EFFECTS OF PHRASE STYLE IN STORYBOOKS ON CHILDREN’S WORD LEARNING IN SMALL AND LARGE READING GROUPS

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

EFFECTS OF PHRASE STYLE IN STORYBOOKS ON CHILDREN’S WORD LEARNING IN SMALL AND LARGE READING GROUPS

Presented by Alicia Lorio,
A candidate for the degree of
Master of Science
And hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATIONS

I dedicate my thesis work to my parents, Julio Lorio and Ana-Maria Fernandez, as well as my brother, Richard Lorio. Without their continual support, warm hugs, and good cooking, I would not have had the energy to reach this milestone. Thank you for always being there for me throughout each long night, proofreading session, and final submission. I love you all.
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Abstract

Shared storybook reading between adults and children has long been considered an effective activity that facilitates children’s early language and literacy development (Brabham & Lynch-Brown, 2002; Chomsky, 1979; Elley, 1980, 1989). Children are exposed to an abundance of new, complex words, for which adult readers subsequently expand on and highlight to help make memorable for children (Biemiller & Boote, 2006; Clark, 2010; Read, 2014). Given that early childhood providers regularly incorporate shared storybook reading sessions in small and large groups as part of the typical schedule, opportunities to support how young children learn new words within these contexts are possible. The purpose of the current study was to examine the influence of three specific phrase styles (rhyming, subverted-expectations, and typical phrases) on preschool children’s word learning (recall and recognition of target words) within small and large reading groups. Results from the study indicated that, regardless of the group size, children were more successful at recalling complete or partial definitions of the target words and were more successful at recognizing the target words’ definitions when they were read storybooks with phrase styles that rhymed compared to when they read storybooks with storybooks that did not rhyme. Implications are also discussed.
Introduction

Shared storybook reading between adults and children has long been considered an effective activity to facilitate children’s early language and literacy development (Brabham & Lynch-Brown, 2002; Chomsky, 1979; Elley, 1980, 1989). Within this specific context, adult readers introduce children to the conditions and conventions of literacy (Allison & Watson, 1994), such that opportunities to engage in language-rich conversational exchanges, experience decontextualized text elements, and learn about relations between oral and written registers are actively supported (Brabham & Lynch-Brown, 2002; Elley, 1989; McLeod & McDade, 2001; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988). Indeed, through shared storybook readings, children are exposed to an abundance of new, complex, and sophisticated words, which adult readers can subsequently expand on and highlight with analytic talk to help make memorable for children (Biemiller & Boote, 2006; Clark, 2010; Read, 2014). Specifically, Dickinson and Porche (2011) found that analytic talk about books during classroom group readings in preschool had lasting effects on children’s vocabulary in fourth grade as well as indirect effects mediated through children’s kindergarten receptive vocabulary. When children are presented with analytical talk from the adult reader, they may become more attuned to books and more readily able to participate in and learn from these group discussions (Dickinson & Porche, 2011). Through such social interactions and discussions with adults, children can engage in conversations and pose questions related to newly encountered words, both of which promotes their vocabulary learning.

Given the association between vocabulary knowledge and important outcomes, including academic achievement and oral language development, an understanding of how young children acquire new words, particularly within the classroom context of shared storybook reading, is
important for learning how to most effectively facilitate vocabulary learning during these years. As Pentimonti and Justice (2010) have noted, early childhood programs regularly hold reading sessions within their daily schedule. Considering this frequency, it is also important to examine specific reading conditions that best foster children’s learning and comprehension of new words as well as their engaged behaviors during reading sessions. Thus, an examination of the type of storybooks adults read aloud to children, the repetition of each reading, and the adult-child interactions within this context will further add to the understanding of the role shared storybook readings have in scaffolding young children’s vocabulary growth.

**Children's Word Learning from Storybooks**

For more than 40 years, research has supported the notion that early shared storybook reading experiences contribute to children’s word learning by exposing children to new, more advanced vocabulary and complex language structures through a familiar and motivating routine (Beck & McKeown, 2007; Chomsky, 1979; Elley, 1989; Jong & Bus, 2002; Justice, Meirer, & Walpole, 2005; McLeod & McDade, 2001). When presented with novel words during reading sessions, children gain word knowledge and comprehension, though these effects are often influenced by factors such as the frequency of each reading (Biemiller & Boote, 2006; Sénéchal & LeFevre, 2002), the age of the children (DeBaryshe, 1993; Sénéchal & LeFevre, 2002), children’s current word knowledge (Hindman, Connor, Jewkes, & Morrison, 2008; Robinson & Ehri, 1994), the method for operationalizing word learning, and adults’ reading styles and elaboration of new words (Ard & Beverly, 2004, Elley, 1989). Thus, the conditions under which storybooks facilitate children’s word learning is still unclear.

**Storybook types and reading styles.** Of interest in the current study is how specific types of storybooks influence word learning. For instance, Justice et al., (2005), note that past
research shows that the type of storybook and how it is read affects how children learn words. For example, the shared storybook context introduces young children to opportunities to explore with and infer meanings for unfamiliar words either incidentally or explicitly. In incidental encounters, word meanings are not expressed or accessible, such that children must implicitly discern these meanings from indirect contextual information presented in the stories (Nagy, Anderson, & Herman, 1987; Robbins & Ehri, 1994). In explicit encounters, children learn novel word meanings as adults directly name or define the target words embedded within the stories. Such interactions can be considered instructional, as children are provided with decontextualized, meaning-focused explanations of target words.

In addition, several empirical studies have provided evidence that the manner in which children encounter the novel words from the storybook seems to influence their vocabulary development. For example, after reading the same stories three times to a class of seven- and eight-year-olds, Elley (1989) discovered that children demonstrated a 15 to 20% net gain in words learned (i.e., each child learned about three new words of the 20 words tested) from simply listening to teachers read stories verbatim without providing explanations of unfamiliar word meanings. When explicit explanations of target word meanings were added and discussed during reading sessions (i.e., by providing a synonym, engaging in role play, or pointing to an illustration of the target word), children’s vocabulary gains more than doubled compared to the gains they made in the absence of such explanations.

Similarly, Brett, Rothlein, and Hurley (1996) examined the effects of three different reading conditions on students’ vocabulary acquisition (as measured by multiple-choice recognition post-tests): (a) listening to stories with a brief explanation of unfamiliar target words, (b) listening to stories without an explanation of target words, and (c) having no exposure to
stories or target words (control condition). Children who were read the stories and provided with a brief explanation of target words learned significantly more words and had higher memory for those words six weeks later compared to children who had either heard the stories without an explanation or who had no exposure to the stories or words. It was concluded that through shared storybook readings, children can incidentally acquire new, more advanced vocabulary simply by listening to stories read aloud. Compared to non-elaborated encounters, children’s comprehension of vocabulary words is often accelerated when adult readers engage in explicit conversational exchanges and discussions central to vocabulary word meanings. These direct explanation of word meanings while reading provide opportunities for children to relate to word meanings.

An additional process of word learning that has been explored is children’s repeated exposure to target words, either within the text of a single book or from repeated readings of the same book. As Biemiller and Boote (2006) have noted, repeatedly reading stories aloud to young children not only helps them understand story content (e.g., characters, events) more clearly, but it also allows them to have several exposures to taught or self-taught word meanings. For instance, Robbins and Ehri (1994) conducted a study in which kindergarten children participated in two reading sessions involving a single storybook with varied number of occurrences of target words in the story. Children’s word learning was measured with an oral multiple-choice post-test, in which they were provided with four picture choices and an option if they did not know the answer. Participants pointed to the picture that best matched the description/definition that the researcher read aloud. Results indicated that the likelihood for learning a new word was greater for words that occurred twice in a storybook compared to words that occurred only once. On average, one new word was learned following two exposures to the storybook. Furthermore,
in Penno et al. (2002), children five to eight years-old heard three repeated readings of two storybooks. Children’s use of novel target words during retellings progressively increased in a linear manner from the first to third reading session. On average, children’s post-test scores increased approximately 16% from repeated exposure.

Biemiller and Boote (2006) have also described how repeated readings of stories with explanations of word meanings results in more acquisition of words than simply reading the story again without word meaning explanations. Thus in the current study, the effects of different phrase styles on children’s recall and recognition of target words will be explored following the exposure to multiple repeated readings of each book. During all readings, target words will be explicitly introduced and defined to children.

**Effects of phrasing style in storybooks on children’s word learning.** Past research indicates that how children are exposed to words influences vocabulary growth. The current study explores the distinct features of shared storybooks used during these reading sessions, in particular if a specific book’s phrasing style has the potential to promote children’s vocabulary growth in more pronounced ways when a story is read three times (one time per day) in a single week.

Very little is known about how the specific phrasing style of text in storybooks may influence children’s word learning (Fletcher & Reese, 2005; Read, Macauley, & Furay, 2014; van Kleeck, 2003). According to Read et al. (2014), despite the prevalence of rhyming throughout children’s storybooks, only a small body of empirical research has explicitly examined if these texts can influence what preschoolers learn from stories. Indeed, results from studies comparing stories with non-rhyming prose and stories with rhyming prose are mixed as to whether story details or events recalled (Calvert & Billingsley, 1998; Hayes, 1999; Hayes,
Chemelski, & Palmer, 1982; Sheingold & Foundas, 1978), words learned and/or recognized (Read, 2014; Read et al., 2014), and words recalled (Johnson & Hayes, 1987) differ in children based on whether the text used rhyming or not.

For example, Hayes and colleagues (Hayes, 1999; Hayes et al., 1982; Johnson & Hayes, 1987) found that four- to six-year-olds’ recall of particular story events improved in non-rhyming prose conditions compared to rhyming prose conditions, where their short-term retention of these events was actually hindered (Hayes et al., 1982). However, Johnson and Hayes (1987) found that in spite of preschool children’s limited paraphrasing abilities, their verbatim recall of words in correct sequential order was enhanced in rhyming conditions compared to non-rhyming conditions. More recently, researchers have discovered similar results for children’s retention for and learning of new words from rhyming stories (Read, 2014; Read et al., 2014). While children’s story-related comprehension may be mixed based on specific outcome measures, most studies exploring word learning show a positive effect for rhyming.

For instance, Read et al. (2014) conducted two experiments to examine the effects of rhyming on preschool children’s (two- to four-year-olds) word recognition (Experiment 1) and word retention (Experiment 2) during shared storybook readings. Despite differing levels of word familiarity and ages, children in both experiments performed better in the rhyme condition than in the non-rhyme condition. While no other differences between conditions in parent reading styles or the emphasis on particular target words existed, parents’ dramatic pause prior to reading the target word may have encouraged children’s ability to anticipate upcoming words before they were revealed. Both experiments provide evidence to support the notion that, in the context of shared storybook reading, rhyming texts can boost children’s word retention and strengthen word learning. Because of its predictive rhythm, these texts may provide increased
opportunities for children to participate in shared readings by anticipating and identifying words more rapidly from a sequence. In addition, the manner in which adult readers and child listeners actively engage with the texts’ predictability during their reading sessions may make the words more memorable for children (Hayes et al., 1982; Read et al., 2014).

Extending results from her previous study, Read (2014) conducted an additional two experiments to examine if the specific way rhyming sets up novel words in storybooks makes a difference for how well children retain and learn these words. Two- to four-year-old children were exposed to novel names of unfamiliar monsters in three types of rhyming conditions: (a) non-rhyme condition where novel monster names were embedded within the rhyme but were not the rhymed stanza itself, (b) non-predictive rhyme condition where the novel monsters were the rhymed element in the first line of the stanza, and (c) predictive rhyme condition where the monster name was the rhymed element in the last line of the stanza. For both between-subjects (Experiment 1) and within-subjects (Experiment 2) comparisons, children demonstrated the greatest novel name learning from the predictive rhyme conditions in tests of retention and identification. In Experiment 2, parents served as the story readers, and many of them paused before target words in the predictive rhyme condition, possibly creating a stronger predictive rhyme advantage for their children. From these studies, Read (2014) concluded that rhyme serves as an effective means to facilitate learning and that the particular placement of novel vocabulary within the text may make these words more accessible to children. Children’s anticipation for the new word at the end of the stanza encourages their attention and active prediction during the reading sessions.

To the best of my knowledge, however, there have not been any studies that explore texts where this rhyme scheme is broken or where children’s attention is subverted from an expected
rhyme stanza. An example of this subversion is in the following excerpt from Kelly Bingham’s children’s book, *Circle, Square, Moose*:

“A triangle is a wedge of cheese, a piece of pie, or ears like these...A rectangle is a domino, a book to read, and a tall—Moose!...A diamond is the shape of a crown, a flying kite, and a sign to slow—Moose!...A curve might be a snake-ity snake, a yo-yo trick or a ribbon’s wake...A circle is a polka dot, a lollipop, the sun so—Hurry! ”

According to Read (2014), such texts may produce interesting effects for young children, specifically if children find the target word more memorable when the broken rhyme scheme fails to match their predictions and/or expectations. Considering that this type of phrasing in texts also incorporates rhyme to initially build children’s anticipation, examining how children’s word learning is affected when their expectations for a rhyme scheme are subverted is important. Therefore, in the current research, phrases with predictive rhyme and phrases that subvert expectations were compared to a non-rhyming phrase condition.

**Group Size and Word Learning**

Rhyming text conditions were also examined within both small and large reading groups in the current study. Shared storybook reading sessions in small and large groups occur as part of the typical preschool classroom reading process. Within these contexts, opportunities for rich, interactive exchanges between adults and children transpire. Children engage in cooperative learning among themselves by discussing story content with one another, listening to one another’s explanations, and developing a shared understanding of story elements (Morrow & Smith, 1990). While benefits specific to children’s comprehension and participation in both types of group context have been found, much of the literature has hailed small groups for enhancing these effects (Morrow & Smith, 1990; Palincsar, 1986). During reading sessions, children in
small groups are often able to pose more comments and questions that extend story content and engage in more complex discussions with each other compared to large group contexts (Cochran-Smith, 1984), where discussions are generally literal (Morrow & Smith, 1990). In large groups, reprimand is also often greater (Bossert, 1979), distractions more common, and opportunities to remark spontaneously and interact with the books occur less frequently compared to small groups (Morrow & Smith, 1990).

Given such varied effects based on group-size dynamics, the current study was designed to explore the nature of shared storybook readings in both small and large group sizes and to explore if the phrase style of the storybook interacted with the group size (small, large) resulting in differences for words recalled and recognized from the reading. Across phrase style conditions, this word learning was expected to be greater in small than large groups. However, whether or not the same effects for the phrasing conditions would emerge in the small and large groups was not known. Considering that early childhood settings regularly incorporate shared storybook readings throughout a typical daily schedule in both small and large group contexts, the exploration of different phrase styles for increasing young children’s word learning during various size group reading sessions was considered ecologically important despite having no specific hypotheses about how it would or would not interact with phrase style.
The Current Study

As noted, few studies have explored if word learning is greater when children are read storybooks with different styles of phrasing (i.e., storybooks that use rhyming texts compared to storybooks that use false-rhymes that subvert expectations). Moreover, it is not known whether the number of words learned across different phrasing conditions will be more pronounced in small or large group reading sessions. A quasi-experimental within-group pre-post design was used to investigate the effects of three different phrasing in storybooks—rhyming, subverted-expectations, and non-rhyming—on preschool-age children’s recall and recognition of target words in both small (five children) and large (20 children) reading groups. Specifically, recall (children asked to give a definition) and recognition (children indicated if a provided definition was correct or not) assessments were used to measure the effects of these phrase conditions on word learning.

As indicated in Table 1, rhyming phrases in the current study contained text that rhymed, such that children were able to correctly anticipate upcoming phrases. Stories with subverted-expectation phrases contained text that subverted children’s expectation for a rhyming word to a non-rhymed word, such that children were unable to correctly anticipate upcoming phrases. Stories with non-rhyming/typical phrases, which acted as the control, contained text that did not include phrases that rhymed or subverted-expectations. All reading sessions for this study occurred as part of each classroom’s typical morning daily schedule.

Given the potential that specific features of the reading context (i.e., group size, children’s engagement) as well the text themselves (i.e., phrase styles) have to foster children’s word learning, it was hypothesized that when storybooks that included rhyming or subverted-expectation phrases (phrasing conditions 1 and 2) were read aloud in small or large groups,
children’s ability to recall and recognize the definitions of target words would be greater (and thus associated with higher performance on assessments) compared to children's ability to recall and recognize the definitions of target words for storybooks that did not include rhyming or subverted-expectation phrases (control condition). In addition, based on previous work with rhyming texts read in small or individual reading groups (Read 2014; Read et al., 2014), children’s recalled and recognized words were expected to be greater in small groups compared to large groups for all phrasing conditions. Finally, the interaction of phrasing conditions and reading group size (small, large) was also explored to determine if the influence of phrase style on word learning depended on reading group size. Findings from the current study may have implications for effective book selection among early childhood teachers and parents who are attempting to increase vocabulary gains among preschool-age children.
Methods

Participants

Forty children were recruited from two preschool classrooms of a full-day, full-year, university-affiliated laboratory school. As discussed below, from this total, eight children were dropped from the study during data collection based on specific exclusion criteria (e.g., age, behavior, typical development, absences). Demographic information for the remaining 32 participants from these classrooms are presented in Table 4. Participant ages ranged from 3.25 to 5.92 years, with a mean age of 4.54 years ($SD = .78$). Across both rooms there was a near equal distribution of girls (53.12%) and boys (46.88%). Prior to the study, the Developmental Indicators for the Assessment of Learning, fourth edition (DIAL-4) screening assessment was used to evaluate all children’s general language development. Items on this assessment included measures such as rhyming, articulation, and children’s expressive and receptive language. Participants’ mean standardized language scores across both classrooms ranged from 82 to 135 ($M=109.26$, $SD=12.65$).

The majority of children attending the laboratory school were identified as White (84%), with about 12.5% identified as Asian, and the remaining identified as Black. According to the center director, most families were identified as dual-partner (i.e., married, co-habiting parents) from middle to upper-middle income homes, and there was a near even distribution of children from university faculty, staff, and the local community.

The center serves 60 preschool children in three classrooms (20 children in each), and 15 infants/toddlers in two classrooms (eight toddlers in one and seven infants in the other). Each preschool classroom used a different curriculum from the others, which included Creative Curriculum, High Scope, and the Emerging Language and Literacy Curriculum (ELLC). The two
classrooms selected to participate in this study used Creative Curriculum and ELLC. The director of the center specifically selected these two classrooms as eligible to participate in the study due to the similar behavioral dispositions and characteristics of children in both rooms.

The laboratory school employed 15 full-time teachers, two part-time teachers, and a range of university undergraduate student employees. The number of years that teachers have taught in early education settings ranged from three to 37. Sixteen teachers were female, 15 identified themselves as White, and two identified themselves as African American. The laboratory school also served as a practicum site for undergraduate students’ field teaching experiences. Each classroom typically had between eight to 10 of these undergraduate students, who observed and engaged directly with children for approximately eight hours per week for class credit.

**Procedures**

Recruitment of participants primarily occurred through the use of informational flyers sent home to parents through the school explaining the study and asking for consent to allow their children to participate. While all children in each classroom were included in the daily reading sessions as part of typical daily reading activities, only children whose parents provided signed consent were asked to participate in the remaining portions of the study protocol. Children who were frequently absent during the weekly readings as well as those who did not meet the age-range or typical developmental levels were also not included in the remaining portions of the study protocol.

After consent was obtained from parents, the two participating classrooms were randomly assigned to one of two group sizes—either small or large group—using a random number generator. Children in the classroom assigned to the "small group" size were randomly assigned
using a random number generator into one of the four small groups. Each of the four small
groups had five children. All children in the classroom assigned to the "large group" size were
included in the whole-class reading session each day. Finally, ten participants from each
classroom were then randomly assigned using a random number generator to receive a pre-trial
assessment on the Monday of each reading week. The pre-trial assessment measured children’s
knowledge of the four target words prior to their exposure to the week’s storybook. The
assessment included the four target words embedded in the upcoming storybook, as well as four
non-target words not embedded in the storybook.

Two trained assessors, both of whom were graduate students and employees of the
laboratory school, administered all pre-trial assessments. To avoid bias, assessors were randomly
assigned to a classroom and remained blind to all pre-trial assessment scoring procedures, which
were rated at the conclusion of the study. For each pre-trial assessment, assessors recorded
children’s definitions verbatim for each target word. All assessments were video and audio
recorded to verify assessor notes and to allow for further reliability checks.

Readings began on the Tuesdays of the three consecutive weeks of the study. All
participants in both group sizes were read one of the three storybooks (rhyming phrases,
subverted-expectations, non-rhyming/typical phrases) for three consecutive days (Tuesday,
Wednesday, and Thursday) each week (one phrase style per week). Reading sessions for all
participants in both group sizes lasted approximately 10 minutes and occurred at the same time
each day based on the classroom's typical daily morning time for reading. I first read aloud to the
children in the classroom assigned to the large group size, and then transitioned to the classroom
assigned to the small group size. Specially for the small group reading sessions, additional efforts
were made across each group to reduce children’s sharing of target words and story content with
one another. As a result, sessions were administered in 10-minute cycles per small group during the classroom’s scheduled morning readings. For each reading cycle, one small group heard the shared storybooks in a separate designated reading location, while the remaining three groups were assigned to play in supervised areas inside the classroom.

Both classrooms (small and large groups) received the same storybook with the same phrasing style each week. The order of storybook and phrasing style to be read was randomly determined using a random number generator. The decision to have both classrooms read the same storybook with the same phrase style each week was made to eliminate the potential sharing of story content or target words between classrooms prior to study specifications. Given that both classrooms interact daily during their outside play, it is possible that children may have opportunities to discuss stories and corresponding target words with one another. Thus, if children were assigned to different phrase style conditions, they may be exposed to and/or learn new target words from such interactions without having yet received the actual storybook or target words in their reading sessions. To eliminate this possibility of sharing target words from different storybooks, both classrooms received the same storybook, phrase style, and target words each week.

In order to avoid variation by the readers within and across rooms, I read to all participants during their assigned reading sessions and explicitly introduced and defined the target words embedded within the given week’s assigned storybook. For each 10-minute reading session, I paused the story after completing sentences with target words and orally provided the definition of these words by reciting from a memorized script (e.g., “A ‘companion’ is someone who is your friend. In this book, Joey and Mikey were companions or good friends, they liked to play together.”), such that all children in both group sizes received the exact same definition in
the exact same manner. Following the definition, I asked children to repeat the target word’s definition aloud with me (e.g., “Can you all tell me what a companion means? Companion is someone who is your friend. Let’s say it together, companion is someone who is your friend.”) before continuing with the reading.

On the Friday of each reading week, all participants received post-trial assessments that included the given week’s four target words from the assigned storybook. Children’s word learning was first assessed by their ability to orally provide definitions of the target words (post-trial target word recall assessment), then subsequently by their ability to distinguish between a correct form of the target words’ definition and an incorrect form of the target words’ definition (post-trial target word recognition assessment).

Storybooks

Rather than select existing stories for each phrase style and risk the potential that the storybooks did not match in length, theme, narrative style, or word complexity, I created and designed three short storybooks (Ain’t Gonna Share, First Day Blues, and Mikey’s Big Lie) to specifically meet the criteria of each phrasing style. By creating the storybooks, I also controlled for children’s previous exposure to and knowledge of story content, words, and phrases.

In order to control for biases and increase the likelihood that no storybook had an advantage over the other, I randomly assigned all themes and all 12 target words to each storybook phrase style prior to writing the stories. Collectively, story themes and/or moral messages centered on experiences that preschoolers were likely to be familiar with and/or encounter in their daily lives (e.g., learning to share, being brave when starting a new school, telling the truth). In addition, all storybooks were created and integrated with specific features that researchers (e.g., Robbins & Ehri, 1994) have found to appeal to children and that increase
children's attention to texts. Thus, each storybook had characters that children could connect with (i.e., main characters were preschool child), had humor (i.e., story events/content elicited laughter), and had a high action plot (i.e., main characters confronted with problems that need to be resolved).

As shown in Table 2, each storybook was specific to one of the three phrase styles: (a) anticipating a rhyming phrase correctly (*Ain’t Gonna Share*); (b) subverting expectations for a rhyming phrase (*First Day Blues*); and (c) containing typical phrases that neither rhyme nor subvert children’s expectations (*Mikey’s Big Lie*). All storybooks were systematically matched in length and narrative-style (17 pages, 935 words, 55 words per page, first-person narrative) and each contained four randomly assigned target words typically not known or used by preschoolers, but whose meanings the children would be able to understand. See "Pilot Study" below for a description of how the selected vocabulary words were tested for learning difficulty with children from the selected preschool.

In order to effectively examine the effects of phrase styles on children’s recall and recognition, it was important that these target words were not already used by the children. Therefore, to reduce the likelihood that the words in this study would be familiar, all target words were selected from three separate online vocabulary lists and ranged from 5th grade through above 6th grade difficulty levels across all storybooks. These selection criteria further increased the likelihood that the words were rare and of very low frequency to children.

As Kuperman, Stadhagen-Gonzalez, and Brysbaret (2012) have noted, researchers using word stimulus materials tend to control or manipulate their stimuli on several variables, such as word frequency, word length, word similarity, word onset, and age of acquisition. Specifically in the current study, all target words were matched for syllable length, frequency, and placement.
Each word was embedded within each storybook and presented at the beginning of every fourth page as the seventh word in the opening stanza. Additionally, the target words were primarily nouns, as children from past studies have often acquired this word class more easily than other word classes (i.e., adjectives and verbs; Houston-Price, Howe, & Lintern, 2014).

Each storybook also contained a total of 13 illustrations. Illustrations were of images specifically related to the events of each page to help facilitate children’s understanding of story events/content. However, to avoid potential cues for target words in subsequent vocabulary assessments, pictures did not depict images of any target word on the page that the target word was introduced and/or defined. Rather on the pages that the target word was introduced and/or defined, there was a solid yellow-colored page with only story text.

**Pilot Data**

Three months prior to study protocol, I collected pilot data with 10 children—all of whom were not included in the present study—on the selected target vocabulary words. Information from the pilot data was used to make potential revisions of target words and to determine whether the selected words could be taught to young children despite the difficulty level.

During the pilot study’s initial phase, four target words (woe, tureen, interstice, quarrel) were selected to be taught within a one-week period. Over the course of four consecutive days, six children from the non-participating preschool classroom at the same university-affiliated early education center were selected to participate, and each child was individually presented with one target word to learn.

On the first day of the test week, I asked the child if she or he knew the target word. I then provided the corresponding definition for the word ("Do you know what the word quarrel"
means? Quarrel means a loud or noisy fight."). Following the definition, each child was asked questions to connect his or her personal experiences and/or knowledge related to the specific target word:

**Experimenter:** “Can you think of something that might cause a quarrel or a loud, noisy fight to happen?”

**Child:** “When someone doesn’t share...that’s a kid fight.”

**Experimenter:** “You’re right! A quarrel can happen if someone is mad when her friend isn’t sharing.”

The child was then asked to repeat the word and definition before the session concluded.

I returned to the classroom once each day to ask each child if she or he remembered the word and the definition that was taught (“Do you remember the special word you learned? What did ______/your word mean?”). The child’s response was recorded verbatim and scored based on the definition she or he provided (“Quarrel! Loud noisy fight!”). Scoring criteria was consistent with the scale used in the current study’s pre- and post-trial target word recall assessments (e.g., 2 points for a correct definition, 1 points for a partial definition, and 0 points for an incorrect definition) as indicated in Table 3. Before each session concluded, I reminded each child of his or her target word and had the child repeat the word and definition aloud with me two times.

Following the first week of pilot testing, an additional four new children from the center’s third preschool classroom were selected to learn four new words (glare, limb, taunt, apparel) to further inform target word selection. The same procedures and scoring criteria that occurred in week one were used. The majority of children were able to correctly recall a correct or partial definition for the target word they learned during each of the four test days. Children were more successful at producing this definition than recalling the actual target word.
Based on these results, changes to the post-trial procedures were made to include a recognition assessment—in addition to the recall assessment—as a secondary indicator for word learning. As Spencer, Goldstein, Sherman, Noe, Tabbah, Ziolkowski, & Schneider (2012) have noted, with this addition, the post-trial assessments may better reflect children’s learning and/or partial understanding of the target words and definitions, as the target word recall task alone may be challenging in nature and only provide a limited or conservative estimate of what children actually gained following the readings. Overall, the data from the pilot studies provided initial evidence that the current study’s 12 target words could be successfully taught and recalled by preschool-age children.

Assessments

Pre-trial target word recall assessment. The purpose of the pre-trial target word recall assessment was to determine if children knew or had been exposed to the target words prior to each shared storybook reading session. Thus, on the Monday of each reading week, ten randomly assigned participants from each classroom received a pre-trial recall assessment of the storybook’s four target words as well as four non-target words not found in the storybook. This split was also used to explore potential carryover/practice effects from the pre-trial assessment on subsequent vocabulary assessments once the study was completed.

For all pre-trial recall assessments, the same two assessors administered the tests to the same children from each classroom. Assessors read aloud from a predetermined script and asked each child to orally define each word. Target words appeared after every other non-target word on the list. To increase the likelihood that assessors remained blind to the scoring procedures, only children’s responses to each target word were recorded during each assessment. All responses for each target word were transcribed verbatim and entered into an electronic
spreadsheet along with the child’s corresponding identification number. Following the study, all assessment answers were scored by an independent coder, who was a trained graduate student and blind to the data collected during each assessment.

**Post-trial target word recall assessment.** On the Friday of each reading week, all children were administered a post-trial target word recall assessment of all four target words. Similar to the pre-trial recall assessment, this assessment was also in the form of a definitional recall test (i.e., produce a definition). Assessors asked children to define each target word out loud: “For this game we are going to see if you remember what some silly words we heard from the book this week mean. The first word is ‘apparel.’ What does the word ‘apparel’ mean?” To increase the likelihood that assessors remained blind during these assessment procedures, assessors only documented children’s responses for each target words’ definition, but did not provide an overall score for these definitions on the child’s record sheet.

Following the last week of book reading, all responses for both pre-trial and post-trial assessments were entered into the same electronic spreadsheet and grouped together based on each target word. Responses did not include identifying information beyond each child’s pre-determined identification number, and a code (hidden from the coder) to indicate the timing of the assessment (i.e., 56=pre-trial, 85=post-trial).

Given that children’s definitions ranged in responses for each target word, the coder underwent reliability checks with an additional coder. These checks allowed for an independent definition coding and were used to increase fidelity of scoring based on the rating scale. The coders scored a total of 184 responses and reached a high degree of fidelity, with a percentage agreement of 97.28%. During the scoring, the coders used detailed rubrics that outlined specific
criteria and sample responses for each target word. Sample responses for several of these items included actual definitions children provided for target words during pilot work.

Scoring criteria for assessments was similar to those also found in Spencer et al., (2012). For example, each target word’s definition was scored as reflecting complete knowledge (2 points), partial knowledge (1 point), or no knowledge (0 points), for a total possible score ranging from 0 (i.e., did not know any of the four target words) to 8 (i.e., knew all four target words) for each week’s assessment.

**Post-trial target word recognition assessment.** Following the post-trial target word recall assessment, children were given a post-trial target word recognition assessment. The same assessors from the pre-trial target word recall assessments also administered the post-trial target word recognition assessments. Assessors read from a predetermined script to introduce each word and to increase fidelity of procedures. Scripts were positioned away from children’s direct view throughout the assessment, such that children were unable to see the scripts or assessors’ notes.

For the recognition assessment, children were asked questions that required a ‘yes’ or ‘no’ answer (e.g., Coyne, McCoach, Loftus, & Ziploli, 2009). Each target word was represented by two questions, one that corresponded to a correct definition (‘Is a ‘tureen’ a bowl?’) and another that corresponded to an incorrect definition (‘Is a ‘tureen’ a house?’). Following the question, children indicated if the definition was correct or incorrect. They received a score of 1 point for each answer that was correctly identified and 0 points for each answer that was incorrectly identified. The order of presentation for these questions was random across each child. All responses for the verbal recognition task were recorded and scored by the same
independent coder following all study procedures. The individual answers from these assessments were used in subsequent mixed model analyses.

Assessors did not provide children with feedback regarding the accuracy of children’s responses or definitions for all assessments, however assessors did provide positive encouragement (e.g., “I can tell you are working hard!” or “You are doing a good job playing this game!”) if children needed it or specifically asked for help during any and all assessment procedures.
Results

The results section is organized as follows: first, child and factors/characteristics were compared to determine whether demographic differences existed. Second, both classrooms were compared to determine whether demographic differences existed. Third, individuals who received the pre-trial and those who did not receive the pre-trial were compared to determine if demographic differences existed. Fourth, correlations between dependent variables and child and classroom characteristics were conducted to determine the degree to which non-experimental child and classroom factors were associated with word learning (i.e., recall and recognition) outcome measures. Fifth, mixed models analyses, one per each dependent factor listed above, were conducted to explore the impact of each phrase style (“condition”) on outcome variables while controlling for any significant factors found in previous analyses.

Child-level factors and demographic differences

Child and factors/characteristics (e.g., gender, race, age) were compared to determine whether any demographic differences existed. As shown in Table 5, no demographic differences were found among children.

Classroom-level factors and demographic differences

Classroom-level factors/characteristics were compared to determine whether any demographic differences existed. No significant differences among each classroom was found.

Pre-trial-level factors and demographic differences

The half-sample of individuals who received the pre-trial were compared to those who did not receive the pre-trial to determine if demographic differences existed. No significant demographic differences were found among each of these groups.
**Child-level and classroom characteristics and word learning outcome measures**

Correlations between dependent variables and child and classroom characteristics are also shown in Table 5.

**Gender.** Gender was not found to be associated with performance on any word learning outcome measures.

**Race.** Race was found to be significantly associated with performance on post-trial target word recognition for incorrect (“negative”) recognition definitions. However, because race was highly homogenous with 84% identified as White, too few children remained in other race groups ($N = 4$) to allow for control in subsequent analyses. Further, one of the four children in the other race groups had several missing data points due to an absence, which would likely skew estimations for this small group of children.

**Age.** Child age was found to be significantly associated with performance on post-trial target word recall and post-trial target word recognition for negative definition questions. Therefore, age was used as a control factor in subsequent analyses.

**Pre-trial.** No significant differences in post-trial performance were found for individuals who received the pre-trial and those who did not, suggesting no order or timing effects of condition on outcome.

**Group size.** Classroom reading group size (small or large) was not significantly associated with any of the outcome measures.

**Language Scores.** Children’s language scores from the DIAL-4 were not significantly associated with any of the outcome measures.
Phrase style on word learning outcome variables

Mixed model analyses, one per each dependent factor, were conducted to explore the impact of each phrase style ("condition") on outcome variables while controlling for child age in the fixed effects model and random child variance in the random effects model. Descriptive statistics for all independent and dependent factors included in the models are shown in Table 5, and raw means for each outcome measure by condition are shown in Table 6.

The results for each mixed model are presented in Table 7. As expected given the preliminary analyses, age was found to be significantly associated with each outcome variable, such that older children had higher performance than younger children. For the recall assessment, results indicated no significant differences in performance among the three phrase conditions at pre, suggesting no order or timing effects of condition on outcome. At post, word recall significantly increased for the rhyming condition as indicated by the significant interaction factor shown in Table 7. The other two phrase style conditions, subverted-expectation and control, did not increase significantly from pre to post on word recall and were not significantly different from each other at pre and post. Estimated changes for word recall definitions across each phrase condition for a prototypical 4.5-year-old child are depicted in Figure 1.

Also shown in Table 7 are the results for the models exploring recognition of the correct definitions (e.g., “positive”) and the incorrect definitions (e.g., “negative”). While neither recognition definition outcome was significantly associated with phrase condition, there was a marginally significant effect for condition for the recognition of incorrect definitions compared to the recognition of correct definitions, which did not approach significance. While this effect was not significant, both rhyming and subverted-expectation seemed to produce more correct responses (and were similar to each other) than the control for negative recognition questions.
Discussion

The goal of the current study was to examine the influence of three specific styles of phrasing in storybooks (rhyming, subverted-expectations, and typical phrases) on children’s word learning (i.e., recall and recognition of target definitions) within small and large reading groups. In order to explore these effects, two preschool classrooms were randomly assigned a group size condition and read three storybooks that each contained one of the three phrase styles. All storybooks were read by one experimenter and self-authored in order to control for page length, total number of words, total number of words per page, and presentation of target words. All small and large group storybook reading sessions lasted for ten-minutes. A random selection of half the participants from each classroom received a pre-trial target word recall assessment to measure their prior knowledge of target words and to explore whether pre-trial or carryover effects occurred as a result of pre-reading exposure to the target words. All participants received post-trial target word assessments to measure their recall and recognition of the target word definitions following the readings.

Preliminary analyses were conducted to determine whether non-experimental child and classroom factors were associated with word learning outcome measures (i.e., recall and recognition post-assessments). While it was hypothesized that the size of the reading group would influence children’s word learning (as indicated by their increased performance on post-trial assessments), no significant association for group size was found with any of the outcome measures. In fact, beyond children’s age (which was controlled for in subsequent analyses) and race, no other child or classroom factor, including pre-trial exposure, was significantly associated with any of the word learning outcome measures.
Results of this study provide support that young children can learn new words through shared storybook readings. Consistent with previous studies (Read, 2014; Read et al., 2014), these gains may increase when stories incorporate rhyming phrase styles. Further evidence from this study suggests that, regardless of the reading group size (small, large), when children are read storybooks with similar rhyme phrase styles and are provided target word definitions during the readings, they seem to recall more complete or partial definitions of these target words and are more successful at recognizing the target words’ definitions compared to when they are read storybooks with phrase styles that subvert expectations or that do not rhyme.

Although not previously explored in past literature, it was hypothesized that the subverted-expectation phrase styles would have the most pronounced effect on children’s recall and recognition of target definitions by increasing their attention to the storybook when their expectations were subverted. However, following the subverted-expectation phrase style, children recalled fewer correct definitions and recognized fewer target word definitions correctly than the rhyming phrase style. In fact, the subverted-expectation phrase style did not significantly differ from the typical phrase style condition. One possible explanation for this finding could be attributed to the specific type of subversion used within the written story. For instance, although children were unable to correctly predict the upcoming sequence in First Day Blues, the words used to subvert their expectations were those that did not rhyme with the original scheme:

“Wait! That girl over there said she liked my curly hair. Hmm, that was nice, but I bet she doesn’t ever share. Suddenly we walk in my classroom and there are toys as far as I can look. There are dolls, there are trains, and the teacher is reading from my favorite—Fun.”)
However, it is important to note that additional forms of subverted-expectation texts exist within children’s literature, which could contribute to differences in how children respond and attend to these readings. Given that children in this study were able to recall and recognize target vocabulary definitions more successfully following the rhyming phrase style, it may be possible that a more effective way to boost children’s attention to the target words from a subverted-expectation phrase style would be to incorporate words that rhyme unexpectedly with the sequence rather than those that fail to rhyme at all with the sequence. An example of this unexpected rhyme sequence is in Karen Beaumont’s (2005) children’s book, *I Ain’t Gonna Paint No More*:

“‘Like an Easter egg, I’m gonna paint my…leg! Now I ain’t gonna paint no more. Still, I ain’t complete til I paint my….feet. Now I ain’t gonna paint no more. I ain’t gonna paint no more no more, I ain’t gonna paint no more. But I’m such a nut, I’m gonna paint my—’

‘WHAT?’”

It may be that the anticipation for the rhyme—regardless of the accuracy of the prediction—increases children’s attention to the storybook, making the target words more memorable following the reading and resulting in a greater understanding and recognition of what these words mean. Thus, an important next step in future research would be to explore the various types of subverted-expectation phrase styles (i.e., rhyming vs. non-rhyming words) compared to rhyming phrase styles on children’s recall and recognition of novel words.

The current findings have implications for practice specific to children’s vocabulary learning within the shared storybook reading context. Consistent with past studies, these results demonstrate that reading aloud storybooks with rhyming phrases to young children may contribute to this learning more than storybooks that do not rhyme (Read et al., 2014). In
addition, they extend previous mixed findings regarding rhyming features within books (Calvert & Billingsley, 1998; Hayes, 1999; Hayes, Chemelski, & Palmer, 1982; Sheingold & Foundas, 1978), illustrating that such versions can positively effect children’s recognition of new words (Read, 2014; Read et al., 2014) and words recalled (Johnson & Hayes, 1987). Specifically, it may be that the rhyme feature within such books can aid in children’s retention of novel words by making these words more familiar and memorable. For example, in the current study, the target words within the storybook were not rhymed as part of the sequence. However, children were more likely to produce a full or partial definition and recognize more of these words correctly at post-test, suggesting that the rhyme scheme may facilitate children’s learning by drawing their attention to the story rather than to the actual word, which is often used as a rhyming word at the end of a stanza (e.g., Read, 2014).

Additionally, by including the target words at the beginning of the rhymed stanza, rather than at the end of the stanza as one of the words-to-be-rhymed, the current study also extended previous findings of rhyming effects on children’s word learning. Read (2014) determined that the placement of novel vocabulary within a rhyming text assists with learning by making these words more accessible to children. Specifically, children’s expectations for the new word at the end of the stanza increased their attention and predictions throughout the reading sessions. In the current rhyming style, children still formed predictions for upcoming rhyming words and, compared to other phrase style conditions, performed higher on post-trial assessments of the target words following these readings. Throughout all phrase style readings, children seemed to reflect some understanding of the target vocabulary through their recall and recognition of target words, but this understanding occurred more significantly when the rhyming phrase style storybook was read—regardless of group size—compared to the phrase style versions that did
not rhyme. These results suggest that it may be the rhyme itself—rather than the actual placement of the novel words within this scheme—that serves as a more effective means to facilitate word learning throughout shared storybook readings.

The rhyming nature may also pique children’s engagement during the reading by encouraging more active, out-loud guessing in anticipation for words to complete the rhyme sequence (Read et al., 2014). When this occurs, the reading experience may become more beneficial and enjoyable for young children compared to reading contexts where rhyming does not occur. Furthermore, anecdotal evidence of these engaged behaviors were present throughout the rhyming phrase style reading in the current study. For instance, the majority of children in both small and large reading groups continually anticipated phrases within Ain’t Gonna Share once the rhyme scheme and repetition were established. They formed predictions specific to story events or to rhyming words. These were obvious in the comments children made during the readings, such as “Mikey will share his truck with Joey because sharing is nice,” or “share and care rhyme.” Others recalled story events on subsequent days of reading, such as “Joey was really sad when Mikey didn’t share his blue truck.” Children also made connections to the target words and meanings when overtly asked about words (e.g., one child said “that means best friend”) and they commented on the presence of the novel words within the storybook (e.g., “We heard about ‘quarrel’ yesterday.”). These type of comments were not noticed during the other two storybook readings. When the subverted-expectation and typical phrase style books were read, children commented less frequently and drew fewer connections to the target vocabulary. Therefore, if the goal of reading with children is to teach new target words, phrase styles that use rhyming may be most effective at increasing children’s attention to the storybook as a means to promote vocabulary development.
Similar to previous studies, two forms of the post-trial assessment were used to better reflect children’s learning and/or partial understanding of the target words and definitions. The scoring criteria for the post-trial recall assessment was also consistent with previous studies measuring children’s complete, partial, or lack of knowledge for each target word (e.g., Spencer et al., 2012). While the addition of this partial knowledge score allowed for more variability in children’s definitional responses, a recall test alone may have only provided a conservative estimate of what children actually gained from the readings following each phrase style. Thus, a secondary post-test assessment was used to measure children’s ability to recognize (or identify) the correct and incorrect definition of each target word from a series of ‘yes-no’ questions (e.g., Coyne et al., 2009). Although children in this study recalled a full or partial target word definition and recognized correct target word definitions across all phrase conditions—though more significantly from the rhyming phrase style—the outcomes were still modest. Consistent with past studies (e.g., Silverman, 2007; Spencer et al., 2012), the effect size for this study was low, and did not lead to substantial learning of all target words taught in the readings for most children.

Limitations and Future Directions

While this current study provides further evidence that reading aloud to young children from a particular phrase style benefits their vocabulary acquisition, it is important to recognize that this contribution may be limited due to specific methodological decisions. For instance, given both the convenience nature and size of the sample (e.g., 32 children and only two classrooms), caution should be taken when generalizing potential findings to the broader population of preschoolers. The children used specifically for this study were also those who were already robust word learners. Considering that the word learning process can be influenced
by several mediating factors, it could be that the particular children in this current study may benefit more from the attention-drawing that the rhyme provides in the word learning process than children who are weaker and/or limited vocabulary learners. These robust learners may be able to produce and recognize novel definitions more successfully from readings compared to their counterparts, who already may struggle with learning new words and attuning to stories where new, complex words are encountered. Ideally, a more diverse and larger sample of young children from differing vocabulary ability levels should be used in future replication studies in order to determine whether similar performance following these specific phrase styles still occur.

However, while the decision to use a small convenience sample may reduce the study’s external validity, the decisions to (a) use repeated conditions, (b) randomize phrase styles to each storybook, (c) match story characteristics across all books systematically (i.e., page numbers, narrative-style, target vocabulary presentation/location in book, number of words per page, number of illustrations, number of target words per book), (d) randomize all 12 target words to each storybook, (e) randomize group size for each classroom, (f) randomize the order each storybook would be read, and (g) compare post-trial outcomes between individuals who did and did not receive the pre-assessment, all strengthened the study’s internal validity and provided some degree of confidence that differences in children’s recall and recognition of target words were due to the storybook’s phrasing style in small and large group reading contexts.

An initial limitation for the current study was the decision to use a pre-trial assessment during the beginning of each trial week. With such an assessment providing pre-reading exposure to the target words, the potential for practice or carryover effects on children’s post performance were possible. However, by only administering the test to a random-half sample, these potential carryover effects could be measured at the conclusion of the study. Therefore,
children’s post-trial outcomes were compared between those who did and did not receive the pre-assessment. The results from these post-hoc comparisons provided evidence that no significant carryover effects occurred in this study, suggesting that the pre-trial assessment did not interact with the storybook’s phrase style to produce an increase in children’s post-assessment scores. This result is consistent with Biemiller and Boote (2006), who also did not find pre-testing effects on children’s acquisition of word meanings (measured by their post-test gains). These findings may have important implications for future studies with similar target vocabulary complexity levels. Given that no significant interactions occurred between children’s performance scores following the pre-trial, this type of assessment may continue to be an effective tool for researchers to assess children’s prior knowledge and/or familiarity of target words without significantly influencing children’s post-assessment scores.

An additional limitation was the inconsistency in word class across the target words as well as their differing levels of difficulty. Initially all target words were treated as nouns when selected from the vocabulary lists, and all children were presented with a definition specific to each target noun. This specific type of word class was selected as children in past studies have acquired this word class easier than others (Houston-Price, Howe, & Lintern, 2014). However, for the target word “void” there was a slight inconsistency between the definition and how it appeared in the actual storybook. For example, the word was written as an adjective in Mikey’s Big Lie and was used to describe the empty space in the room, rather than being the empty space (i.e., a noun). While this may not have resulted in significant differences for how children performed on post assessments, as they were all still presented with the actual noun definition for the readings and given this same noun definition during both the recall and recognition assessments, it is still worth noting since this particular word class differed compared to the
target words used in all the story texts. Second, although specific factors were implemented to control the type of target words (e.g., syllable length) and how they were presented to children (e.g., child-friendly definition, children repeat each definition aloud, seventh word in the opening stanza on the seventh page of every story), differing difficulty levels across these words existed and could have influenced the extent to which children understood certain definitions. Rather than include a range of difficulty level (e.g., 5th grade to above 6th grade) for the selected target vocabulary, it may be more effective to keep these levels the same to better increase children’s understanding and recognition of unfamiliar words. Future studies should explore these factors as well as the difficulty level (e.g., third grade) to determine whether the phrase styles used in the current study continue to produce similar effects for young children.

An additional factor that may have influenced how children learned words could be based on the concreteness (e.g., something that exists in reality and that an individual can directly experience through his/her senses) of the target word. As noted by Brysbaert, Warriner, and Kuperman (2013), some theories have proposed that concrete words may be easier to remember than abstract words because they activate both perceptual memory and verbal codes (e.g., Pavio’s Dual Coding Theory), while others theories provide an alternative explanation for this ease of processing, such that concrete words are easier to process because they support memory contexts. Abstract words (e.g., something that cannot be directly experienced through senses, and whose meaning is dependent on language) in this case, do not. Given that several of the target words varied in concreteness and abstractness, it could mean that children had more difficulty processing these definitions based on the type of word introduced. To explore this possibility, future replication studies should continue to compare concrete words with abstract words to
determine if children differ in their understanding of these target word definitions following each phrase style reading.

Another possible explanation for why children’s performance differed on the post-trial assessments could be from the order that the storybooks were read. It could be that children performed better on the first post-assessments because both the readings and assessments were a novel experience, but as the study continued over the remaining two weeks, their performance on these assessments could have declined once the experience of reading and testing no longer seemed novel. If this were the case, it would be likely that children’s scores on all assessments would be more sporadic and spread out over time to reflect such testing or order effects. However, all scores at pre-trial were tightly clustered (as indicated in Figure 1) to reflect little or no word knowledge, with each gradually increasing over time. Although this effect may be unlikely, it is still important to note. Thus, in future studies, researchers should read the storybooks in a different order than those used in the current study to explore if children are still likely to recall and recognize the target words in similar ways from these phrase styles.

Although I read all storybooks to children in order to avoid variation by readers within and across rooms, this could have also served as a limitation. Specifically, because it was hypothesized that the subverted-expectation phrase style (as well as the rhyming phrase style) would result in greater recall and recognition scores for children at post-test, it may be possible that this bias could have influenced my readings in such a way that would lead to these results. However, given that the post-assessment scores for the subverted-expectation phrase style were low and did not differ from the control phrase style (which was hypothesized to produce the lowest recall and recognition scores), it is unlikely that that this occurred, but it is an important possibility to consider.
Last, a limitation of the study was the decision to use illustrations in the storybook, which could serve as a distraction to the story content during the reading session, particularly if the pictures disrupted children’s attention between the text and illustrations. To limit this likelihood, illustrations were of images related to the specific events of each page to help facilitate children’s understanding of story events. Illustrations, however, did not depict images of any target word on the pages on which target words were introduced and/or defined. Rather, pages on which target words were introduced did not include any illustrations and only displayed a solid color background and text so as to avoid potential cues for target words in subsequent assessments.

Despite the possible limitations of these methodological decisions as well as the small word learning effect sizes, the current study provided valuable insights within the context of shared storybook readings and the style of text phrasing that has the potential to influence children’s word learning within different group sizes. Additionally, the study both expanded on and corroborated past research findings examining rhyming phrase styles on children’s recall and recognition of words (Read, 2014; Read et al., 2014), demonstrating that this phrase style may be more effective at facilitating children’s vocabulary growth during readings than other phrase styles that do not rhyme, even when the target words are not the rhyming words themselves. Given the daily prevalence of shared storybook reading sessions within a preschool classroom, and the opportunities for children to be exposed to complex, novel words during these sessions, incorporating books that rhyme throughout such contexts seems to be an important way to support children’s early understanding of target word definitions.
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## Appendices

Table 1. Target Words, Definitions, and Sample Excerpts from Storybooks Used to Introduce Target Words

<table>
<thead>
<tr>
<th>Target words</th>
<th>Definitions provided</th>
<th>Samples from story books</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Book 1: Rhyming</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companion</td>
<td>Someone who is your friend.</td>
<td>So one day when my dear companion Joey came over for some fun, I agreed to play, but only if he followed rule number one.</td>
</tr>
<tr>
<td>Limb</td>
<td>An arm, leg, or wing</td>
<td>Landing atop a high shelf, no limb of mine could reach. Shocked at such a horrific sight, I let out a piercing screech.</td>
</tr>
<tr>
<td>Tier</td>
<td>Rows stacked above each other</td>
<td>Joey passed blocks stacked in a tier, determined to save the day. But how could he? Blue was trapped, much to my bitter dismay.</td>
</tr>
<tr>
<td>Quarrel</td>
<td>A loud or noisy fight.</td>
<td>And at this point a large quarrel might very soon take place, Joey was mad. I could tell by the look on his face.</td>
</tr>
<tr>
<td><strong>Book 2: Subverted-Expectation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparel</td>
<td>The clothes that you wear.</td>
<td>Goat! What if he chews my apparel like it’s something to eat? Or the slyest of weasels tries to steal the shoes off of my feet.</td>
</tr>
<tr>
<td>Chortle</td>
<td>A happy laugh or giggle.</td>
<td>And soon I let out a chortle and we both laugh in glee. I met a new friend, and his name is Joey.</td>
</tr>
<tr>
<td>Taunt</td>
<td>A teasing thing to say.</td>
<td>Or the kids yell a mean taunt all because of what I wear? Laughing at my brand new clothes and my red curly hair.</td>
</tr>
<tr>
<td>Woe</td>
<td>A feeling of being sad.</td>
<td>Ridiculous! First days may bring about woe, sadness, and, yes, even jitters too. But you must always remember how fun and exciting preschool will be for you.</td>
</tr>
<tr>
<td><strong>Book 3: Typical Phrase</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glare</td>
<td>A mean or angry look.</td>
<td>Mommy’s face would be in a glare—angry and red because of what I’d done.</td>
</tr>
<tr>
<td>Interstice</td>
<td>A small break or crack</td>
<td>“I did it! There is an interstice on the side of your bowl because I kicked my soccer ball straight into it, so it fell and cracked.</td>
</tr>
<tr>
<td>Tureen</td>
<td>A bowl to serve food.</td>
<td>With a sickening crash, my mother’s tureen came falling to the ground.</td>
</tr>
<tr>
<td>Void</td>
<td>A very large empty space.</td>
<td>Yes, JUST RIGHT! It was completely void and clear of any furniture.</td>
</tr>
</tbody>
</table>
Table 2. Story Type Variables Across All Three Storybooks

<table>
<thead>
<tr>
<th>Variables</th>
<th>Book 1: Ain’t Gonna Share</th>
<th>Book 2: First Day Blues</th>
<th>Book 3: Mikey’s Big Lie</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storybook content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phrase style</td>
<td>Rhyming</td>
<td>Subverted.expectation</td>
<td>Typical Phrases</td>
</tr>
<tr>
<td>Narrative-style</td>
<td>First-person</td>
<td>First-person</td>
<td>First-person</td>
</tr>
<tr>
<td>Total number of words</td>
<td>935</td>
<td>935</td>
<td>935</td>
</tr>
<tr>
<td>Total number of pages</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Total number of words per page</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Theme</td>
<td>Morals (sharing)</td>
<td>Morals (courage)</td>
<td>Morals (honesty)</td>
</tr>
<tr>
<td>Number of words in title</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Target vocabulary content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of target words per book</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Word-class</td>
<td>Noun</td>
<td>Noun</td>
<td>Noun</td>
</tr>
<tr>
<td>Presentation in book</td>
<td>Beginning of every 4th page; 7th word in opening stanza</td>
<td>Beginning of every 4th page; 7th word in opening stanza</td>
<td>Beginning of every 4th page; 7th word in opening stanza</td>
</tr>
<tr>
<td>Level of complexity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th grade level*</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6th grade level**</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Above 6th grade level***</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Concrete concepts</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Abstract concepts</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Number of syllables</td>
<td>1, 1, 2, 3</td>
<td>1, 1, 2, 3</td>
<td>1, 1, 2, 3</td>
</tr>
<tr>
<td>Number of words in definition</td>
<td>5, 5, 5, 5</td>
<td>5, 5, 5, 5</td>
<td>5, 5, 5, 5</td>
</tr>
<tr>
<td><strong>Protagonist content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Race</td>
<td>White</td>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>Age</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Number of additional main characters</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Illustration content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of illustrations total</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Number of illustrations per page</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Illustration medium</td>
<td>Crayons</td>
<td>Crayons</td>
<td>Crayons</td>
</tr>
<tr>
<td>Illustrator</td>
<td>Author</td>
<td>Author</td>
<td>Author</td>
</tr>
</tbody>
</table>

**Note.** *, **, *** represents the complexity of the target word as determined by online vocabulary lists for grades 5-6. Target words that were determined to be above 6th grade complexity were more advanced synonyms for specific words found on these lists.
### Table 3. Scoring Criteria for Target Vocabulary Items on Pre-trial and Post-trial Word Recall Assessments

<table>
<thead>
<tr>
<th>Point</th>
<th>Criterion</th>
<th>Sample response for <em>woe</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td><strong>Complete knowledge</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Definition from reading session</td>
<td><em>A feeling of being very sad</em></td>
</tr>
<tr>
<td></td>
<td>Other definition or synonym</td>
<td><em>Feeling really sad, unhappy</em></td>
</tr>
<tr>
<td></td>
<td>Definition and example</td>
<td><em>Very sad feeling, like when you fall down</em></td>
</tr>
<tr>
<td>1</td>
<td><strong>Partial knowledge</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partial definition</td>
<td><em>Sad</em></td>
</tr>
<tr>
<td></td>
<td>Meaningful use in a phrase or sentence</td>
<td><em>You have woe when you are hurt</em></td>
</tr>
<tr>
<td></td>
<td>Use in a story context or a specific example</td>
<td><em>Mikey was sad on his first day</em></td>
</tr>
<tr>
<td>0</td>
<td><strong>No knowledge</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incorrect or no response</td>
<td><em>To play outside</em></td>
</tr>
<tr>
<td></td>
<td>Related but inadequate response</td>
<td><em>People being woe</em></td>
</tr>
</tbody>
</table>

*Note.* Scoring criteria for all assessments reflect those used in Spencer et al. (2012).
Table 4. *Descriptive Statistics for Participating Children in Each Classroom*

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Children</th>
<th>Child Ethnicity/Race</th>
<th>Sex</th>
<th>Child Age in Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N in class</td>
<td>N participated</td>
<td>Black</td>
</tr>
<tr>
<td>A</td>
<td>20</td>
<td>18</td>
<td>.06</td>
<td>.11</td>
</tr>
<tr>
<td>B</td>
<td>20</td>
<td>14</td>
<td>.00</td>
<td>.14</td>
</tr>
</tbody>
</table>
Table 5. Sample Sizes, Ranges, Child Level Means, Standard Deviations, and Correlations of Primary Analysis Variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Range</th>
<th>M (SD) or %</th>
<th>Pre-test</th>
<th>Post-test</th>
<th></th>
<th>Post-Positive Recognition</th>
<th>Post-Negative Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child Demographics</strong></td>
<td></td>
<td>0, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (male=0)</td>
<td>32</td>
<td>0, 1</td>
<td>46.88%</td>
<td>-.034</td>
<td>.014</td>
<td>.145</td>
<td>.190</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td>0, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (Black=1)</td>
<td>32</td>
<td>0, 1</td>
<td>3.13%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Asian (Asian =1)</td>
<td>32</td>
<td>0, 1</td>
<td>12.5%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>White (White = 1)</td>
<td>32</td>
<td>0, 1</td>
<td>84%</td>
<td>.167</td>
<td>.103</td>
<td>-.106</td>
<td>.364*</td>
<td></td>
</tr>
<tr>
<td>Age in Years</td>
<td>32</td>
<td>3.25-5.92</td>
<td>4.54 (.78)</td>
<td>.041</td>
<td>.504**</td>
<td>.311</td>
<td>.493**</td>
<td></td>
</tr>
<tr>
<td>Post-test Only (0=Yes)</td>
<td>32</td>
<td>0, 1</td>
<td>46.88%</td>
<td>--</td>
<td>.218</td>
<td>.004</td>
<td>.107</td>
<td></td>
</tr>
<tr>
<td>Classroom (0=A; 1=B)</td>
<td>32</td>
<td>0, 1</td>
<td>56.25%</td>
<td>.333</td>
<td>-.177</td>
<td>-.240</td>
<td>-.010</td>
<td></td>
</tr>
<tr>
<td><strong>DIAL-4</strong></td>
<td></td>
<td>0, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language/Literacy Scores</td>
<td>31</td>
<td>82-135</td>
<td>109.26 (12.65)</td>
<td>.031</td>
<td>.037</td>
<td>.134</td>
<td>.260</td>
<td></td>
</tr>
<tr>
<td><strong>Type of Questions</strong></td>
<td></td>
<td>0, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Recall Definitions</td>
<td>216</td>
<td>0-2</td>
<td>.02 (.17)</td>
<td>--</td>
<td>.401</td>
<td>.216</td>
<td>.124</td>
<td></td>
</tr>
<tr>
<td>Post-Recall Definitions</td>
<td>316</td>
<td>0-2</td>
<td>.30 (.68)</td>
<td>.401</td>
<td>--</td>
<td>.469**</td>
<td>.529**</td>
<td></td>
</tr>
<tr>
<td>Correct Questions</td>
<td>653</td>
<td>0, 1</td>
<td>.71 (.45)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Positive</td>
<td></td>
<td>0, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition</td>
<td>327</td>
<td>0, 1</td>
<td>.80 (.40)</td>
<td>.216</td>
<td>.469**</td>
<td>--</td>
<td>.204</td>
<td></td>
</tr>
<tr>
<td>Post-Negative</td>
<td></td>
<td>0, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition</td>
<td>326</td>
<td>0, 1</td>
<td>.63 (.49)</td>
<td>.124</td>
<td>.529**</td>
<td>.204</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, **p<.01, ***p.<.001
Table 6. *Means (Standard Deviations) and Percent Correct of Children’s Assessment Scores Across Each Book Condition*

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Book Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pre-Recall Definitions</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>Post-Recall Definitions</td>
<td>.43 (.81)</td>
</tr>
<tr>
<td>Post-Positive Recognition Question</td>
<td>79%</td>
</tr>
<tr>
<td>Post-Negative Recognition Question</td>
<td>61%</td>
</tr>
</tbody>
</table>
Table 7. **Coefficients (and Standard Errors) from Mixed Effects Model exploring Impact of Book on Child’s Word Learning Scores (Recall, Positive Recognition Questions, Negative Recognition Questions) while Controlling for Age in the Fixed Effects Model and Child Variance in the Random Effects Model.**

<table>
<thead>
<tr>
<th></th>
<th>Recall Definitions</th>
<th>Positive Recognition Questions</th>
<th>Negative Recognition Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects Model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept/Constant</td>
<td>-.93 (.37)</td>
<td>2.03 (.94)</td>
<td>3.30 (1.27)</td>
</tr>
<tr>
<td>Age in years</td>
<td>.24 (.08)**</td>
<td>-.70 (.21)**</td>
<td>-.83 (.28)**</td>
</tr>
<tr>
<td>Rhyming book</td>
<td>-.01 (.08)</td>
<td>-.18 (.25)</td>
<td>-.61 (.34) +</td>
</tr>
<tr>
<td>Subverted-expectation book</td>
<td>.04 (.08)</td>
<td>-.06 (.24)</td>
<td>-.57 (.33) +</td>
</tr>
<tr>
<td>Time (1=post)</td>
<td>.10 (.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhyming book X Time</td>
<td>.34 (.11)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subverted-expectation book X Time</td>
<td>-.07 (.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Random Effects Model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Variance</td>
<td>.10 (.01)</td>
<td>.43 (.20)</td>
<td>.74 (.35)</td>
</tr>
</tbody>
</table>

*Note: Reference condition is control book. Recall model used a normal distribution with a linear link. Recognition models used a binary distribution with logit link. + p < .10, * p < .05, ** p < .01, *** p < .001*
Figure 1. Estimated marginal means for children’s scores on recall assessments for each phrase style while controlling for age at 4.5 years.