn page, prompt children to motion like turning wheel)**
- **p. 7-8 (Read). (Turn page, prompt children to motion like turning wheel)**
- **p. 9-10 (Read) (Turn page, prompt children to motion like turning wheel)**
- **p. 11-12 (Read) (Turn page, prompt children to motion like turning wheel)**
- **p. 13-14 (Read) (Turn page, prompt children to motion like turning wheel)**
- **p. 15-16 (Read) (Turn page, prompt children to motion like turning wheel)**

- **p. 17-18 (Read) (Wait) (Turn page, prompt children to motion like turning wheel)**

- **p. 19-20 (Read)** *This dad is on a nice* ***stroll*** *with his little boy. Do you think this puppy is* ***strolling*** *with the family?* **(Turn page, prompt children to motion like turning wheel)**

- **p. 21-22 (Read)** *The police officers* ***patrol*** *the community to keep it safe. Who did we say* ***patrols*** *our school to make sure we're safe?* **(*security guard, principal*) (Turn page, prompt children to motion like turning wheel)**

- **p. 23-24 (Read). (Turn page, prompt children to motion like turning wheel)**

- **p. 25-26 (Read).** *Ferris wheels are a lot of fun!* **(Turn page, prompt children to motion like turning wheel)**

- **p. 27-28 (Read). (Turn page, prompt children to motion like turning wheel)**

- **p. 29 (Read). (Turn page, prompt children to motion like turning wheel)**

Post-Reading-

- *We reviewed two important words today –* ***stroll*** *and* ***patrol.*** *Say "****patrol.****"* **(Wait)** *What does* ***patrol*** *mean? Say "****stroll.****" What does* ***stroll*** *mean?*

- *In the book, sometimes people raced, or moved really fast. Sometimes they* ***strolled****, or moved pretty slowly. We're going to play a game where we walk in place. When I say "Race", I want you to run in place really fast, like this* **(Demonstrate).** *When I say, "****Stroll****", I want you to walk in place really slowly, like this* **(Demonstrate).** *You'll need to listen very carefully, because I might try to trick you! Let's go!* **(Play game for 1-2 minutes, sometimes moving quickly back and forth between strolling and racing)**

- *Now let's pretend we are* ***patrolling*** *our classroom to keep it safe. Pretend you are driving in your* ***patrol*** *car and checking to make sure nothing is wrong in the classroom. (Model for children.)*

What Do Wheels Do All Day?
Non-Read Aloud Activities

Materials:

- *Picture cards for patrol and stroll.*
- *Book marked with post-it notes on the pages for patrol and stroll.*
- *Copies of the maze activity sheet.*
-

Morning Meeting:

- *Let's review the words we learned yesterday:* ***patrol*** *and* ***stroll.***

- *To* ***patrol*** *is to go back and forth watching over something carefully to keep it safe.*
    - *Here is a picture of* ***patrol*** *from the book. Here is a real picture of* ***patrol.***
    - *In this picture* **(hold up the real picture)** *who is on* ***patrol.***

- *To* ***stroll*** *is to walk slowly for a short time.*
    - *Let's have someone show us how to* ***stroll.***
    - *Here is a picture of* ***stroll*** *from the book. Here is a real picture of* ***stroll.***

- *I will post the picture cards on our vocabulary word wall so you can see them when you look around the room.* ***(Post Picture Cards.)***

Small Group/Writing:

- *Today you can draw a picture what you might see on a* ***stroll*** *through the park.*

- *What might you see on your* ***stroll****?*

- *How would you draw someone* ***strolling*** *in the park?*

- *What does* ***stroll*** *mean?*

- *You can tell me what you are drawing and I will write, "On my* ***stroll*** *I see ____."*

Centers:

- Today you can choose one of three centers that has something to do with **patrolling.**
- What does **patrol** mean?
- Dramatic Play – *Pretend you are a police officer **patrolling** the city making sure everyone is safe.*
- Blocks-You can build a city and pretend one block is the **patrol** car that circles the city to make sure it stays safe.
- Games – *You can help the police car **patrol** the neighborhood and get back to the police station by completing the maze activity sheet.*

Appendix C

Process for Choosing Target Words

Words were piloted with three samples of children (see Table C1). One sample of children was a first grade class of six-year olds in an affluent suburban community. The other two samples included a group of three-year olds and a group of four-year olds in two separate classrooms in an urban preschool, serving children demographically similar to those in the study. Each sample of children participating in pilot testing was assessed using a PPVT-formatted assessment using overlapping target words. Several target words per book were piloted. The final list of words was chosen based on the results of the pilot test. Sample word lists were analyzed for similarity across a variety of frequency lists as shown in Table C2. In addition, the results of the pilot testing resulted in some words being assessed using other pictures, or with other foils.

The final list of words, along with relevant characteristics of each word, is included as Table C2. The genre in which a target word is introduced was not correlated with any of the other characteristics in Table C2. Correlations range from -.03 to .2 and none are statistically significant (to an alpha level of .05). T-tests did not reveal significant differences on any of the frequency lists in Table C2 or in the age of acquisition by book genre. However, more words introduced in storybooks appeared on the list of words used by first graders in oral language (11 words versus 6 words). In addition, the words introduced in storybooks appeared more often in first graders' oral language than words introduced in

information books (12.7 versus 9). This difference is statistically significant ($t=1.88$, $p<.05$).

Table C1

Pilot test results from a sample of 3-year olds (n=10) 4-year olds (n=10) and 6-year olds (n=17)

Word	3 yo	4 yo	6 yo	Notes
Apart		10%	43%	Replaced due to low imageability.
Apron	10%	0	60%	Retained.
Arch	0	40%	71%	Book replaced (out of print).
Bank	10%	40%	13%	Retained but foils changed.
Brought		30%	73%	Other word chosen due to many possible targets.
Bunch	60%	80%	44%	Other word chosen due to many possible targets.
Bundle	20%	10%	53%	Retained.
Bury		40%	57%	Retained.
Capture	20%	10%	67%	Book replaced (lack of additional target word).
Cargo		0	14%	Retained.
Crowd	40%	90%	71%	Replaced due to ceiling.
Decorate		30%	86%	Retained.
Delicious		50%	100%	Replaced due to ceiling.
Dial		30%	100%	Book replaced (lack of additional target word)
Dye		40%	71%	Retained.
Enormous	70%	80%	93%	Replaced due to ceiling.
Field		10%	93%	Retained.
Flock		40%	29%	Replaced due to erratic results.
Gasp		30%	60%	Retained.
Giggle	20%	50%	93%	Replaced due to ceiling.
Harvest	10%	30%	73%	Retained.
Hatch		30%	86%	Retained.
Haul		40%	14%	Retained.
Highway	30%	50%	93%	Replaced due to ceiling.
Horns	10%	0	60%	Replaced due to multiple meanings.
Huge	50%	90%	100%	Replaced due to ceiling.
Humans		NA	NA	Foils too attractive.
List		50%	100%	Retained.
Market		10%	100%	Replaced due to ceiling (when attractive foil is

				included).
Miserable	10%	50%	93%	Replaced due to ceiling.
Passageway	0	30%	73%	Retained.
Passenger		40%	100%	Retained.
Patrol	30%	10%	73%	Retained.
Pedal	50%	40%	93%	Replaced due to ceiling and other possible targets.
Pitcher	30%	10%	44%	Replaced due to multiple meanings.
Plow	30%	40%	75%	Retained.
Pound		10%	43%	Retained.
Prepare		10%	29%	Retained.
Pyramid		0	57%	Retained.
Rail		30%	33%	Other word chosen due to many possible targets.
Ray		10%	29%	Retained.
Rescue		10%	57%	Book replaced (out of print)
Roots	40%	50%	67%	Replaced due to ceiling.
round		30%	86%	Other word chosen due to many possible targets.
Route		50%	20%	Retained but foils changed.
Scrub		30%	100%	Retained.
Sharp		30%	86%	Other word chosen due to many possible targets.
Siren		40%	20%	Replaced due to low imageability.
snail	10%	0%	80%	Retained.
Soar		40%	60%	Other word chosen due to many possible targets.
Splash		40%	100%	Replaced due to low imageability.
Stalk	10%	40%	40%	Retained.
Stroll		10%	100%	Retained.
Stuck		30%	33%	Replaced due to low imageability.
Territory		10%	57%	Retained.
Thrilled	80%	30%	60%	Retained.
Tray		80%	71%	Replaced due to ceiling.
Twisted	40%		0%	Replaced due to ceiling.
Underneath		40%	86%	Book replaced (out of print)
Writing	80%	80%	93%	Replaced due to ceiling.

Table C2

Target Word Characteristics

Target Word	Genre of Book	Ginn Overall[a]	School Book Freq[b]	Picture Book Freq[c]	Oral Word Freq[d]	Part of Speech	Zeno Freq[e]	Imageability[f]	Age of Acquisition[f]
apron	F	17	15	14	15	noun	8	565	5
bank	F	9	8	9	9	noun	93	560	
bitter	NF	15	13	16		adjective	24	457	67
bundle	F	15	13	13		noun	14		58
burrow	NF	16	17	12		verb	4	444	
bury	F	12	12	12	10	verb	6	401	53
cargo	NF	18	14	15		noun	13	497	
coral	F	18	15	14		noun	7	561	562
decorate	F	19	15	16	15	verb	3	508	
dye	NF	19	18	14		verb	6	506	5
engineer	F	12	11			noun	16	495	524
field	NF	5	4	5	7	noun	179		
gasp	F	15	16	12		verb	2	491	68
glide	NF	17	19	13		verb	3		
graze	F	17	14	14		verb	4	470	
gross	F	15	19		13	adjective	9		77
harbor	NF	13	12	12		noun	28	579	67
harvest	NF	16	13	14		verb	18	562	6
hatch	NF	17	14	14	13	verb	12		57
haul	NF	15	13	13		verb	5	406	405
knead	F					verb	2		
list	F	8	4	12	14	noun	101		54
marsh	F	21	15		14	noun	6		64
passageway	NF					noun	2		

passenger	NF	15	12			noun	14	529	535
patrol	NF	7	17		3	verb	5		79
plow	NF	15	13	14		noun	12		
pound	F	11	7	11	11	verb	23	553	57
prepare	NF	11	11	12		verb	44		
pyramid	F	22	15			noun	10	613	619
ray	NF	13	11	12	12	noun	20	556	562
rig	F					noun	2		
roost	NF	23		17		noun	1		
route	F	14	12	17	14	noun	39	447	443
scrub	F	14	16	11		verb	4		
slice	F	14	13	12		verb	9	507	53
snail	NF	17	17	13	14	noun	5	577	
sour	NF	22	20	16		noun	8	495	64
spin	NF	9	12	9	5	verb	15		48
stalk	NF	17	14	13		noun	4	440	489
steep	F	16	13	15	14	adjective	27		59
stroll	NF	21	19	15		verb	2		62
swamp	F	18	14	14		noun	10	600	67
swoop	NF	19		13		verb	1		
territory	NF	15	13			noun	35	445	451
thrill	F	23	17			verb	2	483	73
unload	F	21	19	15		verb	3		
van	F	14	15	17	11	noun	10	572	578

Note. [a]Ginn Overall frequency of words (Johnson, Moe & Baumann, 1983) [b]Frequency in third to nineth grade schoolbooks (Carroll, Avies & Richman, 1971 in Johnson, Moe & Baumann, 1983) [c]Frequency in primary grad picture books as listed in Moe Picture Book Words (in Johnson, Moe & Baumann, 1983) [d]Frequency in oral language of first grade children as listed in Moe, Hopkins, Rush Oral Language Words (in Johnson, Moe & Baumann, 1983) [e]Frequency from the Educators' Word Frequency Guide (Zeno, 1995) [f]Composites from MRC Psycholinguistic Database (Wilson, 1987)

Appendix D
Internal Reliability of TVA

Table D1

Internal reliability and item difficulty of different versions and administrations of TVA

Assessment	K-R coefficient	Item Difficulty
	Full TVA	
Pre	0.46	0.31
Post	0.68	0.44
	Reduced TVA	
Pre	0.54	0.31
Post	0.66	0.44
	TVA-Information	
Pre	0.36	0.35
Post	0.46	0.43
	TVA-Storybook	
Pre	0.25	0.28
Post	0.52	0.40
	TVA Reduced-Information	
Pre	0.35	0.33
Post	0.42	0.43
	TVA Reduced-Storybook	
Pre	0.37	0.31
Post	0.52	0.46

Appendix E

Fidelity to the Book Reading Program

Fidelity in Read Aloud Only Classrooms

Observers noted whether teachers demonstrated the following behaviors during read aloud time. Each book had two target words, and most of the behaviors are linked to whether those words were used as indicated in the script. These behaviors were scored as present (1)/not present (0).

Table E-1

Items analyzed for Fidelity

Observational Read Aloud Fidelity Items	
RAT01	The teacher introduces the book. (0/1)
RAT06	The teacher stops to define 2 target words, X and Y.
RAT07	The teacher stops to discuss the book 4-6 times.
RAT08	The teacher has children say word X at least 2 times.
RAT09	The teacher has children say word Y at least 2 times.
RAT13	The teacher reviews word X at the end. (0/1)
RAT14	The teacher reviews word Y at the end. (0/1)
RAT15	The teacher asks children a question about word X at the end. (0/1)
RAT16	The teacher asks children a question about word Y at the end. (0/1)

The scores for each classroom were averaged. Categorical variables were created based on the average as follows: Low fidelity (0-3), Moderate fidelity (4-6) , or High fidelity (7-9)

Based on the observation data alone, three classrooms exhibited high fidelity, three classrooms exhibited moderate fidelity, and one exhibited low fidelity. The survey data was then analyzed. Special attention was paid to when teachers reported deviating from the script. Finally, a recommended fidelity level was determined based on the observations and the survey data. Of the 8 RA classrooms, three exhibited high fidelity, two exhibited moderate fidelity, and three exhibited low fidelity

Table E-2

Fidelity information for RA classrooms (n=8)

Classroom	Observation Fidelity Level	Survey Data	Overall Fidelity Level
2	0	No survey data	0
8	1		1
9	2		2
10	1	Sometimes did not use script, never read script word-for-word, sometimes did not emphasize target words	0
12	1	Sometimes did not emphasize target words	0
16	0		0
18	1		1
24	2	Sometimes did not use script, sometimes taught words her own way rather than as in script, sometimes did not emphasize target words	2
25	2		2

Fidelity in Read Aloud Plus Classrooms

The observations in RAP classroom included the RA items described above, as well as items related to the extension activities. A similar process was used to describe fidelity, with an analysis of both observational and survey data.

Table E-3

Items From Observational Scale Analyzed for Fidelity to Extension Activities

Observation items related to RAP extension behaviors	
	Morning Meeting
	Low fidelity (0-2) Moderate fidelity (3-4) High fidelity (5-6)
MM01	The teacher says, "Let's review the words we learned yesterday, X & Y." (0/1)
MM02	The teacher defines word X. (0/1)
MM03	The teacher shows a real picture of word X. (0/1)
MM04	The teacher defines word Y. (0/1)
MM05	The teacher shows a real picture of word Y. (0/1)
MM06	The teacher does something physically active with X and/or Y. (0/1)
	Center Time
	Low fidelity (0-2) Moderate fidelity (3-5) High fidelity (5-6)
CT01	The teacher connects centers to the read aloud book/theme. (0/1)
CT02	The teacher reviews word X or Y. (0/1)
CT03	The teacher uses word X or Y 5 times. (0/1)
CT04	The teacher introduces 3 activities about word X/Y that children can do during centers. [Code as 3 for 3 activities, 2 for 2 activities, 1 for 1, 0 for 0 activities related to the word.]
	Small Group Time
	Low fidelity (0-1) Moderate fidelity (2-3) High fidelity (4)
SGT02	The teacher reviews word X or Y. (0/1)
SGT03	The teacher uses word X or Y 5 times. (0/1)
SGT04	The teacher has children do an activity about word X or Y. (0/1)
SGT05	The teacher connects the small group activity to a classroom or book theme (0/1)

Teachers in the RAP condition were largely faithful to the Read Aloud activities. Of the 8 RAP classrooms, five exhibited high fidelity, three exhibited moderate fidelity, and none exhibited low fidelity. Teachers participating in the RAP condition appear to have been more faithful to the Read Aloud component of the program than teachers in the Read Aloud Only condition.

The fidelity to the extension activities was more variable. No teachers were highly faithful to the extension activities, and two teachers had low fidelity to the activities. Note that two RAP classrooms seemed to function as RA classrooms, with high fidelity to the Read Aloud activities, but low implementation of activities.

Table E-4

RAP Fidelity based on observations (2=High, 1=Moderate, 0=Low)

Classroom	Read Aloud Level	Morning Meeting Level	Center Time Level	Small Group Level	Average Activity Level
3	2	0	1	2	1
5	2	1	0	0	0
6	1.5	0	1	1	1
7	2	0	0	1	0
11	1	1	2	1	1.5
20	2	0	1	1	1
23	1	1	2	0	1
29	2	1	1	0	1

Table E-5

RAP fidelity based on responses to surveys

Classroom	We read the scripts pretty much word-for-word.[a]	We did the morning meeting.[b]	We did the small group activities.[b]	We did the center time activities.[b]	We skipped activities.[b]	We added to the activities to help children learn the words.[b]
3	Almost always	Almost always	Usually	Usually	Sometimes	Never
5	Sometimes	Almost always	Almost always	Usually	Sometimes	Sometimes
6	Sometimes	Almost always	Almost always	Almost always	Never	Sometimes
7	Sometimes	Almost always	Sometimes	Sometimes	Sometimes	Sometimes
11	Sometimes	Almost always	Almost always	Almost always	Sometimes	Sometimes
20	Almost never	Usually	Usually	Sometimes	Sometimes	Sometimes
23		Usually	Almost always	Almost always	Sometimes	Never
29	Sometimes	Almost always	Almost always	Almost always	Never	Almost always

Note. [a]Responses were Almost Never, Sometimes, Almost Always [b]Responses were: Never, Rarely, Sometimes, Usually, Almost Always

Table E-6

RAP fidelity based on observational and survey data

Classroom	RA Observational	RA Survey	RA Final	Activities Observational	Activities Survey	Activities Final
3	2		2	1		1
5	2		2	0		0
6	1.5		1.5	1	High	1
7	2		2	0		0
11	1		1	1.5		1.5
20	2	Low	1.5	1		1
23	1		1	1		1
29	2		2	1	Did extra	1

Appendix F

Residual Analysis of the Final Model for the Vocabulary Study

Table F-1

Shapiro-Wilk Normality Test

Variable	Obs	W	V	Z	Prob>z
Classroom-level Residuals	534	.99602	1.419	.844	.19934
ID-level Residuals	534	.99561	1.568	1.085	.13898

Appendix G

Consideration of Alternative Models for the Vocabulary Study

I. Full Dataset and Reduced Measure

An alternative version of the TVA was created to deal with two problems. First, the internal reliability was very low. Second, there were differences in children's knowledge of words introduced in storybooks versus information books. Children knew more of the words to be introduced in information books than words to be introduced in storybooks at pretest. In addition, children in the control group learned more of the words introduced to the experimental conditions in information books than words introduced in storybooks. These differences could not be related to the genre of the book because the children did not learn words from the books. A reduced version of the TVA was created by dropping 8 items; 4 items from the storybook subtest and 4 items from the information subtest. This change solves all of the problems described above. The findings, shown in Table G-1 are similar to the Final Model.

Table G1

Taxonomy of fitted multilevels models describing the relationship between the genre of the book in which words were introduced during a read aloud and children's knowledge of target words at posttest, controlling for pretest score, general vocabulary level, demographic variables, and test condition for the **full dataset and reduced measure**

Predictor	M1 (uncond.)	M1 (uncond.)	M1 (uncond.)	M2 demo	M3 testing	M4 conditions	M5 question	M6 interaction
Intercept	3.87	3.85	3.87 ***	3.22	-1.33	-1.65	-1.67	-1.74
Asian				0.17	0.2	0.25	0.25	0.25
Black				-0.31	-0.4	-0.35	-0.35	-0.35
Mixed				0.86	0.22	0.17	0.18	0.17
Native				-1.68	-1.41	-1.87	-1.85	-1.87
Other				-0.39	-0.37	-0.26	-0.26	-0.26
White				0.05	-0.4	-0.32	-0.32	-0.32
Male				-0.08	-0.07	-0.08	-0.08	-0.08
Only English				.78 *	-0.16	-0.15	-0.15	-0.15
HS				0.48	0.3	0.19	0.2	0.19
Allday				0.32	0.09	-0.11	-0.11	-0.11
preTVA					.22 ***	.22 ***	.21 ***	.22 ***
prePPVT					.05 ***	.05 ***	.05 ***	.05 ***
raonly						0.44	0.44	.65 *
raplus						.88 ***	.88 ***	.88 ***
information							0.05	0.18
infoxraonly								-.42 ~
∂^2_ϵ	1.73	0.2	1.18	1.19	1.19	1.19	1.2	1.2
∂^2_μ	0.7		0.62	0.6	0.58	0.52	0.52	0.52
∂^2_i		1.4	1.29	1.27	0.78	0.78	0.78	0.78
-2LL	-1119.72	-1098.92	-1072.12	-1015.74	-954.73	-951.96	-953.18	-951.98

****p<.001, **p<.01, *p<.05, ~p<.10*

Note. u is associated with classroom-level variance, i is associated with student-level variance, € is associated with residual variance.

2. **Reduced Dataset and Full Measure**

Because of concerns about fidelity, models were built using a reduced version of the dataset. This dataset includes three fewer classrooms than the full dataset. The findings, shown in Table G-2, are similar to the final model.

Table G2: Taxonomy of fitted multilevels models describing the relationship between the genre of the book in which words were introduced during a read aloud and children's knowledge of target words at posttest, controlling for pretest score, general vocabulary level, demographic variables, and test condition for the **reduced dataset and full measure**

Predictor	M1A (uncond.)	M1B (uncond.)	M1C (uncond.)	M2 demo	M3 red demo	M4 testing	M5 conditions	M6 question	M7 interaction	M8 final
Intercept	49.78***	4.93***	4.97***	4.17***	4.08***	-1.00	-1.65	-1.71***	-1.85	-1.80***
Asian										
Black										
Mixed										
Native										
Other				-0.16						
White				0.24						
Male				0.24	0.23	0.12	.11	.11	.11	.11
Only English				.76~	.95***	-.44~	-.38	-.38	-.38	-.38
HS				0.44	0.49					
Allday				0.28	0.3					
prePPVT						.06***	.06***	.06***	.06***	.06***
preTVA						.2***	.20***	.19***	.20***	.20***
raonly							.72*	.72*	1.02***	.98***
raplus							1.27***	1.27*	1.38***	1.27***
information								.13	.4*	.31*
raonlyxinfo									-.61*	-.52*
raplusxinfo									-.24	
∂^2_ϵ	1.99	1.38	1.36	1.37	1.37	1.36	1.36	1.36	1.35	1.35
∂^2_μ	0.92		0.85	0.84	0.82	.74	.57	.57	.57	.57
∂^2_i		1.68	1.49	1.47	1.47	.97	.97	.98	.98	.98
-2LL	-1061.22	-1048.51	-1018.67	-963.88	-983.56	-950.5	-945.57	-946.20	-944.56	-944.6

****p<.001, **p<.01, *p<.05, ~p<.10*

Note. u is associated with classroom-level variance, i is associated with student-level variance, € is associated with residual variance.

3. **Full pre-test TVA as the pre-test predictor**

The low internal reliability of the pretest assessment was cause for concern. Models were built using the full TVA as a pretest rather than the genre-related subtest. As shown in Table G-3, results were similar to the Final Model.

Table G3

Taxonomy of fitted multilevels models describing the relationship between the genre of the book in which words were introduced during a read aloud and children's knowledge of target words at posttest, controlling for full pretest score, general vocabulary level, demographic variables, and test condition for the full dataset and full measure

Predictor	M1 (uncond.)	M2 Demographics	M3 Pretests	M4 Conditions	M5 Question	M6 Interactions	M7 Final
Intercept	5.02***	-1.01	-5.48***	-6.08***	-6.26***	-6.37***	-6.33***
Age		1.16***	.90***	.92***	.92***	.92***	.92***
Only English		1.07***	-.10	-.10	-.10	-.10	-.10
Head Start		.36	.31	.14	.14	.14	.14
Full Time		.45	.2	.03	.03	.03	.03
Male		.20	.15	.13	.14	.14	.14
White		.28	-.23	-.05	-.05	-.05	-.05
Black		.12	.04	.5	.05	.05	.05
Other Race		-.09	-.10	.4	.04	.04	.04
prePPVT			.06***	.06***	.06***	.06***	.06***
preFullTVA			.11***	.11***	.11***	.11***	.11***
raonly				.70*	.70*	.95***	.89***
raplus				1.21***	1.21***	1.31***	1.21***
information					.36***	.58***	.48***
infoxraonly						-.48~	-.39
infoxraplus						-.19	
∂^2_{ϵ}	1.36	1.38	1.37	1.37	1.35	1.35	1.35
∂^2_{μ}	0.78	.59	.54	.35	.35	.35	.35
∂^2_{i}	1.54	1.41	.91	.91	.92	.92	.93
-2LL	-1159.17	-1088.1353	-1031.23	-1024.94	-1021.61	-1020.97	1020.85

****p<.001, **p<.01, *p<.05, ~p<.10*

Note. u is associated with classroom-level variance, i is associated with student-level variance, € is associated with residual variance.

4. Including RA and RAP as a single "program" question predictor

Because two RAP classrooms functioned more as RA classrooms and RA classrooms had lower overall fidelity (see Appendix E), the analysis was run comparing classrooms in the experimental condition to classrooms in the control condition. The results of this model suggest that a similar number of words introduced to children in the experimental condition in information books regardless of whether children were in the experimental or control condition. A similar number of words introduced to children in the experimental condition in storybooks regardless of whether children were in the experimental or control condition. This suggests that the genre in which the books were read to the children was not relevant for word learning.

Table G4

Taxonomy of fitted multilevels models describing the relationship between the genre of the book in which words were introduced during a read aloud and children's knowledge of target words at posttest, controlling for pretest score, general vocabulary level, demographic variables, and test condition for the full dataset and full measure

Predictor	M1 (uncond.)	M2 Demographics	M3 Pretests	M4 Condition	M5 Question	M6 Interactions
Intercept	5.02***	-1.01	-5.71***	-6.44***	-6.65***	-6.75***
Age		1.16***	.96***	.99***	1.01***	1.01***
Only English		1.07***	-.09	-.08	.09	-.09
Head Start		.36	.32	.25	.26	.26
Full Time		.45	.27	.20	.20	.20
Male		.20	.16	.15	.15	.15
White		.28	-.24	-.04	-.04	-.04
Black		.12	-.02	.00	.01	.02
Other Race		-.09	-.09	.04	.04	.05
prePPVT			.06***	.06***	.06***	.06***
preTVA			.16***	.16***	.14***	.14***
RA Program				.91***	.90***	1.07***
information					.23~	.45*
infoxprogram						-.34
∂^2_ϵ	1.36	1.38	1.36	1.36	1.35	1.35
∂^2_μ	0.78	.59	.54	.38	.38	.38
∂^2_i	1.54	1.41	.92	.92	.93	.93
-2LL	-1159.17	-1088.1353	-1028.31	1023.19	1022.62	-1022.14

****p<.001, **p<.01, *p<.05, ~p<.10*

Note. u is associated with classroom-level variance, i is associated with student-level variance, € is associated with residual variance.

The learning associated with each word was examined, to see if a very few words were responsible for the findings. However, this does not appear to be the case. Also, this analysis reinforces this idea that word learning for RA condition was higher for words introduced in storybooks than words introduced in information books.

Table G5

Mean Knowledge of Target Words at Pretest and Posttest and Mean Difference Between Pretest and Posttest, by Condition

Word	Control			RA			RAP		
	pre	post	difference	pre	post	difference	pre	post	difference
Storybook									
f01	0.05	0.05	0	0.08	0.21	.13*	0.04	0.24	.2*
f02	0.38	0.33	-0.05	0.22	0.35	.12*	0.29	0.41	.12*
f03	0.34	0.3	-0.04	0.28	0.31	0.03	0.34	0.33	-0.01
f04	0.49	0.58	.09~	0.43	0.65	.22*	0.57	0.63	0.06
f05	0.23	0.28	0.04	0.18	0.37	.19*	0.19	0.38	.19*
f06	0.31	0.49	.18*	0.22	0.35	.12*	0.29	0.46	.16*
f07	0.29	0.4	.11*	0.15	0.53	.38*	0.22	0.6	.38*
f08	0.38	0.46	.08~	0.25	0.5	.20*	0.37	0.63	.27*
f09	0.15	0.28	.12*	0.2	0.43	.22*	0.23	0.4	.17*
f10	0.57	0.68	.11*	0.51	0.67	.17*	0.49	0.72	.23*
f11	0.14	0.16	0.02	0.17	0.21	0.04	0.18	0.29	.11*
f12	0.23	0.26	0.02	0.11	0.29	.18*	0.27	0.28	0.01
Information									
n01	0.28	0.31	0.03	0.21	0.25	0.03	0.25	0.35	.1~
n02	0.3	0.33	0.03	0.31	0.37	0.06	0.28	0.38	.1*
n03	0.42	0.56	.14*	0.48	0.54	0.06	0.37	0.58	.21*
n04	0.67	0.79	.11*	0.62	0.71	.09~	0.36	0.79	.12*
n05	0.48	0.43	0	0.36	0.44	0.08	0.37	0.56	.18*
n06	0.55	0.67	.12*	0.58	0.68	.09~	0.51	0.73	.21*
n07	0.12	0.11	-0.01	0.21	0.18	-0.03	0.16	0.33	.17*
n08	0.32	0.29	0.03	0.28	0.36	0.08	0.18	0.49	.31*
n09	0.24	0.24	0	0.19	0.34	.15*	0.18	0.39	.21*
n10	0.3	0.35	0.05	0.34	0.36	0.02	0.39	0.5	.11*
n11	0.31	0.4	.09~	0.17	0.28	.11*	0.34	0.43	.09~
n12	0.39	0.37	0.02	0.43	0.4	-0.02	0.34	0.33	-0.01

****p<.001, **p<.01, *p<.05, ~p<.10*

The learning associated with each classroom was examined to see if a single classroom was responsible for most of the word learning (or lack thereof). This was not the case.

Table G6

Mean number of words learned that were introduced to the experimental conditions in storybooks and information books, by classroom and condition

Classroom	n	Story	Information	Difference
Control				
13	8	0.375	1.5	1.13
14	13	0.54	0.69	0.15
15	11	1.09	1.09	0
21	13	0.69	0.62	0.08
22	10	-0.5	1.2	1.7*
26	12	1.08	0.08	-1.17~
27	13	1.15	-.15	-1.31*
28	12	.75	-.5	-1.25*
RA Only				
8	14	3.2	1.14	-2.07*
9	12	3.42	.75	-2.67*
10	14	.5	.07	-.43
12	9	1.22	-.11	-1.33
16	13	-.31	.69	1.00~
18	9	2.56	1.33	-1.22*
24	9	2.33	.69	-1.67~
25	9	4.11	1.22	-2.89*
RA Plus				
3	11	2.73	2.00	-.28
5	13	1.38	2.46	1.08*
7	14	2.36	1.64	-.71
11	11	.55	1.18	.64
20	8	3.00	3.25	.25
23	7	.29	1.43	1.14
29	4	2.00	1.5	.5
30	3	2.00	1.33	.67
31	3	2.33	.67	-1.67

Appendix H

The Pretend-Reading Assessment Protocol

Who to assess:

Four 4 or 5 year old preschoolers (not 3 year olds) with consent forms.

They must all be **fluent in English**.

They should be children who their teacher thinks will like reading books to you.

You want to have two boys and two girls **if possible.**

Directions:

- Be sure you have all four pretend-reading books and an audio recorder.
- Test the digital audio recorder to make sure it works.
- Determine which children will do the assessment.
- Be sure to do **both** pretend-readings with each child with whom you do any pretend readings if possible. Otherwise, we cannot use the data.
- Remember that participation is voluntary. If children are reluctant, uncomfortable, or not enjoying the activity and you cannot quickly re-engage them in the activity, return them to their classrooms regardless of where you are in the assessment.

Assigning books to children:

- If you have two boys and two girls:
    - One boy and one girl will read the books about snakes.
    - One boy and one girl will read the books about firefighters.
- If you have only three children, all three should read the same books (snakes or firefighters).
- If you have four children, but they are all boys or all girls:
    - Two children will read the books about snakes.
    - Two children will read the books about firefighters.

Which order should you read the books?

- Alternate the order in which you read the books.
- Just alternate the order with each child (the first child starts with info books, the second child starts with storybooks, the third child starts with info books, etc.). You can use this table to help you.
- If the child says they've read or heard the book before, and seems to know the book, please circle the book. If you catch this early enough, read the other books with them, regardless of the order.

Center	Classroom	Child	First Book	Second Book

Pretend-reading Protocol

Adapted from Duke & Kays (1998, 302-303)

Step 1: Introducing the task

"What I want you to do is to pretend to read some books to me. Now, it's okay if you can't *really* read yet. That's okay, I just want you to pretend to read - say what you think the book might say. I have two books for you to pretend to read. These are two *different kinds* of books. This book is a *storybook*. It tells a story about (a snake named Sam/a pig named Pam). . . . . Do you know this story? This is not a storybook. This book tells about something that is real. It tells you lots of information about (snakes/firefighters). Do you know this book?"

Step 2: Picture walk

"Now we're going to read the (storybook or book about snakes/firefighters). These books have the words crossed out so that I remember to listen to the words *you* say rather than read the words in the books. Before you read, I want you to look all through the book. Look through the book and think about what you might say."

Help the child to look through the book, looking at each page. If they start pretend-reading, remind them that you're going to look at all the pictures first, and then read the book. Keep the picture walk pretty quick.

Step 3: Pretend-reading

Begin recording: " (your name) and (child's name) are at (center and classroom) and (child's name) is going to pretend to read to me today on (date)."

The assessor says: "OK, now it's time for you to pretend to read to me. Remember, the name of the book is XX." If it is a storybook, the researcher says, "It is a storybook. It isn't real." If it is an information book, the researcher says, "It is a book with information about (snakes/firefighters). It tells you about snakes/firefighters)."

Make sure the child talks about *each page*. If the child says nothing about a page, or just a few words or a sentence about a page, you may ask:

- What do you think the book might say here?
- So just say what you think the book says here on this page.
- Look at this page. What do you think the book might say?
- What might it say at the beginning of this book?
- What do you see (in the picture)?
- Well, there's a (character/animal/etc.)

If the child starts to talk about things that have nothing to do with the book, try the prompts above to bring their attention back to the book. If the child's dialogue does have to do with the book, let them talk.

Do not worry about the recording extra dialogue – the transcriber will ignore anything that isn't the pretend reading. It's okay if the child wanders a bit – it's totally normal and natural and we want them to feel free to tell us what they think without losing track of the task.

The entire pretend-reading of the book is audio recorded – don't stop until you're sure the child is done. Go Step 2 with the book of the other genre.

Appendix I

Thematic Vocabulary Words

Table I

Thematic vocabulary words by topic

Snakes		Firefighters	
afraid	observing	afraid	hose
animal	sand	ambulance	hospital
animals	scaly	bell	hurt
attacked	slid	bottle	hydrant
bit	slide	building	jacket
bite	sliding	burned	mask
biting	slinky	burning	masks
body	snail	climb	medal
bone	snake	climbed	police
climb	snakes	climbing	protect
climbed	spitting	clock	rescue
climbing	stick	clothes	rescues
crawl	sticking	coat	rescuing
crawled	tail	company	riding
crawling	teeth	cry	roof
crawls	tongue	crying	rope
crept	tree	dalmation	safe
curled	trees	drain	save
curling	water	drive	saved
dirt	watered	drived	saving
dirty	watering	driving	sign
feed	worms	emergency	sleep
feeding		explode	sleeping
feeds		exploded	sleepy
food		exploding	sleeve
foods		explosion	slept
fox		fight	slid
gliding		firefighter	sliding
grass		fighterfighter	slinky
ground		fighters	smoking
growing		fighting	spray
growling		fire	spraying
growls		firefighter	station
hole		firefighters	street
holes		fireman	trap
hungry		firemen	trapped
leaf		fires	tree
leafy		firetruck	trees
leaves		firing	truck
lives		fixed	trucks
lizard		fixing	water

mouse
mouth
mouths
move
moves
moving
munch

hat
hats
helmet
help
helping
helps
high

watered
watering
waters
waves
waving
wheel
wheels
window
windows

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