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Impact of a Language and Literacy Training and Coaching Intervention on Early Childhood Outcomes in Low-Income Communities

Abstract

We implemented an Extension-led language and literacy training and coaching intervention targeting preschool teachers and children in low-income communities in Nevada. Participation in the intervention had a positive influence on the language and literacy instruction skills of preschool teachers and language and literacy skills of children. Analysis of 40 preschool classrooms and 199 preschoolers over 3 years of data collection identified improvements in general classroom environments and teachers' language and literacy practices. Preschoolers demonstrated improvements in alphabet knowledge, comprehension, phonological awareness, vocabulary, and oral language. Extension professionals elsewhere may use a similar approach to positively affect the achievement gap of at-risk children.

Keywords: [language](#), [literacy](#), [preschool](#), [coaching](#), [training](#)

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Introduction

The language and literacy abilities of young children develop rapidly during the first 5 years of life, a period classified as early childhood. During early childhood, children build foundational language and literacy skills (Piasta & Wagner, 2010). The preschool years, in particular, are an important time for young children, aged 3 to 5 years, to engage in meaningful language and literacy activities (Gerde, Bingham, & Wasik, 2012) both at home and in preschool settings.

The National Early Literacy Panel (2008) conducted an extensive meta-analysis of early literacy research to identify specific instructional practices and early literacy skills that are predictive of later literacy achievement. Approximately 500 research studies were analyzed, and 11 early literacy skills were identified. These skills included phonological awareness, alphabet knowledge, writing, print knowledge, reading readiness, and oral language.

Preschool children benefit from engaging in a variety of language and literacy experiences focused on essential early literacy skills. The National Early Literacy Panel (2008) identified a particular need to improve

the language and literacy outcomes of children from low-income communities. According to the Center on Children and Families at Brookings, only 48% of economically disadvantaged children are ready for school as compared to 75% of children from families with moderate to high incomes (Isaacs, 2012).

This disparity may be correlated to early childhood educators' lacking sufficient education and training on how to provide effective language and literacy instruction. Children in lower quality childcare settings often do not have as many opportunities to engage in rich conversations with teachers (Dickinson, Hofer, Barnes, & Grifenhagen, 2014), participate in phonological awareness activities (Skibbe, Gerde, Wright, & Samples-Steele, 2015), or hear frequent book readings (Dickinson & Caswell, 2007).

To address the need to improve language and literacy outcomes of children from low-income communities, we implemented a multifaceted language and literacy intervention targeting early childhood teachers in low-income communities. The purpose of the project was to determine whether strengthening preschool teachers' language and literacy instructional practices would improve preschoolers' language and literacy skills and enhance the quality of language and literacy experiences provided in preschool classrooms.

Methods

Striving Readers Comprehensive Literacy Program Intervention

One concern of a local school district in Nevada was the low language and literacy rates of children and families living in low-income neighborhoods. To address the concern, personnel from the local school district applied for external funding and received 5 years of federal Striving Readers Comprehensive Literacy Program funding. The funding was designated for developing and implementing programming to strengthen language and literacy skills in children from birth to Grade 12. As Extension specialists in the areas of early childhood development and family literacy, we received a subcontract to provide language and literacy professional development to preschool teachers in targeted childcare settings and to conduct classroom and child assessments.

Language and Literacy Intervention Program and Implementation

Prior to program implementation, we and one other Extension employee attended several training sessions provided by state and national experts. The training focused on how to effectively coach early childhood teachers on implementing specific language and literacy teaching strategies. Using the information and skills gained from the training series and in collaboration with the early childhood department of the local school district, we developed a language and literacy program for preschool teachers designed to strengthen their language and literacy instruction.

Preschool teachers in the treatment group received training and coaching on teaching language and literacy skills predictive of later literacy achievement (National Early Literacy Panel, 2008): oral language development, phonological awareness, alphabet knowledge, reading, vocabulary, and emergent writing. All the preschool teachers in the treatment group were invited to attend four 2.5-hr language and literacy training sessions every 6 weeks during the 7-month intervention. Forty-four preschool teachers from 22 preschool classrooms attended the training series.

During the same time period, the preschool teachers in the treatment group also received bimonthly literacy

coaching (30-min sessions) from an Extension professional we had trained for the project. The coaching focused on teachers' engagement in strong language and literacy practices. In collaboration with the coach, teachers created and implemented action plans related to targeted language and literacy skills.

Teachers at the comparison group sites did not receive any training or coaching during the intervention time period. They received language and literacy support materials a few months after the intervention.

Assessments

Our project team conducted assessments to determine the quality of language and literacy experiences within preschool classrooms and the language and literacy skills of preschool children. We conducted the assessments both before and after the intervention. The study was approved by the University of Nevada, Reno Institutional Review Board.

Early Childhood Classroom Assessment (Years 1, 2, and 3)

We conducted the classroom assessments over a 3-year period (2013–2016). We evaluated preschool classrooms using the Early Language and Literacy Classroom Observation Pre-K Tool (ELLCO) (Smith, Brady, & Anastasopoulos, 2008), which measures the quality of the language and literacy experiences within preschool classrooms. The assessment tool includes two subscales with seven items focused on general classroom environments and 12 items focused on specific language and literacy practices (e.g., phonological awareness, efforts to build vocabulary). In all, 19 items are evaluated. Each of the 19 items is scored on a 5-point scale (1 = *deficient* to 5 = *exemplary*). An average score is determined for the two subscales: General Classroom Environment and Language and Literacy Practices.

Child Assessment (Years 2 and 3)

During Years 2 and 3 of our evaluation time frame (2014–2016), Extension professionals we had trained as assessors evaluated preschoolers using the Preschool Early Literacy Indicators (PELI, Dynamic Measurement Group). The PELI is a set of standardized subtests in storybook format for children 3 to 6 years old. The preintervention assessment measures children's existing early literacy and language skills. The postintervention assessment is used to measure the changes in these skills across the school year. The subtests in the PELI are Alphabet Knowledge, Vocabulary/Oral Language, Comprehension, and Phonological Awareness. The PELI composite score is a combination of the PELI subtest scores and provides the best overall estimate of the preschooler's early literacy skills.

The PELI assessment includes specially designed storybooks on topics such as "off to the grocery store" and "cooking with Mom." The PELI is untimed and takes about 15 min to complete. Interrater reliability, which we tested prior to data collection, averaged .91 (by Cohen's kappa) across all tested pairs of data collectors, with a low of .88 and a high of .93.

Participants

The local school district determined the targeted low-income communities for each year of the intervention.

Once the communities were identified, we invited community childcare centers to participate in the early childhood literacy programming (treatment group sites). The comparison sites were selected from the same organization or company as the targeted sites, assuring, as much as possible, similar types of programming in both the treatment and comparison groups.

Table 1 shows the numbers of community child care sites and classrooms participating in the treatment and comparison groups. Table 2 shows the demographics of the children who participated in the treatment and comparison groups from these sites. We found no significant differences between treatment and comparison groups with regard to demographic variables.

Table 1.
Childcare Sites and Classrooms 2013–2016

Evaluation year	Number of childcare sites		Number of classrooms	
	Treatment sites	Comparison sites	Treatment classrooms	Comparison classrooms
2013–2014	5	3	7	6
2014–2015	4	2	6	4
2015–2016	3	3	9	8
Total	12	8	22	18

Table 2.
Demographic Characteristics of Preintervention and Postintervention Matched Children

Variable	Number (%)		
	Treatment (<i>n</i> = 103)	Comparison (<i>n</i> = 96)	Total
Child's gender			
Boy	54 (52%)	46 (48%)	100 (50%)
Girl	48 (47%)	32 (33%)	80 (40%)
Not collected	1 (1%)	18 (19%)	19 (10%)
Child's age (in years)			
3-year old	36 (35%)	36 (38%)	72 (36%)
4-year old	67 (65%)	60 (62%)	127 (64%)
Ethnicity			
Caucasian	34 (33%)	37 (39%)	71 (36%)
African American	29 (28%)	7 (7%)	36 (18%)
Hispanic	26 (25%)	21 (22%)	47 (24%)

Asian	2 (2%)	6 (6%)	8 (4%)
Others	8 (8%)	7 (7%)	15 (7%)
Not collected	4 (4%)	18 (19%)	22 (11%)

Results

Early Childhood Classroom Assessment

We assessed all the preschool classrooms using the ELLCO prior to intervention (September/October) and after intervention (April/May). A statistical analysis (paired-samples *t* test) of the preintervention/postintervention ELLCO scores of the treatment group ($n = 22$) demonstrated a statistically significant improvement from before to after the intervention (General Classroom Environment subscale: $M = 2.77$, $SD = .66$ à $M = 3.08$, $SD = .63$, $t = 3.63$, $p = .002$; Language and Literacy Practices subscale: $M = 2.21$, $SD = .56$ à $M = 4.27$, $SD = .58$, $t = 9.63$, $p = .001$; overall score: $M = 2.44$, $SD = .56$ à $M = 3.14$, $SD = .58$, $t = 8.11$, $p < .001$). Additionally, we conducted a two-way repeated measure analysis to compare the difference between treatment group ($n = 22$) and comparison group ($n = 18$) classrooms. The treatment group showed statistically significant improvement on the ELLCO between pretest and posttest compared to the comparison group (see Table 3). The effect sizes (partial eta-squared [η^2] was used) of this repeated measure analysis output ranged from 0.32 to 0.55.

Table 3.

Differences in ELLCO Scores Between Treatment Group ($n = 22$) and Comparison Group ($n = 18$)

Comparison (η^2)	<i>df</i>	<i>F</i>	<i>p</i>
General Classroom Environment subscale			
Within subjects			
Time	1	1.85	<.001
Time × group	1	20.07	<.001
Error	38		
Between subjects			
Group	1	3.66	.063
Error	44		
Language and Literacy Practices subscale			
Within subjects			
Time	1	44.70	<.001
Time × group	1	42.14	<.001
Error	43		

Between subjects			
Group	1	3.51	.07
Error	43		
Overall ELLCO			
Within subjects			
Time	1	35.68	<.001
Time × group	1	35.68	<.001
Error	43		
Between subjects			
Group	1	6.92	.01
Error	43		

Note. Treatment group $n = 22$; comparison group $n = 18$. Error is the amount of variance that our model does not account for. ELLCO = Early Language and Literacy Classroom Observation Pre-K Tool.

Child Assessment

Trained Extension professionals assessed preschoolers using the PELI prior to intervention (September/October) and after intervention (April/May) in Years 2 and 3. In conducting a paired t test, we found that both treatment group and comparison group children demonstrated statistically significant improvements in alphabet knowledge, comprehension, phonological awareness, vocabulary/oral language, and PELI composite scores between pretest and posttest. Additionally, a two-way repeated measure analysis showed statistically significant improvement between pretest and posttest on all measures except comprehension, when controlling for children's age (see Table 4). However, we found no significant differences when controlling for children's gender. The effect sizes (partial eta-squared [η^2] was used) of this repeated measure analysis output ranged from 0.01 (small) to 0.13 (large).

Table 4.
Differences in PELI Scores Between Treatment Group and Comparison Group

Comparison (η^2)	<i>df</i>	<i>F</i>	<i>p</i>
Alphabet knowledge			
Within subjects			
Time	1	.047	.828
Time × group × age	2	4.26	.016
Error	171		
Between subjects			
Group × age	2	13.76	<.001

Error	121		
Comprehension			
Within subjects			
Time	1	4.76	.031
Time × group × age	2	1.18	.311
Error	171		
Between subjects			
Group × age	2	22.92	<.001
Error	171		
Phonological awareness			
Within subjects			
Time	1	.04	.85
Time × group × age	2	3.48	.03
Error	171		
Between subjects			
Group × age	2	38.95	<.001
Error	171		
Vocabulary/oral language			
Within subjects			
Time	1	.002	.95
Time × group × age	2	9.29	<.001
Error	171		
Between subjects			
Group × age	2	45.48	<.001
Error	171		
PELI composite scores			
Within subjects			
Time	1	1.26	.26
Time × group × age	1	5.92	.003
Error	171		
Between subjects			
Group × age	2	37.05	<.001

Note. Error is the amount of variance that our model does *not* account for. PELI = Preschool Early Literacy Indicators.

Discussion

Strengthening preschool teachers' abilities to implement effective language and literacy practice can have a positive influence on preschoolers' language and literacy skills. Our study included relevant coaching and training and allowed teachers to practice, reflect, and change teaching practices in a safe environment, as recommended by Stover, Kissel, Haag, and Shoniker (2011).

Following the intervention, improvements were seen in teachers' overall instructional practices in reading, writing, vocabulary, and phonological awareness. Our findings are similar to those of previous studies focused on the effects of language and literacy training and coaching on structural quality and process quality of preschool classrooms (Hindman & Wasik, 2012; Neuman & Cunningham, 2009). One unique aspect of our study was the Extension-specific programming focused on improving early childhood language and literacy classroom and child outcomes.

Our study targeted children from low-income families as they often do not have the same opportunities to be exposed to high-quality language and literacy instruction. Preschoolers' language and literacy skills scores showed greater improvement when teachers implemented high-quality language and literacy instructional practices.

Extension personnel have the capacity to affect the language and literacy instruction skills of early childhood professionals. A lesson learned from our project was how open early childhood educators are to improving their teaching practices. The preschool teachers viewed Extension personnel as knowledgeable experts with the ability to translate research into usable practices that they could implement in their preschool classrooms. One of the strengths of Extension programming is the use of engaging and interactive experiential teaching strategies. Extension personnel offer professional development to early childhood professionals in about 70% of the state Extension systems (Durden, Mincemoyer, Gerdes, & Lodi, 2013). Therefore, Extension personnel have the potential to make a positive difference in early childhood settings through multifaceted professional development interventions.

Several limitations of our study should be noted. First, a convenience sample (i.e., targeted communities determined by the school district) was used; however, the sample was composed of childcare settings from low-income communities. The childcare centers in the comparison group were similar to the treatment group centers as they were selected from the same organization or company to assure similar types of programming. Second, although we trained the assessors and deemed them reliable, some of the results were determined on the basis of observation, which may have been influenced by personal biases. We conducted the majority of the classroom observations ourselves and implemented reliability training with all the assessors to mitigate biases. Third, the sample size was moderate. In future studies, researchers could include larger samples that are more representative of the population with randomized comparison-led trials to minimize selection bias through removal of the elements of choice.

Summary

Early childhood settings are an important place for developing young children's language and literacy skills. Children who have high-quality preschool language and literacy experiences are more likely to develop strong emergent language and literacy skills (Camilli, Vargas, Ryan, & Barnett, 2010). Therefore, strategically targeting the instructional practices of early childhood teachers is one way Extension professionals can help bridge the achievement gap of at-risk children.

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