

## RESEARCH-TO-PRACTICE SUMMARY

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### The Importance of Teachers' Language and Children's Vocabulary to Early Academic Skills

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This study explored whether the quality of Head Start teachers' language improves the vocabulary, literacy, and math skills of English language learners and English speakers. The CLASS (Language Modeling scale) was used to observe the quality of teachers' language. Children's skills were assessed in the fall and spring on measures of expressive and receptive vocabulary, early literacy, and math skills. The pattern of results differed for English language learners and English speakers and across outcome measures. The quality of teachers' language predicted gains in English language learners' receptive and expressive vocabulary, but not in English speakers. In addition, the receptive vocabulary of the English language learners predicted gains in their phonological awareness and math skills. The quality of teachers' language predicted gains in print knowledge for children who had higher vocabulary scores. These results show the importance of teachers' language for children's vocabulary and early academic development.

The language that preschool teachers use is an important component of their interactions with children. Using rare and challenging vocabulary and extended discourse involving the use of open-ended questions that require more than a yes-no response when speaking or reading to children accounts for significant variability in children's early language and literacy skills (Neuman, 2006). A recent study found that children who attended classrooms where teachers received training to increase the quality of their language interactions and instruction earned higher receptive vocabulary and phonological awareness scores than children in control classrooms (Wasik & Hindman, 2011). However, our knowledge of how teachers' language fosters the skills of children from different backgrounds is still fairly limited.

This study investigated how the quality of the language used by preschool teachers improved low income children's vocabulary, early literacy, and math skills. Of particular interest were potential differences in effects for English language learners and English speakers, given that the effectiveness of specific types of teacher interactions varies with characteristics of the children (Connor, Morrison, & Slominski, 2006).

## CHILDREN'S VOCABULARY

Growing up in a home where parents talk with children using a rich and varied vocabulary predicts children's vocabulary development (Hart & Risley, 1995). However, children from low income families hear far fewer words and a more limited range of different types of words than their middle income peers (Hoff, 2006). They also engage less frequently with printed matter or in interactions that can foster phonological awareness or knowledge of print (Serpell, Baker, & Sonnenschein, 2005). The relatively limited experience low income children have at home with such forms of language and literacy interactions highlights the importance of the language that these children hear at school.

Low income English language learners are particularly dependent upon what goes on at school for their English language development. They are less likely to hear English at home (Hammer, Miccio, & Wagstaff, 2003) or read with their parents (Brooks-Gunn & Markman, 2005). English language learners who are not fluent in English or have limited English vocabularies are likely to have long-term difficulties with reading

## CHILDREN'S MATH SKILLS

A recent report by the National Research Council on math learning in early childhood stressed the need for more high quality math instruction in preschool (Cross, Woods, & Schweingruber, 2009). However, children need to have sufficient vocabulary to understand the vocabulary that teachers use in instruction (e.g., the words for numbers and operations) and that appear in math word problems. Several researchers have shown relations between English speaking children's vocabulary and math skills. Cowan, Donlan, Shepherd, Cole-Fletcher, Saxton, and Hurry (2011) found that second graders' oral language skills (grammar and receptive vocabulary) predicted their third grade math skills. The problem of limited vocabulary can be even greater for English language learners (Kempert, Saalback, & Hardy, 2011). Attending a preschool program that fosters vocabulary skills should increase low income English language learners' math skills, through the increase in vocabulary.

## PRESENT STUDY

We investigated whether the relation between teachers' language usage and low income children's early academic skills is direct or indirect, that is, one mediated by children's vocabulary. In other words, does teachers' language influence growth in children's vocabulary which, in turn, influences growth in their early literacy and math skills? We also considered whether the relation between teachers' language usage and children's academic skills is similar for English speakers and English language learners.

## METHOD

### Overview

Children in this study were participants in a larger project designed to evaluate the effectiveness of the Core Knowledge Preschool Sequence (<http://www.coreknowledge.org>) being implemented in several Head Start Centers in Baltimore, MD. More than half of the children attending the focal Head Start centers spoke Spanish at home as their primary language. However, none of the teachers was fluent in Spanish; most knew no Spanish or only a few words. Note that the Core Knowledge Preschool Sequence is an English language curriculum.

### Participants

Participants were 191 children attending two urban Head Start centers (mean age = 4.03 years,  $SD = .56$ ). Children were enrolled in one of 25 classes, each of which had one teacher and one teacher's assistant. Of the 191 children, 108 were Spanish monolingual (English language learners) and 83 English monolingual (English speakers). All English language learners were Hispanic, and all but two English speakers were African-American. English language fluency was determined through parent report and school records.

All of the teachers were women with college degrees. All teachers in the study received ongoing training in the Core Knowledge Preschool Sequence, a curriculum that emphasized the nature of language used with the children.

### Measures

Children's academic skills were assessed with five standardized measures. Receptive vocabulary was assessed with the Receptive One-Word Picture Vocabulary Test (ROWPVT; Brownell, 2000). Expressive vocabulary was assessed with the Test of Preschool Early Literacy (TOPEL; Lonigan, Wagner, & Torgesen, 2007; Definitional Vocabulary subtest). Early literacy skills were assessed with the TOPEL (Lonigan et al., 2007; Phonological Awareness and Print Knowledge subtests). Math skills were assessed with the Woodcock-Johnson Tests of Achievement III (Woodcock, McGrew, & Mather, 2001; Applied Problems subtest).

Teachers' language usage was assessed with the Language Modeling scale of the Classroom Assessment Scoring System (CLASS; Pianta, LaParo, & Hamre, 2007). The CLASS is a commonly used measure for assessing classroom quality.

Language practices for English Language Learners (Language Practices) is a researcher-developed measure that documents four teacher practices useful with English language learners (August, Carlo, Dressler, & Snow, 2005): Using visual aids, speaking slowly/using repetition, explaining the meaning of key words, and incorporating Spanish words into daily vocabulary.

## Procedure

**Assessment of children's skills.** Children were individually administered the ROWPVT, WJ-III Applied Problems, and the three subtests from the TOPEL in the fall and spring by trained research assistants. Each child was tested during two separate testing sessions in a quiet room in his or her school. Testing took place in English. During the first session, children completed the ROWPVT and WJ-III Applied Problems subtest. During the second session, children completed the three subtests (Print Knowledge, Definitional Vocabulary, and Phonological Awareness) from the TOPEL. Administration of WJ-III Applied Problems was counterbalanced, such that half of the children received form A in the fall and B in the spring, and half received form B in the fall and A in the spring. The typical time between sessions was about one week.

**Teachers' language.** Classroom quality was assessed using the CLASS (Pianta et al., 2007) in the fall and spring. A graduate research assistant who completed training with CLASS developers trained the observers of the classroom interactions and also served as one of the observers of classroom quality.

Observers were trained using three master videos provided by the CLASS developers. Training continued until the observers achieved ratings within one point of the master coders on 80% of the codes on the videos. Once reliability was achieved, observers worked individually in classrooms.

Each classroom was observed one morning in the fall and spring for four 20-minute cycles; language modeling scores were averaged across the four cycles (see Pianta et al., 2007). The fall and spring data were averaged to compute the average yearly language *modeling* score for each classroom.

**Language practices.** After making ratings on the CLASS observation forms, observers completed the Language Practices form. Fall and spring scores, each averaged across four rating cycles, were combined to compute a yearly average.

Inter-rater agreement was established by having observers perform ratings in the same classroom. Overall agreement (ratings within one point of each other, consistent with how CLASS reliabilities were calculated) was very high.

## MAJOR FINDINGS AND IMPLICATIONS

Results revealed the important role of teachers' classroom language and of children's vocabulary for early literacy and math development. There were five particularly noteworthy findings.

One, receptive and expressive vocabularies of both English language learners and English speakers increased significantly from fall to spring. However, English language learners earned lower vocabulary scores than English speakers. Although the English language learners did not close the gap between themselves and their English speaking peers after a year attending Head Start, the gap in their vocabulary skills did narrow. Such findings highlight the need to develop effective instruction to close the gap and improve all children's vocabulary, a critical component of every aspect of academic development.

Two, the quality of teachers' language generally fell in the mid-level range. Although these ratings are consistent with what others have found, it shows how difficult it is to train teachers on this dimension.

Three, the quality of teachers' language with English language learners predicted increases in their receptive and expressive vocabulary which, in turn, predicted gains in their phonological awareness and math skills. In other words, the relation between teachers' language and English language learners' early academic skills may be better conceptualized as an indirect one: teachers' language influences vocabulary, which influences phonological awareness and math skills.

Four, teachers' language predicted gains in print knowledge for children who displayed higher vocabulary levels but not for those with lower vocabulary levels. It was typically the English speakers who had the better vocabulary. Such a pattern of differential benefit related to vocabulary skill is consistent with other research.

Five, the quality of language displayed by teachers predicted gains in vocabulary for English language learners but not for English speakers. English language learners' receptive and expressive vocabulary was much more limited than that of English speakers. Although the teachers conversed with the children, they did not frequently use advanced vocabulary or open-ended questions. They did, however, use visual aids and repetition during half the observations. Such a pattern would enable English language learners to increase their basic knowledge of English but not necessarily promote growth of more advanced language skills.

## Implications

Low income children routinely enter kindergarten with more limited vocabularies than their middle income peers, largely because the experiences they have at home do not foster the vocabulary growth needed to support progress in school. The results from this study underscore the need to improve the quality of instruction in low income preschool classes. Although the quality of the language displayed by teachers was associated with gains in the vocabulary of the English language learners, these children still received much lower scores than their English-speaking peers. However, vocabulary skills are critical to these children's subsequent academic development.

Professional development for teachers should focus on the importance of children's vocabulary to early academic development, why the language they use with their students matters, and on ways they can interact with children from different backgrounds to improve vocabulary. Such preservice or inservice instruction will need to be intensive and ongoing.

It is important to keep in mind that the teachers in this study were highly qualified; that is, they had earned bachelor's degrees and received training in the curriculum. Despite these qualifications, the teachers' language modeling scores fell in the mid-level range, on average. This highlights the need for more intensive teacher training.

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