Development of Reading Skills in Spanish-Speaking English-Language Learners: A Six-Year Longitudinal Study

by Kim A. Lindsey and Franklin R. Manis

The number of children who enter school in the United States speaking a language other than English has risen dramatically in the last decades. Those numbers are expected to rise even more sharply in the decades to come. By the year 2020, the predictions based on demographics suggest that 50 percent of the children in our schools will come from language minority homes (Berliner & Biddle, 1995). Children who come from these homes typically have achievement scores averaging between the 10th and 12th percentiles.

The challenges facing children who enter school with limited English are great. An investigation of Language Minority children's achievement as a whole looked at 700,000 student records over a 14 year period and found that children who were educated in traditional bilingual and English as a Second Language (ESL) programs did not, as a group, reach the same average academic levels as their English speaking peers (Thomas & Collier, 1997). English Language Learner's (ELL) achievement scores at the end of 11th grade ranged between the 24th and 40th percentiles on monolingual English norms. Thomas and Collier argue that the reasons for this are evident. The average English-speaking child starting in kindergarten at the 50th percentile would need to advance 9 months during the 9-month academic year in order to remain at that same percentile. Similarly, an ELL child who enters school at or below the 5th percentile would need to advance 9 months during that academic year just to remain at the 5th percentile. In order to reach the 50th percentile, that same child would have to advance a year and a half for every academic year for six to seven consecutive years to reach the 50th percentile – based on English monolingual norms (Thomas & Collier, 1997).

ELL children who also have reading disabilities face even greater challenges. There is considerable evidence that reading disabilities in English persist throughout childhood and into adulthood (Bruck, 1990; Felton, Naylor, & Wood, 1990). It is also known that children who are poor readers in the early years of elementary school seldom catch up to their more able peers without serious intervention (Juel, 1988; Shaywitz, S., Escobar, Shaywitz, B., Fletcher & Makuch, 1992). Although a full understanding of the development of literacy entails study of complex issues such as instructional models, socioeconomic and familial factors, a great deal of information can be obtained simply by assessing a child's cognitive skills and tracking the development of these skills. Early identification of reading difficulties in the ELL population is imperative if these children are to receive the help they need in the critical first years of schooling. By far the largest ELL group in the United States is made up of Hispanics.

Overview

This paper focuses on two issues. The first is an examination of the developmental trends in both Spanish and English language and literacy skills over a 6-year period. The second is the feasibility of predicting ELL's English reading achievement in 1st, 3rd and 5th grades using a prediction battery administered in the children's native language at the beginning and end of kindergarten, and in English at the end of 1st grade.

Project Design

The study began in 1998 with 303 low SES, Latino kindergarten children in a Texas border town. All of the children were in an early-exit bilingual program. They had very low or no knowledge of English at the onset of kindergarten as determined by the Language Assessment Scales (LAS) administered by the district. In the first year of the study, the children were chosen from ten schools (two schools from each of the five sub-districts). Within those schools, several classrooms were chosen. As the years passed, the children dispersed to 28 elementary schools within the district. Every effort was made to track the children as they moved from one school to another within the district. The children were originally taught to read in Spanish using a Spanish language arts program called Esperanza (Cardenas-Hagan, 1997), modeled closely after the Basic Language Skills program (Neuhaus Education Center). This program in turn was based on the principles of the classic Orton-Gillingham multi-sensory reading and spelling curriculum. The children were gradually transitioned from the Spanish language arts program to the parallel English Basic Language Skills program beginning sometime in the middle of first grade.

A kindergarten predictive battery was developed in Spanish, specifically to include most of the best cognitive predictors of reading identified in previous English, German, Dutch and Spanish studies (e.g. Scarborough, 1998; Wimmer, 1996). The battery included three Spanish-language measures from the Woodcock Language Proficiency Battery- Revised (Woodcock & Muñoz-Sandoval, 1995), Memory for Sentences, Picture Vocabulary, and Letter-Word Identification. In addition, all the letters of the alphabet were presented in random order, first in upper case and then in lower case, and the child was asked to name each letter and to give its sound. Two measures of phoneme awareness were adapted for Spanish speakers (Lindsey, 1999), based on the Comprehensive Test of Phonological Processes (CTOPP) (Wagner, Torgesen, & Rashotte, 1999), Sound Matching and Sound Categorization. A shortened version (18 items) of Clay's (1979) Concepts About Print was translated into Spanish and given to the children. Finally, a rapid automatized naming (RAN-Objects) task was adapted from the CTOPP. The children were tested during a two week period in October and then again in May of their kindergarten year.

In first grade, the same predictive variables were measured in English, rather than Spanish. Three measures of phoneme awareness (Sound Matching, Sound Categorization and Phoneme Elision), and two measures of rapid serial naming (RAN-Objects and RAN Digits) from the CTOPP (Wagner, et al., 1999) were used. The children were asked to name all of the letters of the alphabet in upper and lower case in English, and the English versions of the Woodcock Language Proficiency tests used in kindergarten were administered (Picture Vocabulary, Memory for Sentences, and Letter-Word Identification). English Passage Comprehension was also given, along with Spanish Letter-Word Identification and Spanish Passage Comprehension.
Development of Reading Skills in Spanish-Speaking English Language Learners

continued from page 22

The outcome measures in second, third and fifth grades were administered in both languages. These included Letter-Word Identification, Word Attack, Speeded Word Reading, Listening Comprehension, Passage Comprehension, as well as two oral language measures: Picture Vocabulary (all grades) and Listening Comprehension (third and fifth grade).

Developmental Trends

It's important to know how quickly ELL children achieve accuracy and fluency in various aspects of reading in their second language. They may differ from monolingual children in their areas of greatest challenge. For example, they may master basic decoding skills in a reasonable amount of time, but they may require more time to become fluent in reading comprehension due to the oral language demands of the task.

Looking at the development of language and reading skills in this cohort, we found that at the beginning of kindergarten the children were well below average based on Spanish national norms on all the Spanish language measures. This is not surprising given the children's extremely low SES (98% of the children in the district qualified for a free school lunch program). They nevertheless caught up and surpassed the norms on Letter-Word Identification by the end of kindergarten and continued to make remarkable progress by the end of first grade. In contrast, the children's progress during the same time period was negligible on Memory for Sentences, and modest at best on Picture Vocabulary.

The fact that the children made such notable progress on single word decoding supports the view that children are able to learn to decode quite easily in languages with regular orthographies, especially when properly taught. Reading problems in these languages don't usually show up on single word decoding measures (Wimmer, 1993). The study revealed an interesting finding: although the children were extremely low on the language tasks in English at the end of first grade (e.g., English Picture Vocabulary was in the 3rd Percentile), they performed as a whole slightly above average compared to the norm group (monolingual English speaking children their own age) on two of the three English reading measures (English Letter/Word Identification and Passage Comprehension), and just below average on the third (Word Attack). The fact that the majority of the children barely spoke English at the time suggests that there may have been some transfer from Spanish to English reading skills, at least at the level of the decoding and word identification skills that predominate in first grade.

The developmental data showed that the children's English word decoding skills, as measured by English Letter Word Identification, were above the national norms in first and second grade (56th percentile and 60th percentile) and then fell in third and fifth grades (49th percentile and 45th percentile). Word Attack held fairly steady at around the 58th percentile from first through fifth grade. The children's oral language skills remained very low. English Picture Vocabulary rose only slightly from the 3rd percentile in first grade to the 14th percentile in fifth grade. Passage Comprehension in English remained steady at around the 46th percentile in first and second grade, but started declining in third grade (40th percentile) and dropped in fifth grade to the 20th percentile, when presumably the demands on language comprehension increased.

The children's Spanish developmental data indicated that they had maintained at least average word decoding skills, although these also declined from a high of the 77th percentile in first grade to the 62nd percentile in fifth grade. They were below average for Listening Comprehension (36th percentile in third grade and 29th percentile in fifth grade). Spanish Picture Vocabulary remained fairly steady in the mid 30th percentile for grades K though fifth. Spanish Memory for sentences declined from a high of the 31st percentile in Kindergarten to the 18th percentile in fifth grade. Spanish Reading Comprehension started at the 63rd percentile in first grade but steadily declined each year until reaching the 22nd percentile in fifth grade. As mentioned earlier, single word decoding in a language with a regular orthography is not difficult and is usually mastered. The children's reading difficulties showed up in other areas such as comprehension.

To summarize the developmental trends, basic word reading skills were generally holding steady at about national average in English and a bit above average in Spanish over the time period from kindergarten to fifth grade. Oral language was moving up slightly but still well below average in English and declining in Spanish. Passage Comprehension declined steadily from an initial level of about average in both English and Spanish.

The question we asked was whether this trend was due only to low oral language skills, or whether there was some other explanation? Decoding proficiency and reading fluency have been shown in the past to predict reading comprehension (Freed, C., 1984; Wolf & Bowers, 1999). We performed a regression analysis using the third grade data for Word Attack, Listening Comprehension and Speeded Word Reading measures to predict English Passage Comprehension in fifth grade. All three variables contributed substantial unique variance. Listening Comprehension and Speeded Word Reading accounted for the most unique variance in the final equation. This suggests that both oral language ability and reading fluency are important sources of problems in reading comprehension at this point. However, it still remains the case that a significant group of children (about 25% of the sample) had failed to progress in basic word decoding and recognition. A practical application of these results is that many children having reading comprehension problems by fifth grade need intervention in all three areas: decoding skills, oral language skills and reading fluency. Decoding problems could be addressed by consistent, high quality phonics lessons that are appropriate to the child's reading level. For example in the early phases it could be enough to teach letter sound correspondences, but in the later phases, lessons on English word structure and syllabification might be important. With regard to oral language skills, the lags we saw in vocabulary growth
### Development of Reading Skills in Spanish-Speaking English-Language Learners

**VARIABLE**

<table>
<thead>
<tr>
<th></th>
<th>K1</th>
<th>K2</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish Letter/Word Identification</td>
<td>30</td>
<td>56</td>
<td>77</td>
<td>68</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Spanish Listening Comprehension</td>
<td></td>
<td></td>
<td>36</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish Picture Vocabulary</td>
<td>28</td>
<td>36</td>
<td>38</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish Memory Sentences</td>
<td>28</td>
<td>31</td>
<td></td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish Passage</td>
<td>63</td>
<td>48</td>
<td>36</td>
<td>22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Prediction of English reading in first, third and fifth grades by Spanish language tasks administered in kindergarten.**

The most important applied issue investigated in our study was how accurately we could identify ELL children at risk for reading problems from earlier cognitive test scores administered in their native language. Early intervention is imperative for these children to achieve academically. One direct way to address this issue is to conduct longitudinal discriminant analyses. Longitudinal discriminant analyses determine the best combination of test scores at one time point (say kindergarten) for predicting membership in a group at a later time point (say, below average and average readers in fifth grade). In addition, the analyses permit us to determine how accurate the prediction would be.

Discriminant analyses were conducted to ascertain what percentage of children could be correctly classified as "at risk" or "not at risk" given their cognitive skills. A significant problem identified by many reading prediction studies concerns the high "false positive" and "false negative" prediction rates. Simply put, there are children who are predicted to be at risk but who nevertheless develop adequate levels of reading (false positives), while others are predicted not to have problems but in fact develop reading difficulties (false negatives). Scarborough's (1998) meta-analysis of prediction studies reported that across the studies she reviewed, 44 percent of the children predicted to be at risk were successful in learning to read, and 22 percent of the children who developed reading difficulties were predicted not to be at risk. In other words, "poor" readers were classified correctly 56 percent of the time, and "good" readers 78 percent of the time. This pattern was found to be quite consistent across studies. Keeping this in mind, the classification rates encountered in our study were quite good, particularly given the fact that the prediction was being done across languages.

For our analyses, we classified as "poor" readers – those who scored at or below the
25th percentile on the national norms, and as “good” readers — those who scored above the 25th percentile. We were able to predict English Letter-Word Identification at the end of first grade with up to 98.3 percent overall accuracy (96.4 percent of the “poor” readers and 99 percent of the “good” readers) from the end of kindergartens scores. Although prediction to single word reading was excellent, prediction to passage comprehension was only moderately good. In the discriminant analyses, end of kindergarten scores on the test battery predicting to Passage Comprehension at end of first grade predicted 66.7 percent of “poor” readers and 73.4 percent of good readers, with 71.4 percent overall correct prediction rates.

Prediction accuracy from the test battery at the end of kindergarten to third grade English Letter-Word Identification was 73.8 percent overall (71.4 percent for “poor” readers and 74.4 percent for “good” readers). For English Passage Comprehension, the overall prediction rate was 61.7 percent (58.8 percent for “poor” readers and 71 percent for “good” readers).

Predictions from end of kindergarten to fifth grade English Letter-Word Identification were at 69.4 percent overall (67.2 percent for “poor” readers and 70.3 percent for “good” readers). For English Passage Comprehension, the prediction rate was 70.3 percent overall (72.9 percent for “poor” readers and 64.2 percent for “good” readers). It’s puzzling that for Passage Comprehension, the prediction from end of kindergarten was much better for fifth grade “poor” readers (72.9 percent) than for third grade “poor” readers (58.8 percent).

Prediction of English reading skills in third and fifth grades by English language tasks administered in first grade

Once the children had been exposed to reading in English, it made sense to predict using English cognitive test scores. The prediction of English Letter-Word Identification in third grade from English first grade measures was 91 percent (89.7 percent for “poor” readers, 91.3 percent for “good” readers). Prediction to third grade Passage Comprehension was somewhat lower with an 81.9 percent overall prediction rate (79.7 percent for “poor” readers, and 83 percent for “good” readers).

Prediction from first grade to fifth grade was fairly good, with an overall prediction rate to English Letter-Word Identification of 82.5 percent (78 percent for “poor” readers, and 84 percent for “good” readers). For Passage Comprehension, the overall prediction rate was 80.2 percent (82.3 percent for “poor” readers and 75.4 percent for “good” readers).

We found that all of the predictor variables were useful depending on the outcome measures used and whether they were in Spanish or English. Considering the English outcome measures Letter-Word Identification and Passage Comprehension in 5th grade, for example, the most predictive variables at the end of kindergarten were Spanish Letter-Word Identification, knowledge of letter names, and Picture Vocabulary. The strongest predictive variables at the beginning of kindergarten were Spanish Letter-Word Identification and Spanish Memory for Sentences. When using English first grade measures to predict to third and fifth grade English outcome measures, Letter-Word Identification, Word Attack, RAN and Memory for Sentences were the prime contributors to the discriminant function differentiating the groups.

Prediction rates achieved by this (and other studies) emphasize the multifaceted and intrinsically complex nature of reading prediction per se. As has been frequently pointed out, no single measure, or group of measures, will invariably present a perfectly accurate estimate of a child’s reading ability. It seems that the best we are able to achieve at this time with cognitive test scores is to identify children who, failing intervention, will in all likelihood fall into the extremes of reading ability. It is difficult to make more fine-grained predictions, as must be made for children who are on the border of low achievement and average achievement. In applied settings, cognitive test scores should be combined with teacher observations in the classroom continuously from kindergarten to first grade and beyond, to increase the accuracy of identification of children at risk. Researchers and practitioners must continue to address the challenge of finding variables that are both practical to administer and effective in accurately identifying children at risk.

Nevertheless, an important finding in this study is that we were able to predict ELLs’ English reading achievement using the children’s native language with comparable accuracy to monolingual English reading prediction studies. This could provide educators with vital information needed to identify and help children with possible reading disabilities who, given their limited English, might otherwise go undetected until it’s “too late”.

References


Neuhaus Education Center (1997). Language Enrichment I.


Franklin R. Manis received his Ph.D. in 1981 in Child Psychology from the University of Minnesota. Currently he is Professor of Psychology at the University of Southern California. He has published widely in the areas of reading development and dyslexia, and this work has been supported by a series of grants from the National Institute of Child Health and Human Development.

Kim A. Lindsey, a native of Mexico, taught languages for many years and also worked in publishing, radio and television. She received her Ph.D. in Psychology from the University of Southern California in 2001. She is currently Research Assistant Professor of Psychology at USC. Kim teaches Developmental Psychology and conducts research on the development of literacy in bilingual children. She currently directs a grant from the National Institute of Child Health and Human Development.

IDA 56th Annual Conference
November 9-12, 2005
Adam’s Mark Hotel • Denver, Colorado

ATTENTION EXHIBITORS AND ADVERTISERS!

IDA is now accepting applications for exhibitors and exhibitors for our Denver Conference. Space for full, half, or quarter page ads is available in the printed program, which will consist of about 100 pages, and has a circulation of approximately 40,000.

More than 100 exhibitors will be present and booths will go very quickly.

The Exhibit Grand Opening is Wednesday evening, November 9 and exhibits close on Saturday afternoon.

We expect our Denver Conference to draw approximately 3,000 participants from the fields of education, psychology, speech/language pathology, research, etc.

For information, please contact Margaret Palmer (ext. 134) for exhibitor information (mpalmer@interdys.org) and Diane Nies (ext. 135) for information about advertising in conference publications (dnies@interdys.org).

Conferences/Publications Department, (410) 296-0232. Also, visit our web site at www.interdys.org.

See you in Denver!