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Many Prompts, Few Expansions: Preservice Early Childhood Educators' Implementation of Dialogic Reading

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Abstract
Shared reading sessions utilizing dialogic reading methods have shown promise in supporting children's language development and comprehension, though variability in implementation among practitioners remains a concern. This study analyzed 33 videotaped, one-on-one dialogic reading sessions implemented by 14 Chilean preservice early childhood educators and children aged 1 to 6. In total, 1289 sequences were examined for adherence to the PEER structure (prompt, evaluate, expand, and repeat), prompt type, and rate and length of children's answer. Results showed that, on average, PSECEs executed sequences of 1.75 steps, with only 5% of all sequences reaching the final step. Furthermore, the study investigated the types of prompts employed by PSECEs. Notably, 69% of the prompts included questions, with wh-word-initiated questions comprising 46% of the total questions. Within this category, 16% were classified as high-challenge. Merely 7% of all prompts featured high-challenge questions. Children's response rates were notably higher for prompts containing questions compared to other types of prompts, as well as for those containing wh-questions compared to other question types. Moreover, children's answers were observed to be longer in response to prompts including high-challenge questions in contrast to other prompt types. Implications of these findings and future lines of research are discussed.

Keywords Dialogic reading · PEER structure · Prompting · Question types

Introduction

Experts recommend engaging in shared reading with children to enhance early literacy skills (Clemens & Kegel, 2021; Flack et al., 2018; Noble et al., 2019), a robust predictor of future reading proficiency (Mendive et al., 2017; Strasser et al., 2017). Dialogic reading (Whitehurst et al., 1988) is an interactive shared reading method where adults actively involve children by using open-ended questions, offering positive feedback, and emphasizing vocabulary. This exploratory study examines the features of dialogic reading sessions led by preservice early childhood educators (PSECEs) with children aged 1 to 6.

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Concept of Dialogic Reading

Conceived as a support for parents of preschoolers when reading to their children, dialogic reading is a method of shared reading between an adult and one or few children that encourages active participation from children. It is based on three principles: (1) use of evocative techniques that stimulate children to talk, (2) adult-provided feedback in the form of evaluation and expansion of children's responses, (3) adults' flexibility to adapt their reading and prompting styles to children's developmental stage and capabilities (Mol et al., 2008; Pillinger & Vardy, 2022).

Dialogic reading stands out as a wide-spread shared reading method due to its formulaic structure that simplifies training for practitioners (Urbani, 2020; Zevenbergen & Whitehurst, 2003) and its demonstrated benefits in the development of the language, literacy, and social-emotional development of young children (Pillinger & Vardy, 2022). Moreover, its efficacy has been demonstrated across various cultural and geographical contexts, including Italy (Dicataldo et al., 2022), Canada (Milburn et al., 2014), Hong Kong (Ganotice et al., 2017), Germany (Grolig et al., 2020),

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Bangladesh (Opel et al., 2009), Chile (Strasser et al., 2013), South Africa (Vally et al., 2015), Mexico (Valdez-Menchaca & Whitehurst, 1992), and Turkey (Yüceer et al., 2022).

Benefits of Dialogic Reading

Dialogic reading has been shown to have numerous benefits for children's language skills, particularly in vocabulary and expressive language (Grolig et al., 2020; Lever & Sénéchal, 2011; Mol et al., 2008; Pillinger & Vardy, 2022; Rahn et al., 2016; Simsek & Erdogan, 2015). By promoting active participation and verbal expression during reading, dialogic reading has been found to be more beneficial than shared reading, which lacks this structure (Lever & Sénéchal, 2011; Whitehurst et al., 1999). Studies have found that children who participate in dialogic reading perform better on language measures compared to those in control groups (Pillinger & Vardy, 2022; Simsek & Erdogan, 2015). Additionally, the benefits of dialogic reading have been demonstrated to be independent of whether it is parents or educators who implement this methodology, and they have been shown to transcend different socioeconomic levels (Zevenbergen & Whitehurst, 2003).

In addition to the positive impact on language development, dialogic reading practices have also been linked to advantages in home literacy and motivational measures. For example, encouraging this type of reading has led to an increase in frequency of reading at home and greater enjoyment of reading by children (Huebner, 2000). Dialogic reading interventions have also been shown to increase parents' appreciation for spending time reading with their children and to promote children's interest and enjoyment of reading (Pillinger & Wood, 2014). Other research suggests that dialogic reading can significantly improve parent–child relationships (Ganotice et al., 2017) and child care (Vally et al., 2015). Furthermore, a longitudinal study found that parents who had been trained in dialogic reading continued to practice aspects of the method 2 years after receiving instruction (Huebner & Payne, 2010).

Structure of Dialogic Reading

The goal of dialogic reading is to read *with* children and not just to them, thereby promoting their language development and comprehension skills. To aid in the implementation of dialogic reading, the authors of the method conceived two strategies: (1) PEER (Prompt, Evaluate, Expand, and Repeat) and (2) CROWD (Completion, Recall, Open-Ended questions, WH questions, and Distancing) (Zevenbergen & Whitehurst, 2003).

The strategy PEER refers to the four-step structure the method proposes. First, the adult prompts the child with an invitation or question (e.g., "What is happening here?"). After the child answers (e.g., "It is raining"), the adult evaluates the child's answer (e.g., "Yes…") and expands it by adding new information related to the child's answer. Zevenbergen and Whitehurst (2003) recommend that expansions vary according to children's age. For children aged 2 and 3, they suggest providing children with a full sentence that includes their answer. For example, if the child says "Rain", the adult might evaluate and expand by saying "Yes, it is raining". For children aged 4 and 5, they suggest adding new words or more precise words for known concepts (e.g., "Yes, when it rains really hard, we say it is pouring"). Finally, the adult asks the child to repeat the new information (e.g., "Can you say 'pouring'"?).

The acronym CROWD refers to the types of prompts adults can use when reading to children aged 4 and 5: complete a sentence, recall parts of the story, open-ended prompts, wh-questions, and distancing questions that ask children to connect their lives to the story (Zevenbergen & Whitehurst, 2003).

While Zevenbergen and Whitehurst (2003) did not provide specific guidelines for adapting dialogic reading to children aged 2 and below, it has been noted by scholars that adults engage in more language-rich interactions while sharing books with children in this age bracket compared to play with other materials (Clemens & Kegel, 2021; Sosa, 2016). This implies potential benefits of employing dialogic reading for children aged 2 and below. However, due to the limited language abilities of younger children when compared to older children, adults should use simpler prompts and offer increased support when engaging in dialogic reading with them.

Prompting for Increased Language Skills and Comprehension

The purpose of prompting in dialogic reading is to encourage children to talk and take an active role in telling the story. Nevertheless, evidence indicates that not all prompts are equally effective. Numerous studies have found that asking open-ended questions—questions that have more than one correct answer and which require more than two words to be answered—tends to result in more child-produced talk and in increased language skills than close-ended questions (Barnes et al., 2017; Blything et al., 2020; De Rivera et al., 2005; Deshmukh et al., 2019; van der Wilt et al., 2022).

Yet, as desirable as open-ended questions are for increasing language skills, research shows that not all open-ended questions are equally effective in promoting story comprehension (Dicataldo et al., 2020; Strasser et al., 2013).

Strasser et al. (2013) conducted an experimental study with 109 Chilean children between the ages of 42 and 60 months. All children were read the same two books four times, over a four-week period. Children in the control group were asked open-ended questions that did not focus on the stories' internal coherence (e.g., distancing questions, making predictions, and describing illustrations). In contrast, children in the intervention group were asked coherence-oriented questions about cause-effect relationships from stories' events, and characters' intentions, feelings, and thoughts. The researchers found that children in the experimental group performed better in comprehension measures than their peers in the control group. Similarly, Dicataldo et al. (2020) found that children who were asked to produce inferences about temporal or causal links between events of a story, story structure, and word meanings obtained better results than children in the control group who answered questions that lacked a focus on the coherence of the story.

The impact of coherence-oriented questions on story comprehension measures makes sense given that research on reading comprehension shows that successful reading comprehension is linked to the ability to make inferences from the text (Cain & Oakhill, 2009; Kendeou, 2015; Kendeou et al., 2016; Oakhill & Cain, 2018). Thus, questions that prompt children to make such inferences appear to be especially relevant when increasing their comprehension skills is a desired outcome. In the context of reading comprehension, making an inference means generating new information with the purpose of completing information that is not explicit in a text (Elbro & Buch-Iversen, 2013; Kendeou & O'Brien, 2015). This demanding cognitive process requires the activation of prior knowledge and its integration with the new content (Kendeou & O'Brien, 2015). Prompting children to produce those inferences while reading is an effective way to enhance their comprehension.

Training and Assessing Dialogic Reading

Considering the evidence that asserts wide variability among educators' shared reading practices (Sembiante et al., 2018), researchers have developed tools for assessing the quality of shared reading sessions (DeBruin-Parecki, 1999; Goodson et al., 2004; Pentimonti et al., 2021; Smith et al., 2002). These general tools are useful to evaluate how a shared reading session aligns to evidence-based practices.

Specifically in the realm of dialogic reading, however, the quality of training and implementation is often evaluated based on adherence to the original structure of dialogic reading proposed by its developers. Researchers studying dialogic reading implementation typically monitor several key aspects, such as the number of questions asked during sessions (Dicataldo et al., 2022; Fleury & Schwartz, 2017; Lonigan et al., 1999; Strouse et al., 2013; Towson et al., 2016), the types of questions posed by educators (Cohrssen et al., 2016; Dicataldo et al., 2022; Fleury & Schwartz, 2017; Fleury et al., 2014; Huebner & Payne, 2010; Lonigan et al., 1999; Nicolopoulou et al., 2023; Strouse et al., 2013), the nature of follow-up responses to children's answers (Cohrssen et al., 2016; Fleury & Schwartz, 2017; Huebner & Payne, 2010; Nicolopoulou et al., 2023; Rahn et al., 2016) and compliance with the PEER sequence (Fleury & Schwartz, 2017; Rahn et al., 2016; Towson et al., 2016, 2017, 2020). Monitoring those features, researchers have observed significant variability in the fidelity of implementation (Towson et al., 2017). This finding is problematic given that Whitehurst et al. (1994) observed that the effectiveness of dialogic reading depended on the degree of adherence to the methodology.

Additionally, research suggests that coming up with effective prompts while reading to children does not always come naturally to adults. Some international researchers who have conducted naturalistic observations of shared reading in preschool classrooms have concluded that educators tend to ask more inferential than literal questions (Hindman et al., 2008; Nicolopoulou et al., 2023; Walsh & Hodge, 2018; Zucker et al., 2010). Others have found that the ratio between inferential and literal is balanced (Tompkins et al., 2017), and still others have found that educators ask more low-level or literal questions than questions that pose high cognitive demands (Chen & Liang, 2017; Hindman et al., 2019; Sartori et al., 2021; Sembiante et al., 2018). Although the optimal ratio between low- and high-level questions remains unclear, these findings highlight that educators naturally employ diverse ratios, which underscores the necessity for explicit training in prompting techniques to ensure that all educators can adeptly formulate both low and high-level questions.

This necessity is confirmed by evidence from Chilean preschool classrooms. Analysis of questions posed by early childhood educators during story time across 63 distinct kindergarten classrooms in Santiago revealed that although 76.35% of questions were open-ended, 60.20% fell into the category of requiring the lowest cognitive demand levels, such as identification, naming, or describing. Only 15.85% were classified as demanding higher-order cognitive skills like analysis, evaluation, or creation (Tornero et al., 2015).

Another observational study examined transcripts from videotaped read aloud sessions involving 31 preschool teachers and four-year-old children (Gómez et al., 2017). These educators had completed a year-long professional development program that emphasized analytic discourse; the reading sessions were conducted as part of an end-of-year assessment. The researchers found that, on average, 15% of the utterances made by preschool teachers during reading sessions incorporated high-level strategies, including offering

or soliciting analyses or predictions of story developments. However, the study did not provide specific data regarding the number of those utterances that were requests for analyses generated by the children themselves (i.e., questions that demanded children to produce analyses). Notably, substantial variability existed among educators in this regard, ranging from 2 to 38%. The scholars concluded that these types of questions posed significant demands not only for children to respond to but also for educators to formulate.

In summary, current research highlights the manifold advantages of dialogic reading. Utilizing open-ended prompts that center on internal story coherence and inference-making appears to yield enhanced outcomes for fostering language and comprehension skills. Nonetheless, these particular question types seem to be less commonly posed by Chilean preschool educators. These findings underscore the ongoing necessity to continue investigating strategies for training educators in effective shared reading methodologies.

The Present Study

The research questions that guided this study were:

1. How do preservice early childhood educators (PSECEs) implement the PEER strategy of dialogic reading in shared reading sessions with children aged 1 to 6?
2. Do questions asked by PSECEs during dialogic reading sessions align with features identified in previous literature as effective for promoting children's story comprehension?
3. How do questions' features associate to children's answer rate and length?

Methods

Design

An exploratory, quantitative study was designed. A convenience sample of 14 first-year female students majoring in early childhood education was recruited from a private university in Santiago, Chile. All PSECEs attended a semester-long course on Children's Literature, in which they were taught the method and benefits of dialogic reading through theoretical (e.g., exposition of the method, study of relevant literature, listening to an exemplar session), and practical lessons (e.g., role-playing, providing feedback after watching a videotaped session, in-class planning of a session). During the semester, each student planned and implemented up to three one-on-one dialogic reading sessions with children aged 1 to 6.

Procedure

PSECEs training in dialogic reading occurred from March to June 2022. It highlighted four aspects: (1) the completion of the four steps of the PEER structure, (2) the prioritization of questions that helped children understand the internal coherence of the story (i.e. cause and consequences of events and actions, characters' emotions and intentions, etc.), (3) the promotion of dialogue with the children during the reading, and (4) the adaptation of the kinds of questions they asked according to the age of the child with whom they were reading. Specific examples on how to adapt their questions were providing in a cheat sheet like that in Table 1. Types of prompts provided in Table 1 were adapted from the CROWD acronym (explained in the introductory section of this article) using Strasser et al.'s (2013) findings.

PSECEs were asked to plan and implement three one-on-one dialogic reading sessions with children with whom they had contact (e.g., relatives, neighbors, family friends) using children's favorite book. PSECEs were asked to submit a written plan for each session where they wrote at least six questions they planned to ask the child: two before beginning the reading session, two during the reading session, and two after finishing the reading.

After securing a signed consent from their parents, PSECEs implemented and videotaped the reading session they had planned. All PSECEs in the course had to submit a document with their written plan and a video of the implementation of the reading for each of the three sessions. After the course was finished, all PSECEs were contacted and invited to participate in this study. Participation was voluntary and not compensated, and consisted of allowing the researchers to analyze the videos they had submitted during the course. All PSECEs gave consent to participate. Only videos that had both the child's parents' and the PSECE's consent were analyzed. This study was approved by the authors' institutional IRB.

Data

Data consisted of 1289 sequences of interactions initiated by preservice early childhood educators (PSECE) in 33 one-on-one dialogic reading sessions, each with a different child aged 1 to 6. A new sequence of interaction was counted each time the PSECE provoked the child with a new question or comment (e.g., "What do you see here?", "Look, here is the kid's home."). Evaluations, expansions, and repetitions as follow-up comments to a previous question were not counted as new lines of interactions. The mean number of sequences per dialogue was 59.02 (SD = 32.34; Range: 8–112).

Children's age distribution encompassed a diverse range: 6% were aged 12 to 17 months, 27% fell within the 18 to 35 months range, 6% were situated between 36 to

Table 1 Adapted CROWD prompts for children of different ages

	18 to 24 months	2 to 3 years old	3 to 4 years old	4 to 6 years old
Completing sentences	Adult omits last syllables, child completes	Adult omits last word, child completes	Adult omits short sentence, child completes	Adult omits long sentence, child completes
Describing illustrations	Adult asks child for the names of familiar objects (colors, body parts, animals)	Adult asks child for names of nouns or adjectives	Adult asks child for names of verbs (actions)	Adult asks child for an explanation of a scene
Recalling details/Explaining events, actions, feelings	Adult asks child to identify details that can be answered with 1 word	Adult asks child to recall details that can be answered with 2 or more words	Adult asks child to infer intentions or emotions, or simple explanations	Adult asks child to infer intentions or emotions, or complex explanations
Distancing	Adult comments an explicit connection between the book and the child's life	Adult asks children to connect the book with their own lives	Adult asks children to connect the book with their own lives	Adult asks children to connect the book with their own lives

47 months, 30% were within the 48 to 59 months category, 9% were aged 60 to 71 months, and 21% fell within the 72 to 96 months age group. In terms of gender, 61% were conducted between a PSECE and a girl, while the remaining 39% were held between a PSECE and a boy.

Variables

The 1289 sequences were coded by the research team, considering the context of the conversation. A coding scheme was developed based on a preliminary revision of all transcripts and previous research (Blything et al., 2020; Nicolopoulou et al., 2023; Strasser et al., 2013; Zevenbergen & Whitehurst, 2003) The two authors independently coded 20% of the data ($N=295$). Cohen's Kappa was calculated for each of the variables that resulted from manual coding. Discrepancies were discussed until unanimous agreement was reached and the coding book was revised, accordingly. Manual coding was preferred over automatized coding because, while time consuming, it can be more precise when distinguishing the cognitive demand of each question since raters can consider the context of the conversation and their prior knowledge of the story in discussion. The coding scheme and examples can be found in Table 2.

Characteristics of the Dialogue Between PSECEs and the Children

Completion Rate of PEER Structure The number of steps from the dialogic reading method that PSECEs completed in each sequence of interactions was counted. When PSECEs completed a sequence including all four steps of the PEER model—prompt, evaluation, expansion, and repetition—that sequence was rated as "4". When the sequence included only some of those steps, they were rated with numbers from 1 to 3, accordingly.

Children's responses to PSECEs' first prompt in each of the 1289 sequences was coded and rated according to these criteria:

Response/Non-Response If the children produced a response, it was coded as 1, if the children did not produce a response, it was coded as 0. Responses were counted every time there was a verbal or non-verbal response (e.g., nodding, shaking head, turning the page, indicating with a finger, etc.).

Word Count of Children's Verbal Response The number of words in children's responses was counted. When the children did not provide any response or provided a non-verbal response, it was rated as 0. When the child produced sounds that attempted communication or parts of words, each sound

Table 2 Coding scheme and examples

Criterion	Code	Description	Examples
Question/Non-Question	1	The prompt includes a question indicated by oral intonation, rising pitch at the end	"What about these?" "He looks frightened, don't you think?" "The blue or the purple one?" "What do you see here?"
	0	The prompt does not include a question, or only includes questions that ask the child to repeat an answer or complete a sentence or word	"What did you just say?" "Sorry, what?" "Bu…(nny)" "This is a zebra." "He is running with the kid."
Wh-Question/Non-Wh-Question	1	The prompt includes a question that starts with a wh-word (e.g., who, what, where, when, why, how)	"What is this?" "What might he be carrying?" "Who lives here?" "Why do you think she laid down?"
	0	The prompt does not include a wh-question. If it includes a question, it is only a confirmatory, yes/no or rhetorical question	"Is this red or blue?" "Did you like the story?" "And these are red, right?" "Here is the cave with the bear."
High-challenge/Non-High-Challenge Question	1	The prompt includes a question with high cognitive demands requiring synthesizing information or making inferences about event causes, consequence, or characters' intentions, thoughts, or emotions	"What happened to them in the story?" "How do you think he felt?" "Where do you think he is coming from?" "Why do you think she left?"
	0	The prompt does not include a high-challenge, wh-question. All non-question prompts, and prompts with questions whose answers are explicit in the text or illustration, questions about synonyms or definitions, and all opinion-based questions	"What was your favorite part?" "What is this?" "What does 'moan' mean?" "Where is the shell?"

that resembled a word was counted as a word (e.g., "arne muho" was rated as 2).

Characteristics of the First Prompt in Each Sequence

The prompt (first step) of each of the 1289 sequences was coded by the authors into dummy variables according to the following criteria. Examples prompts for all criteria can be found in Table 2.

Question/Non-Question When PSECEs' prompts included a question, they were coded as 1; if they did not, they were coded as 0. When a sequence began due to a child-generated question, the first prompt in the sequence was the PSECE's response, and so it was coded as 0, unless the PSECE answered to the child's question with another question. For interrater reliability purposes, Cohen's Kappa was estimated (97.67% agreement, $\kappa = 0.95$), showing almost perfect agreement beyond chance ($p < 0.001$).

Wh-Question/Non-Wh-Question All wh-questions were coded as 1; and the rest (attention callers, comments, or closed-ended questions) were coded 0. Wh-questions were all those that started with a Wh-word (e.g., who, what, where, when, why, how). Not wh-questions included confirmatory questions (e.g., "Is this red or blue?"), yes/no questions (e.g., "Did you like the story?") and rhetorical questions (e.g., "And these are red, right?"). For interrater reliability purposes, Cohen's Kappa was estimated (90.31% agreement, $\kappa = 0.80$), showing substantial agreement beyond chance ($p < 0.001$).

High-Challenge/Non-High-Challenge Questions that posed high cognitive demands on children in relation to their comprehension of the story were coded as 1; all comments and the rest of the questions, as 0. High-challenge questions required synthesizing information (e.g., "What happened in the story?") or making inferences about events' causes or consequences, or characters' emotions, thoughts or intentions (e.g., "How do you think he felt?"). Non-high-challenge questions included all non wh-questions (i.e. confirmatory, yes/no, and rhetorical questions), all questions whose answer was explicit in the text or illustration (e.g., "What does the rabbit have in its paws?"), and questions that asked about synonyms or definitions (e.g., "What other word do you know for 'sea'?"). For interrater reliability purposes, Cohen's Kappa was estimated (95.74% agreement, $\kappa = 0.62$), showing substantial agreement beyond chance ($p < 0.001$).

Complexity Level Considering the features described above, each prompt was classified according to how complex it was for children to respond to in an ordinal variable from 0 to 3. Prompts at level 3 were all high-challenge, wh-questions.

Level 2 indicated all non-high challenge, wh-questions. Level 1 consisted of all non-high challenge, non-wh-questions and Level 0 were all non-question comments.

Analysis

Descriptive statistics were examined for all relevant variables. Paired sample *t*-tests were conducted to examine potential differences between means in children's response rate and length, considering four grouping variables: (1) question vs. non-question, (2) wh-question vs. non-wh-question, and (3) high-challenge vs. non-high-challenge.

Results

Results are discussed in regards to each of the three research questions.

Question 1: Characteristics of PSECEs' Implementation of the Dialogic Reading Method

Completion Rate of PEER Structure

Of the 1289 sequences analyzed, 39.02% contained only the first step of the PEER structure (prompt), 52.06% included the steps of prompt and evaluation, 3.65% included three steps (prompt, evaluation, and expansion), and 5.28% completed all four steps, finishing with the step of asking the child to repeat a new word. On average, PSECEs completed sequences consisting of 1.75 steps (SD = 0.76). Of the 33 reading sessions analyzed, 27% included sequences where the maximum number of steps followed in any sequence were 2 (prompt and evaluate); while 61% of the sessions included at least 1 instance of a four-step sequence. These findings suggest that PSECEs partially implemented the four-step PEER structure of the dialogic reading method.

The average completion rate of the PEER sequence was also calculated for each session. The completion rate averages ranged from 1.41 to 2.67 steps (SD = 0.33). Results showed that 14% of the variance in completion rate could be attributable to between-session variance (Intraclass correlation coefficient = 0.14, CI (95%) = [0.08–0.23]). Additionally, the average completion rate was also calculated for each PSECE. The completion rate averages ranged from 1.43 to 2.56 (SD = 0.30). Results showed that 11% of the variance in completion rate could be attributable to between-educator variance (Intraclass correlation coefficient = 0.11, CI (95%) = [0.05–0.23]). Combined, these results suggest that a large proportion of the variance in completion rate of the PEER sequence is attributable to within-session and within-PSECE factors.

Children's Answers

Children's responses to the prompt of each sequence were analyzed. Out of the 1289 sequences initiated by PSECEs across all sessions, 73.47% provoked some response from the child, either verbal (88.07%) or non-verbal (11.93%). Further examination of verbal responses revealed that, on average, children's responses contained 1.73 words (SD = 2.69, range = 1–24).

It was suspected that single-step sequences could result from a lack of response from the child following the initial prompt. However, 80.52% of the 503 sequences that included only the first step ("P" = prompt) received a response from the child. Indeed, the correlation between completion rate and the presence of children's response was negative and significant ($r = -0.09$, $p < 0.01$), but small. This finding suggests that PSECEs' tendency to complete the four steps of the PEER structure did not depend on whether children responded to their prompt.

Question 2: Comprehension Orientation of PSECEs' Questions

Descriptive analysis of prompts in each sequence showed that 69.12% of all prompts corresponded to questions ($N = 891$). Most prompts that were not questions were attention-caller comments (40.10%; e.g., "Look at this!"), 39.60% consisted of PSECEs paraphrasing parts of the story (e.g., "Here he is trying to reach the star but he still cannot reach it") or labeling an object (e.g., "Here is the bird that we call owl"), 11.39% aimed for sentence or word completion (e.g., "They went together to the… (park)"), 7.92% corresponded to answers provided by PSECEs to questions asked by the children, and 1% corresponded to definitions of unknown words.

Nearly half of all the questions asked by PSECEs corresponded to wh-questions (46.31%, $N = 597$). Within all wh-questions, 16.08% ($N = 96$) were classified as high-challenge questions. The percentage of high-challenge questions per session ranged from 0 to 40%. Of the 33 reading sessions analyzed, 64% included 3 or fewer high-challenge questions, including 8 sessions (24.24%) during which PSECEs posed no high-challenge questions.

A composite variable (range = 1–3) was generated to summarize the complexity of the prompts. Prompts classified at level 3 were all high-challenge, wh-questions ($N = 96$, 7.45%). Level 2 indicated all non-high challenge, wh-questions ($N = 501$, 38.87%). Level 1 consisted of all non-high challenge, non-wh-questions ($N = 294$, 22.81%) and Level 0 were all non-question comments ($N = 398$, 30.88%). Using this variable, an additional analysis was conducted to explore whether prompts' complexity varied significantly from beginning to end of each dialogic reading session.

Pearson correlation coefficient was computed between prompts' complexity and their position within each conversation (i.e., 1 = first prompt in the conversation). The analysis revealed a statistically significant small negative correlation between prompt order and complexity (r = − 0.10, $p < 0.001$). This indicated that as conversations progressed, PSECEs' prompts tended to become slightly less complex.

Furthermore, it was suspected that the complexity of prompts might be dependent on children's ages, as more high-challenge, wh-questions might be asked of older children given that their language is generally richer. Spearman's rank correlation between prompt complexity and age was estimated to be 0.08 ($p > 0.01$). This correlation coefficient indicated a very weak, but positive and significant association between the two variables.

Question 3: Questions Features' and Children's Answers

Presence of an Answer

Paired samples t-tests were conducted to compare the mean answer rate of children under three different conditions: (1) question vs. non-question, (2) wh-question vs. non-wh-question, and (3) high-challenge question vs. non-high-challenge question. The first test showed that the mean answer rate when children were asked questions (M = 0.81, SD = 0.01) was significantly higher than when they were provided with comments (M = 0.56, SD = 0.02), t(1287) = − 10.12, $p < 0.001$, Cohen's d = − 0.61). The effect size was medium, indicating a considerable difference in the mean answer rates between the two types of prompts.

The second and third tests were conducted only with prompts that contained a question ($N = 891$). The second test showed that the mean answer rate when children were asked a wh-question (M = 0.83, SD = 0.02) was significantly higher than when they were asked a non-wh-question (M = 0.78, SD = 0.02), t(889) = − 2.12, $p < 0.05$, Cohen's d = − 0.15). The third test found no significant differences in children's answer rate for high-challenge questions vs. non-high-challenge questions (t(889) = 0.37, $p = 0.73$).

Answer Length

Additional paired sample t-tests were conducted to compare the mean length of children's answers under three conditions: (1) question vs. non-question, (2) wh-question vs. non-wh-question, and (3) high-challenge vs. non-high-challenge question. The first test showed that children's mean number of words when asked a question (M = 1.89, SD = 0.09) was significantly higher than when they were provided with a comment (M = 1.35, SD = 0.12), t(1288) = − 3.38, $p < 0.001$, Cohen's d = − 0.20).

The second and third tests were conducted only with prompts that contained a question ($N = 891$). The second test showed no significant differences in the mean answer length when children were asked wh-questions vs. non-wh-questions (t(889) = − 0.93, $p = 0.35$). However, significant differences were found for the third test, which compared children's answer length for high-challenge questions (M = 2.43) vs. non-high-challenge questions (M = 1.83, t(889) = − 1.96, $p = 0.05$, Cohen's d = − 0.21).

Discussion

Few Expansions

Results showed that PSECEs fully embraced the task of prompting children during reading sessions, with each session including an average of 39 prompts. This high rate of prompting indicates that PSECEs were keen on engaging in dialogue and posing questions to children. This finding is consistent with previous research; for instance, a study with early childhood educators from the United States found that, on average, educators asked 54 questions during 14-min-long shared reading sessions (Deshmukh et al., 2019). However, the issue of the optimal frequency of questioning has been raised previously but remains unresolved in the literature (Karweit & Wasik, 1996; Walsh & Hodge, 2018). Future research could investigate whether an excessive number of questions might actually impede comprehension and language development.

Despite their frequent questions, PSECEs very rarely followed each prompt-evaluate dyad with the remaining two steps suggested in the PEER structure—expand children's answer with a complete sentence or new concept and ask them to repeat the new information. The prevalence of partial sequence completion, especially missing the expansion and repetition stages, is consistent with previous research (Towson et al., 2020) and suggests that an opportunity exists to extend the interactions that occur in shared reading sessions.

Expansions are intended to be short extensions of children's verbal expressions (Zevenbergen & Whitehurst, 2003). Despite their conciseness, findings from this study indicate that expansions were not instinctively employed by PSECEs, who demonstrated a significant failure to elaborate on children's utterances. Notably, 27% of the sessions conducted by PSECEs did not incorporate any expansions, suggesting a lack of proficiency in spontaneously generating such extensions in response to children's comments. The challenge PSECEs face in employing expansions effectively raises important considerations regarding the focus of their training. Should emphasis be placed on enhancing their skills in this specific area, assuming its significant impact,

or should training pivot towards other methodologies that align more closely with their innate competencies yet yield comparable developmental outcomes? For instance, an Australian study involving four educators found that the majority of their utterances while reading with children aimed at language development. However, actions categorized as having this purpose included not only expansions but also four additional strategies that might be more readily embraced by PSECEs: noticing, labeling, and describing; requesting or providing noun labels; requesting or providing noun descriptions; and requesting or providing word definitions (Adam & Barratt-Pugh, 2023). Those actions were included in the language development category as per guided by the Systematic Assessment of Book Reading (SABR-2.2) instrument, validated to measure shared reading quality (Pentimonti et al., 2021). Future research should explore the comparative advantages of recasting strategies vs. other language development strategies, taking into account the ease with which educators can adopt them.

Low-Complexity Questions

Results also showed that there was a preponderance of prompts that included questions, yet most questions were confirmatory, rhetorical, or yes/no questions. The portion of wh-questions (46.31%) included a large majority of low-challenge questions. In total, only 7% of the 1289 prompts analyzed contained a high-challenge question. Sadly, the low proportion of high-challenge questions is consistent with previous studies with Chilean early childhood educators (Gómez et al., 2017; Tornero et al., 2015).

Given that dialogic reading has been described as a method for scaffolded interactions that increase in complexity (Walsh & Hodge, 2018), it could be the case that high-challenge questions were few because interactions grew in complexity throughout the session, from basic questions that secure understanding of simple facts to sophisticated questions related to the causality of events or characters' emotions and intentions. Yet, it is impossible to sustain that line of argument for the 8 sessions during which PSECEs posed no high-challenge questions. Furthermore, while small, a significant and negative correlation was estimated between prompt order and complexity, which suggests that PSECEs tended to begin the reading session with prompts that were slightly more complex than the ones they used towards the end of the session. This decrease in complexity might be influenced by the children's responses, leading educators to lower the challenge level of subsequent questions. A very small proportion of variance in prompt complexity could be explained by children's age, as the positive yet weak correlation between these two variables suggested. However, the combination of these findings suggests that PSECEs' infrequent use of high-challenge question might be explained by reasons other than the scaffolded nature of dialogic reading or children's age. More research is needed to understand and revert educators' tendency to use mostly low-challenge questions.

Promotion of Children Talk

Not surprisingly, the results also indicated that prompts including questions elicited higher response rates than those without questions. Previous research had not differentiated whether educators' prompts involved a request or a provision of information (Gómez et al., 2017); however, this finding substantiates that explicitly posing questions (i.e., requesting) elicited distinct responses from children compared to comments, sentence-completion prompts, or explanations. This observation aligns with findings from other studies. For instance, the original SABR instrument assigned the same code to a question posed by the educator that required abstract thinking and to an utterance where the educator modeled abstract thinking by thinking aloud (Pentimonti et al., 2012). However, the revised versions distinguished between questions that facilitate language and meaning-related talk, in which educators model cause-effect relationships, inference-making, and provide definitions (Pentimonti et al., 2021). Future research could explore how children's comprehension and language development are differentially impacted by talk vs. questions.

Furthermore, this study shows wh-questions had higher answer rates than non-wh-questions; and that high-challenge wh-questions resulted in longer responses than low-challenge wh-questions. These findings are consistent with previous research (Blything et al., 2020) and have important implications for practitioners who aim to promote children's language skills, professors training future educators, and researchers studying educators in the field. The classification between wh-question and non-wh-question might be easier to grasp than distinctions between open-ended or close-ended questions (Walsh & Hodge, 2018; Worley, 2015). This study shows that even such a simple distinction can result in higher children's response rate.

Distinguishing between high-challenge and low-challenge questions might prove a bit more complex if the focus is on inference-making, as all level inferences are needed for comprehensive reading. Instead, the code scheme used in this study to identify high challenge questions focused on questions' relevance to understand stories' internal coherence: events' causes and consequences, and characters' emotions, thoughts, and intentions (Strasser et al., 2013); and proved to be reliable for coding and easy to use. Nevertheless, the same focus was used when training PSECEs and results showed that they did not prioritize these kinds of questions. Future research could explore practical ways of teaching educators to formulate high-challenge, wh-questions that

focus on stories internal coherence; and use additional measures to confirm through more rigorous methods that these kinds of questions effectively produce gains in children's comprehension and vocabulary.

Limitations

Findings from this study may not be generalizable to all PSECEs, given its small and contextualized sample. Furthermore, the study considered only one method to assess the quality of dialogic reading implementation, although other tools and methods are available (Goodson et al., 2004; Pentimonti et al., 2021; Smith et al., 2002; Weadman et al., 2021). Implementation was assessed by analyzing PSECEs' utterances, but there was no attempt to directly assess children's language or comprehension. Finally, the study's reliance on correlational analyses to draw conclusions about the relationship between question complexity and children's responses does not establish causality.

Conclusion and Recommendations

This study highlights a gap in the current practices of PSECEs, particularly in their limited use of expansions and a tendency to pose low-challenge questions, which may not fully exploit the opportunities for language enrichment during shared reading sessions. PSECEs might benefit from receiving targeted training to elaborate on children's utterances spontaneously, improve their use of expansions, and incorporate high-challenge questions during shared reading sessions. Addressing this gap through targeted training and a broader adoption of diverse language development strategies could substantially benefit children's language and cognitive development.

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Declarations

Competing interest The authors report there are no competing interests to declare.

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