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In this study, we examined the longitudinal relations between frequency and features of reading experiences within the preschool classroom to children's language and literacy outcomes in kindergarten and 1st grade. *Frequency* refers to the number of shared reading sessions conducted each week as measured by teachers' written reading logs recorded across the academic year. *Features* refers to teachers' extratextual talk about literal, inferential, or print or phonological topics as assessed by analysis of 6 videotaped readings of narrative and informational texts collected across the preschool year. Participants were 28 preschool teachers and 178 children. The children were largely at risk and randomly selected from among those in each classroom to complete longitudinal assessments. In preschool, results showed that the frequency of classroom shared reading was positively and significantly related to children's receptive vocabulary growth, as was the inclusion of extratextual conversations around the text; only extratextual conversations related to children's preschool literacy growth. There was no evidence of differential influences of these experiences for children; that is, the relationship between frequency or features and children's language and literacy development was not moderated by children's initial skill level. Longitudinally, extratextual talk during preschool shared reading remained associated with children's vocabulary skills through kindergarten, with trends toward significance extending to 1st grade literacy skills. The frequency of preschool shared reading was not a significant predictor of longitudinal outcomes.

Keywords: shared book reading, language, literacy, features extratextual talk, frequency

An important and widely recommended activity for promoting young children's language and literacy skills is shared book reading. Supporters ranging from pediatricians to celebrities have championed efforts to increase young children's participation in shared-reading interactions (Anderson, Hiebert, Scott, & Wilkinson, 1985; Ferraguto, 2008; Klass, Needlman, & Zuckerman,

2003; Trelease, 2006). The term *shared reading* refers to the interactions and discussions that occur when an adult and a child (or children) look at a book together. Despite strong consensus that children's participation in shared-reading experiences within the preschool classroom is an important mechanism for stimulating language and literacy development, few studies have attempted to disentangle whether the value of shared reading resides in frequency of exposure or in deliberate adult behaviors beyond just reading text aloud that are aimed at advancing influential language and literacy skills. In this study, we examined how typical variation among the frequency and features of preschool shared reading related to children's language and literacy development in prekindergarten (pre-k), kindergarten, and first grade.

Early Language and Literacy Development

In the early stages of reading development, young children build a range of precursory skills that are systematically associated with later decoding and reading comprehension abilities (Dickinson, McCabe, & Anastasopoulos, 2003; Kendeou, van den Broek, White, & Lynch, 2009). For example, preschool children's phonological awareness and print knowledge (understanding of the alphabetic principle and book and print concepts) predict decoding skills and, especially in the later elementary grades, early language and vocabulary skills emerge as key determinants of reading

comprehension (e.g., Storch & Whitehurst, 2002). Young children exhibit significant individual differences in these precursory skills (Cabell, Justice, Konold, & McGinty, 2011) that are critical determinants of children's future reading achievement (National Early Literacy Panel [NELP], 2008). Consequently, considerable efforts have been directed toward understanding how early education experiences can promote early literacy skills. Of particular interest is the role that early shared-reading experiences can play in promoting children's precursory reading skills, specifically when children are engaged in explicit meaning- and code-related conversations surrounding text, often referred to as *extratextual talk* (e.g., Price, van Kleeck, & Huberty, 2009). Participation in such conversations can have causal impacts on children's development of such prereading skills as vocabulary and print knowledge (e.g., Coyne, McCoach, Loftus, Zipoli, & Kapp, 2009; Gonzalez et al., 2010; Justice, Meier, & Walpole, 2005; Penno, Wilkinson, & Moore, 2002; Reese & Cox, 1999; Wasik, Bond, & Hindman, 2006). Critical foci of extratextual talk during shared reading interactions includes both *meaning-related talk*, focused on comprehending narrative events, illustrations, or language within books, and *code-related talk* addressing print, letters, or sounds of words within books.

The Contribution of Shared Reading to Children's Language and Literacy Skills

Relatively robust experimental evidence is available for characterizing the general impacts of shared reading participation on children's development, as summarized in two recent meta-analyses (Mol, Bus, & de Jong, 2009; NELP, 2008). Results of these meta-analyses show, in general, that participation in shared-reading experiences has moderate effects on young children's oral language and print-concept knowledge but mixed or limited effects on other early literacy outcomes (e.g., phonological awareness) or later conventional literacy skills (Bus, van IJzendoorn, & Pellegrini, 1995; Lonigan, 1994; Mol et al., 2009; NELP, 2008; Scarborough & Dobrich, 1994; What Works Clearinghouse, Institute of Education Sciences, 2006, 2007). For example, Mol et al. (2009) reported that children's participation in *interactive* shared reading within the classroom, that is, reading in which the adult engages in extratextual talk and/or child questioning, had a moderate effect on language and vocabulary skills (ds = 0.45—0.62). These findings were substantiated in 16 home- and school-based studies included in the NELP (2008) meta-analysis. The NELP findings demonstrated that shared reading had a moderate effect on oral language skills (d = 0.57) with stronger impacts observed for vocabulary than for more global language skills.

In regard to code-related skills, Mol et al. (2009) reported a more modest effect of interactive reading on children's alphabet knowledge, phonological awareness, and orthographic skills (ds = 0.39–0.43). However, the NELP (2008) report, in which home- as well as school-based interventions were examined, reported no significant effect on children's alphabet knowledge or phonological awareness but moderate effects on print knowledge (d = 0.50). Another shared-reading review (Stahl, 2003) suggested that reading alone has little impact on code-related skills because adults seldom explicitly discuss print within extratextual conversations.

The extent to which such findings can be generalized to typical preschool shared reading is unclear. More robust effects on chil-

dren's language skills were observed for interactive reading implemented by research staff or trained interventionists, whereas the average impacts for teacher-implemented reading sessions were substantially attenuated in comparison (Mol et al., 2009). Few experimental studies in the NELP (2008) report involved implementation of whole-group (large-group) classroom shared reading, leading the panel to conclude that there is limited evidence for the efficacy of using shared reading as a whole-class circle time activity in preschool settings. But Mol et al. (2009) explicitly examined group size as a potential moderator of outcomes attributable to interactive reading and found that teacher-implemented shared reading in whole-group settings was effective (average d = 0.48) for language outcomes. The contradictory nature of such claims shows that further study of the potential associations of participation in whole-group shared reading with children's development is warranted, particularly given that this is a daily activity in many pre-k classrooms (Dickinson et al., 2003).

At the same time, the evidence available within such recent meta-analyses raises questions about how often preschool teachers should conduct shared reading. It might be presumed that more participation in shared-reading experiences in the preschool classroom is beneficial to children, but this cannot be concluded on the basis of prior reports. For instance, the NELP (2008) report indicated that there was no relation between the minutes spent in shared-reading sessions (range = 112–1,500 min) and children's language and literacy skills. In contrast, Mol et al. (2009) reported that more book-reading sessions facilitated children's phonological awareness but that more sessions (>16 weeks) did not result in an increased benefit to children's language skills. Such findings suggest, at face value, that children might not necessarily benefit from increases in the amount of shared-reading experiences in their preschool classrooms. Thus, the issue of preschool shared-reading frequency also warrants further study.

Key Aspects of Shared Reading: What Is Known?

Understanding shared-reading experiences requires accounting for behaviors of the adult reader as well as the participating child or children. With respect to the adult's role, some have suggested that the frequency of reading sessions may be less influential than the quality or features of the adult's reading style (Scarborough & Dobrich, 1994); however, this has not been explicitly tested with preschool teachers. Yet many adults engage in very little extratextual talk, using a limited input style (Hammett, van Kleeck, & Huberty, 2003; Price et al., 2009). For the child's part, his or her unique characteristics and skills may influence the adult's behaviors during reading and the extent to which benefits are derived (e.g., Coyne et al., 2009; Reese & Cox, 1999). We review evidence for these points subsequently.

Frequency of Shared Reading

Theoretically, the frequency with which children experience shared reading should be of great consequence given ecological models of development that claim effective interactions must take place routinely and over extended periods of time to promote learning (Bronfenbrenner & Morris, 2006). Previous efforts to understand the influence of shared-reading frequency have mostly focused on the home environment (for reviews, see Bus et al.,

1995; Scarborough & Dobrich, 1994; see also Britto, Brooks-Gunn, & Griffin, 2006; Sénéchal, 2006) or have addressed variations in frequency of school shared reading by simply controlling for the duration (minutes, seconds) of a reading session (e.g., Hindman, Connor, Jewkes, & Morrison, 2008). Within preschool classrooms, it is typically the case that teachers provide one or more daily shared-reading sessions; these might range from about 5 to 25 min, with most preschool teachers averaging a 10-min reading session (Dickinson, De Temple, Hirschler, & Smith, 1992; Dickinson et al., 2003; Hindman et al., 2008).

Nonetheless, there is variability in children's school-based shared-reading experiences. Studies within classrooms serving low-income students show that 20% to 40% of classrooms do not include shared reading daily (Dickinson et al., 2003; Neuman, 1999). Even in classrooms serving more advantaged populations, some children do not experience daily reading (18% of classrooms in Hindman et al., 2008). These data suggest that despite widespread recommendations to share books with preschoolers several times per day in preschool standards and guidelines (Ohio Department of Education, 2006; Virginia Department of Education, 2007), shared reading is not ubiquitous in preschool classrooms. There is surprisingly little evidence regarding whether the frequency of pre-k shared-reading sessions is influential on children's development. In fact, an older study with kindergarteners found that more shared reading time was negatively related to reading outcomes in kindergarten and first grade, perhaps because time spent reading aloud takes away time from direct reading instruction (Meyer, Wardrop, Stahl, & Linn, 1994). The present study increases the understanding of how the sheer volume of preschool shared reading relates to children's language and literacy outcomes.

Features of Adult Shared-Reading Styles

Adults show significant variability with respect to their style of shared reading, or the features of their extratextual conversations, and there is no single style that has proven to be superior for all children (Hammett et al., 2003; Martinez & Teale, 1993; Reese & Cox, 1999). Although much of the research on reading features has focused on parents (e.g., Britto et al., 2006; Hammett et al., 2003), a number of classroom-based correlational studies have shown that specific qualities of classroom-based shared reading appear to have positive links to children's growth in language skills. For instance, in a seminal study, Dickinson and Smith (1994) examined one shared-reading session in 25 classrooms serving low-income children and reported that sessions characterized by higher proportions of cognitively challenging talk (i.e., analysis, prediction, and vocabulary utterances) predicted stronger vocabulary and comprehension skills among children 1 year later. A more recent analysis of these data (Dickinson & Porche, 2011) shows that children's ($n = 57$) fourth grade receptive vocabulary was related to challenging, inferential talk and teachers' corrective utterances during preschool book reading, with kindergarten vocabulary mediating these effects. In a more advantaged, mixed-income sample, Hindman et al. (2008) also found that exposure to talk about inferential topics (e.g., recalling, predicting, inferencing) rather than literal topics (e.g., labeling, describing) predicted children's ($n = 130$) short-term vocabulary skills. Inferential thinking skills are essential for later reading comprehension, suggesting that this

is a critical skill to foster early through pre-k listening comprehension (see van Kleeck, 2008).

Although the above-cited studies highlighted how aspects of meaning-related extratextual talk relate to children's language development, emphasizing the importance of more challenging, inferential talk, other studies have explored how extratextual talk may influence children's code-related skills (e.g., Evans, Shaw, & Bell, 2000; Hindman et al., 2008). Observational studies have generally failed to draw linkages between features of extratextual talk and children's code-based development; however, this appears to be largely because most adults, including parents and teachers, devote very little attention to code-based features of texts (Bus & van IJzendoorn, 1988; Justice & Ezell, 2000; Martinez & Teale, 1993; Phillips & McNaughton, 1990). Findings from experiments in which adults' extratextual talk about code-based features of books is explicitly increased show that code-focused extratextual talk positively affects children's literacy skills in both the short and the long term (Justice & Ezell, 2000; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Girolametto, Weitzman, Lefebvre, & Greenberg, 2007; Ukrainetz, Cooney, Kyer, Kysar, & Harris, 2000), making this an important focus for naturalistic studies in which adult's print-referencing talk is not directly trained.

Child Characteristics and Shared Reading

Children within preschool classrooms exhibit significant heterogeneity in their language and literacy development (Cabell et al., 2011). Some evidence suggests that individual child characteristics may influence children's ability to profit from shared-reading experiences. For instance, experimental and correlational studies show that children with more initial language benefit most from rich vocabulary explanations (Coyne et al., 2009) or more challenging, inferential questioning, whereas children with less initial language benefit most from a more literal reading style (Reese & Cox, 1999; Zucker, Justice, Piasta, & Kaderavek, 2010). However, there is mixed evidence to this point, as other correlational studies suggest that only inferential (rather than literal) conversations are beneficial regardless of pre-k children's initial skill levels (Hindman et al., 2008).

Children's prior code-related skill also may affect learning during shared book reading. For example, Evans, Saint-Aubin, and Landry's (2009) recent eye-gaze work showed that children with more letter knowledge spent more time attending to print within texts than did children who knew fewer letters. Justice and colleagues (Justice et al., 2009; Justice, McGinty, Piasta, Kaderavek, & Fan, 2010) examined whether children with relatively limited literacy skills gained as much as did children with relatively high levels of skill during a shared-reading program that included training for teachers to use explicit extratextual talk about print. They reported that children's early literacy gains were not moderated by initial skill levels. Thus, although children with a low initial level of skills may not look at print on their own, it is possible that children with a range of ability levels may benefit from explicit extratextual talk about print. However, few studies have examined initial print knowledge as a potential moderator of children's benefit from typical shared-reading experiences.

Goals in the Present Study

In this study, we addressed four research questions pertaining to frequency and features of whole-group shared reading in preschool classrooms serving children considered to be at risk for future low academic performance because of poverty. The questions were

1. What is the frequency of shared book reading in preschool classrooms and what are the features of meaning-focused (literal and inferential) and code-focused extratextual conversation during these readings?

2. To what extent are frequency and features of shared-reading sessions associated with children's language and literacy development during the preschool year?

3. Do children's initial skill level and frequency or features of shared reading moderate any observed relations during preschool?

4. Are the frequency or features of preschool shared-reading sessions associated with children's language and literacy skills in kindergarten and first grade?

We hypothesized a positive relationship between reading frequency, features of extratextual talk, and children's outcomes in pre-k but wondered whether these relations might persist into later grades. An important contribution of the present study is that it comprehensively indexes both frequency and features of pre-k shared-reading sessions. Previous studies have examined only one of these variables at a time. To arrive at a less biased estimate of teachers' reading styles, we measured shared-reading features across six reading sessions, whereas previous classroom research only measured one session (e.g., Dickinson & Porche, 2011; Hindman et al., 2008). Examining both frequency and features is of theoretical importance given evidence that, for example, in regard to vocabulary learning during shared reading, shorter exposures to vocabulary are sufficient for receptive vocabulary gains but that more extended time and more deliberate instruction is necessary for deeper expressive vocabulary gains (Coyne et al., 2009).

The present study also expands on the extant literature by examining readings of multiple types of texts, including both narrative and informational texts, as well as the repeated reading of titles. Some studies have shown that text familiarity and genre may influence the nature of shared-reading interactions. For example, narratives tend to elicit conversation about the plot or inferences about character's feelings and motivations (Zevenbergen, Whitehurst, & Zevenbergen, 2003), whereas informational genres often elicit discussion of technical vocabulary or more inferential topics (Price et al., 2009; Torr & Clugston, 1999).

Method

Participants

Participants in the present study were 28 teachers (1 man, 27 women) and 178 children (99 boys, 79 girls) who took part in a large, multisite shared book reading study (Justice et al., 2009, 2010). In the larger study, data were collected across 2 academic years for two sequential cohorts of participants (total $N = 59$ teachers, 379 children) in a mid-Atlantic and a Midwestern state. Caregiver consent was requested from all children in participating classrooms. From among children for whom consent had been obtained, approximately six children were randomly selected per classroom. The present study included teachers randomly assigned to the comparison group in the larger study, in which teachers received books each week of the academic year and read them using their normal reading style. Participating teachers worked in need-based preschool programs serving children experiencing economic, social, or developmental risks (e.g., Head Start, state-funded preschool). The majority of teachers were Caucasian (57.1%) or African American (32.1%). Teachers had an average of 16.5 years of total teaching experience ($SD = 9.93$ years, range = 0–30 years) and the majority held either a 2-year (32.1%) or a 4-year college degree (32.1%), with a few holding master's degrees (14.3%). Most teachers reported using either Creative Curriculum or HighScope as their core curriculum.

Children's mean age in October of the academic year was 52 months ($SD = 4.55$ months, range = 41–60 months). The majority of the children were Caucasian ($n = 77$; 43.5%) or African American ($n = 70$; 39.5%). Of the children for whom home language data were available, 98.8% percent primarily spoke English in the home (11 were unreported). In terms of maternal education, 21.9% of children's mothers did not hold a high school degree, 25.6% held a high school degree, 35.4% had some additional training beyond high school, 12.2% held a 2-year college degree, and 4.9% had earned a bachelor's or master's degree (14 were unreported). Annual household income was at or below $25,000 for 62.4% of children, with 29.3% of children living in households in which the income from all sources was $10,000 or less (21 were unreported). For 95 children (57.9%), the present academic year represented their first year in preschool (14 were unreported). Mean proportion of child attendance for the academic year was .78 ($SD = .25$; 24 were unreported).

General Procedures

All teachers in the present study were randomly assigned to a comparison group called the *regular reading* condition in the larger study; in the other experimental conditions, the teacher's reading style was directly manipulated. This condition included implementation of a 30-week book-reading schedule requiring four whole-class readings per week of 30 texts provided to the teachers for each week. Teachers were asked to read the text for the week on Monday and again on three additional days that week for a total of four sessions per week, totaling 120 prescribed reading sessions. To facilitate reading according to this schedule, we placed books in a sealed envelope with the date for the initial reading on the outside. Teachers were told to use their typical or preferred style of shared reading. Teachers participated in two training workshops, one in the fall prior to the start of the study and the other during the winter of the academic year. The fall full-day workshop focused largely on the study requirements and provided time for teachers to fill out questionnaires. Teachers also participated in a break-out session separate from other study participants in which they discussed their usual reading style and received general ideas about shared reading. Topics included managing children's behavior during reading, encouraging children to par-

ticipate during reading, and reading a variety of genres, as well as possible ideas for story extension activities (e.g., crafts). The winter session addressed similar topics. In general, the content of these workshops was kept as general as possible and all ideas were optional: The purpose of the workshops was to control for training time received by teachers in other conditions who received didactic training on certain reading techniques.

Two requirements of the larger study were for teachers to keep a written log of their whole-group shared-reading sessions (discussed below) and to videotape selected reading sessions of the researcher-provided texts. All teachers videotaped a prescribed shared-reading session every 2 weeks and submitted these to project staff. Teachers were given a digital video camera, tripod, digital video disks (DVDs), and stamped addressed DVD mailers; they were trained to set up the camera before reading to properly capture the reading session. Twice during the study, researchers provided teachers with a written response about their video submission that thanked them for their time and gave very general comments about the reading session (e.g., children appeared to enjoy the book, the teacher used clear voicing when reading).

Selected Books

We analyzed videotaped whole-class readings of six researcher-provided texts selected for this study to ensure that we observed both an initial reading and rereadings and that both narrative and informational genres were represented. Although teachers were required to submit 15 videotaped reading sessions over the academic year, we purposefully selected a subsample of three books read aloud in the fall (Weeks 2, 8, and 16) and three read during the spring (Weeks 24, 26, and 30) to capture reading experiences across the academic year. It is likely that this analysis of six reading sessions produced a less biased estimate of teacher's typical reading styles than that obtained in most other studies with only one reading session. It should be noted that all texts within the larger study were chosen because they contained at least some print-salient features (e.g., print in illustrations, dramatic fonts),

which are known to influence the extent to which teachers discuss print during reading (Smolkin, Conlon, & Yaden, 1988; Zucker, Justice, & Piasta, 2009). Table 1 contains a measure of the number of print-salient features within each text along with measures of the linguistic qualities of the texts, including the mean length of sentences, type–token ratio, and total words. These statistics were obtained by transcribing all texts verbatim and using the Systematic Analysis of Language Transcripts Research (Version 9.0) software (Miller & Iglesias, 2006). It is noteworthy that these texts varied in the measured qualities given prior evidence that book genres and characteristics influence the types of extratextual conversations that occur (e.g., Price, van Kleeck, & Huberty, 2009; Zucker et al., 2009).

Measures and Data Collection Procedures

Children completed language and literacy assessments in the fall and late spring of their preschool year. Follow-up assessments were administered to students in the late spring of their kindergarten and first grade years. Trained research assistants conducted all testing in a quiet location within the child's school building. The majority of assessors were unaware of the study condition during the preschool assessments, although this was not always the case (i.e., some assessors were involved in teacher-training workshops). For all kindergarten and first grade assessments, assessors did not have knowledge of children's earlier conditions. Measures for this study were threefold: (a) measurement of the frequency of shared reading, (b) measurement of the features of shared reading, and (c) measurement of children's language and literacy skills. In addition, parents and teachers completed demographic questionnaires to provide information about themselves (e.g., level of maternal education, years of teaching experience; see correlations between teacher-level variables in Table 2).

Frequency of shared reading. Each teacher maintained a written log over the entire academic year on which they recorded all whole-class reading sessions that occurred above and beyond the required four readings each week of the researcher-provided

Table 1
Text Characteristics and Systematic Assessment of Book Reading (SABR) Score for Features of Extratextual Talk

Book	Week read	Repeated reading	Genre	Pages	Salient print	Mean length sentence	Type–token ratio	Total words	SABR score M	SABR score SD
There's a Dragon at My School (Hawthorne, 2004)	2	4th	Nar.	15	12	8.42	.02	175	52.96	45.28
Rumble in the Jungle (Andreae, 1996)	8	2nd	Nar.	24	49	9.79	.53	509	57.08	52.96
I Stink! (McMullan & McMullan, 2006)	16	1st	Info.	30	153	5.56	.16	344	66.21	55.22
In the Small, Small Pond (Fleming, 1993)	24	3rd	Info.	29	16	4.27	.94	64	83.73	80.43
The Noisy Airplane Ride (Downs, 2003)	26	3rd	Info.	30	27	7.99	.44	775	31.16	25.07
Miss Bindergarten Gets Ready for Kindergarten (Slate, 1996)	30	4th	Nar.	35	153	5.58	.66	201	36.35	33.55

Note. Repeated reading = indicates whether this is the first, second, third, or fourth time the book was read aloud; Genre = narrative (Nar.) or informational narrative (Info.); Salient print = total instances of print salient features within the text; Mean length sentence = average length of sentences (in words) within text; Type–token ratio = number of unique words or types/number of total words or tokens; Total words = total sum of words in printed text of story (excludes copyright, title page, etc.); SABR score = sum of all codes for literal, inferential, and print or phonological extratextual teacher talk.

Table 2

*Bivariate Correlations Among Teacher-Level Variables (*n = 28*)*

Variable	1	2	3	4
1. Teacher holds bachelor's degree	—	.07	−.36	.50**
2. Teacher years of experience		—	.09	.37
3. Frequency of reading			—	−.17
4. Features of extratextual talk				—

Note. Frequency = whole-group shared reading as measured with teachers' report on written logs; Features = sum of literal, inferential, and print or phonological extratextual talk coded using the Systematic Assessment of Book Reading (Justice, Zucker, & Sofka, 2007).
** *p* < .01.

texts. Teachers' logs identified the title of all books read and how many times each book was read aloud. It is important to note that reading logs documented only those books that were not a part of the larger study and thus represented any and all supplemental shared-reading sessions; if teachers recorded any books that had been provided by researchers, these titles were excluded. If teacher-selected titles were recorded more than once, each session was counted. Reading logs were submitted by mail every 2 weeks using stamped addressed mailers given to teachers for this purpose. We coded a subset of all reading logs collected throughout the academic year to calculate the average number of supplemental reading sessions per week. We entered the number of titles and sessions reported for Weeks 1, 5, 10, 15, 20, 25, and 30 of the study into a database for 7 weeks of logs (typically totaling 35 days of instruction), chosen to represent time points across the entire academic year. Prior analyses have suggested that a random sampling of these weeks provides a valid representation of teachers' reading practices (Pentimonti, Zucker, & Justice, 2011).

Features of shared reading. To measure the features of teachers' extratextual talk during the six shared reading sessions, the Systematic Assessment of Book Reading (SABR; Justice, Zucker, & Sofka, 2007) was used. We coded teacher behaviors from the moment the book became the focus of conversation until the book was no longer discussed or children transitioned to a new activity. The SABR is a systematic observational tool with adequate reliability and validity (Pentimonti et al., 2012) that uses a 15-s interval coding scheme to indicate the presence or absence of specific teacher behaviors for each interval. Thus, codes represent the occurrence of behavior(s) within an interval, and it may be that the actual frequency rates are somewhat higher, as multiple behaviors within a given interval would only be counted once. Coding categories and descriptive statistics are in Table 2. In this study, we used SABR codes for 18 distinct teacher behaviors organized in three categories. SABR codes in Table 2 begin with simple, *literal* levels of cognitive demand that require matching or selective analysis of perception. The next category of codes requires more complex, *inferential* levels of processing that demand reordering, inferencing, or reasoning about perception. The final category addresses code-related talk about *print or phonological awareness* targets (at any level of cognitive demand). Coding focuses at the level of the teacher utterance, and the system is neither mutually exclusive nor exhaustive. That is, some utterances are not coded (e.g., redirecting misbehavior) and a single utterance might receive more than one code. For example, the comment, "Sally has an *S* in her name just like we see in the title" is coded as both "text-to-life link" and "letters/words."

Our goal in analyzing six reading sessions was to produce a less biased metric of typical teacher behaviors than has likely occurred in prior research with only one reading session. Thus, we planned to aggregate scores across the six sessions to represent the average

Table 3

Features of Extratextual Talk: Codes, Definitions, and Descriptive Statistics

Code	Definitions	*M*[a]	*SD*	Range
	Literal codes (α = .88)			
Label nouns	Label objects, characters, or nouns in illustrations or text	13.77	9.86	4.50–45.00
Describe nouns	Describe characteristics of nouns, including possession	5.56	5.00	0.83–24.00
Describe actions	Label or describe story actions or verbs in text	5.94	4.59	1.80–23.17
Define word	Simple definition of a word or purpose of object	0.65	0.79	0–2.83
Expansion	Teacher expands or extends child's utterance using child's own words	4.70	4.23	0.50–18.17
	Inferential codes (α = .87)			
Comparison	Discuss likeness or differences	0.83	1.20	0–6.17
Inference	Discuss inferences such as character point of view, judgments, and so on	5.72	5.16	0.50–18.80
Prediction	Hypothesize or predict story events, including revisiting predictions	0.57	1.04	0–4.83
Explanation	Reasoning and analysis to explain conditions, cause and effect, or how or why	2.85	3.11	0–12.17
Rich explanation	Rich discussion of word meaning to contextualize or dramatize word	0.29	0.47	0–1.83
Text-to-life link	Link to child or teacher's personal experiences or to other texts	2.79	2.45	0–8.83
Pretend talk	Dramatize story actions or use pretend talk with story characters	1.16	1.47	0–5.00
Emotions	Discuss emotion vocabulary or character's emotions	0.46	0.61	0–2.20
Follow child's lead	Teacher continues child's spontaneous topic with a contingent verbal response	2.63	2.00	0–9.17
	Print and phonological codes (α = .72)			
Print conventions	Book or print conventions such as author, title, book parts, directionality	2.16	2.14	0.25–11.50
Letter sounds	Discuss letter–sound correspondences including letter pairs (e.g., *ch, br*)	0.36	0.65	0–2.80
Letters/words	Discuss letters or words such as upper- or lowercase, word length, and so on	2.87	3.55	0–13.67
Phonological	Discuss sounds of words such as rhyme, syllables, or beginning sounds	0.79	1.18	0–4.50

[a] Mean features scores for 15-s intervals coded across all six videotaped book reading sessions.

level of extratextual talk in a reading session. We first created summary scores for each reading session, adding together scores from the coding categories to create a summed SABR score per book per teacher. Although in other samples, these three categories were distinct (Pentimonti et al., 2012), in the present sample, the three categories were so highly intercorrelated (rs = 0.83–0.95) that using them as separate predictors was inappropriate. We then created a global score by averaging the summed SABR scores across the six book readings. Because this variable aggregates extratextual talk across texts with different genres and characteristics, we examined correlations amongst the six titles to determine if there was some degree of stability in teacher behaviors. Most correlations were in the high range (rs = .72–.91) and two were moderate (rs = 0.58, .65). Internal consistency across the six texts was good: Cronbach's α = .94.

Collecting six videos from the 28 participating teachers resulted in 168 possible videos. Teachers returned 90% of videos, and many teachers (n = 13) returned all six videos. Some videos were not analyzed because of these issues: videos damaged (n = 9); videos not returned because of school closure on the day taping was to occur (n = 3); videos returned late because of teacher illness or absence, so teachers recorded an alternate title (n = 3); and videos not returned by teacher (n = 2). This resulted in a corpus of 154 videos that were coded by five trained coders who completed a comprehensive training protocol to become a reliable coder (see Pentimonti et al., 2012). Interrater agreements (randomly selected 10%) were good: Literal ICC = .94, inferential ICC = .85, and print or phonological ICC = .95. Similar to other studies of preschool shared reading, the average duration of shared-reading sessions was 8.43 min (SD = 4.49, range = 4.19–20.54).

Preschool language and literacy skills. We used two preschool measures to examine children's language (i.e., vocabulary) and literacy (i.e., letter knowledge) skills. Children's vocabulary was assessed via the Expressive Vocabulary subtest of the Clinical Evaluation of Language Fundamentals Preschool—Second Edition (Wiig, Secord, & Semel, 2004). Children were asked to provide a label for each illustrated item; the illustrated items depicted objects, actions, and/or people. For most items, 2 points were awarded for semantically correct answers and 1 point was awarded for partially correct answers (maximum score = 40). Test developers report an internal consistency of .82, test–retest reliability of .90, and interrater reliability of .97. As a group, children's standardized vocabulary scores at the start of preschool were in the below-average range at 7.91 (SD = 2.93), compared with normative references (based on M = 10, SD = 3). Letter knowledge was measured via the Uppercase and Lowercase Alphabet Knowledge tasks of the Phonological Awareness Literacy Screening for Preschool (Invernizzi, Sullivan, Meier, & Swank, 2004). Children were asked to provide the name of each of the 26 letters presented in a random order on a single test plate. Children were awarded 1 point for each correctly named letter; scores for both tasks were summed to create a letter naming composite (maximum score = 52). Test developers reported an interrater reliability of .99.

Kindergarten and first grade skills. At the follow-up assessments in kindergarten and first grade, we used three measures to assess language and literacy skills. Language was assessed with a receptive vocabulary test, the Peabody Picture Vocabulary Test—Third Edition (Dunn & Dunn, 1997). Children are shown a plate

with four pictures and are asked to point to the picture that matches the examiner's spoken word. Items increase in difficulty until a ceiling is reached. Internal consistency is good (Cronbach's α = .92–.98). To assess literacy skills (i.e., decoding and reading comprehension), we had the children complete two subtests of the Woodcock–Johnson Tests of Achievement(Woodcock, McGrew, & Mather, 2001). Decoding was measured via the Letter–Word Identification subtest, which required children to name letters and words increasing in difficulty (maximum score = 76). Reading comprehension was measured using the Passage Comprehension subtest. In the first set of Passage Comprehension items, children were asked to point to the rebus picture most closely matching a target picture. The next set of items required children to select a picture matching a written phrase; the final set of items required children to read a short passage and provide a missing word (maximum score = 47). Basals and ceilings were applied according to subtest guidelines. Test developers reported internal consistency for the Letter–Word Identification and Passage Comprehension subtests greater than .90 and .83, respectively, and test–retest reliability of .92 and .89, respectively (Woodcock et al., 2001). Means and standard deviations of all measures are shown in Table 4.

Results

Characteristics of Preschool Shared Reading: Frequency and Features of Reading

First, we sought to characterize the frequency and features of observed preschool shared-reading sessions. Teachers' reading logs indicated that most teachers conducted about one whole-group, shared-reading session of their choice each day (M = 5.30 titles per week, SD = 3.08, range = 1.21–15.00). Recall that these logs recorded sessions above and beyond the whole-group shared-reading session required by the larger study (four readings per week). Therefore, on average, children in these classrooms partic-

Table 4
Children's Raw Scores for Vocabulary and Literacy Skills

Variable	n	M	SD
Preschool skills			
Fall expressive vocabulary[a]	170	14.86	7.34
Spring expressive vocabulary[a]	140	19.81	7.68
Fall letter knowledge (uppercase/lowercase)[b]	158	9.37/6.52	9.23/7.62
Spring letter knowledge (uppercase/lowercase)[b]	140	17.28/14.99	9.72/9.34
Kindergarten skills			
Receptive vocabulary[c]	131	75.27	17.02
WJ Letter–Word[d]	113	19.36	5.19
WJ Passage Comprehension[e]	111	8.14	2.94
First grade skills			
Receptive vocabulary[c]	120	86.72	14.30
WJ Letter–Word[d]	119	31.32	8.43
WJ Passage Comprehension[e]	119	14.98	5.54

[a] Expressive Vocabulary subtest of the Clinical Evaluation of Language Fundamentals Preschool—Second Edition. [b] Uppercase and Lowercase Alphabet Knowledge tasks of the Phonological Awareness Literacy Screening for Preschool. [c] Peabody Picture Vocabulary Test—Third Edition receptive vocabulary. [d] Woodcock–Johnson Letter–Word ID subtest. [e] Woodcock–Johnson Passage Comprehension subtest.

ipated in just under two total reading sessions per day. However, there was considerable variability, with some children exposed to only one shared-reading session per day, whereas others heard three books per day. Two teachers appeared to be outliers, with average weekly frequencies of 13.67 and 15.13, whereas all other teachers fell at or below 7.77 on the distribution. We decided to leave these teachers' actual data points in our analyses after examining several of their other reading logs by hand and determining that this frequency of shared reading was typical for their classrooms.

The amount of extratextual talk varied across the six readings as shown by the SABR score in Table 1. The mean SABR score was 53.45 observations of focal extratextual talk ($SD = 43.32$, range 15–199) per reading session, but note the large standard deviation, suggesting high variability across teachers even though the book that was shared with students was controlled by the study design. Specific features of teachers' extratextual talk coded across all six books are shown in Table 2. More than half of the coded 15-s intervals within a book reading session included talk at the literal level (57%, $n = 30.62$), whereas 32% of intervals contained talk at the inferential level ($n = 17.31$). Far less (11%, $n = 6.17$) of teachers' extratextual talk was focused on print or phonological targets. Within each of these categories, some items were more prominent. For instance, within the literal category, the item coded most frequently was labeling nouns, occurring in an average of 13.77 ($SD = 9.86$) intervals per reading. In contrast, less than one interval per reading ($M = 0.65$, $SD = 0.79$) included definitions of vocabulary words. Similar variability occurred within the inferential category, as the most frequently observed item per book reading was discussion of inferences ($M = 5.72$, $SD = 5.16$), whereas rich explanation of vocabulary words was the least observed item ($M = 0.29$, $SD = 0.47$). Although print and phonological awareness talk was infrequent, the most observed items were talk about letters and words ($M = 2.87$, $SD = 3.55$) and print conventions ($M = 2.16$, $SD = 2.14$). The distribution of each category was highly positively skewed, meaning the bulk of the values fell below the mean. This finding indicates that only a few teachers displayed high levels of extratextual talk.

Relations Between Frequency and Features of Shared Reading and Preschool Outcomes

Our second research question asked to what extent frequency and features of shared reading were associated with children's pre-k, spring language, and literacy outcomes. First, the correlation matrix between predictor and outcome variables is shown in Table 5. Although these correlations do not take into account the nested data structure, they point to a generally weak relationship between frequency and child outcomes and a more stable, positive link with features, namely, inferential talk, and children's outcomes. The few negative bivariate correlations between frequency and child outcomes likely signal multicollinearity or suppression effects with other variables that are not controlled for, as occurs in the multilevel models. The presence of the small but significant relation ($r = .22$) between teachers' years of experience and pretest vocabulary might suggest a persistence of factors present before exposure to pre-k.

Because the data adhered to a multilevel structure with 178 children nested within 28 classrooms, we used two-level hierar-

Table 5
Bivariate Correlations Among Predictor and Outcome Variables

Variable	Pre-k fall outcomes		Pre-k spring outcomes		Kindergarten outcomes			First grade outcomes		
	Expressive Vocabulary[a]	Letter Knowledge[b]	Expressive Vocabulary[a]	Letter Knowledge[b]	Receptive Vocabulary[c]	WJ Letter–Word[d]	WJ Passage Comprehension[e]	Receptive Vocabulary[c]	WJ Letter–Word[d]	WJ Passage Comprehension[e]
Fall pre-k vocabulary	—	.39**	.79**	.53**	.73**	.48**	.39**	.73**	.50**	.60**
Fall pre-k letter knowledge	.39**	—	.42**	.67**	.37**	.46**	.47**	.27**	.41**	.38**
Teacher with bachelor's	.08	-.12	<.01	.04	-.02	.09	.07	-.01	.09	.05
Teacher years of experience	.22**	.04	.19*	.14	.03	.001	-.03	.22*	.19*	.18*
Frequency of reading	-.19*	-.17*	.01	-.18*	-.06	-.09	-.13	.06	.03	.02
Features of extratextual talk	.22**	-.09	.24**	.18*	.19*	.10	.07	.21*	.22*	.23*
Literal talk	.20**	-.09	.22**	.16	.18*	.08	.06	.21*	.20*	.23*
Inferential talk	.25**	-.06	.28**	.23**	.24**	.12	.10	.23*	.27**	.27**
Print/PA talk	.17*	-.16*	.20*	.12	.09	.08	.05	.16	.11	.12

[a] Expressive Vocabulary subtest of the Clinical Evaluation of Language Fundamentals Preschool—Second Edition. [b] Uppercase and Lowercase Alphabet Knowledge tasks of the Phonological Awareness Literacy Screening for Preschool. [c] Peabody Picture Vocabulary Test—Third Edition receptive vocabulary. [d] Woodcock–Johnson Letter–Word ID subtest. [e] Woodcock–Johnson Passage Comprehension subtest.
* $p < .05$. ** $p < .01$.

chical linear modeling (HLM; Raudenbush & Bryk, 2002) computed with Mplus Version 6.11 software (Muthén & Muthén, 1998–2010) and estimated models using the Bayesian equivalent of full information maximum-likelihood estimation. This allowed for parameter estimation based on all available data, with the assumption that data were missing at random. We first estimated unconditional and base models. The intraclass correlations (ICCs) from the unconditional models indicated that although the majority of variance lay between children, there was substantial variance between classrooms: Preschool vocabulary ICC = .16 and letter knowledge ICC = .34. In the base models, we examined gains in children's scores over the preschool year by entering fall scores as grand-mean centered predictors at the child level per outcome. Raw scores were used in these analyses to allow for greater variability than standardized scores and truer detection of change over time. We then added child- and classroom-level covariates, including maternal education (uncentered), teacher education (uncentered), and teacher total years of experience (grand-mean centered). Three dummy codes were created to represent four socioeconomic status categories based on the highest level of maternal education: no high school degree, completed high school, some college, and 2- or 4-year college degree. Teacher education was dummy coded to represent bachelor's degree (1) or not (0). We built on this model by adding frequency and features variables as grand-mean centered predictors.

Table 6 displays the HLM results for both language and literacy preschool outcomes. With respect to vocabulary, both shared reading frequency and features were positively and significantly related to children's preschool gains after controlling for Type I error by applying a Benjamini–Hochberg correction (Benjamini & Hochberg, 1995) to all significant effects. Specifically, the frequency of book reading that teachers reported each week was positively and significantly related to children's vocabulary development ($p = .015$, compared with a p value of .05). Likewise, with regard to features, teachers' use of extratextual talk during shared reading was significantly related to children's vocabulary development ($p = .01$, compared with a p value of .025). For all main effects models, we calculated the percentage of total variance in the outcome (i.e., combining child- and classroom-level variance) explained by the final model by subtracting the final model total residual variance estimate from the unconditional model total variance estimate and then dividing by the unconditional model variance. The final model explained 64.8% of the variance in children's preschool vocabulary scores. A different pattern emerged for preschoolers' literacy development. Extratextual talk ($p = .030$, compared with a p value of .05), but not frequency, was significantly associated with children's letter knowledge gains. This full model explained 53.7% of the variance in children's letter knowledge.

Potential Moderators of Shared Reading Frequency and Features in Preschool

To address our third research question investigating potential moderators of the association between frequency, features of extratextual talk, and children's preschool language and literacy gains, we added interaction terms to the previous set of models. A classroom-level interaction term was created by multiplying the grand-mean centered frequency by features variables and subse-

Table 6

Association Between Frequency and Features and Children's Preschool Vocabulary and Literacy Development

Variable	Estimate	Posterior *SD*	*p,* one-tailed
Expressive vocabulary[a]			
Intercept	20.54	0.64	<.001
Child and teacher characteristics			
Fall vocabulary score	0.81	0.06	<.001
Maternal ed.: Completed HS	−0.08	0.64	.455
Maternal ed.: Some college	−0.38	0.73	.310
Maternal ed.: College degree	0.47	0.74	.265
Teacher holds a bachelor's degree	−1.55	1.19	.030
Teacher years of experience	−0.07	0.06	.090
Preschool shared reading			
Frequency of reading	0.35	0.16	.015[c]
Features of extratextual talk	0.03	0.01	.010[c]
Letter knowledge[b]			
Intercept	31.05	2.56	<.001
Child and teacher characteristics			
Fall letter knowledge score	0.74	0.08	<.001
Maternal ed.: Completed HS	1.03	1.78	.270
Maternal ed.: Some college	−4.00	1.97	.013
Maternal ed.: College degree	−0.18	1.83	.470
Teacher holds a bachelor's degree	−0.27	4.59	.470
Teacher years of experience	0.08	0.21	.353
Preschool shared reading			
Frequency of reading	−0.02	0.66	.490
Features of extratextual talk	0.10	0.05	.030[c]

Note. Frequency = Number of shared-reading sessions logged per week; Features = total Systematic Assessment of Book Reading score for teachers' extratextual talk; ed. = education; HS = high school.
[a] $n = 178$ children, 28 classrooms.   [b] $n = 175$ children, 28 classrooms.
[c] Variable of interest with statistically significant effect after correcting for Type I error rate.

quently entering the uncentered interaction variable into the model as a fixed component. We also examined the cross-level interactions between children's initial skill and frequency as well as between initial skill and features. In these models, initial skill was entered as a group-mean centered, random component at the child level; the classroom mean of children's initial skills was simultaneously entered as a classroom-level predictor.

There were no significant teacher-level interactions between frequency and feature when considering either vocabulary development or literacy development. In addition, children's initial skill was not a significant moderator of the relation between frequency and skill development. Neither did children's initial skill serve as a significant moderator of the relations between use of features and vocabulary or literacy development. Thus, the degree of benefit conferred by the frequency of reading or talk during shared reading did not depend on children's initial skills.

Relation of Frequency and Features to Longitudinal Outcomes

We addressed our fourth research question, investigating associations between preschool shared reading and children's vocabulary and reading skills at the end of kindergarten and first grade, by first considering unconditional and base models. The ICCs estimated from the unconditional models for kindergarten vocab-

ulary, decoding, and reading comprehension were .20, .05, and .02, respectively. The ICCs estimated from the unconditional models for first grade vocabulary, decoding, and reading comprehension were .24, .22, and .20, respectively. For models with vocabulary as the dependent variable, fall of preschool vocabulary was added as a predictor (i.e., grand-mean centered at the child level), along with a set of covariates identical to those in the preschool models. For decoding and comprehension outcomes, we controlled for children's fall of preschool letter knowledge and added the same set of covariates. Frequency and features variables were entered as grand-mean centered predictors at the teacher level.

Table 7 provides detailed HLM results for end-of-kindergarten and end-of-first grade outcomes. Frequency or features of shared reading during preschool were not significantly related to either kindergarten decoding or comprehension. With regard to vocabulary, although frequency was not a significant predictor, features were significantly associated with children's kindergarten vocabulary outcomes ($p = .005$, compared with a p value of .0167). The final models for each outcome explained 56.8% of the variance in vocabulary and approximately 26.6% and 17.3% of the total variance in decoding and comprehension, respectively.

Similar to kindergarten results, the frequency of preschool shared reading was not significantly related to any first grade outcomes. However, in contrast to kindergarten results, features of talk during preschool book reading did not significantly predict

first grade vocabulary. There was a notable trend toward significance for reading comprehension ($p = .040$, compared with a p value of .0167). These models explained 59.8%, 22.4%, and 18.2% of the variance in first grade vocabulary, decoding, and comprehension, respectively.

Discussion

With the present study, we make an important contribution to the literature on the extent to which shared-reading practices benefit young children's language and literacy skills by examining the frequency and features of classroom-based reading experiences and their longitudinal associations with children's outcomes. We examined the interplay between frequency of shared reading and features of teachers' extratextual talk during reading sessions and as observed across multiple time points during the preschool year because no studies, to date, have examined these two variables across numerous observation points with both narrative and informational genres. The findings presented here provide a welcome convergence with the extant literature on the long-term importance of the adult's use of intentional extratextual talk during reading for children's language skills. To our knowledge, this is the first study to establish a positive link between sheer volume of reading in preschool classrooms and children's preschool vocabulary skills; however, the influence of frequency did not persist into kinder-

Table 7
Association Between Preschool Shared-Reading Frequency and Features and Children's Kindergarten and First Grade Outcomes

Variable	Receptive vocabulary[a]			WJ Letter–Word ID[b]			WJ Passage Comprehension[b]		
	Estimate	Posterior SD	*p*, one-tailed	Estimate	Posterior SD	*p*, one-tailed	Estimate	Posterior SD	*p*, one-tailed
Kindergarten model									
Intercept	77.74	2.42	<.001	17.89	0.96	<.001	7.81	0.50	<.001
Child and teacher characteristics									
Pre-k fall score[c]	1.66	0.15	<.001	0.16	0.03	<.001	0.10	0.02	<.001
Maternal ed.: Completed HS	1.41	1.58	.195	0.44	0.82	.303	−0.20	0.44	.310
Maternal ed.: Some college	0.31	1.83	.440	−0.04	0.87	.477	0.27	0.45	.317
Maternal ed.: College degree	0.31	1.75	.430	1.49	0.79	.052	0.15	0.45	.393
Pre-k teacher holds a bachelor's degree	−7.10	4.13	.045	1.65	1.52	.132	0.51	0.82	.297
Pre-k teacher years of experience	−0.41	0.19	.023	−0.03	0.07	.280	−0.03	0.04	.310
Preschool shared reading									
Frequency of reading	0.34	0.54	.260	0.11	0.19	.308	0.02	0.12	.457
Features of extratextual talk	0.11	0.04	.005[e]	0.01	0.02	.220	0.01	0.01	.167
First grade model									
Intercept	87.49	1.90	<.001	29.43	1.65	<.001	14.35	1.07	<.001
Child and teacher characteristics									
Pre-k fall score[c]	1.37	0.14	<.001	0.27	0.04	<.001	0.16	0.03	<.001
Maternal ed.: Completed HS	−1.19	1.28	.170	0.52	1.24	.355	0.13	0.81	.430
Maternal ed.: Some college	2.10	1.61	.080	−0.12	1.28	.485	0.05	0.78	.475
Maternal ed.: College degree	0.90	1.61	.250	0.94	1.53	.280	0.46	0.94	.330
Pre-k teacher holds a bachelor's degree	−3.73	3.20	.145	2.42	2.87	.165	0.05	1.86	.490
Pre-k teacher years of experience	−0.004	0.16	.490	0.03	0.13	.420	0.004	0.09	.475
Preschool shared reading									
Frequency of reading	0.50	0.46	.135	0.54	0.39	.075	0.24	0.25	.185
Features of extratextual talk	0.05	0.04	.090	0.05	0.04	.115	0.04	0.02	.040[d]

Note. WJ Letter–Word = Woodcock–Johnson Letter–Word ID subtest; WJ Passage Comprehension = Woodcock–Johnson Passage Comprehension subtest. Ed. = education; HS = high school; Pre-k = prekindergarten.
[a] $n = 178$ children, 28 classrooms. [b] $n = 175$ children, 28 classrooms. [c] Preschool vocabulary was entered for vocabulary outcome and preschool letter knowledge was entered for decoding and comprehension outcomes. [d] Variable of interest with statistically significant effect prior to applying correction for Type I error rate. [e] Variable of interest with statistically significant effect after correcting for Type I error rate.

garten and first grade. We found no evidence of differential effects depending on children's initial skill level and no significant teacher-level interactions between frequency and features of extratextual talk.

Frequency of Shared Reading Carries Some Weight in the Short Term

Although this study does not answer a question many practitioners ask regarding exactly how often preschool children should be involved in classroom shared reading, it does show some importance of sheer volume of reading within the preschool classroom. Teachers in our sample typically read aloud an estimated nine books per week (almost two per day) in whole-group settings when considering both the readings of researcher-provided texts as well as the additional shared reading documented via teacher logs. We cannot speculate as to whether this amount of reading would have been the same under completely naturalistic conditions. Still, as shown in previous studies, there was substantial variability in the frequency of shared reading within the 28 classrooms, with some teachers consistently reporting an average of three reading sessions per day while other teachers conducted only one shared-reading session per day.

We found that the frequency of shared reading, as reported by teacher reading logs, predicted one child outcome: preschool expressive vocabulary. Exposure to rich and varied vocabulary within children's literature is believed to be a critical support for vocabulary development (Stanovich, 2000). The sheer volume of texts children are exposed to may be a powerful predictor of vocabulary and verbal intelligence, in part because children's books contain a rich corpus of vocabulary words, even more than adult's spoken language (Cunningham & Stanovich, 1997). Our findings that frequency predicts vocabulary growth in preschool align with claims that children need substantial amounts of rich language input to develop a broad lexicon. These data also align with experimental studies documenting that intensive, routinized shared-reading programs, implemented daily over several weeks or months (e.g., 9 months, Wasik et al., 2006; 6 weeks, Whitehurst et al., 1994), enhance preschool vocabulary learning. However, the effect of preschool shared-reading frequency was not maintained for vocabulary skills measured longitudinally (cf. Dickinson & Porche, 2011).

Frequency of shared reading was also unrelated to children's growth in preschool letter knowledge and later literacy outcomes. Yet this is not surprising given that these teachers seldom discussed print and evidence that shows children tend to ignore print without explicit guidance. Eye-gaze studies (Evans et al., 2009; Justice, Pullen, & Pence, 2008) and observational studies (Yaden, Smolkin, & Conlon., 1989) indicate that young children have little contact and/or interest with print during typical shared-reading experiences because their focus is mostly on pictures or the story, unless adults explicitly direct children's attention to print. Although a study by Meyer et al. (1994) during the whole language era suggested that large volumes of shared reading in kindergarten were negatively related to reading achievement (perhaps because reading aloud displaced important instructional time focused on more explicit decoding instruction), our multilevel analyses showed generally positive, albeit weak relations between preschool reading frequency and literacy achievement. Thus, as other

researchers have suggested (e.g., Stahl, 2003), our interpretation of these findings in the current pre-k study confirm that "just reading a lot" does not necessarily result in children's code-related skill development.

Features of Interactive Shared Reading Make a Difference in the Short and Long Term

The most salient finding from the present study is not only that teachers' extratextual talk before, during, and after the reading of a text is important for fostering skills in the short term but also that these qualities also play a role in children's long-term language and literacy development. This study documented a range of adult shared-reading behaviors linked to children's code- and meaning-related literacy skill development. Positive associations with these interactive reading techniques and children's skills were identified for four outcomes: pre-k expressive vocabulary, pre-k letter knowledge, kindergarten receptive vocabulary, and trends toward significance for first grade reading comprehension. Converging with Mol et al.'s (2009) meta-analysis that found moderate effects for teachers' large-group shared reading, this study of whole-group shared reading in pre-k demonstrates the value of interactive shared reading persists into the start of formal schooling. This is the first classroom-based study to confirm the hypothesis put forth by Scarborough and Dobrich (1994) that the quality of reading sessions appears to be of greater import than simply reading frequently for achieving sustained effects.

The value of rich extratextual talk during shared reading is most evident for children's vocabulary skills as measured expressively and then receptively in pre-k and kindergarten, respectively. But the findings for reading comprehension in this study are less clear. It should be noted that although there was a trend toward teachers' extratextual talk predicting Grade 1 Woodcock–Johnson Passage Comprehension scores, we did not find this trend for comprehension skills in kindergarten. It is possible that this relation, which is not significant after correcting for Type I error, simply caries little meaning because such sleeper effects are rare. Another possibility is that this is not a sleeper effect so much as a measurement issue, given that the Woodcock–Johnson test is not very sensitive at detecting comprehension skills in kindergarten because success with this test requires substantial decoding skill, which most kindergarteners are still developing; a listening comprehension measure may have produced different results.

Although it is of theoretical interest, we could not consider the relative importance of literal and inferential extratextual talk in this sample because these two variables were too highly correlated ($r = .95$) to be entered as separate predictors in our multilevel analyses. Previous research by Hindman et al. (2008) found that only inferential talk (not literal) was related to children's pre-k language development. Similarly, Dickinson and Smith's (1994) seminal work and various experimental studies that infused inferencing, predictions, analysis, and rich vocabulary instruction into shared reading (e.g., Beck & McKeown, 2007; Coyne et al., 2009; van Kleeck, Vander Woude, & Hammett, 2006; Wasik et al., 2006) point to the importance of teachers' extratextual talk at inferential levels. Drawing inferences is necessary to understand most texts, but it is also a source of great difficulty for many poor comprehenders (e.g., Cain & Oakhill, 1998), making it a key target for early prevention and intervention efforts in preschool (Van Kleeck,

2008). But literal conversations are likely also important to young language learners. At early stages of development, literal language may represent the child's level of understanding and thus may be closer to his or her zone of proximal development (Blank, Rose, & Berlin, 1978; Van Kleeck, 2008). The bivariate correlations in this study suggest that although inferential extratextual talk has stronger associations with children's language outcomes, literal talk is also linked to children's language skills. Literal extratextual talk is an important technique used in effective interactive reading approaches such as dialogic reading (What Works Clearinghouse, Institute of Education Sciences, 2007; Whitehurst et al., 1994), and recent evidence indicates researchers must continue to carefully consider how more simple language input can be effective for different profiles of learners (Bowers & Vasilyeva, 2011).

Characteristics of Teacher's Extratextual Talk and Occurrence of Limited Input Style

Important characteristics of the 154 shared-reading sessions observed in this study of 28 preschool teacher's shared-reading behaviors were (a) many teachers do little besides read the printed text during shared reading; (b) a literal focus on the story or illustrations dominates, whereas talk about print is rare; and (c) some extratextual behaviors that evidence shows are important for children's language skills (e.g., vocabulary explanations) occur very infrequently.

Perhaps the most troubling finding was that many preschool teachers in the current study did not incorporate a variety of language- or literacy-enhancing techniques and did little more than simply read the text aloud, as evidenced by the positively skewed distributions for all extratextual talk features. This aligns with earlier findings from school and home observations that 40% of teachers (Dickinson & Smith, 1994) and 63% of parents (Hammett et al., 2003) engaged in limited amounts of talk during shared reading. This finding is of concern because (a) children show more vocabulary learning when teachers use an interactive, extended discussion style compared with a book reading with a more limited input style (Dickinson & Smith, 1994) and (b) interactive shared-reading interventions produce larger effects on children's language outcomes compared to noninteractive shared-reading approaches (NELP, 2008).

In alignment with prior literature (Dickinson et al., 1992; Hindman et al., 2008), teachers in the current study most often focused on literal topics (57% of extratextual talk); by definition, this talk included labeling and describing perceptually available information. However, it was encouraging that fair amounts of inferential-level extratextual talk also occurred (32%); inferential talk mostly included making inferences, relating the text to the children's own lives, and explaining or analyzing. When adults use inferential extratextual comments and questions, it can be a useful mechanism for encouraging children to use higher level inferential language (Danis, Bernard, & Leproux, 2000; Van Kleeck, 2008; Zucker et al., 2010). Yet a recent study reveals that many preschool teachers have difficulty identifying places in stories where an inference needs to be discussed for young children to comprehend the text (Scheiner & Gorsetmen, 2009), suggesting this is likely an important topic for professional development.

The smallest proportion of conversation surrounded print and phonological awareness topics (11%). In home-based shared reading studies (e.g., Bus & van IJzendoorn, 1988; Phillips & McNaughton, 1990) and recent school-based studies (e.g., Hindman et al., 2008),

code-focused extratextual talked occurs infrequently. In both the Hindman et al. (2008) study and our study, teachers typically referenced print about five times during a reading session, confirming that untrained teachers are unlikely to incorporate the 25 or more print or phonological references achieved in experimental studies that significantly improve children's code-related skills (e.g., Girolametto et al., 2007; Justice et al., 2009). Educators may espouse different perspectives on whether shared reading is a suitable context to discuss print, letters, words, or the sounds of language. Some teachers feel that it is not an optimal venue for discussing these code-related topics because it detracts from story understanding (Flowers, Girolametto, Weitzman, & Greenberg, 2007). However, other experts have suggested that with certain books (i.e., familiar books, print-salient books), teachers can successfully embed code-related comments into shared book reading (Bradley & Jones, 2007; Smolkin et al., 1988; Zucker et al., 2009).

A large body of research evidence indicates that children benefit when adults provide rich vocabulary instruction that includes child-friendly definitions and rich explanations of word meaning (e.g., Beck & McKeown, 2007; Coyne et al., 2009; Justice et al., 2005; Penno et al., 2002). Unfortunately, vocabulary instruction was not represented at a high level in teachers' extratextual talk in the current sample; teachers rarely defined words ($M = 0.64$, $SD = 0.79$) and produced few rich explanations of vocabulary ($M = 0.29$, $SD = 0.47$). Other research has reported similar findings. For example, Wright and Neuman (2010) observed an average of only 8.14 episodes of word explanations over the course of an entire kindergarten school day. Because vocabulary exposure in home environments varies greatly (e.g., Hart & Risley, 1995), it is imperative that early childhood educators include rich vocabulary instruction in the classroom.

Limitations and Future Directions

This study is correlational and focused on understanding typical variability in preschool teachers' shared-reading behaviors and relations with children's longitudinal outcomes; because of this design, no causal claims can be made about how shared-reading practices may affect children's language and literacy skills over time. Likewise, we cannot rule out that these effects could be bidirectional rather than only teacher driven. For example, possible child-driven effects are that children with stronger language and literacy skills might evoke higher frequency and different features of shared-reading experiences from teachers, which could, in turn, further advance their language and literacy skills. Moreover, the observed relations may point to simply the benefits of exposure to teachers with larger vocabularies; in two instances, variables for teachers' years of experience and a bachelor's degree were significantly related to vocabulary skills that might be a sign of teachers' own vocabulary levels. Three other limitations to the design of the study warrant attention and present directions for future researchers to consider.

First, the study was designed to reduce potential confounds found in many extant studies in which teachers are allowed to choose any book for the shared reading observation, but there remain important limitations to our sampling method. Although we observed more reading sessions than are observed in other studies that only analyze one session (e.g., Dickinson & Porche, 2011; Hindman et al., 2008), six reading sessions of researcher-provided texts may not represent a full range of teacher reading behaviors.

Even if providing texts allowed us to ensure that all teachers read the same number of words about the same topics and ensured that differences in duration of the reading session were due to extra-textual conversations, it also reduced the ecological validity of the study. Teachers and children may not have enjoyed the texts we provided or the texts may not have aligned with the larger unit or topics of study within the classroom, thereby reducing opportunities for rich connections between texts and thematic units (Martinez & Teale, 1993). Researchers might instead consider observing multiple shared-reading sessions to include some controlled reading sessions using researcher-selected texts as well as others sessions with teacher choice of text. In our future research, we will also endeavor to untangle potential book and genre effects that were beyond the scope of this study.

Second, the teachers in this study were assigned to a comparison condition of a larger study that included two professional development workshops that may have influenced teacher's reading features or frequency. The workshops addressed general topics about the importance of shared reading. Although this type of one-time professional development is unlikely to have a lasting effect on teacher behaviors (Spodek, 1996) and was similar to or less than the professional development experiences addressing book reading common to teachers in these locales (according to Ohio and Virginia Departments of Education), it may have influenced the nature of these shared-reading experiences. Therefore, future researchers might observe the naturalistic shared reading behaviors under business-as-usual conditions that do not involve even minimal training. Although shared reading is a preschool activity that has garnered considerable attention, examining additional classroom contexts and/or curriculum activities that support children's language and literacy skills could provide a more comprehensive picture of how preschool learning experiences support children's learning in the short and long term.

Third, we tested for differential effects of shared-reading experiences depending on children's entry level skills and found the relation between children's language and literacy development was not stronger or weaker at different levels of initial skills. However, this study may not have had sufficient power to detect meaningful interactions, should they exist, as have been reported in other studies involving shared reading (e.g., Coyne et al., 2009; Hindman et al., 2008; Reese & Cox, 1999; Zucker et al., 2010). This is not to say that differentiation is irrelevant to shared reading; however, in this low-income sample, all children appeared to benefit from frequent shared reading that included rich extratextual conversations. Further, the design of this study did not allow us to delve further into how individual child characteristics may impact the extent to which they profit from classroom-based shared reading. Future researchers could consider innovative approaches to understanding child-level responses to shared reading such as using eye-gaze technology or microphones and additional cameras to study particular children's responses to a text shared in a whole-group setting.

Conclusion

Many advocates of shared reading—including educators, politicians, and celebrities—have advanced the notion that the most important thing you can do for young children is read to them (e.g., Anderson et al., 1985; Trelease, 2006). However, educators and researchers must continue to strive to understand what occurs during shared book reading and how what is done impacts long-term literacy outcomes. The findings of this study add nuance to that claim by demonstrating that the features of the extratextual conversation that produce rich, interactive shared reading sessions are most critical because, longitudinally, the association between sheer frequency of reading and children's language and literacy development diminishes, while features remain an important predictor. Rich, interactive shared-reading experiences delivered in sufficient frequency for each child is an important goal of educators. This study demonstrates that both the features and the frequency of preschool shared reading instruction matters for students' language and literacy development in preschool and that the adults' reading style continues to be related to some child skills through kindergarten and perhaps first grade.

References

Anderson, R., Hiebert, E., Scott, J., & Wilkinson, I. (1985). *Becoming a nation of readers: The report of the Commission on Reading* (Contract No. 400-83-0057). Washington, DC: National Institute of Education.

Andreae, D. (1996). *Rumble in the jungle*. London, England: Little Tiger Press.

Beck, I. L., & McKeown, M. G. (2007). Increasing young low-income children's oral vocabulary repertoires through rich and focused instruction. *The Elementary School Journal, 107,* 251–271. doi:10.1086/511706

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society Series B (Methodological), 57,* 289–300.

Blank, M., Rose, S. A., & Berlin, L. J. (1978). *Preschool Language Assessment Instrument: The language of learning in practice*. New York, NY: Grune & Statton.

Bowers, E. P., & Vasilyeva, M. (2011). The relation between teacher input and lexical growth of preschoolers. *Applied Psycholinguistics, 32,* 221–241. doi:10.1017/S0142716410000354

Bradley, B. A., & Jones, J. (2007). Sharing alphabet books in early childhood classrooms. *The Reading Teacher, 60,* 452–463. doi:10.1598/RT.60.5.5

Britto, P. R., Brooks-Gunn, J., & Griffin, T. M. (2006). Maternal reading and teaching patterns: Associations with school readiness in low-income African American families. *Reading Research Quarterly, 41,* 68–89. doi:10.1598/RRQ.41.1.3

Bronfenbrenner, U., & Morris, P. (2006). The bioecological mode of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (6th ed., pp. 793–828). Edison, NJ: Wiley.

Bus, A. G., & van IJzendoorn, M. H. (1988). Mother–child interactions, attachment, and emergent literacy: A cross-sectional study. *Child Development, 59,* 1262–1272. doi:10.2307/1130489

Bus, A. G., van IJzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65,* 1–21.

Cabell, S. Q., Justice, L. M., Konold, T. R., & McGinty, A. S. (2011). Profiles of emergent literacy skills among preschool children who are at risk for academic difficulties. *Early Childhood Research Quarterly, 26,* 1–14. doi:10.1016/j.ecresq.2010.05.003

Cain, K., & Oakhill, J. (1998). Comprehension skill and inference-making ability: Issues of causality. In C. Hulme & R. M. Joshi (Eds.), *Reading and spelling: Development and disorders* (pp. 329–342). Mahwah, NJ: Erlbaum.

Coyne, M. D., McCoach, D. B., Loftus, S., Zipoli, R., Jr., & Kapp, S. (2009). Direct vocabulary instruction in kindergarten: Teaching for breadth versus depth. *The Elementary School Journal, 110,* 1–18. doi:10.1086/598840

Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology, 33,* 934–945. doi:10.1037/0012-1649.33.6.934

Danis, A., Bernard, J., & Leproux, C. (2000). Shared picture-book reading: A sequential analysis of adult–child verbal interactions. *British Journal of Developmental Psychology, 18,* 369–388. doi:10.1348/026151000165751

Dickinson, D. K., De Temple, J. M., Hirschler, J. A., & Smith, M. W. (1992). Book reading with preschoolers: Coconstruction of text at home and at school. *Early Childhood Research Quarterly, 7,* 323–346. doi:10.1016/0885-2006(92)90025-T

Dickinson, D. K., McCabe, A., & Anastasopoulos, L. (2003). A framework for examining book reading in early childhood classrooms. In A. van Kleeck, A. A. Stahl, & E. B. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 95–113). Mahwah, NJ: Erlbaum.

Dickinson, D. K., & Porche, M. V. (2011). Relation between language experiences in preschool classrooms and children's kindergarten and fourth-grade language and reading abilities. *Child Development, 82,* 870–886. doi:10.1111/j.1467-8624.2011.01576.x

Dickinson, D. K., & Smith, M. W. (1994). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. *Reading Research Quarterly, 29,* 104–122. doi:10.2307/747807

Downs, M. (2003). *The noisy airplane ride.* Berkeley, CA: Tricycle Press.

Dunn, L., & Dunn, D. (1997). *Peabody Picture Vocabulary Test: Examiner's manual for the PPVT–III.* Circle Pines, MN: American Guidance Service.

Evans, M. A., Saint-Aubin, J., & Landry, N. (2009). Letter names and alphabet book reading by senior kindergarteners: An eye movement study. *Child Development, 80,* 1824–1841. doi:10.1111/j.1467-8624.2009.01370.x

Evans, M. A., Shaw, D., & Bell, M. (2000). Home literacy activities and their influence on early literacy skills. *Canadian Journal of Experimental Psychology/Revue canadienne de psychologie expérimentale, 54,* 65–75. doi:10.1037/h0087330

Ferraguto, M. (2008). *Reach Out and Read featured on the Rachael Ray show and PBS!* Retrieved February 5, 2009, from http://www.childrenslearninginstitute.org/documents/Rachael_Ray_ROR.pdf

Fleming, D. (1993). *In the small, small pond.* New York, NY: Holt.

Flowers, H., Girolametto, L., Weitzman, E., & Greenberg, J. (2007). Promoting early literacy skills: Effects of in-service education for early childhood educators. *Canadian Journal of Speech-Language Pathology and Audiology, 31,* 6–18.

Girolametto, L., Weitzman, E., Lefebvre, P., & Greenberg, J. (2007). The effects of in-service education to promote emergent literacy in child care centers: A feasibility study. *Language, Speech, and Hearing Services in Schools, 38,* 72–83. doi:0161-1461/06/3801-0072

Gonzalez, J. E., Pollard-Durodola, S., Simmons, D. C., Taylor, A. B., Davis, M. J., Kim, M., & Simmons, L. (2010). Developing low-income preschoolers' social studies and science vocabulary knowledge through content-focused shared book reading. *Journal of Research on Educational Effectiveness, 4,* 25–52. doi:10.1080/19345747.2010.487927

Hammett, L. A., van Kleeck, A., & Huberty, C. J. (2003). Patterns of parents' extra-textual interactions during book sharing with preschool children: A cluster analysis study. *Reading Research Quarterly, 38,* 442–468. doi:10.1598/RRQ.38.4.2

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experiences of young American children.* Baltimore, MD: Brookes.

Hawthorne, P. (2004). *There's a dragon at my school.* London, England: Usborne.

Hindman, A. H., Connor, C. M., Jewkes, A. M., & Morrison, F. J. (2008). Untangling the effects of shared book reading: Multiple factors and their associations with preschool literacy outcomes. *Early Childhood Research Quarterly, 23,* 330–350. doi:10.1016/j.ecresq.2008.01.005

Invernizzi, M., Sullivan, A., Meier, J., & Swank, L. (2004). *Phonological Awareness Literacy Screening: PreK.* Charlottesville, VA: University of Virginia.

Justice, L. M., & Ezell, H. K. (2000). Enhancing children's print and word awareness through home-based parent intervention. *American Journal of Speech-Language Pathology, 9,* 257–269.

Justice, L. M., Kaderavek, J., Fan, X., Sofka, A., & Hunt, A. (2009). Accelerating preschoolers' early literacy development through classroom-based teacher–child storybook reading and explicit print referencing. *Language, Speech, and Hearing Services in Schools, 40,* 67–85. doi:0161-1461/09/4001-0067

Justice, L. M., McGinty, A. S., Piasta, S. B., Kaderavek, J. N., & Fan, X. (2010). Print-focused read-alouds in preschool classrooms: Intervention effectiveness and moderators of child outcomes. *Language, Speech, and Hearing Services in Schools, 41,* 504–520. doi:10.1044/0161-1461(2010/09-0056)

Justice, L. M., Meier, J., & Walpole, S. (2005). Learning new words from storybooks: An efficacy study with at-risk kindergarteners. *Language, Speech, and Hearing Services in Schools, 36,* 17–32. doi:10.1044/0161-1461(2005/003)

Justice, L., Pullen, P., & Pence, K. (2008). Influence of verbal and nonverbal references to print on preschoolers' visual attention to print during storybook reading. *Developmental Psychology, 44,* 855–866. doi:10.1037/0012-1649.44.3.855

Justice, L. M., Zucker, T. A., & Sofka, A. (2007). *Systematic Assessment of Book Reading.* Charlottesville, VA: Preschool Language and Literacy Lab. Retrieved from http://clrc.ehe.osu.edu/resources/assessments/sabr/

Kendeou, P., van den Broek, P., White, M., & Lynch, J. (2009). Predicting reading comprehension in early elementary school: The independent contributions of oral language and decoding skills. *Journal of Educational Psychology, 101,* 765–778. doi:10.1037/a0015956

Klass, P. E., Needlman, R., & Zuckerman, B. (2003). The developing brain and early learning. *Archives of Disease in Childhood, 88,* 651–654. doi:10.1136/adc.88.8.651

Lonigan, C. J. (1994). Reading to preschoolers exposed: Is the emperor really naked? *Developmental Review, 14,* 303–323. doi:10.1006/drev.1994.1011

Martinez, M. G., & Teale, W. H. (1993). Teacher storybook reading style: A comparison of six teachers. *Research in the Teaching of English, 27,* 175–199.

McMullan, K., & McMullan, J. (2006). *I stink!* New York, NY: HarperCollins.

Meyer, L. A., Wardrop, J. L., Stahl, S. A., & Linn, R. L. (1994). Effects of reading storybooks aloud to children. *The Journal of Educational Research, 88,* 69–85. doi:10.1080/00220671.1994.9944821

Miller, J., & Iglesias, A. (2006). Systematic Analysis of Language Transcripts (SALT), English and Spanish (Version 9) [Computer software]. Language Analysis Lab: University of Wisconsin—Madison.

Mol, S. E., Bus, A. G., & de Jong, M. T. (2009). Interactive book reading in early education: A tool to stimulate print knowledge as well as oral language. *Review of Educational Research, 79,* 979–1007. doi:10.3102/0034654309332561

Muthén, L. K., & Muthén, B. O. (1998–2010). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.

National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel.* Washington, DC: National Institute for Literacy.

Neuman, S. (1999). Books make a difference: A study of access to literacy. *Reading Research Quarterly, 34,* 286–311. doi:10.1598/RRQ.34.3.3

Ohio Department of Education. (2006). *Early learning content standards*. Columbus, OH: Ohio Department of Education Center for Students, Families, and Communities. Retrieved November 22, 2010, from http://education.ohio.gov/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=1698&ContentID=1629&Content=83592

Penno, J. F., Wilkinson, I. A. G., & Moore, D. W. (2002). Vocabulary acquisition from teacher explanation and repeated listening to stories: Do they overcome the Matthew effect? *Journal of Educational Psychology, 94,* 23–33. doi:10.1037/0022-0663.94.1.23

Pentimonti, J. M., Zucker, T. A., & Justice, L. M. (2011). What are preschool teachers reading in their classrooms? *Reading Psychology, 32,* 197–236. doi:10.1080/02702711003604484

Pentimonti, J. M., Zucker, T. A., Justice, L. M., Petscher, Y., Piasta, S. B., & Kaderavek, J. N. (2012). A standardized tool for assessing the quality of classroom-based shared reading: Systematic Assessment of Book Reading (SABR). *Early Childhood Research Quarterly, 27,* 512–528. doi:10.1016/j.ecresq.2011.12.007

Phillips, G., & McNaughton, S. (1990). The practice of storybook reading to preschool children in mainstream New Zealand families. *Reading Research Quarterly, 25,* 196–212. doi:10.2307/748002

Price, L. H., van Kleeck, A., & Huberty, C. J. (2009). Talk during book sharing between parents and preschool children: A comparison between storybook and expository book conditions. *Reading Research Quarterly, 44,* 171–194. doi:10.1598/RRQ.44.2.4

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

Reese, E., & Cox, A. (1999). Features of adult book reading affects children's emergent literacy. *Developmental Psychology, 35,* 20–28. doi:10.1037/0012-1649.35.1.20

Scarborough, H. S., & Dobrich, W. (1994). On the efficacy of reading to preschoolers. *Developmental Review, 14,* 245–302. doi:10.1006/drev.1994.1010

Scheiner, E. Y., & Gorsetman, C. (2009). Do preschool teachers consider inferences for book discussions? *Early Child Development and Care, 179,* 595–608. doi:10.1080/03004430701425851

Sénéchal, M. (2006). Testing the home literacy model: Parent involvement in kindergarten is differentially related to Grade 4 reading comprehension, fluency, spelling, and reading for pleasure. *Scientific Studies of Reading, 10,* 59–87. doi:10.1207/s1532799xssr1001_4

Slate, J. (1996). *Miss Bindergarten gets ready for kindergarten*. New York, NY: Dutton.

Smolkin, L. B., Conlon, A., & Yaden, D. B. (1988). Print-salient illustrations in children's picture books: The emergence of written language awareness. In J. E. Readence & R. S. Baldwin (Eds.), *Dialogues in literacy research: Thirty-seventh yearbook of the National Reading Conference* (pp. 59–68). Chicago, IL: National Reading Conference.

Spodek, B. (1996). The professional development of early childhood teachers. *Early Child Development and Care, 115,* 115–124. doi:10.1080/0300443961150110

Stahl, S. A. (2003). What do we expect storybook reading to do? How storybook reading impacts word recognition. In A. van Kleeck, A. A. Stahl, & E. B. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 363–383). Mahwah, NJ: Erlbaum.

Stanovich, K. E. (2000). *Progress in understanding reading: Scientific foundations and new frontiers*. New York, NY: Guilford Press.

Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology, 38,* 934–947. doi:10.1037/0012-1649.38.6.934

Torr, J., & Clugston, L. (1999). A comparison between informational and narrative picture books as a context for reasoning between caregivers and 4-year-old children. *Early Child Development and Care, 159,* 25–41. doi:10.1080/0300443991590104

Trelease, J. (2006). *The read-aloud handbook*. New York, NY: Penguin.

Ukrainetz, T. A., Cooney, M. H., Kyer, S. K., Kysar, A. J., & Harris, T. J. (2000). An investigation into teaching phonemic awareness through shared reading and writing. *Early Childhood Research Quarterly, 15,* 331–355. doi:10.1016/S0885-2006(00)00070-3

Van Kleeck, A. (2008). Providing preschool foundations for later reading comprehension: The importance of and ideas for targeting inferencing in storybook-sharing interventions. *Psychology in the Schools, 45,* 627–643.

van Kleeck, A., Vander Woude, J. V., & Hammett, L. (2006). Fostering literal and inferential language skills in Head Start preschoolers with language impairment using scripted book-sharing discussions. *American Journal of Speech-Language Pathology, 15,* 85–95. doi:10.1044/1058-0360(2006/009)

Virginia Department of Education. (2007). *Virginia's foundation blocks for early learning: Comprehensive standards for four-year-olds*. Retrieved November 22, 2010, from http://www.earlychildhood.virginia.gov/documents/foundationblocks.pdf

Wasik, M. A., Bond, M. A., & Hindman, A. (2006). The effects of a language and literacy intervention on Head Start children and teachers. *Journal of Educational Psychology, 98,* 63–74. doi:10.1037/0022-0663.98.1.63

What Works Clearinghouse, Institute of Education Sciences. (2006, September). *Shared book reading*. Retrieved July 20, 2009, from http://ies.ed.gov/ncee/wwc/pdf/WWC_Shared_Book_092806.pdf

What Works Clearinghouse, Institute of Education Sciences. (2007, February). *Dialogic reading*. Retrieved July 20, 2009, from http://ies.ed.gov/ncee/wwc/pdf/WWC_Dialogic_Reading_020807.pdf

Whitehurst, G. J., Arnold, D. S., Epstein, J. N., Angell, A. L., Smith, M., & Fischel, J. E. (1994). A picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology, 30,* 679–689. doi:10.1037/0012-1649.30.5.679

Wiig, E. H., Secord, W. A., & Semel, E. (2004). *Clinical Evaluation of Language Fundamentals—Preschool* (2nd ed.). San Antonio, TX: Harcourt Assessment.

Woodcock, R., McGrew, K., & Mather, N. (2001). *Woodcock–Johnson Tests of Achievement (WJIII)*. Itasca, IL: Riverside.

Wright, T. S., & Neuman, S. S. B. (2010, December). *Opportunities to learn vocabulary at school: The contribution of teachers*. Paper presented at the annual meeting of the National Reading Conference, Fort Worth, TX.

Yaden, D. B., Jr., Smolkin, L. B., & Conlon, A. (1989). Preschoolers' questions about print, print conventions, and story text during reading aloud at home. *Reading Research Quarterly, 24,* 188–214.

Zevenbergen, A. A., Whitehurst, G. J., & Zevenbergen, J. A. (2003). Effects of a shared-reading intervention on the inclusion of evaluative devices in narratives of children from low-income families. *Journal of Applied Developmental Psychology, 24,* 1–15. doi:10.1016/S0193-3973(03)00021-2

Zucker, T. A., Justice, L. M., & Piasta, S. (2009). Prekindergarten teachers' verbal references to print during classroom-based, large-group shared reading. *Language, Speech, and Hearing Services in Schools, 40,* 376–392. doi:10.1044/0161-1461(2009/08-0059)

Zucker, T. A., Justice, L. M., Piasta, S. B., & Kaderavek, J. N. (2010). Preschool teachers' literal and inferential questions and children's responses during whole-class shared reading. *Early Childhood Research Quarterly, 25,* 65–83. doi:10.1016/j.ecresq.2009.07.001