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Research Note

Measuring Preschool Teachers' Language Use During Shared Book Reading With Children With Developmental Disabilities: A Pilot Study

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ABSTRACT

Purpose: Opportunities to actively engage in literacy instruction should be accessible to all students in the classroom. Shared book reading provides a literacy-based context in which teachers may adapt their communication to allow students with a range of abilities to participate. The current study examines teacher communication during shared book-reading activities to understand what specific strategies teachers are using when children with developmental disabilities are included.
Method: A shared reading activity was video-recorded in one classroom with and one classroom without students with developmental disabilities. Quantity of teacher communication was measured using the Systematic Analysis of Language Transcripts (SALT) tool, while communication functions were measured by adapting the Systematic Assessment of Book Reading. Survey methods reported teachers' typical classroom literacy instruction.
Results: While both teachers used similar amounts of language, the teacher with students with developmental disabilities in her classroom used more literacy-related functions (e.g., referencing letters, phonics, decoding) to discuss print concepts and slightly greater communication to support comprehension of the story. Both teachers reported rarely—if not at all—using technology as an instructional strategy.
Conclusions: SALT, an adapted assessment, and survey methods may capture differences in teacher communication during shared reading within heterogeneous classrooms. Understanding more about teacher communication yields important implications for intercollaborative practice to allow support for students with a range of abilities within inclusive literacy-based instruction.

Learning to read is of critical importance as children become independent communicators throughout school-age and into adulthood. Children develop phonological awareness and alphabet knowledge during preschool that will support decoding and reading ability when entering school (Lonigan et al., 2009). For children with developmental disabilities, including those with a range of speech and language abilities is critical so that equitable access to instruction and learning is provided. Children with and without developmental disabilities have demonstrated positive change in early literacy knowledge because of direct, robust instruction with inclusive opportunities for participation (Erickson et al., 2005; Lemons et al., 2012). Moreover, when those opportunities have included accessible modalities of participation (e.g., augmentative and alternative communication [AAC]), children with and without more limited speech ability have improved in their spoken language, vocabulary, and print knowledge (Ahlgrim-Delzell et al., 2016; O'Neill et al., 2018; Romski et al., 2015).

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Literacy activities occur throughout an entire school day in preschool (Cabell et al., 2013). However, opportunities for preschool-age children with developmental disabilities to engage in literacy instruction have reportedly occurred more frequently in their homes than in their schools (Barton-Hulsey et al., 2022). To become a skilled, independent reader, a child must be provided direct opportunities to learn how to read and meaningful opportunities to access that instruction (Browder et al., 2009). To this end, it is essential that teachers create opportunities—aligned with the science of reading (Petscher et al., 2020)—for all students to meaningfully participate. Thus, the purpose of this study is to explore experimental ways of understanding how preschool teachers of children with and without developmental disabilities communicate during a shared reading activity and, through a survey, understand additional targets of reading instruction and the frequency of instruction on these targets during direct instruction throughout the week.

Shared Book Reading as a Context for Inclusive Reading Instruction

Inclusive instruction supports language and literacy growth for children with developmental disabilities (Hunt et al., 2004; Odom, 2002; Tiede & Walton, 2019). One context for inclusive literacy instruction is shared book reading. During shared book reading, interactions occur when adults scaffold the linguistic content within a text to make the story accessible to children. Adults may reference children's experiences and background knowledge, or create new experiences within the classroom to make the content of the story more salient (Doyle & Branwell, 2006). During shared book reading, young children can also develop emergent literacy skills (Justice & Ezell, 2002), expanding their knowledge of print and their understanding of the relationship between oral and written language. Moreover, shared reading can increase reading engagement, vocabulary knowledge, print awareness, and word learning (Blewitt et al., 2009; Justice, 2002).

During shared book reading, teachers' communication is often measured by the "quantity" of their language (e.g., number of different words, number of total words, mean length utterance) and the "functions" used to foster child engagement, which depict the intent of communication (Justice et al., 2010). The quantity of language can provide information about the extent to which language input is provided to children (Barton-Hulsey et al., 2020). While quantity measures "how much" teachers are communicating with their students, communication function provides information about "how" teachers are speaking with their students. For example, teachers may use repeated storylines, use "attention getters," summarize text with controlled vocabulary, and use repeated readings (Browder et al., 2007). Within this context, the main responsibility of the teacher is to organize shared reading in a way that represents the text and meets the needs of the children who are actively listening and responding to the reading (Kindle, 2011).

Measuring Teacher Communication During Shared Reading

Within inclusive settings, young children with developmental disabilities are given opportunities to participate in shared reading activities; however, the way teachers' shared reading practice has been measured varies. Bean et al. (2020) observed a whole-group reading activity led by a preschool teacher of an inclusive classroom. Within this context, the teacher elicited the print referencing skills of 16 children with autism spectrum disorder by drawing their attention to words, letters, book and print organization, and the meaning of print. However, the ways in which teachers also adapted their communication to make the content more accessible to children with language and communication impairments during group reading was not considered.

While it has been of great importance to examine the language and literacy growth of children in response to communicated instruction, few studies have specifically evaluated teacher communication during shared book reading with children who have intellectual and developmental disabilities (IDDs). In one example, Golloher (2020) evaluated special education teachers using a 23-item checklist of their adaptations of reading instruction using the Pathways to Literacy Program (Browder et al., 2011). Teachers were rated on their communication that elicited participation from children across three target areas (i.e., engagement, listening comprehension, communication) with a range of example behaviors specific to each skill (e.g., as you and the child choose a book to read, the child might "touch one book, reach toward one book, say the book name"). While Golloher (2020) examined how teacher communication influenced child participation, child outcomes were directly examined as opposed to the teacher communication that was used to foster participation using strategies typically designed for including children with developmental disabilities.

Feuerstein and Landa (2020) provided structured feedback to teachers in inclusive classrooms of children with autism spectrum disorder between 12 and 47 months of age during shared book reading. Teachers' communication functions were rated using a 26-item checklist of whether they were implementing (2), were attempting to implement (1), or were not implementing (0) evidence-based strategies that allowed children to demonstrate

their understanding of story-related concepts. While the outcomes of this study provide broad information about teachers' strategies for instruction, more specific information about direct literacy instruction during shared reading and additional functions of communication were not measured.

More detailed analyses of teacher communication have captured both the quantity and functions of communication (Justice & Ezell, 2002). Kaderavek et al. (2014) used the Systematic Assessment of Book Reading (SABR 2.0; Pentimonti et al., 2012)—an existing standardized tool of shared book reading—to examine a wide range of communication functions teachers exhibited during whole-group activities that included children who had speech and language impairments. However, it is unclear how this tool can be used to capture communication within whole-group classroom shared reading activities with and without children who have developmental disabilities and a range of communication support needs. Moreover, while the validated SABR does document teachers' communication functions related to teacher talk across three constructs: (a) behavior codes (i.e., redirection/reminders), (b) literacy codes (i.e., book and print conventions, referencing letters/words/writing), and (c) meaning codes (i.e., character referencing, cognition, feelings and emotions, defining vocabulary, acting out/pretend), it does not allow us to quantify how much of the story time is dedicated to teacher talk and how much is read verbatim. The current tool also does not allow for more specific examination of letter and word conventions separately. Given some preschool-age children may be developing these coding skills at the letter level while others may be able to recognize whole words (Petscher et al., 2020), it is advantageous to understand how teachers communicate the opportunities to learn individual elements of word reading. Furthermore, given the SABR's focus on function, it does not quantify the content of teacher language use in terms of vocabulary or syntactical complexity (e.g., number of total words, number of different words, mean length of utterance) provided by teachers who read in classrooms with a range of different students without the use of digital software—such as Systematic Analysis of Language Transcripts (SALT; Miller & Iglesias, 2012) software, which has been used to quantify and subsequently examine large amounts of language output (Heilmann & Miller, 2023).

The current study is an initial step to understand teacher communication within preschool classrooms during naturalistic, whole-group shared reading activities and explore the utility of an adapted tool for measuring that communication. In addition, we gathered information from teachers about additional methods of literacy instruction and frequency of that instruction. Examining teacher communication and subsequently identifying a need for teacher support to enhance the inclusivity of shared literacy activities can yield opportunities for collaboration with other professionals—such as speech-language pathologists (SLPs)—to provide high-quality services responsive to the individual needs of children with IDD. An SLP's expertise in typical and atypical language development coupled with a teacher's ability to engage and build rapport with students can be leveraged to build an environment centered in opportunities for all children to develop both literacy and communication skills alongside one another (Murphy et al., 2022).

Purpose of the Current Investigation

The current pilot, exploratory study provides a context in which to explore the utility of a measurement tool to systematically describe the "quantity" and "function" of teacher communication during shared book reading to better understand what specific strategies teachers are using when children with developmental disabilities are included in group shared reading activities. The study adapts an existing shared reading measure (SABR–Short Form) that captures several functions of communication and uses SALT software to quantify communication used by teachers to understand the utility of using transcript variables such as mean length of utterance and number of different words to determine differences in teacher communication that might be meaningful. Subsequently, the current study allows for comprehensive analysis of communication during shared reading conducted by two different teachers—one in a classroom that included children with developmental disabilities and one in a classroom that did not include children with developmental disabilities—to understand if there were differences between the type of communication when children with developmental disabilities were involved. While the primary focus of this study was to understand the utility of a tool to measure teacher communication during shared reading activities, capturing additional times where literacy instruction occurred and the targets of that instruction is important to describe the overall literacy experiences of children in each classroom. Surveys were used to gather information about teachers' additional instructional targets and frequency of that instruction. The aims of the current pilot study were as follows:

1. Describe the "quantity" of language input during shared book reading using the SALT software to identify the number of different words, mean length utterance in morphemes, and number of utterances used by teachers across two different classrooms—one without children with developmental disabilities and one that included children with developmental disabilities.

2. Describe the "function" of teacher communication during shared book reading across two different classrooms—one without children with developmental disabilities and one that included children with developmental disabilities.
3. Describe reading instruction methods as reported by teachers across each classroom.

Method

Participants

Preschool teachers from two different private preschools in Tallahassee, Florida, participated in this study. This study was approved by the Florida State University Institutional Review Board. Teacher 1 had less than 10 years of teaching experience and a classroom of children without a diagnosed developmental disability. Teacher 2 had over 10 years of teaching experience and had a classroom of between three and five students with a diagnosed developmental disability. These students used speech as a primary means of communication and were described by Teacher 2 as having diagnoses of autism spectrum disorder, attention-deficit/hyperactivity disorder, anxiety disorder, and sensory integration disorder. Children in each classroom were between the ages of 4 and 5 years. Teacher 1 had at least 15 students in her classroom, and Teacher 2 had at least 18 students.

Procedure

Teachers provided consent for the study team to video-record their delivery of a shared book-reading activity with their whole class and completed a school literacy survey (Barton-Hulsey et al., 2022) that included questions about literacy instruction within their classroom across areas of decoding and phonological awareness, word recognition and vocabulary development, writing, and the use of technology and media (e.g., AAC) for instruction. The procedures for administering the shared book-reading observation were adapted from the SABR–Short Form 2.2 observational protocol for classrooms (Pentimonti et al., 2012). This form is composed of a section to quantify teacher communication by utterance form (e.g., questions, repetitions, recasts, and extensions of child communication) and a section to quantify teacher communication function by topic/content. Topic/content categories include behavior-related functions (behavior management using redirections/reminders), literacy-related functions (book and print conventions; letters, words, and writing), and meaning/comprehension-related functions (character reference, cognition, feelings/emotions, define/elaborate on vocabulary, acting out, and pretend play). Codes for the current study taken from the SABR–Short Form included those that identified teacher communication topic/content categories of behavior-related functions, literacy-related functions (book and print conventions, letter referencing was separated from word referencing), and all meaning/comprehension-related function codes. Teacher reading verbatim was added and quantified under literacy-related function codes for the current study. SALT software was used to quantify mean length of utterance, number of different words, and total utterances (SALT; Miller & Iglesias, 2012; see below for details on transcription procedures).

Prior to the observation, each teacher met with a member of the research team to review details of the observation procedures. During this meeting, teachers were told that they should read with their students as they typically would during group shared reading and were provided with a standard book to use: *The Cat in the Hat* (Seuss, 1957). Each teacher had experience with this book and was comfortable integrating it within their classroom when shared reading would typically occur. On the day of observation, a member of the research team positioned a camera within the classroom to record the video and audio from the teacher and avoid capturing students in the frame. Student spoken language was audio-recorded, but not video-recorded.

Recording began from the time the book-reading activity began to the time it ended. The start of the session was defined as when the book-related discussion began (e.g., teacher announcement of story time, drawing attention with a gesture, holding up a book, discussing a topic that is related to the book). Any additional discussion related to the book was also included, such as after-reading group discussion about any book-related concepts or reviewing any visual supports that were introduced throughout the story (i.e., graphic organizers, props/puppets).

Surveys of classroom literacy instruction originally developed by Barton-Hulsey et al. (2022) were given to teachers to complete after the shared reading observation. Teachers returned these surveys within 2 weeks to the primary investigator. The surveys were a 14-item questionnaire that asked teachers to rate on a scale of 0–4 (0 = *never/rarely*, 1 = *on occasion*, 2 = *weekly*, 3 = *daily*, 4 = *a few times per day*) the frequency in which they provided instruction on a particular literacy skill, or used technology and media for instruction—particularly given the benefits of using AAC as an instructional method for children with and without disabilities (O'Neill et al., 2018). The 14 items were divided into three sections so that composite scores can be generated across areas of (a) instruction in decoding and word recognition, (b) instruction in writing, and (c) technology and media.

Transcriptions and Coding

Following observations, the videos were transcribed using SALT (Miller & Iglesias, 2012) to quantify target language variables of mean length of utterance in morphemes, number of different words, and communication turns to address Research Aim 1. These transcripts were also used to code the function of each teacher utterance according to a set of codes developed by the research team and adapted from the SABR–Short Form described above. Two undergraduate research assistants transcribed each video recording of teacher communication during shared reading. Each research assistant completed prior training in transcription according to SALT and met 90% reliability on standard SALT transcript conventions using a language sample separate from this study. Following this training, each teacher's communication was transcribed first by one trained research assistant and checked for accuracy by the second trained research assistant. Any discrepancies were discussed, and consensus was determined before analysis and coding of the transcripts.

Mean length of utterances in morphemes, number of different words, and number of utterances were quantified using the SALT software. To code the function of teacher utterances, utterance lines that fit within one of the 10 codes within three broad categories described in Table 1 were coded. These codes described the function of the utterance as either teaching a literacy-related concept within the story, regulating the behavior of the students in the group, or teaching language concepts within the story, as defined by the meaning/comprehension-related codes. Two undergraduate research assistants met with a study investigator (second and third authors) after reading the SABR–Short Form 2.2 manual. At this meeting, they discussed the SABR–Short Form 2.2 operational definitions of the codes being used, as well as adaptations to codes for the current study, and ensured consensus regarding definitions and how they should be applied to teacher communication prior to coding. It was determined that given the small sample size and exploratory nature of the study—being able to understand the utility of using these codes for teacher communication when students with developmental disabilities were present—consensus coding would be done between the two research assistants. Any discrepancies would be discussed together, and a consensus decision would be made on the code to use. If consensus could not be achieved, the research assistants brought that information to the attention of a primary investigator (second author) to make a decision.

Table 1. Teacher communication codes.

Variable	Literacy related	Examples
Reading verbatim	Teacher reads directly from the text.	"And then something went bump! How that bump made us jump!"
Letter reference	Teacher references the letters in the text by pointing while reading, making their sounds, or drawing attention to their location and size.	Teacher points letter by letter to p-l-o-p when sounding it out.
Word reference	Teacher references specific words in the text by pointing while reading, sounding them out, or drawing attention to letters within them.	Teacher blends the sounds together in p-l-o-p while pointing to the entire word "plop" and reading it aloud.
Book conventions	Teacher acknowledges author or illustrator; discusses how to use books, book parts, or rules or conventions of English; and elaborates on illustrations in book.	"And the title of the book is . . ."
	Behavior related	**Examples**
Behavior management	Teacher elicits a specific behavior from child or redirects their attention to the book.	"Remember, if you have something to say, you raise a quiet hand."
	Meaning/comprehension related	**Examples**
Character reference	Teacher makes a reference back to a character mentioned in the story.	"Who is this?"
Event reference	Teacher references something that happened in the story to a real-life event.	"Did we get to go out this morning? . . . and the children in this book didn't get to either."
Feelings/emotions	Teacher talks about emotions felt by character.	"Well, the fish is upset because he knows that the mommy would not like it if Cat in the Hat and Thing One and Thing Two were in the house while she wasn't there."
Acting out and pretend play	Teacher dramatically acts out the story to aid in comprehension.	"Can you make a face like that?"
Defining vocabulary	Teacher acknowledges and defines a word that may be new to the students.	" . . . it's like a loud noise" to reference the book describing a bump and thump.

Even though consensus coding was ultimately done, given the exploratory nature of the study to understand how these codes could be used, reliability was calculated prior to consensus coding. Two undergraduate research assistants coded each transcript separately according to the codes and operational definitions listed in Table 1 to determine the appropriate code for each utterance. Percentage agreements were determined between the research assistants for each transcript by dividing the number of agreements per code by the total number of codes identified between the coders. All codes reached at least 90% agreement. Consensus coding was done between coders for any utterances not in agreement, with no need to consult a third-party primary investigator.

Data Analysis

To describe the quantity of teachers' language input, mean length of utterance in morphemes, number of different words, and total number of utterances were calculated using SALT. Computing mean length of utterance allowed for comparison of quantity and complexity of extratextual talk beyond reading the story verbatim between teachers. To describe teachers' function of language input, the proportion of literacy-related codes, behavior-related codes, and meaning and comprehension-related codes were calculated for each teacher. Answers to the school literacy questionnaire (Barton-Hulsey et al., 2022) were compared by item between teachers to identify the different strategies and instructional methods used outside of shared reading activities within their classrooms. Items were organized within categories of instruction in (a) decoding and word recognition, (b) instruction in writing, and (c) use of technology/media during instruction. Teachers were asked to rate, on a Likert scale of 0–4, their frequency of instruction based on the question asked. Scale options corresponded to 0 = *never/rarely*, 1 = *on occasion*, 2 = *weekly*, 3 = *daily*, 4 = *a few times per day*.

Results

Quantity of Communication

Teacher 1 (in a classroom without students with disabilities) and Teacher 2 (in a classroom with students with disabilities) used nearly the same number of different words, with Teacher 1 using 300 and Teacher 2 using 303. The mean length of utterance used by Teacher 1 was 8.70, and for Teacher 2, it was 8.66. Both teachers used similar numbers of overall utterances, with Teacher 1 having 237 utterances and Teacher 2 having 240 utterances. Given that each teacher had the same book to read, these findings suggest that they had similar amounts of extratextual talk that also occurred. Table 2 reports each of these values by teacher.

Function of Communication

Proportions of each utterance function code were calculated for each teacher using the number of total occurrences of the code as the numerator and total utterances of the teacher as denominator and are reported in Table 2. Seventy-three percent of Teacher 1's 237 total utterances were used to read verbatim. The remaining 63 utterances (27%) were extratextual talk. Of the utterances used for extratextual talk, 24 (10% of total utterances) were used for functions that corresponded to one of the codes in Table 1, and the remaining 12% of her utterances fell under a category that did not apply to our specific set of codes and mostly consisted of filler words (e.g., "Wow," "Uh oh"). Teacher 1 used five (2.1%) utterances to define vocabulary (e.g., " … it's like a loud noise" to reference the book describing a bump and thump), one (0.4%) to reference book conventions (e.g., "Alright friends, today's story is 'The Cat in the Hat,' by Dr. Seuss"), 11 (4.6%) utterances to manage the behavior of students (e.g., "Remember, if you have something to say, you raise a quiet hand"), and five (2.1%) to discuss feelings of the book's character (e.g., "Well, the fish is upset because he knows that the mommy would not like it if Cat in the Hat and Thing One and Thing Two were in the

Table 2. Teacher communication during shared reading.

Variable	Teacher 1	Teacher 2
Quantity of language input[a]		
MLUm	8.70	8.66
No. of different words	300	303
No. of total utterances	237	240
Function of communication[b]		
Literacy related		
Reading verbatim	73%	69%
Letter reference	0%	0.4%
Word reference	0.8%	1.3%
Book conventions	0.4%	7.5%
Behavior related		
Behavior management	4.6%	4.2%
Meaning/comprehension related		
Character reference	0%	0.8%
Event reference	0%	4.2%
Feelings/emotions	2.1%	0%
Acting out and pretend play	0%	0.8%
Defining vocabulary	2.1%	0%

Note. MLUm = mean length of utterances in morphemes.
[a]Values represent totals derived from transcripts. [b]Values represent proportions of total utterances.

house while she wasn't there"). Teacher 1 used two (0.8%) utterances to direct attention to printed words while reading. Teacher 1 did not use any utterances to reference letters or characters, relate book content to real-life events, or act out parts of the story to support comprehension.

Sixty-nine percent of Teacher 2's 240 total utterances were used for reading verbatim. The remaining 70 (31%) utterances were used for extratextual talk. Of the utterances used for extratextual talk, 46 (19% of total utterances) were used for functions that corresponded to one of the codes in Table 1, and the remaining 10% of her utterances fell under a category that did not apply to our specific set of codes similar to Teacher 1 and mostly consisted of filler words. Of her total utterances, Teacher 2 used 18 (7.5%) utterances to identify book conventions, including the author, and expanded on the illustrations in the text (e.g., "And the title of the book is . . . "; "Look at the weather in this picture"), one (0.4%) utterance to reference specific letters in the text (e.g., points letter by letter to p-l-o-p when sounding it out), three (1.3%) utterances to reference printed words when reading (e.g., blending the sounds together in p-l-o-p while pointing to the entire word "plop" and reading it aloud), 10 (4.2%) utterances to manage behavior of students (e.g., "Sit down please [child's name]," or "Sit there by [child's name]"), two (0.8%) utterances to support comprehension of the text by acting out or using pretend play (e.g., "Can you make a face like that?"), two (0.8%) utterances to reference characters in the story ("Who is this?"), and 10 (4.2%) utterances to reference a real-life event that could or did happen (e.g., "Did we get to go out this morning? . . . and the children in this book didn't get to either"). Teacher 2 did not use any utterances to define vocabulary or discuss feelings or emotions.

Table 3. Teacher-reported instruction.

Item	Teacher 1	Teacher 2
Instruction in decoding and word recognition		
Names the letters of the alphabet	3	4
Names the sounds of the alphabet letters	3	4
Practices sounding out simple words (i.e., *cat*, *log*)	1	4
Participates in sight word instruction based on commonly occurring words in the community and home	0	2
Participates in sight word instruction for high-frequency words (e.g., *is*, *of*, *the*, *and*)	0	3
Traces letters	2	4
Instruction in writing		
Identifies relevant phrases or words using an AAC system during reading instruction	1	0
Copies simple words	1	4
Spells words using a keyboard	0	0
Spells words on an AAC device with voice output	0	0
Technology and media		
Uses an AAC device to sound out letter names or words during reading instruction	2	0
Reads books on a tablet/ touchscreen and/or Smartboard during class	0	0
Plays games involving writing and/or typing letters on a tablet device or computer	0	0
Plays games involving letters and sounds on a tablet device or computer during class	0	0

Note. 0 = *never/rarely*, 1 = *on occasion*, 2 = *weekly*, 3 = *daily*, 4 = *a few times per day*. AAC = augmentative and alternative communication.

Additional Literacy Instruction

Both teachers returned surveys of school literacy instruction to note the type and frequency of literacy instruction provided. Table 3 reports each teacher's survey response by item. When answering questions related to instruction in decoding and word recognition, Teacher 1 responded that she engaged in daily instruction that included naming letters and sounds of the alphabet and traced letters weekly. She reported that occasionally, she engaged the class in sounding out simple words. She never or rarely engaged in sight word instruction using common words in the community or home or with high-frequency words (e.g., *is*, *of*, *the*, *and*). Teacher 2 responded that she engaged in instruction a few times per day that included naming the letters and letter sounds of the alphabet, sounding out simple words, and tracing letters. She engaged daily in instruction that included high-frequency sight words and weekly in instruction that included commonly occurring words around the community and home.

When asked about instruction in writing, Teacher 1 reported that she occasionally had students copy simple words and identified relevant words or phrases using an AAC system during reading instruction. She reported that she never/rarely engaged in instruction that used a keyboard or AAC device with voice output. Teacher 2 reported that she had students copy simple words a few times per day and never/rarely identified relevant phrases or words using technology that included an AAC system or keyboard.

When asked about reading instruction that incorporated technology and media, Teacher 1 reported that she

used an AAC system to sound out letter names or words during reading instruction weekly, but never/rarely engaged in any other use of technology/media during instruction. These items asked about the frequency books were read on a tablet/touchscreen or Smartboard, the frequency of games played on a tablet or computer that involved writing/typing letters, and the frequency games were played on a tablet or computer that involved letters and sounds. Teacher 2 responded never/rarely for all items regarding the use of AAC or technology and media for reading instruction.

Discussion

The current pilot study describes an adapted tool that was successful in measuring the function of communication provided by preschool teachers who had children with and without developmental disabilities in their classrooms. Additionally, this study describes the utility of using SALT to both quantify teacher communication input and code for teacher communication function. Furthermore, surveys about teacher literacy practices, in addition to shared reading, reported information about the frequency and type of literacy instruction in classrooms. Pairing exploratory observational methods with a survey to measure literacy instruction provided a rich understanding of instructional support needs of teachers, as well as a preliminary look at differences between literacy practices in classrooms with and without students with developmental disabilities. In turn, findings can suggest implications for intercollaborative practice that include professionals who are knowledgeable about inclusive instruction that targets the communication and language support needs of children with developmental disabilities (e.g., SLPs) within instructional strategies of group reading (e.g., teachers).

First, quantifying teacher language input using SALT revealed that both teachers used similar amounts of language input in terms of mean length utterance of morphemes, number of different words, and number of different utterances. However, using the adapted SABR assessment, findings revealed differences in the quality of teacher utterances during shared reading. Overall, Teacher 2—the teacher with students with developmental disabilities in her classroom—used more literacy-related functions of communication than Teacher 1 to talk about print concepts and slightly greater communication that provided support for comprehension of the story. Teacher 2 may have used these explicit strategies more readily due to the learning needs of these students in her classroom, benefitting all students in the group. Teacher 2 explicitly used extratextual talk about print and provided scaffolding that is known to support the learning of children with developmental disabilities (O'Neill et al., 2018).

The most documented function of Teacher 2's communication was referencing book conventions, while this was one of the least documented functions used by Teacher 1. This scaffolding provides visual and spoken input about book conventions (e.g., title, author), the illustrations and pages, and the rules and conventions of print. The most documented function of Teacher 2's communication related to comprehension of the story was event referencing. This type of communication provided explicit references to children's everyday experiences that were similar to those expressed in the story. Again, Teacher 2 may have provided this scaffolding to explicitly engage children with developmental disabilities who had greater difficulty with comprehension of story concepts. The adapted SABR–Short Form coding scheme also allowed for recognition of behavioral management as a predominant function of both teachers' communication—which is similar to previous whole-group activities that have included children with and without developmental disabilities (Sparapani et al., 2020).

While we were able to directly observe the differences in communication quantity and functions exhibited by teachers of students with and without developmental disabilities, survey methods also yielded similarities and differences in additional classroom literacy instruction practices. For instance, both teachers reported they provide instruction on letter naming and letter sounds at least daily; however, Teacher 2 reported spending additional time on sight word instruction and more time sounding out single words with her students. Furthermore, survey results indicated that both teachers, despite the makeup of students in their classrooms, are rarely—if not at all—using technology as an instructional strategy for literacy learning. This finding is consistent with prior findings using the same survey methods (Barton-Hulsey et al., 2022).

Study Implications

The current pilot study provides preliminary evidence of the utility of an adapted tool that can measure teacher communication during whole-group shared reading activities that include children with developmental disabilities. As a next step, examining the reliability and validity of an adapted measure that includes communication functions while also accounting for AAC strategies that are modalities of communication that children with developmental disabilities may use is a worthwhile pursuit. For researchers, adapting an already validated measure can (a) identify teachers' current shared reading practices with children who have developmental disabilities and (b) provide subsequent, responsive feedback based on the individualized experiences of each teacher and classroom environment when used for intervention planning. Measures

that are sensitive to identifying communication strategies teachers use with children who have developmental disabilities and additional communication support needs can provide a tool for monitoring outcomes of teacher instruction and may ultimately improve the whole-group classroom reading experience. Considering the range of speech, language, and communication abilities of children with developmental disabilities, understanding these differences is critical for designing intervention efforts that are responsive to the individualized needs of not only students but also teachers who have varied classroom makeup of students, resources in their classroom, and training.

For SLPs who work alongside and share expertise in literacy acquisition with teachers in preschool classrooms, this study provides preliminary evidence of the similarities and differences between teacher communication when children with developmental disabilities are included in shared reading activities. Understanding the needs of teachers when supporting children who have developmental disabilities is important for designing collaborative opportunities for SLPs to provide targeted instruction for children as teachers read to their students (see Murphy et al., 2022, for additional strategies). Moreover, SLPs can understand the strengths of teacher instruction—such as Teacher 2's direction toward book conventions—to guide the discussion of developing and addressing individualized education plan goals for language and literacy in preschool classrooms.

Lastly, this study provides preliminary evidence that an adapted shared reading assessment can capture differences in teacher communication between classrooms of students with and without developmental disabilities. Therefore, adapting this assessment further could identify communication strategies that support the engagement of children with more limited speech ability who have extensive support needs. By first understanding how teachers communicate with students with developmental disabilities who are included in shared reading, we can then expand these methods to understand the range of teacher communication used across students who also have a range of abilities.

Limitations and Future Directions

This pilot study has several limitations. While this is the first study to our knowledge to examine differences in teacher communication during shared reading in classrooms with and without students with developmental disabilities, the inclusion of only two teachers cannot yield generalizable results regarding shared book-reading instruction or frequency of literacy activities otherwise in preschool classrooms. The communication strategies used by each teacher may have been influenced by a number of factors other than the inclusion of students with or without developmental disabilities. Teacher 2 had greater teaching experience than Teacher 1, which may have informed her shared reading strategies as well as classroom literacy instructional practices. Future directions of this work should report the communication of a greater number of teachers who have students with developmental disabilities in inclusive classroom settings.

Another limitation is the experimental nature of the coding scheme. While codes were used from the original SABR–Short Form in conjunction with added codes to capture reading instruction aligned with evidence-based practice (Petscher et al., 2020), a more comprehensive list of codes is needed to document additional functions that are unique to working with children with developmental disabilities (use of wait time, visual supports, sign language, etc.). Adding these additional codes may have yielded a better understanding of the differences in teacher communication who have students with and without developmental disabilities.

Third, while the researcher's selection of the shared reading book was based on teachers' familiarity with the story, the story's familiarity may have impacted each teacher's use of particular functions that were perhaps not needed. For instance, a teacher may not define vocabulary if the children were already familiar with the vocabulary words from reading the story prior. Further iterations of this work should examine teacher communication with level-appropriate stories over multiple reading sessions to understand the range of potential functions used by teachers to elicit feedback and promote learning among students.

Lastly, while the current study did examine teachers' communication functions and quantity of their language input, it did not capture teacher communication that does not require speech to support child engagement (e.g., the use of AAC). Future directions of this work should include teachers who have classrooms with children with more limited speech ability to understand teacher communication strategies during shared book reading when children require additional support to engage in shared reading activities. In turn, this would provide information about the use of these strategies and thus inform intervention methods that could better support teachers' inclusion of children who have a wide range of abilities. Future work should include methods for capturing not only communication functions but also the forms or modalities of communication.

Conclusions

The current study provides preliminary evidence for using SALT, an adapted assessment, and survey methods to capture differences in teacher communication during

shared reading among classrooms with diverse groups of children. Doing so allows for the identification of strengths and areas of need in teachers' efforts to provide instruction that includes all children in whole-group shared reading activities, which may be addressed by the collaborative efforts of SLPs and teachers who possess expertise on communication and literacy development. Moreover, the findings of this study yield important implications for the expansion of a measurement tool to capture teacher communication within whole groups that include children with a range of support needs—including those who use limited speech.

Data Availability Statement

The data analyzed from this study are available from the corresponding author on reasonable request.

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