Early Childhood Study of Language and Literacy Development of Spanish-Speaking Children

Subproject 1 of Acquiring Literacy in English: Crosslinguistic, Intralinguistic, and Developmental Factors

Project Period 2000-2005
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Subproject 1 was a longitudinal study of the English literacy development of native-Spanish-speaking children. The study followed a group of children from pre-kindergarten (pre-K) through the end of second grade in order to develop a picture of their skills in Spanish and English and how these change over time.

Purpose

The main objective of Subproject 1 was to identify the factors that influence the course of English literacy development for young Spanish-speaking children. To accomplish this objective, the study investigated the influence of variables such as home literacy, language proficiency in Spanish and English, language of instruction, and quality of instruction on the trajectory of these children's reading development. The project was designed to answer the following three interrelated questions:

1. What are the language and early literacy skills in Spanish and English of young Spanish-speaking children as they enter and as they leave pre-K?
2. How do these children's language and early literacy skills in Spanish and English change over time from pre-K through second grade?
3. What precursor factors from their home and school contexts predict Spanish-speaking children's Spanish and English literacy abilities in second grade?

The study also began to address the question of how to differentiate reading difficulties that stem from limited experience with and proficiency in English from those not primarily related to English language learning.

Study Subjects

The subjects of the study were native-Spanish-speaking children who were four year olds when the research began. Three hundred and fifty children from homes where Spanish is spoken were

recruited from Head Start and public pre-K programs in Massachusetts and Maryland in Year 1; 61 additional children were recruited in the spring of 2002, while the original group was still in pre-K, in order to replace children who had left the study that year. At the end of the study, 305 children were still participating. This group of children is referred to below as the Early Childhood Study (ECS) sample.

The researchers also recruited a group of 152 children in Head Start programs in Puerto Rico. This sample was selected to be similar in age, gender, and socioeconomic background to the ECS sample. Inclusion of these children enabled the researchers to determine expectable Spanish performance levels for the ECS sample. This group of children is referred to below as the Puerto Rico comparative (PRC) sample.

A sub-sample of 51 children was drawn from the ECS group for more intensive study throughout the project. This sub-sample is referred to below as the representative sub-sample (RSS). These children represented the range of dual language proficiencies found in the entire sample at that time. Each child in the sub-sample was assigned to one of four categories:

- Low-Low: those who scored below the ECS sample mean on the Picture Vocabulary subtest of the Woodcock Language Proficiency Battery-Revised (WLPB-R) (Woodcock, 1991) and its Spanish parallel (Woodcock & Muñoz-Sandoval, 1991) in both languages
- High English, Low Spanish or High Spanish, Low English: those who scored above the sample mean in one language and below the sample mean in the other
- High-High: Those who scored above the sample mean in both languages (high-high)

Measures and Timeline

The study began in fall 2000 and continued through spring 2005. The first year of the project was devoted to instrument development and sample recruitment. Four measures were developed, piloted, and finalized: the Phonological Awareness Test (English and Spanish versions) and the Narrative Production Task (English and Spanish versions). In Year 2, a measure of concepts of print and story retelling, the Book Task (English and Spanish), was developed, piloted, and finalized. Descriptions of these instruments are available at www.cal.org/acquiringliteracy.

In addition to the measures developed specifically for the study, a battery of assessments from the WLPB-R (Woodcock, 1991) and its Spanish parallel (Woodcock & Muñoz-Sandoval, 1991) was used. The assessment battery included Picture Vocabulary, Letter-Word Identification, Dictation, and Memory for Sentences. The parallel instruments in Spanish and English were administered one-on-one by separate assessors, one for each language.

In Year 2 (the pre-K year), the children in the ECS and PRC samples were assessed in the fall and the spring. In addition, demographic data for each student was collected through a parent home language and literacy questionnaire (English and Spanish versions) developed by researchers involved in the larger Development of Literacy in Spanish Speakers (DeLSS) project. This survey included questions on country of origin and age of the parents at the time of immigration, child's birth location and age at immigration, number of people in the household,

educational level of parents, income level of the household, present occupation of the parents, provision of literacy materials for the child and the language(s) of those materials, frequency of book reading with the child and the language(s) used, and the language(s) that family members use when speaking to the child and that the child uses when speaking to family members.

Observations were done in all classrooms in Year 2. The observations resulted in a variable related to the quality of the classroom and to the language used in the classroom. In addition, teachers completed questionnaires that included information about ethnic identity, educational level, years of teaching experience and years of experience with second language learners, classroom composition in terms of density of second language learners, and the teachers' estimated proficiency in the languages they speak.

In Year 3 (the kindergarten year), the children in the ECS and PRC samples were assessed in the spring. Classroom observations were conducted and teacher questionnaires were collected. In addition, the children in the RSS were visited at home. In Years 4 (first grade) and 5 (second grade), the children in the ECS and PRC samples were assessed in the spring and teachers completed questionnaires.

Analysis and Findings

Research Question 1

> What are the language and early literacy skills in Spanish and English of young Spanish-speaking children as they enter and as they leave pre-K?

The children in the sample demonstrated considerable variability in their dual language skills at age four. On average, oral language abilities, particularly vocabulary, were low in both languages when compared to monolingual children of the same age. The children's dual language proficiency, as indexed by their vocabulary skills, was related to their life circumstances and their home environments. Results from the Phonological Awareness Test showed that, with respect to early literacy skills, the children were just beginning to grasp the concepts being assessed. Cross-linguistic analyses and comparisons of the Spanish phonological awareness results showed no differences.

Results from the WLPB-R subtests showed that children performed better on the early literacy tests (Letter-Word Identification and Dictation) than on the oral language tasks (Picture Vocabulary and Memory for Sentences) in both English and Spanish. Given that these children were young ELLs, it is perhaps not surprising that they scored, on average, close to two standard deviations below the norm on the oral language subtests in English when compared to English monolingual children. However, they also scored, on average, close to two standard deviations below the monolingual norm on the oral language subtests in Spanish.

Regression analyses used to predict language proficiency as indexed by the children's Picture Vocabulary scores in each language in the fall of the pre-K year indicate that 32.7 percent of the variation in Spanish vocabulary can be explained by the child being born outside the United

States, by the child being read to in Spanish at home, and by the child being exposed to and using Spanish at home, while 33 percent of the variation in English vocabulary can be explained by the number of people in the family (negative), by household income, by the child attending preschool as a three year old, and by the child being exposed to and using English at home.

Research Question 2

> How do these children's language and early literacy skills in Spanish and English change over time from pre-K through second grade?

The children experienced significant growth in phonological awareness and literacy skills from pre-K to second grade. In the pre-K year, on average, the children made better than expected gains in some of their language and literacy skills in each language when compared to monolingual speakers of Spanish and English, but there were also some areas where expected gains were not made. Classroom quality and use of Spanish in the classroom were two factors that had an impact on the changes from fall to spring.

The ECS sample made significant gains in raw scores in phonological awareness in both Spanish ($t(308) = -14.3$; $p<.001$) and English ($t(305) = -10.1$; $p<.001$) from fall to spring and better than expected gains in standard scores on Memory for Sentences in both Spanish ($t(300) = -2.4$; $p<.05$) and English ($t(302) = -5.63$; $p<.001$).They also made better than expected gains in standard scores on English Picture Vocabulary ($t(309) = -3.93$: $p<.001$)and Dictation ($t(308) = -4.1$; $p<.001$) from fall to spring. The ECS sample made age-appropriate gains in standard scores on Letter-Word ID in English and on Dictation in Spanish. However, the ECS sample also made lower than expected gains in Spanish Picture Vocabulary ($t(314) = 4.94$; $p<.001$) and Spanish Letter-Word ID ($t(311) = 8.42$; $p<.001$).

The Spanish-dominant children in the ECS sample, most of whom attended English-language pre-K classrooms, made considerable gains in pronunciation of English phonemes from fall to spring. In an analysis of 20 Spanish-dominant and 20 English-dominant children from the ECS sample, it was found that, although the pronunciation of English phonemes differed between the two groups in the fall, by the spring, the Spanish-dominant group (60-100 percent correct) had caught up to their English-dominant peers (75-100 percent correct).

Research Question 3

> What precursor factors from their home and school contexts predict Spanish-speaking children's Spanish and English literacy abilities in second grade?

The children came from a wide variety of home circumstances. Their parents came from 22 countries and the U.S. territory of Puerto Rico. Twenty-four percent of the children did not have a father or other adult male present in the home. The sample was also diverse in terms of language use at home, parental years of education, and family income. Of the participating families, 70 percent reported that they used only Spanish at home, while the remainder reported that they used varying amounts of Spanish and English. Levels of parental education ranged from 0 to 22 years. Nineteen percent of mothers and 25 percent of fathers did not complete high

school; approximately 28 percent of mothers and fathers had completed some education after high school. In terms of annual family income, 77 percent of the families reported making less than $30,000, and 21 percent reported making less than $10,000.

Family immigration history was a significant predictor for both Spanish and English literacy ability in second grade. Children whose parents had immigrated relatively recently and valued maintenance of Spanish in the home tended to score higher in Spanish, whereas children whose parents had been in the United States longer and emphasized the importance of English tended to score higher in English. Parents whose children scored higher in both Spanish and English had higher educational levels and regarded bilingualism as an asset.

Classroom quality was a school-context factor that had a significant impact on changes in the children's ability levels in both Spanish and English. In regression analyses, classroom quality provided significant increment to R2 when added to a base model of the fall scores when predicting the spring scores on Dictation in both Spanish and English, on Memory for Sentences and Phonological Awareness in English, and on Letter-Word ID in Spanish.

Use of Spanish in the classroom had a significant impact on changes in the children's ability levels in Spanish. In regression analyses, use of Spanish as the instructional language provided significant increment to R2 when added to a base model of the fall scores when predicting the spring scores for Picture Vocabulary in Spanish and Phonological Awareness in Spanish.

The language and literacy assessment results can be further summarized as follows:

- Within language, within time: The assessments are indexing related but not redundant skills, as all correlations are significant and positive, although in the moderate range. The most highly correlated are Picture Vocabulary and Memory for Sentences (.56-.66)
- Within language, across time: Different assessments demonstrate different levels of stability over time (fall to spring), indicating the possible influence of instruction. For example, Spanish (r = .41) and English (r = .56) Phonological Awareness and Spanish (r = .51) and English (r = .58) Dictation show less stability than Spanish (r = .66) and English (r = .75) Letter-Word ID and Spanish (r = .63) and English (r = .74) Memory for Sentences. The most stable measure is Picture Vocabulary (Spanish: r = .81, and English: r = .84).
- Within assessment, across language: Different assessments demonstrate different levels of transfer across the two languages. The within-assessment, across-language correlations in the early literacy tests (Letter-Word Identification and Dictation) are similar in fall and spring and similar to each other (r = .49 to .57), indicating considerable transfer between these two closely-related languages. The within-assessment, across-language correlations on Phonological Awareness are r = .34 in the fall and r = .53 in the spring, indicating a more moderate, but increasing level of transfer. The within-assessment, across-language correlations on the oral language tasks (Picture Vocabulary and Memory for Sentences), however, present a different pattern – Memory for Sentences (fall r = .27; spring r = .32) and Picture Vocabulary (fall r = -.27; spring r = -.12), indicating a lower and more stable level of transfer in the case of Memory for Sentences, and, in the case of Picture Vocabulary, a negative effect between the two languages.

A finding of note was that the children consistently performed better on literacy measures than on oral language tasks in both English and Spanish. Oral language revealed itself as an area of significant concern; on average, the children in the sample scored more than one standard deviation below the mean for monolingual children in both languages. The children made better than expected gains in oral skills from pre-K to second grade, but these gains were small in absolute terms and did not appreciably alter the overall standing of the sample.

Significance

The results of this study of young Spanish-speaking children present two findings of major significance for understanding language and literacy acquisition in this population. First, phonological awareness and early literacy skills appear to be highly related across Spanish and English, irrespective of the language in which they are learned. These skills are also amenable to instruction, as demonstrated by the children's performance on the Phonological Awareness Test and the WLPB-R Letter Word Identification and Dictation subtests over time.

Second, oral vocabulary is an area of considerable concern for this population. On the initial assessment (fall of pre-K), the children in the sample were on average two standard deviations below the mean for monolingual children on WLPB-R Picture Vocabulary in both languages. In English, the children made better than expected gains in Picture Vocabulary over time, but these gains were small in absolute terms and did not appreciably alter the overall standing of the sample. In Spanish, the children demonstrated lower than expected gains in Picture Vocabulary over time, putting them further below the mean for monolingual Spanish speakers.

Further Work

The researchers are continuing to analyze and report on the data collected in the study. Ongoing work seeks to provide further insight into the developmental trajectories of reading development for this sample. A particular focus is the role of oral language in reading development, particularly for those children who demonstrate limited ability in both languages.

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6

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