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By

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**Evidence Based Practice Brief: Teaching Emergent Literacy
Skills to Preschool Children with Specific Language
Impairment.**

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**Evidence Based Practice Brief: Teaching Emergent Literacy Skills to Preschool
Children with Specific Language Impairment.**

by

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Report

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Abstract

Evidence Based Practice Brief: Teaching Emergent Literacy Skills to Preschool Children with Specific Language Impairment

by

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Preschool children with Specific Language Impairment are at an increased risk for later reading difficulties (Watson, Layton, & Pierce, 1994; Catts et al., 1999; Johnston et al., 1999; Boudreau & Hedberg, 1999). Current emergent literacy intervention approaches have been discussed regarding typically developing children and children from lower incomes, but they lack efficacy data for preschoolers with SLI. The purpose of this article is to describe the current literature regarding emergent literacy intervention in preschoolers with SLI and reach an evidence-base decision as to the most effective intervention techniques to utilize in order to prevent later reading difficulties.

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Evidence Based Practice Brief: Teaching Emergent Literacy Skills to Preschool Children with Specific Language Impairment.

Case Scenario

Grace, a school speech-language pathologist, often assists teachers and school educators with developing and implementing learning modifications for students on her caseload. Recently, the school's preschool teacher approached Grace with concerns for one of her students, Chloe. Chloe is 4 years old and identified as having Specific Language Impairment (SLI). Chloe's teacher, recently out of college, is not familiar with SLI and the educational needs of students identified as having SLI. The district-wide curriculum focuses on increasing emergent literacy skills in a naturalistic manner; large group instruction and small group centers are the predominant educational activities in the daily schedule. Even though Chloe demonstrates a high interest in books and print, Chloe's teacher and parents are concerned that she is not receiving the instruction she needs to gain the skills necessary for future success in reading. For example, Chloe's teacher stated that Chloe is still not identifying rhymes or identifying words and letters on a page. Her parents are interested in starting private language therapy and are willing to work with her at home, but do not know where to start. The teacher is interested in Grace's suggestions for modifying the curriculum to better meet Chloe's needs. Chloe's teacher and Grace are working together to develop a system that can help Chloe receive the early emergent literacy skills needed for later success in school.

Background and Rationale

The acquisition of reading skills was once thought to originate in the early elementary years. However, recent research now supports the idea that learning to read is a continuous developmental process that emerges early in life, long before the child ever enters a school setting (Lonigan, 2006). Educators have termed the developmental precursors (the skills, knowledge, and attitudes that children have about reading and writing) *emergent literacy* skills (Whitehurst & Lonigan, 1998). This is a particularly hot topic among educators and early interventionists because several studies examined the predictive power of emergent literacy skills on later reading success and found that emergent literacy skills are good predictors of whether a child will struggle to read in the early elementary grades (Watson, Layton, Pierce, 1994; Catts et al., 1999; Johnston et al., 1999; Boudreau & Hedberg, 1999). Consequently, there has been an increased focus on early childhood education, particularly during preschool and kindergarten before children have begun to read (Bus & Van Ijzendoorn, 1999; National Reading Panel, 2000).

The precursors termed ‘Emergent Literacy’ can be divided into three major categories. These include phonological awareness (PA), print concepts and alphabet knowledge, and literate language (Kaderavek & Justice, 2004). Phonological awareness goals may include: the ability to count syllables and sounds, to identify rhymes and words that start/end with the same sounds, and to manipulate sounds in words. Effectiveness of phonological awareness instruction has been shown with small groups

during brief, 15-minute daily instruction in which preschoolers engage in game-like activities. Other instructional approaches have focused on explicitly teaching a limited set of skills such as blending and segmenting phonemes (Ehri et al., 2001). Along with longitudinal research showing causal relationships between reading growth and phonological awareness training, demonstrations that show training phonological awareness produces a positive effect on reading has led to consensus among professionals that instruction in phonological awareness is an important part of a good reading program (Bus & Van Ijzendoorn, 1999; Ehri et al., 2001; Catts & Kamhi, 2005). Consequently, a variety of programs and sets of materials have been developed to help early educators provide effective instruction in phonemic awareness for young children (Catts & Kamhi, 2005). Although there have been several intervention programs designed to foster emergent literacy skills in typical children and even those with phonological disorders (McCormick and Mason, 1986; Hesketh, Nightingale, & Hall, 2000), there is a lack of reports on effective strategies for teaching emergent literacy skills to children with Specific Language Impairment.

In addition to PA, Kaderavek and Justice (2004) argue that knowledge of print and the alphabet is also crucial to emergent literacy development. *Print concepts* involve understanding how books work and how print represents speech through written units like letters, words, and punctuation. Goals would include book reading conventions, linking text to experiences, recognizing environmental print, sorting upper and lower case letters, and recognizing own name in print (Kaderavek & Justice, 2004). Print concepts

are derived from experience with literacy and print. One way children derive print concepts is through joint book reading, also called shared book reading. In 1985, the Commission on Reading of the National Institute of Education called joint book reading ‘the single most important activity for developing the knowledge required for eventual success in reading’ (p. 23). In consequence, joint book reading and its implications on later reading success are often investigated (Lonigan & Whitehurst, 1998).

The third aspect of emergent literacy, literate language, has to do with the understanding that written communications is more complex than the language of ordinary conversation. This can be introduced to preschool children by exposing them to stories, poems, plays, and other texts that exemplify a more elaborate language style (Kaderavek & Justice, 2004)

Children with Specific Language Impairment have impaired spoken language abilities without the presence of other developmental, sensory, or behavior problems (Munro, Lee, & Baker, 2008). Problems with spoken language vary and may include one or a combination of the following deficits: phonology, semantics, syntax, morphology or pragmatics (Munro et al., 2008). Vocabulary deficits are often the first sign of language delay, but may resolve by age 3 to 4 years (Paul, 1996). Children with SLI often grow out of the most obvious signs of oral linguistic deficits by the end of the preschool period, but deficits remain (Paul, 2007; Tallal, 1988). Tallal (1998) suggested that many children with SLI ‘change diagnoses’ when they get to school age because the demands of the school situation put stress on their underlying impaired language. In situations that

require complex language skills such as phonological awareness, meta-linguistic abilities, or fluent oral narration these deficits become apparent. These are the necessary tasks for success in learning to read, write, spell, and do mathematical problems. A very high proportion of children with SLI also have trouble learning to read (Catts et al. 1999; Mackie & Dockrell, 2004). According to Law (2004), childhood language impairment is of particular concern to those involved in child development because it has immediate and long -term implications for the child, the caregiver, and the school. Because children diagnosed with communication disorders face difficulties with emergent literacy acquisition (Gillam & Johnston, 1985), and are at an increased risk for later reading difficulties, speech-language clinicians have been encouraged to develop strategies to treat more global aspects of language-learning difficulties, such as deficits in emergent literacy (Ezell, Justice, & Parsons, 2000; American Speech-Language-Hearing Association, 2000).

As specialists in language development, speech-language pathologists (SLPs) are often the professionals with the broadest knowledge about the connections between reading and oral language. SLPs have much to offer others who work with young children when designing preliteracy programs not only for those at risk, but also for all children in the preschool classroom.

Clinical Question

How do teachers and SLPs enhance the emergent literacy skills of preschoolers with SLI needed for later reading success? Grace is reviewing the published literature to investigate which language intervention for children with SLI has shown the greatest pre-literacy outcomes. Grace will combine her knowledge of SLI and her knowledge of teaching emergent literacy skills with the research in order to reach the best evidence based decision.

Method

Study Selection Criteria

The following criteria were adopted for their minimal restrictions and their focus on research with a high quality of evidence.

1. The study must include one of the following research designs: randomized controlled trials (RCTs), quasi-experimental controlled studies (QEDs), single-subject multiple probe designs, and group comparison designs. Single case studies were excluded.
2. The sample must include participants identified as having Specific Language Impairment (SLI) or synonymous terms (language impairment, language delay).
3. The participants must be pre-school age with English as their primary language. Studies that included participants from elementary, middle, or high schools were excluded.
4. Intervention must include strategies or approaches specifically developed for developing one or more of the following emergent literacy skills:
phonological/phonemic awareness, joint book reading, book concepts, or print awareness.
5. The dependent measures reported with data amenable to the calculation of an effect size included phonological/phonemic awareness measures or print awareness concepts.

6. The studies must be published in a peer-reviewed journal or in a book between the years of 1990 and present. Doctoral dissertations, presentations, and master's reports or theses were excluded.

Information Retrieval

Grace selected two databases to identify research related to emergent literacy intervention in preschoolers with SLI. The Educational Resources Information Center (ERIC) database was used as the primary resource because it indexes a wide range of journals that cover the areas of language intervention and pre-school children. Although not all of the work is available as full text links, the ERIC database is available in the public domain. The second database Grace chose was PsychInfo because a high percentage of the journals are peer-reviewed and because the database contains literature from a variety of disciplines including education, intervention, and health sciences. Using the criteria listed below, multiple searches were conducted via computer and print sources to locate as many articles as possible.

Search Terms

Grace used a broad definition of emergent literacy skills in order to generate findings related to print concepts, phonological awareness, or phonemic awareness in a preschool population. Grace identified a combination of search terms for use in ERIC and PsychInfo. These terms were identified using the thesaurus available for keyword identification. In addition, the term '*emergent literacy skills*' was used in conjunction

with other, narrower search terms (i.e., phonological awareness, print awareness, and vocabulary knowledge). Descriptors for the database search included:

- a. Population Terms: pre-school, SLI, language delay
- b. Intervention Terms: intervention, strategies, education, or instruction
- c. Outcome Terms: emergent literacy skills, pre-literacy, print concepts, phonological awareness or phonemic awareness

Evaluating the Evidence

Results

The initial search included the following terms: *Preschool, SLI, language therapy, and phonological awareness*. However, these terms proved to be too restrictive as only 1 citation was identified. A second search strategy eliminated *phonological awareness* and included *emergent literacy* and *early childhood education* and produced a total of 184 citations. After reading the abstracts, three articles remained that met the criteria stated. Table 1 provides a summary of each study, including experimental design, instructional approaches, intervention duration, outcome measures, and results.

Descriptions of the Included Studies

Three studies (Munro et al., 2008; Ezell et al., 2000; Lovelace & Stewart, 2007) were selected for in-depth evaluation. These studies met the criteria set forth during the search. They reported an intervention for preschoolers with SLI and assessed emergent literacy language outcomes. The study design, including a description of the participants and language outcomes, is summarized in Table 1.

The three studies included a total of 26 preschool children identified as having Specific Language Impairment and received language intervention with preliteracy skill outcomes. Two studies (Lovelace & Stewart, 2007; Ezell et al., 2000) measured print concepts while Munro et al. (2008) measured phonological awareness and vocabulary growth as indicators of emergent literacy skills. In all three studies, results indicated

intervention was successful in increasing language and emergent literacy outcomes for children diagnosed with SLI.

Because shared book reading helps to develop a number of early literacy skills (Bus, Van Ijendorn, & Pelligrini, 1995; Snow, Whitehurst & Lonigan, 1998), Lovelace and Stewart (2007) examined the extent to which using non-evocative, explicit referencing of print concepts during joint reading would facilitate knowledge of print concepts in children with language impairment. Studies have shown that the way book sharing is conducted between parents and the child is as important as the book reading (McNeil & Fowler, 1999; Justice & Ezell, 1998, 2000). It has been suggested that when caregivers use techniques to enhance children's responses to stories, such as commenting, book reading enhanced literacy knowledge. In Lovelace and Stewart (2007), the authors sought to determine if providing cues during joint reading that carried no obligation for the child to respond would stimulate development of print concept knowledge. The Concepts of Print Assessment (CPA) was developed and used during baseline probes as well as during post-experimental measures. The CPA was an adaption of Clay's (1972) Concepts About Print task which was a criterion-referenced tool that examined children's knowledge of print concepts in the context of shared book reading. It was modified for use in this study because the original task was developed for children who are already reading. The probe included 20 items that asked participants to perform tasks (e.g., "Show me a page in the book") and answer questions (e.g., "What does author mean?"). These items assessed print forms, print conventions, and book conventions.

Using a single-subject, multiple probe design, measures revealed both that knowledge of print concepts remarkably improved when the procedure was incorporated into shared reading and also that the children tested maintained the knowledge with repeated input. Results suggest that children with language impairment may benefit from explicit referencing strategies that can be easily incorporated into the context of storybook reading during language therapy. Specifically, data for all participants revealed that correct responding on print concept assessments improved markedly on the first probe administered.

A study reporting on a hybrid intervention approach to teaching children with SLI emergent literacy skills found that children improved significantly on clinical measures of phonological awareness, spoken vocabulary and oral narrative (Munro et al., 2008) after receiving the intervention. This was a hybrid intervention in that it combined individual targets such as phonological awareness and vocabulary knowledge within the context of whole language-oral narratives, storybook readings, and drill play. By using targeted intervention of specific literacy skills (i.e. rhyme awareness, letter recognition, phoneme segmentation) within a whole language approach, post-test measures showed the children's performance significantly improved on each clinical measure and PA measure. Effect sizes were calculated via eta squared using recommended cut-off values for small (.01), moderate (.06), and large effect size (.14). Posttest data indicate that there is a large effect size for changes in performance on all of the language and PA measures. While this study had the greatest number of participants (N=17) and effect size, it was a

feasibility study. Rather than establishing efficacy, feasibility studies are a necessary first step in determining whether an approach is clinically viable. However, the study did report that preschoolers with SLI showed significant improvements in spoken language and emergent literacy skills after a 6-week intervention. Table 3 provides an in-depth look into measures used for pre and post-test data.

Ezell and colleagues (2000) conducted a pilot investigation aimed to examine the efficacy of a parent-child book-reading program. The program was designed to enhance the early literacy skills of preschoolers with communication disorders. Four parents and their children completed a 5-week program which included parent training supplemented by individualized guided reading practice sessions to complete daily. Pre and post-test measures were compared and found that the program positively influenced children's print concept knowledge. Although the study involved a small sample of participants ($n = 4$), the validity for the program was improved by including multiple participants and materials. According to Horner et al. (2005), a single-subject research design demonstrates evidence based practice when the practice is operationally defined, the context is defined, the practice is implemented with fidelity, the results document the practice to be functionally related to change in dependent measures, and the effect is shown across a range of studies. The current study met all criteria except the last. It is typical for single subject studies to demonstrate effects with at least three different participants, although many single subject studies do not document effect sizes (Horner et al., 2005). Overall, Ezell et al. (2000) include many features that define single-subject

research and the indicators used to judge quality of the research validated the practice as evidence based.

Quality of the Evidence

A number of quality indicators were examined for the three studies reviewed. Indicators included description of participants, interventionists, intervention, use of reliable and valid test instruments, randomization to treatment and control groups, and reports of missing data and attrition. Table 2 summarizes the quality indicators for each of the reviewed studies. The papers reviewed had many positive qualities even though none met all of the listed criteria.

Munro et al. (2008) ran statistics that indicated a large effect sizes for changes in pre versus post-intervention measures. For all measures, effect sizes were .14 or higher. The hybrid nature of the intervention targeted both specific components of vocabulary knowledge and PA skills embedded in a whole-language context of storybook reading. Therefore, the participants were also indirectly being exposed to more print concepts through shared storybook reading. As a group, the children made significant improvements in expressive vocabulary, rhyme awareness, alliteration awareness, and on measures of listening comprehension and oral narratives.

Lovelace and Stewart (2007) demonstrated that, for SLPs, the use of non-evocative, explicit referencing provides a way for assisting preschoolers with SLI to acquire emerging literacy skills. A benefit of this approach is that it targets both oral and written language. Ezell and colleagues (2000) fostered parental strategies during shared book

reading. This study demonstrated the effectiveness of parent education: teaching them techniques to use during shared reading stimulated their children's acquisition of key literacy skills. The effectiveness of the intervention probably lies in the consideration of the family-centered nature of the program. The intervention included parent group sessions, weekly instructional plans for parents, parent training, and providing books to parents. It has been suggested that programs that focus on the family help maximize the parents' abilities and influence the child's development (Mahoney and Wheedon, 1997). When considering effect size of the current study, criteria posed in Horner et al. (2005) was employed in order to determine the effectiveness of the study. According to Horner et al. (2005), external validity in single-subject design is enhanced through the operational description of the participants, the context in which the study is conducted and the factors influence the participants' behavior prior to intervention. Based on the prior criteria, Lovelace and Stewart (2007) demonstrate adequate external validity.

Across the three studies, selection of assessment tools could have been improved. Munro et al. (2008) used 6 different outcome measures. However, due to the experimental nature of the intervention, the reliability and validity of the two measures that directly assessed emergent literacy outcomes were unclear. Ezell et al. (2000) and Lovelace and Stewart (2007) used more standardized measures of concepts of print. Another important factor to note among the three studies was incorporation of caregiver involvement. A combination of weekly clinical sessions and parent delivered home-based activities were used in Munro et al. (2008). The reported attendance rate and participation

in the home activity was 100%, which is not always feasible. The same is true of caregiver involvement in Ezell et al. (2000) study in which parents participated in 30-minute group parent training with didactic instruction, video training, and guided practice session. A larger scale study with parents from varying socio-economic and cultural backgrounds would be needed to determine the clinical viability of the home-based component.

Making the Evidence-Based Decision

In reviewing the search results, Grace realizes she has three different descriptions of programs for teaching emergent literacy skills to children with SLI, all of which showed promising effectiveness. While they differed in intervention approaches and emergent literacy outcomes, the three studies tackled preschool intervention with the rationale that emergent literacy is an important indicator of later reading success. Children with SLI show decreased emergent literacy skills in phonemic awareness, vocabulary growth, print concepts, and children with SLI often have later reading difficulties.

The language outcomes used in Lovelace and Stewart (2007) and Ezell et al. (2000) differed from those measured in Munro and colleagues' (2008) intervention. The latter study measured phonological awareness and vocabulary growth as indicators of emergent literacy skills while Lovelace and Stewart (2007) and Ezell et al. (2000) measured print concepts as future reading indicators. In order to use the present studies to determine which intervention approach would yield the most positive long-term effects for Chloe, the language and preliteracy outcomes had to be considered. Grace had to use her knowledge of print concepts and phonological awareness to determine which outcome (and hence which instructional focus) would be more beneficial for Chloe: direct PA instruction or instruction in written language awareness (print concepts) embedded in oral narratives and shared book reading.

Generally speaking, these two distinct but highly interrelated areas of development refer to acquisition of knowledge about the orthography and the phonology of one's own language (Justice & Ezell, 2001b). Prospective studies following preschool children into elementary school have shown consistently that performance on an array of emergent literacy tasks can reliably predict children's later literacy achievement (e.g., Catts, Fey, Zhang, & Tomblin, 1999; Justice et al., 2003). When considering the use of direct explicit phonological awareness instruction as the main intervention, Kaderavek and Justice (2004) noted that direct instruction demonstrates positive effects on children's readiness for learning to read when it is embedded in preschool routines and activities. Also, Justice et al. (2003) and Justice and Ezell (2004) reported that preschool programs which provide direct instruction and practice in name recognition and writing, alphabet recitation and recognition, awareness of book and print conventions, and PA games have been shown to lead to significantly greater growth in emergent literacy skills than programs that merely expose children to books and print. All three studies showed an increase in emergent literacy skills after the intervention period. The data Grace studied show that preschoolers with SLI make gains in emergent literacy knowledge with explicit PA targets and non-explicit joint reading. In the intervention studies, children were more likely to gain emergent literacy skills with a combination of direct intervention and non-explicit narrative discourse.

In deciding how to interpret these findings, the study that stands out in regard to quality indicators is that of Munro and colleagues. In this study, children improved in

phonological awareness, spoken vocabulary, and oral narrative. Taken together, the importance of both phonological awareness training and written language awareness training for later literacy achievement supports the need for increased focus on both areas as a proactive model for preventing reading difficulties (Justice et al., 2003). Therefore, the hybrid intervention described by Munro et al. (2008) should be Grace's first choice for Chloe's emergent literacy needs. Following this model, intervention should target both PA and vocabulary knowledge embedded within the context of narrative discourse. Furthermore, taking into consideration Chloe's interest in books and print, and her family's interest in further intervention, Chloe is a good candidate for presenting a home-based component as well.

With all of this in mind, Grace is confident in recommending Chloe to receive small group instruction in phonological awareness embedded in a narrative during classroom instruction. Grace is preparing an in-service training for the preschool and kindergarten teachers in order to train them. A sample small group activity would begin with a scripted oral narrative contextualized within a picture-based story, followed by drill play with cards or a board game. The scripted narratives used in Munro et al. (2008) were adapted from a series of published books (Sound Stories; Love and Reilly, 1999). These stories offer multiple discussion points for PA features such as rhyme and alliteration. They can also generate semantic features from within the pictures. The group leader should characterize the narratives by embedded PA and vocabulary-related utterances rather than direct PA questioning. This feature also incorporates the non-

evocative print referencing discussed in Lovelace and Stewart's (2007) intervention. The card or board game following the storybook should feature some of the lexical items from the narrative in order to reinforce and retrieve the PA and semantic features that were originally presented. Based on the similarity among the studies regarding implementing a home-based program, Grace also feels that Chloe's family can implement small changes into their nightly reading time. She is confident that generating a home-based component for Chloe's family to incorporate will only show positive benefits. Chloe's parents will be asked to spend 10-15 minutes each day with their child focusing on one of the books and an associated game. Grace will build a 'story pack' such as the ones described in Munro and colleagues' paper that contains therapy materials, a similar story book that features the same PA target as the one done in the classroom, and a drill-play card game. Grace will also compose a handout for parents that describe techniques to use during reading. The handout will encourage parents to comment about the pictures in order to generate an oral story and increase print concept knowledge (Lovelace & Stewart, 2007) rather than use direct questioning techniques. Based on the studies reviewed, the combination of drill play and non-evocative print referencing is better than a single-component intervention program and better addresses the present and future needs of preschoolers with SLI.

APPENDIX

Table 1.
Description of Included Studies

Reference	Design	Participants	Task or Treatment	Outcome Measures	Results/ Conclusion
Munro, Lee & Baker (2008)	Pre-and post-within subject design	Pre-school and early school-aged children N=17 Mean age: 67 months Language Impairment characterized by -Expressive Language Impairment -Receptive Language Impairment -Cognitive Abilities within normal limits -No previous emergent literacy intervention	Standard clinical assessments as well as experimental tasks were used to measure spoken language and emergent literacy skills at pre- and post intervention. Intervention: attended individual intervention sessions once a week for 6 weeks which included scripted oral narrative (picture based) with a PA target and a board game that followed the story	Phonemic Awareness Vocabulary knowledge (directly trained in the intervention) TONI-3 Test of Nonverbal Intelligence-3 rd Edition Test of auditory comprehension of Language-revised Action Picture Test GFTA-2, Goldman Fristoe Test of Articulation	Children significantly improved on clinical measures of phonological awareness, spoken vocabulary, and oral narrative.
Ezell, Justice, & Parsons (2000)	Pre and post within subject design	N= 4 preschoolers and their parent	Individual orientation <u>3 1-hour training sessions</u> 30-min group	Pre- and post test emergent literacy skills assessed by determining	Participation in the program positively influenced

		Recruited through the university's speech and hearing campus and were receiving speech-language therapy.	parent training with didactic instruction, video training focused on use of verbal and nonverbal print-referencing and 30-min guided practice session and 1 closing session <u>Home reading sessions:</u> Parents provided with 2 children's books each week to use in home-based shared reading sessions.	their print concepts and their receptive and expressive alphabet knowledge. <i>Children's Concepts about Print and Book Reading (CPBR)</i> Receptive/expressive knowledge of alphabet determined using individual flashcards depicting the first 10 letters of the alphabet.	children's concepts about print and that parents judged the program to be beneficial to themselves and their children.
Lovlace & Stewart (2007)	Single Subject, Multiple Probes Across Subjects	N=5 4 Females 1 Male Age: 4;0-5;0 Caucasian, Native English Speakers Identified as having the presence of language impairment and already had an IEP	13 weeks Intervention focused on IEP goals, including developmentally appropriate vocabulary words. The words were presented cyclically in succession for 2 weeks and were recycled after 10 weeks. In the final	<i>Concepts of Print Assessment (CPA)</i>	Performance on the CPA increased markedly for every participant with overall mean accuracy for the first probe in the experimental condition nearly double that

<p>containing semantic goals. Received language intervention services in the classroom.</p> <p>Scored 35% or less on the Concepts of Print Assessment (CPA).</p>	<p>10 minutes of the session, the investigator read a storybook aloud with explicit, scripted input on concepts of print. This included non-evocative strategies of commenting, tracking, and pointing to examples of 20-print related concepts based on targets on the CPA.</p>	<p>of baseline probe.</p>
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Table 2
Quality Indicators Rating

	Munro, Lee & Baker (2008)	Ezell, Justice & Parsons (2000)	Lovelace & Stewart (2007)
Randomization	0	0	0
Baseline Equivalence	2	0	2
Participant Description	2	2	2
Comparable Trainers	2	1	2
Treatment Detail	2	2	2
Treatment Fidelity	2	1	1
Blinding and Assessors	0	0	1
Reliable Outcome Measures	2	0	0
Generalized Performance	1	1	2
Effect Size Estimates	2	0	0

Note. Quality indicators based on Law, Garret, and Nye (2004) and What Works Clearinghouse.

Rating scale based on Law et al. (2004) (0 = inadequate, 1 = unclear, 2 = adequate, NA = not applicable because study is being evaluated on different criterion than that which it was designed for.

Table 3
Oral Language Outcomes

Lovellace and Stewart (2007)							
CPA: Percentage Correct							
	<u>Baseline</u>		<u>Post Experimental Condition</u>				
Brooke	10%		35%				
Vivian	25%		45%				
Monica	15%		65%				
Ivan	35%		55%				
Katrina	25%		80%				
<i>Note.</i> CPA-Concepts of Print Assessment							
Ezell, Justice, & Parsons (2000)							
Child	Client Age	<u>CPBR</u>		<u>Alphabet Knowledge</u>			
		Pre-test	Post-test	Pre-test	Post-test		
DA	4; 2	4	9	3	5		
BK	3; 7	5	10	2	2		
FM	3; 6	0	5	1	0		
MR	2; 8	1	1	2	0		
<i>Note.</i> CPBR, <i>Concepts about Print and Book Reading</i> (Clay 1972).							
Munro, Lee, & Baker (2008)							
	<u>Clinical Assessment Tasks</u>				<u>Experimental Tasks</u>		
	TTC	HPNT	The Bus Story (oral narrative information)	PIPA: rhyme awareness	VMI	Word Attribute Identification: PA attributes trained	Word Association Task: Syntagmatic responses
Pre-	491.9	36.2	16.7	5.0	82.0	51	
Post-	494.7*	49.4*	21.0*	7.8*	78.9	78*	Z=-3.51
<i>Note.</i> *Statistical significance at p=0.05 with Bonferroni correction.							
TTC, <i>The Token Test for Children</i> (Di Simoni 1978); HPNT, <i>Hundred Picture Naming Test</i> (Fisher and Glenister 1992); <i>The Bus Story</i> (Renfrew 1995); PIPA, <i>The Preschool and Primary Inventory of Phonological Awareness</i> (Dodd et al. 2000); VMI, <i>The Developmental Test of Visual-Motor Integration</i> (Beery and Buktenica 1989)							

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