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## An Exploratory Study of Emergent Literacy Intervention for Preschool Children with Language Impairments

John K. McNamara

*Brock University, [jmcnamara@brocku.ca](mailto:jmcnamara@brocku.ca)*

Sherri-Leigh Vervaeke

*Brock University*

Jackie Van Lankveld Speech Services Niagara

### Abstract

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## **An Exploratory Study of Emergent Literacy Intervention for Preschool Children with Language Impairments**

### **Cover Page Footnote**

This research was supported by a grant from the Canadian Council on Learning. The authors would like to thank Dr. Laura Justice for her assistance with offering the Read It Again! program as a model for this project and for her comments on the manuscript drafts. We also thank the staff of Speech Services Niagara for their support and involvement in the study.

## **An Exploratory Study of Emergent Literacy Intervention for Preschool Children with Language Impairments**

*John K. McNamara*  
*Sherri-Leigh Vervaeke*  
*Brock University*  
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*Speech Services Niagara*

### **Abstract**

*This exploratory study measured the efficacy of an emergent literacy intervention program designed to support preschool children who have been identified as having specific language impairments. Specifically, the study compares two intervention approaches — an experimental emergent literacy intervention and a traditional intervention based on traditional models of language therapy. It was hypothesized that the explicit emergent literacy approach would result in significant gains in phonological and print awareness skills relative to a less structured traditional intervention approach. Results indicated that children in the emergent literacy intervention experienced greater gains in pre-literacy measures. The results hold important implications for service delivery models aimed at supporting preschool children with language impairments.*

It is estimated that 5-8% of preschool children experience significant speech and/or language delays that often persist into the school years and are associated with lowered academic achievement as well as psychosocial problems (U.S. Preventive Services Task Force, 2006). Research suggests that it may be children with specific language difficulties that are particularly at-risk for developing later reading difficulties and disabilities (Catts, Fey, Tomblin, & Zhang, 2002; Jenkins et al., 1994; McNamara et al, in press; Rescorla, 2002). Specific language impairments are typically characterized by difficulties with expressive (e.g., late talkers) and/or receptive vocabulary (e.g., oral comprehension). Recognizing the relationship between early language and reading, researchers have begun to explore the efficacy of specific interventions aimed at supporting young children with language delays. The result of such research has been a call for earlier identification and effective programming for preschool children with language delays — children who are at increased risk for developing reading difficulties. Effective interventions would enable professionals to limit the development of these problems and put at-risk children back on the path toward normal reading development (Hurford & Schauf, 1994; Justice, Invernizzi, & Meier, 2002; Lyon et al., 2001; Torgesen, Wagner, & Rashotte, 1994). The current study explores the efficacy of an emergent literacy intervention aimed at supporting preschool children with specific language delays.

When exploring preschool literacy, it is important to consider that most children are not yet formally reading. That is to say that most children are learning pre-reading skills such as letter identification, sounds and letter manipulation, print and word awareness, and basic oral vocabulary. These pre-reading skills may be considered to represent children's emergent literacy skills. Teale and Sulzby (1986) proposed the term *emergent literacy* to define the developmental period from birth through age six when children are "in the process of becoming literate" (p. xix). They argued that during this phase, children are developing, learning and acquiring necessary skills in written language, even prior to being exposed to formal schooling (Teale & Sulzby, 1986). This perspective conceptualizes literacy acquisition as a continuously developing phenomenon, rather than an ability that is acquired when children enter school (Lonigan, Burgess, & Anthony, 2000). Conceptualizing emergent literacy in this way invites questions about the relationship between oral language and literacy development. The following sections attempt to clarify the relationship between early language, language impairments, and reading.

In general, early language impairments may be conceptualized as encompassing two broadly based constructs — expressive and receptive language. Children with expressive language impairments often understand language

better than they are able to communicate. Expressive language impairments can be developmental (i.e., present from birth) or acquired (i.e., brain injury). Younger children with expressive language delays are characterized by a lack of expressive vocabulary. They may use gestures or facial expression to communicate, but lack the verbal output to make their needs and wants known. An expressive language delay may also manifest itself as a reduced number of words (e.g., one-word utterances and limited word productions at 2 years of age) or be a function of impaired grammatical development such as syntax or morphological errors or omissions. Children with expressive language impairments often do not talk much, although they generally understand language that is addressed to them. Causally, it is assumed that inherited expressive language impairments are associated with a functional neurological processing problem (Vargha-Khadem et al., 1998). This neurological impairment is observed in children who experience problems retrieving and organizing words and sentences when expressing thoughts and ideas (Morales, 2007).

With a receptive language impairment children often do not understand language as they are presented with it. Here, it is assumed that a neurological processing problem creates problems for children understanding what is said to them (Vargha-Khadem et al., 1998). In many instances, children with receptive language difficulties also have expressive language impairments simply because they cannot express what was not processed at the input stage of processing. Both expressive and receptive language impairments occur in approximately 5-10% of the general population (National Institute of Health, 2007).

Research has suggested that both expressive and receptive language impairments can impact school-aged reading by impacting phonological awareness (Cooper, Roth, Speece, & Schatschneider, 2002; Metsala, 1999; Snow, Tabers, Nicholson, & Kurland, 1995). In other words, there may be a hierarchical relationship between three constructs whereby expressive and receptive language impairments affect phonological awareness development, which in turn impacts reading. In this way, language development may be thought of as an early component of the emergent literacy process described previously by Teale and Sulzby (1986). In a previous study using a related sample to the current study (McNamara et al., in press), researchers asked whether certain profiles of children referred for speech and/or language were more at-risk for becoming poor readers. The researchers explored how three profile groups of children, those with language impairments only, those with speech impairments only, and those with both language and speech impairments, scored on measures of early phonological awareness and emergent literacy. The measures of phonological awareness used in their study were Upper Case Letter Identification, Beginning Sound Awareness, Print and Word Awareness, and Rhyme

Awareness from the Pre-K version of the Phonological Awareness Literacy Screening (PALS-PreK). The PALS-PreK measures have been established as significant predictors of later reading difficulties (Invernizzi, Sullivan, & Meier, 2001). The results of this study indicated that children with both expressive and receptive language impairments were most at-risk for future reading difficulties as defined by their achievement on the PALS-PreK measures of phonological awareness and emergent literacy. A further finding in this study suggested that when children with language impairments had comorbid speech impairments, the severity of the speech impairment did not play a significant role in children's PALS-PreK scores. The researchers concluded that children with language impairments, with and without comorbid speech impairments, were most at-risk for future reading difficulties. Further to this, speech impairments had little impact on children's phonological awareness skills. This pattern of results is common in early language research. For instance, Metsala (1999) found a strong correlational relationship between receptive language skills (i.e., receptive vocabulary size) and phonological awareness in a sample of 4- to 6-year old children. Similar findings were suggested by Snow et al. (1995) who found that semantic skills associated with expressive language were significantly correlated with the phonological skills of initial and final sound identification. More recently, Cooper et al. (2002) found both expressive and receptive language skills were significant predictors of phonological awareness skills in 4- and 5-year-old children, even more so than home background factors. In general, researchers argue that within clinical populations of children referred for speech and language difficulties, it is specifically the language impairment that may be the main contributing factor leading to poor literacy outcomes later in life (Catts, 1993; Catts et al., 2002; Nathan, Stackhouse, Goulandris, & Snowling, 2004). Specifically, it is because of the critical hierarchical link between language development and phonological awareness that children with language difficulties are particularly at risk for poor literacy outcomes.

The current study is concerned with the effect of an emergent literacy intervention on preschool children with language impairments. Research has only begun to explore what type of intervention is most successful in supporting such children. Most of the interventions in use are based on the underlying assumption that language impairments affect phonological awareness, which is an important precursor to reading. Schuele, Spencer, Barako-Arndt, and Guillot (2007) suggest that early intervention is most effective when it is targeted at a child's specific developmental level. In other words, intervention is effective when it builds the skills necessary to move along the developmental continuum toward increasingly complex reading. The specific skill-set necessary in such intervention should include early aspects of phonological aware-

ness and the promotion of print awareness (Schuele et al., 2007). However, it is suggested also that when working with children who are at risk for developing poor phonological awareness, this type of intervention should be taught explicitly (Snow et al., 1998). That is, targeted phonological and print awareness skills should be taught through a direct instruction approach explicitly teaching the targeted skills within books and literacy-based activities (Schuele et al., 2007). Effective emergent literacy interventions for preschoolers at risk for language impairments difficulties are based on the premise that children and capable others (i.e., Speech-Language Pathologists [SLPs], parents) should participate in mediated interactions with books and other literacy-related artefacts (Justice & Ezell, 1999). These literacy-based interactions function to improve emergent literacy skills by engaging the child and providing mediation and scaffolding through the adult partner (Justice & Ezell, 1999). It has been recommended that emergent literacy interventions utilize such adult-mediated literacy-based interactions in order to both implicitly and explicitly improve children's emergent literacy knowledge (Justice, Chow, Capellini, Flanigan, & Colton, 2003). The experimental emergent literacy intervention being investigated in the present study combines an embedded and explicit approach to enhancing emergent literacy skills in preschoolers with language impairments (Justice & Kaderavek, 2004). The experimental intervention will take the form of involving children in meaningful literacy-based interactions with their SLP but will also have SLPs following lesson plans focused on providing opportunities for explicit teaching through structured literacy-based tasks.

The specific emergent literacy domains that are emphasized in the experimental intervention are phonological awareness, print knowledge, and narrative abilities; these domains have been shown to be critically associated with later literacy achievements (Lomax & McGee, 1987; Scarborough, 1998), and have been recommended as areas to be targeted for development in interventions for children with language impairments (Boudreau & Hedberg, 1999). The fourth emergent literacy skill emphasized in the intervention is oral vocabulary, as oral vocabulary skills are often weak in children with language impairments (Gathercole, 1993; Haynes, 1992), and early oral vocabulary skills are often predictive of later reading (Scarborough, 2002).

### *Current Service Models*

The current study is situated in Ontario where over 60,000 preschool children receive intervention for speech and language difficulties. Historically, SLPs in general have offered traditional therapeutic approaches to preschool children that have focused primarily on their language and speech needs with no direct assessment or facilitation of their emergent literacy skills. With the

recent growth in research of the past 10 years pertaining to the link between language and literacy, there has been a movement by SLPs to incorporate the facilitation of literacy skills into their sessions. In the United States, clinicians are governed by their licensing body, the American Speech-Language-Hearing Association (ASHA). In 2001, ASHA defined the scope of practice of speech-language pathology to include “providing services for disorders of language, including comprehension and expression in oral, written, graphic, and manual modalities; language processing; pre-literacy and language-based literacy skills, including phonological awareness” (ASHA, 2001). An important aspect of this definition is the inclusion of work in pre-literacy within the scope of practice of the SLP. To date, there is no consistent proven model adapted by SLPs that outlines the most effective methods of facilitating literacy development while simultaneously focusing on a child’s language skills. Currently there are varying levels of literacy practices within the field of speech-language pathology. The majority of these practices do include a focus on oral comprehension and vocabulary and morphological development; however, many do not include components of early literacy such as phonological and print awareness, and further, do not include the practice of teaching these skills using books and literacy-based activities. With such a large number of children across the province receiving speech and language therapy, it is essential that these services strive to develop a standard practice of assessment and intervention that includes components of print and phonological awareness — skills that set the foundation for future reading achievement.

### *This Study*

The current study investigates an emergent literacy-based intervention designed to promote phonological and print awareness within the context of books and literacy-based activities. Specifically, the study compares two intervention approaches — an experimental emergent literacy intervention and a traditional intervention based on traditional models of speech and language therapy. It was hypothesized that the explicit emergent literacy approach would result in significant gains in phonological and print awareness skills relative to a traditional intervention approach with no such literacy component.



## **Method**

### *Participants*

The participants of this study were 26 preschool children (18 boys and 8 girls) born in 2002 referred for speech-language services to Speech Services Niagara (SSN). The discrepancy between boys and girls reflects a typical difference in prevalence rates of referrals for early language impairments (Tomblin et al., 1997). Participants were between the ages of 37 and 59 months at their first assessment session with a mean age of 49.4 months. Age and sex were entered as covariates within all analyses in the current study. Participating children were from a primarily middle-class suburban area in Southern Ontario. To counteract the small sample size in this study we attempted to narrow the sample's characteristics to address potential threats to reliability. As such, children with low incidence disabilities or significant ESL difficulties were not included as participants. Further to this, children with significant speech or articulation impairments were not included in the study. Articulation impairments differ from language impairments in that they may be defined as output problems with the way sounds are formed and strung together, usually characterized by substituting one sound for another (wabbit for rabbit), deletion of a consonant (ha for hat), or distorting a sound (lateralization; ASHA, 2007).

In general, all children participating in this study were identified as having early language impairments as their primary referral characteristic. Language impairments were defined by children's performance on the Clinical Evaluation of Language Fundamentals — Preschool: Second Edition (CELF-P2), a clinical tool for identifying and diagnosing language deficits in children ages 3-6 years. The CELF-P2 was administered individually to all children by a certified Speech and Language Pathologist. Language impairments were defined by a Core Language Index score on the CELF-P2 that fell below the 34<sup>th</sup> percentile. The Core Language Index score is a measure of general language ability that quantifies a child's overall language performance. The score is calculated by summing the CELF-P2 Receptive and Expressive Language composite scores. Using Cronbach coefficient alpha, the Core Language Index has an internal consistency reliability of  $\alpha = .93$ . Both the Receptive and Expressive Language composite scores are comprised of three subtests.

*Receptive Language Index.* This composite score is a measure of listening and auditory comprehension. It is derived by summing the scaled scores from the Sentence Structure, the Concepts and Following Directions, and the Basic

Concepts subtests. The Receptive Language Index has an internal consistency reliability of  $\alpha = .94$ .

*Expressive Language Index.* This composite score is a measure of expressive language skills. It is derived by summing the scaled scores from the Word Structure, the Expressive Vocabulary, and Recalling Sentences subtests. The Expressive Language Index has an internal consistency reliability of  $\alpha = .94$ .

## Procedures

A between-subjects repeated measures design exploring two intervention programs served as the framework for this study. As children entered the study, they were randomly assigned to either the experimental ( $n = 13$ ) or traditional intervention group ( $n = 13$ ). Before receiving their respective intervention, all children were assessed with pre-test measures from the Phonological Awareness Literacy Screening – Pre-kindergarten (PALS-PreK; Invernizzi et al., 2001). The PALS-PreK measures have been established as significant predictors of later reading difficulties (Justice et al., 2002). The PALS-PreK is a phonological awareness screening tool that measures preschoolers' developing knowledge of important literacy fundamentals and offers guidelines to teachers for tailoring instruction to children's specific needs. The assessment reflects skills that are predictive of future reading success. The specific subtests of the PALS-PreK used in this study include:

*Upper-case Letter Identification.* In this subtest children were shown all 26 upper-case letters of the English alphabet in random order and asked to give the letter name. Responses were scored as correct if they corresponded with the appropriate letter name.

*Beginning Sound Awareness.* In this subtest the examiner said the name of a picture and asked the child to produce the beginning sounds for words that start with /s/, /m/, and /b/.

*Print and Word Awareness.* In this subtest the examiner read a familiar nursery rhyme printed in a book format and asked the child to point to different components. In this natural book-reading context children demonstrated their awareness of print concepts such as directionality and the difference between pictures, letters, and words.

*Rhyme Awareness.* In this subtest the examiner showed the child pictures and named each picture. The examiner then asked the child to point to the picture that rhymes with the first one.

Following group assignment and pre-testing, children completed a 12-week intervention period. Children participated in this intervention for 45 minutes each week over the course of 12 weeks. Children worked individually with their assigned Speech and Language Pathologist (SLP). A total of six SLPs participated in the study and each was assigned approximately an equal number of children receiving the experimental and traditional intervention. For example, one SLP worked individually with three children who were given the experimental therapy regime, and worked individually with another three children who received the traditional therapy regime. Therefore, it was important that each participating SLP was knowledgeable of both intervention approaches. To ensure this, all SLPs participated in intensive training for each of the intervention approaches. Furthermore, as suggested by Troia (1999), a random selection of therapy sessions were videotaped. Due to time constraints and accessibility of equipment not all sessions were taped. The tapes observed were judged to be typical performance of the SLPs; adhered strictly to inclusion and exclusion criteria (e.g., experimental sessions must include at least two literacy targets per session, one book per session, and control sessions must not include print, books, or explicit teaching of literacy targets); and maintained continuity within each approach. However, it was recognized that with the applied nature of this research, threats to internal validity and external reliability were inherently present; these issues are addressed in the concluding section on study limitations.

### *Intervention*

Both the experimental and traditional intervention program consisted of 12 sessions held once per week for approximately 45 minutes. All sessions were conducted in small private rooms at one of the clinical sites of Speech Services Niagara (SSN) and were conducted by a certified Speech and Language Pathologist. Each SLP had graduate level training in intervention principles for working with children with speech and language impairments. For the duration of the intervention period, children's parents, caregivers, and educators were blind to the study's design.

*Experimental Intervention Program.* The experimental intervention program used in the study included an adaptation of a published program called *Read It Again!* language and literacy supplement for preschool programs, designed by Justice, McGinty, Beckman, and Kilday (2006). *Read It Again!* was designed to build children's language and literacy competencies in four areas transcending both oral language and emergent literacy: vocabulary, narrative, phonological awareness, and print knowledge. The National Reading Panel suggests that these four areas of early language and literacy form a foundation upon

which the child will later build academic proficiency. Furthermore, Snow et al. (1998) suggest that the preschool period is an active time for growth. Justice et al. (2006) write that early difficulties in any one of these areas can undermine early foundations for reading and set the stage for a host of ongoing challenges that become more difficult to remediate over time. The current study's experimental intervention included the four areas of focus from the *Read It Again!* program (Vocabulary, Narrative Skills, Phonological Awareness, and Print Knowledge) and the activities and books involved in their facilitation (please refer to the *Read It Again!* manual [Justice et al., 2006] for complete details).

For the purposes of this study, the Vocabulary component covered a variety of speech components that were related to the content of the book. Vocabulary was highlighted after the story was read and explicit instruction was used in review of the story. Words were defined (e.g., scrumptious) and the children were often asked to repeat the words. The target words were then related to something that happened in the child's life. Narrative aspects of the study included identifying the characters and events in a story and having the child retell the story. The Phonological Awareness components of the experimental intervention involved rhyming, segmenting and syllable blending, sound letter correspondence, and elision. The final area of focus, Print/Alphabet Knowledge, concentrated on left to right directionality of the print, locating the pictures vs. words, book concepts (front, back, author), and letter naming.

During each therapy session, the SLP followed a specific outline adapted from the *Read It Again!* program. The total number of sessions was reduced from the original program from 24 to 12 and utilized 6 book themes instead of 12. However, all four literacy domains remained intact with two of these four domains addressed for 15 minutes of the 45-minute session for one week (e.g., print awareness and vocabulary), and then the other two in the following week (e.g., narrative skills and phonological awareness) using the same book. The remaining 30 minutes were spent focusing on the child's specific language-goals as identified in the intake screening session. However, the SLP worked on language goals within a literacy-targeted environment, addressing the four literacy domains while incorporating books, letters, and print. For example, material used to elicit language targets would be embedded with print. Direct instruction was utilized in order for the child to notice the print, with comments regarding words vs. pictures, beginning and end of word, what the word said, and a description of the word in context.

*Traditional Intervention Program.* Traditionally, preschool language interventions provided to children with language impairments at SSN were based on eclectic approaches that included repetition-and-practice activities aimed

at improving children's receptive and expressive language needs. However, traditional interventions were not typically embedded within literacy-based activities but rather the focus was on eliciting the targets within a communicative interaction with no explicit emergent literacy targets. Within the traditional intervention approach, an SLP would respond to specific language-based needs of children and structure therapy activities accordingly. For instance, to meet a child's specific need with expressive vocabulary, an SLP may explicitly model the use of the desired target word. This would be done without the use of a book or object. For example, an SLP may be working on expressive use of auxiliary verbs (e.g., is/are with verbs). The therapist would model the sentence emphasizing the auxiliary verb (e.g., "he is walking") and showing a corresponding picture or objects. In general, the traditional intervention program did not include the four literacy domains of the *Read It Again!* emergent literacy program. Weekly homework was assigned to both groups. Literacy homework was standardized and sent home weekly with each family. Families in the control group also received homework assignments that were particular to their language targets for treatment but did not include any emergent literacy concepts.

## **Results and Discussion**

First, data were analyzed with a repeated measures design to investigate the influence of both intervention programs as a whole. In the repeated measures multivariate analysis, time (pretest, posttest) was entered as the within-subjects factor and intervention program (experimental, traditional) as the between-subjects factor. Our first research aim was to investigate the extent to which time emerged as a main effect. In this analysis, the four measures from the PALS-PreK were entered as dependent variables. Table 1 illustrates the pre- and posttest means and standard deviations on the four PALS-PreK measures across both intervention programs.

Visual inspection of the pre- and posttest mean scores indicate that both intervention groups experienced increases on all of the PALS-PreK measures. The results of the repeated measures computations indicated a main effect for time  $F(4, 21) = 44.15, p < .001$ , suggesting that indeed, all children, regardless of what type of intervention they received, showed a significant increase in their PALS-PreK scores from pretest to posttest,  $\eta_p^2 = .89$ . Results also indicated a smaller yet significant main effect for intervention program  $F(4, 21) = 3.33, p = .029$ . This result suggested that both intervention groups differed

**Table 1**  
***Emergent Literacy and Traditional Intervention Groups Pre- and Posttest Means and Standard Deviations on the PALS Pre-K Measures.***

	Emergent Literacy Intervention Group				Traditional Intervention Group			
	Pretest		Posttest		Pretest		Posttest	
	M	SD	M	SD	M	SD	M	SD
PALS-PreK Upper-case Letter ID	3.85	5.56	18.38	8.51	3.08	4.03	6.69	3.96
PALS-PreK Beginning Sound Awareness	0.69	0.94	6.38	3.84	1.46	1.05	2.84	2.03
PALS-PreK Print and Word Awareness	2.84	1.72	7.38	1.71	2.15	1.41	5.07	2.32
PALS-PreK Rhyme Awareness	1.23	1.36	4.77	2.12	0.92	1.26	3.46	2.40

from one another in how much they increased in their PALS-PreK scores,  $\eta_p^2 = .39$ . Further to this, a significant Time X Intervention program interaction also emerged  $F(4, 21) = 6.79, p = .001$ . In general, the results here suggest that children in both the experimental and traditional intervention program made significant gains across all four PALS-PreK measures. To explore the above findings for each individual measure of the PALS-PreK univariate analyses from the repeated measures design were evaluated. Results indicated a significant main effect for intervention program results for three of the four PALS-PreK measures: Upper-case letter identification,  $F(1, 24) = 18.99, p < .001$ ; beginning sounds,  $F(1, 24) = 12.07, p = .002$ ; and print awareness,  $F(1, 24) = 8.48, p = .05$ . There was no significant difference between intervention group over time for the PALS-PreK rhyme awareness,  $F(1, 24) = 3.25, p = .259$ .

The results above suggest that in general, children benefited from intervention. However, the results, along with visual inspection of the pre- and

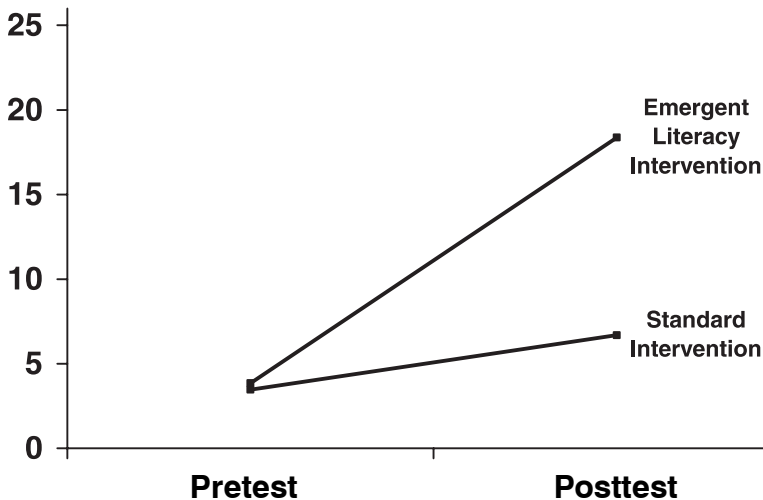
posttest means, suggest also that children in the experimental program may have increased in their PALS-PreK scores more significantly than children in the traditional intervention program. To test this assumption further, between-group univariate analyses were computed for each PALS-PreK measure prior to and after intervention.

### *PALS Upper Case Letter Identification*

Prior to receiving intervention, no significant between-group difference was found for PALS-PreK Upper Case Letter Identification,  $F(1, 24) = 0.15$ ,  $p = .692$ . However, after receiving intervention, a significant between-group difference emerged,  $F(1, 24) = 20.16$ ,  $p < .001$ , reflecting a moderately large difference between groups,  $\eta_p^2 = .46$ . The pre- and posttest differences are illustrated in Figure 1.

It was also important to explore the intervention effect for each individual group. Such an analysis enabled us to investigate changes to within-group scores on the PALS Upper Case Letter Identification measure after groups received intervention. Paired-sample t-tests were computed for each

**Figure 1**  
*Pre- and Posttest Means for Upper-case Letter Identification.*



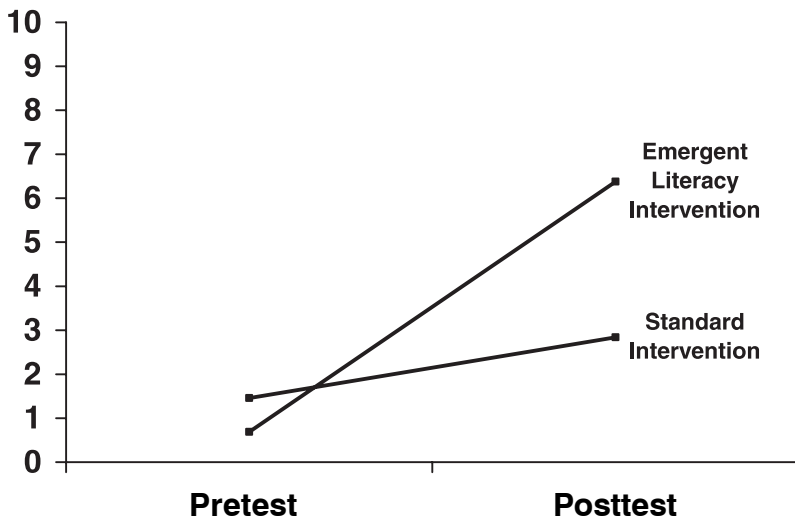
intervention group using pre- and posttest scores on the PALS Upper Case Letter Identification measure. The group of children in the traditional intervention program showed a significant change in score from pre- to posttest,  $t(12) = -3.15, p = .008$ . However, the magnitude in growth was substantially larger for the experimental intervention group,  $t(12) = -6.52, p < .001$ . These results suggest that children who participated in the experimental intervention program showed the most substantial gains in upper case letter identification.

### *PALS Beginning Sound Awareness*

Prior to receiving intervention, no significant between-group difference was found for PALS-PreK Beginning Sound Awareness,  $F(1, 24) = 3.84, p = .162$ . However, after receiving intervention, a significant between-group difference emerged,  $F(1, 24) = 8.61, p < .005$ , reflecting a moderate difference between groups,  $\eta_p^2 = .26$ . The pre- and posttest differences are illustrated in Figure 2.

It was also important to explore the intervention effect for each individual group. Such an analysis enabled us to investigate changes to within-group scores on the PALS Beginning Sound Awareness measure after groups received

**Figure 2**  
*Pre- and Posttest Means for Beginning Sound Awareness.*





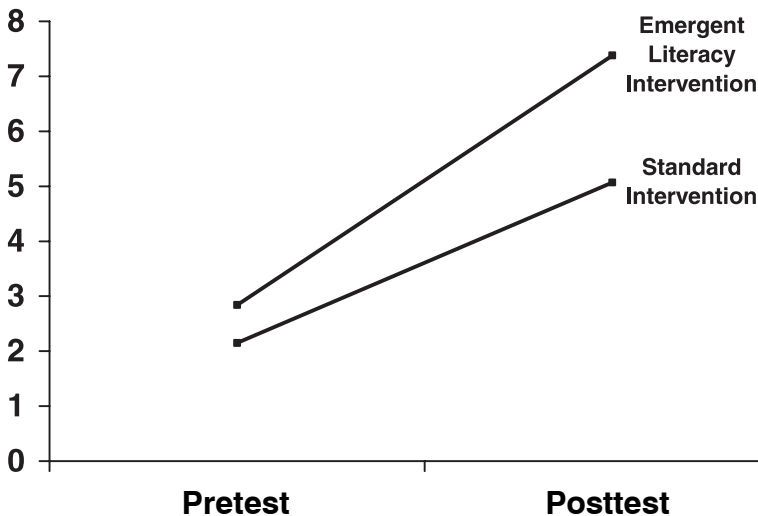
intervention. Paired-sample t-tests were computed for each intervention group using pre- and posttest scores on the PALS Beginning Sounds Awareness measure. The group of children in the traditional intervention program showed a significant change in score from pre- to posttest,  $t(12) = -2.63, p = .022$ . However, the magnitude in growth was substantially larger for the experimental intervention group,  $t(12) = -5.07, p < .001$ . These results suggest that children who participated in the experimental intervention program showed the most substantial gains in beginning sounds awareness.

### *PALS Print and Word Awareness*

Prior to receiving intervention, no significant between-group difference was found for PALS-PreK Print and Word Awareness,  $F(1, 24) = 1.26, p = .273$ . However, after receiving intervention, a significant between-group difference emerged,  $F(1, 24) = 8.31, p < .005$ , reflecting a moderately large difference between groups,  $\eta_p^2 = .26$ . The pre- and posttest differences are illustrated in Figure 3.

It was also important to explore the intervention effect for each individual group. Such an analysis enabled us to investigate changes to within-group

**Figure 3**  
*Pre- and Posttest Means for Print and Word Awareness.*

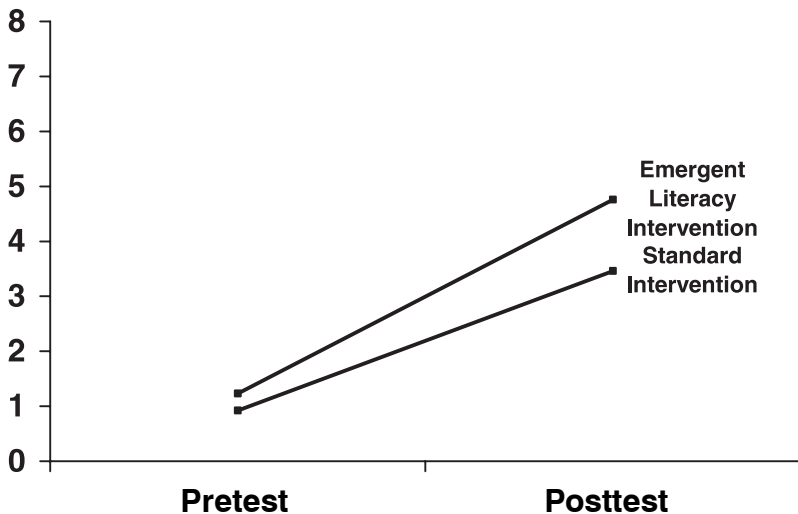


scores on the PALS Print and Word Awareness measure after groups received intervention. Paired-sample *t*-tests were computed for each intervention group using pre- and posttest scores on the PALS Print and Word Awareness measure. The group of children in the traditional intervention program showed a significant change in score from pre- to posttest,  $t(12) = -5.44, p < .001$ . However, the magnitude in growth was substantially larger for the experimental intervention group,  $t(12) = -7.24, p < .001$ . These results suggest that children who participated in the experimental intervention program showed the most substantial gains in print and word awareness.

### *PALS Rhyme Awareness*

As described previously, no main effect for the Rhyme Awareness measure emerged and therefore, no univariate analyses were computed. However, to illustrate the group change over time, pre- and posttest differences are illustrated in Figure 4.

**Figure 4**  
*Pre- and Posttest Means for Rhyme Awareness.*



### *Clinically Significant Gains*

For three of the four PALS-PreK subtests used in this study, the emergent literacy intervention group experienced statistically significant gains compared to the traditional intervention group. However, it was important to consider whether such gains were also clinically significant. In other words, it was important to ask whether the significant increase in scores for children, particularly in the emergent literacy group, reflect an increase whereby posttest scores were within achievement levels commensurate with normally-achieving 4-year old children. To answer this question pre-and posttest mean scores for each PALS-PreK subtest were compared to the Spring Developmental Range scores reported in the PALS-PreK technical data (Invernizzi et al., 2001). The reported Spring Developmental Range scores were established by Invernizzi et al. who examined PALS-PreK scores of approximately 350 children who were identified as successful readers in first grade. In general, the reported range scores were not standard scores but rather scores that reflect the range of scores that could be considered typical for 4-year old children. As such, Invernizzi et al. caution that these range scores should not be used as diagnostic benchmarks but rather as a guide to identify children who could require early support with emergent literacy. Spring Developmental Range scores for the PALS-PreK subtests used in this study are illustrated in Table 2.

**Table 2**  
*Spring Developmental Range Score for the PALS-PreK Subtests.*

	Spring Developmental Range Scores	Maximum Score
PALS-PreK Upper-case Letter ID	12 - 21	26
PALS-PreK Beginning Sounds Awareness	5 - 8	10
PALS-PreK Print and Word Awareness	7 - 9	10
PALS-PreK Rhyme Awareness	5 - 7	10

As noted in Table 1, pretest scores on Upper Case Letter Identification for children in both the emergent literacy intervention ( $M = 3.85$ ) and traditional intervention ( $M = 3.08$ ) fell significantly below the reported developmental range scores. However, after receiving intervention, children in the emergent literacy intervention group increased their mean Upper Case Letter Identification scores to within the Spring Developmental Range scores ( $M = 18.38$ ), whereas children in the traditional intervention group had posttest scores that remained below the Developmental Range scores ( $M = 6.69$ ). This finding suggests that children receiving the emergent literacy intervention increased their Upper Case Letter Identification scores to be commensurate with developmentally appropriate levels.

Prior to receiving intervention, both intervention groups had pretest scores on the PALS-PreK Beginning Sound Awareness subtest that fell significantly below the reported Developmental Range scores: emergent literacy intervention ( $M = 0.69$ ) and traditional intervention ( $M = 1.46$ ). However, after receiving intervention children, in the emergent literacy intervention group increased their mean Beginning Sound Awareness scores to within the Spring Developmental Range scores ( $M = 6.38$ ), whereas children in the traditional intervention group had posttest scores that remained below the reported range ( $M = 2.84$ ). This finding suggests that children receiving the emergent literacy intervention increased their Beginning Sound Awareness scores to be commensurate with developmentally appropriate levels.

Prior to receiving intervention, both intervention groups had pretest scores on the PALS-PreK Print and Word Awareness subtest that fell significantly below the reported Developmental Range scores: emergent literacy intervention ( $M = 2.84$ ) and traditional intervention ( $M = 2.15$ ). After receiving intervention, children in both intervention groups increased their mean Print and Word Awareness scores to within the Spring Developmental Range scores, although children in the emergent literacy group had posttest scores firmly within the upper levels of this range ( $M = 7.38$ ), whereas children in the traditional intervention group had posttest scores that were at the bottom of the reported range ( $M = 5.07$ ).

A similar trend was noted for the PALS-PreK Rhyme Awareness subtest, although, as illustrated in Table 1, neither the pre- or posttest scores for either group fell within the reported Spring Developmental Range scores.

## **Conclusion**

Research on preschool children with language impairments has suggested that these children are at significant risk for developing reading difficulties later in their school experience (Schuele et al., 2007). Supporting these children early is crucial and the results here suggest that, in general, effective intervention will improve children's pre-reading skills. Children in this study received either a traditional intervention therapy where language goals were facilitated without the use of print-based material, nor explicit direction on literacy domains, or in an experimental emergent literacy intervention where language goals were facilitated within a literacy-targeted environment. Both groups benefited from intervention in that children in the traditional and experimental intervention program showed significant gains in their emergent literacy skills as measured by the PALS-PreK. However, children receiving a more structured literacy-based intervention program showed greater gains in their posttest emergent literacy skills. Specifically, compared to those children receiving the traditional intervention, children receiving intervention that was adapted from *Read It Again!* (Justice et al., 2006) showed more substantial gains in their upper-case letter identification, beginning sound awareness, and print and word awareness. This study responded to a need to bridge language and literacy within preschool language services. Specifically, the emergent literacy intervention used in this study included a focus on meeting preschool children's language needs within a literacy-targeted environment. The results of this study confirm the value of focusing on narrative skills, vocabulary, phonological awareness and print knowledge with children identified as experiencing language delays in order to facilitate development of their emergent literacy skills.

Although the current exploratory study has a relatively small sample size, the results point to important policy implications. First, the general focus on this study was bridging the concepts of early language and literacy. Often, it can be thought that oral language in young children is a concept that is separated from later literacy skills. The young children participating in the current study were referred to Speech Services Niagara with receptive and/or expressive language difficulties. It is often assumed that such difficulties are simply oral language issues; however, research has demonstrated that children showing early oral language impairments are also at significant risk for later reading difficulties (Justice et al., 2003; McNamara et al., in press). Furthermore, the results here suggest that a targeted literacy-based intervention for children with language impairments can be particularly effective in promoting emergent literacy skills, such as print and phonological awareness, while simultaneously addressing children's language needs. Further, it should be

recognized that the role of the Speech Language Pathologist is evolving and should include a focus on promotion of literacy needs in preschoolers with language impairments.

The current study has some limitations. First, this research is applied and as such has some inherent threats to reliability. For instance, the therapy was carried out by six participating SLPs and assumingly, there were implicit differences in how the therapy was delivered to each child. To counteract this threat, each SLP was charged with an approximately equal number of randomly assigned children in each of the two intervention groups. Also, each SLP had one of their experimental and traditional therapy sessions videotaped to ensure continuity of the content and delivery method of both interventions. A second and related limitation centres around the notion that each child participating in the study had inherent individual needs. To address this, children were chosen as participants based on their specific language impairment. Children with significant speech or articulation impairments were not included in the study. Narrowing the sample's characteristics helped control somewhat for individual differences. However, such differences are inevitable in this type of research and should be recognized as such. Third, there were school and neighbourhood characteristics associated with each that may have contributed to the pre- and posttest scores. For instance, most of the children participating in this study were also participating in an early learning program such as junior kindergarten or a preschool program. Certainly, such programs are teaching concepts such as letter identification. However, our random assignment protocol was designed to address this potential confound. In general, applied research holds inherent limitations, however, recognizing these and their impact on results is an important component of the study. Further research considering contextual variables, such as school and neighbourhood, hold considerable promise to further our understanding of early learning and language difficulties.

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### **Authors' Notes**

Correspondence concerning this article should be addressed to:  
John K. McNamara, Department of Child and Youth Studies, Brock University,  
St. Catharines, ON, L2S 3A1. E-mail: [jmcnamara@brocku.ca](mailto:jmcnamara@brocku.ca).

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