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How Important Is Teaching Phonemic Awareness to Children Learning to Read in Spanish?

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This comparative study examines relationships between phonemic awareness and Spanish reading skill acquisition among three groups of Spanish-speaking first and second graders: children in Mexico receiving reading instruction in Spanish and children in the United States receiving reading instruction in either Spanish or English. Children were tested on Spanish oral language and reading skills in fall and spring of Grades 1 and 2. Children in Mexico were the lowest in phonemic awareness among the three groups and very low in their entering first-grade reading skills. However, they ended second grade matching or surpassing the reading skills of the U.S. students while remaining lower in phonemic awareness. Findings cast doubt on whether phonemic awareness instruction is helpful for children learning to read in Spanish.

KEYWORDS: Spanish reading instruction, phonemic awareness

The relationship between language and reading has been a focus of research and practice since Edmund Burke Huey launched the beginnings of scientific reading research over 100 years ago (Huey, 1908). Since then, thousands of studies and publications have explored this relationship with many different aspects of language and with readers of varying language characteristics (Stone, Silliman, Ehren, & Apel, 2004). One oral

language skill that has received considerable attention beginning in the 1980s is phonological awareness (see e.g., Adams, 1990; Stanovich, 1987; Troia, 2004).

Phonological awareness refers to the understanding that spoken speech can be broken down into discreet units of sound at the sub-word level: syllables, onsets (initial consonant sound in a syllable), rimes (vowel and rest of the syllable), and phonemes (the smallest unit of spoken speech). Phonological awareness is important for reading since it permits phonological recoding, commonly known as "decoding"—the process of applying sound-symbol mappings to access words already in learners' spoken lexicons. Phonological recoding is considered "the sine qua non for successful reading acquisition" (Ziegler & Goswami, 2005, p. 3).

One question in this area of inquiry has been to which phonological level children's attention should be drawn in the early stages of learning to read. This is what Ziegler and Goswami (2005) call the "grain size" problem: "For phonological recoding to be successful, children need to find shared grain sizes in the symbol system (orthography) and phonology of

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their language that allow a straightforward and unambiguous mapping between the two domains" (p. 3).

Although the right instructional grain size can vary based on where children are in the reading acquisition process (Anthony & Lonigan, 2004), a language's orthography also plays a role. In English, for example, there is a general consensus that the phoneme is the fundamental phonological level to target instructionally (Stanovich, 2000). Phonemes are the smallest units in spoken language. The word *cat*, for example, has three phonemes: /k/-/ă/-/t/; the word *ship* also has three (/ʃ/-/i/-/p/); *faxed* has five (/f/-/ă/-/k/-/s/-/t/). Phonemic awareness refers to the ability to focus on and manipulate individual phonemes and is measured by having individuals perform various manipulations such as phoneme isolation, blending, segmentation, and deletion (Ehri et al., 2001). Phonemic awareness is consistently and highly predictive of reading and spelling achievement in English (Troia, 1999). More significantly, phonemic awareness instruction helps develop children's word recognition skills, spelling skills, and even comprehension (Ehri et al., 2001).

Phonemic awareness is almost certainly necessary for skilled reading in English, but there is no evidence that phonemic awareness *instruction* is required, although there is evidence that interventions that target the phoneme are beneficial for students who experience difficulty in learning to read in English (Ehri et al., 2001). Indeed, generations have learned to read before the concept of phonemic awareness was ever invented. Nor is the relationship between phonemic awareness and learning to read causal in one direction only—phonemic awareness to reading skill. Rather, the relationship is most likely reciprocal: As beginning readers receive instruction and gain experience in recognizing letters, mapping them to sounds, and starting to read, their phonemic awareness increases, thereby further promoting increasingly skilled reading (Hogan, Catts, & Little, 2005; Ziegler & Goswami, 2005). Nonetheless, it is clear that phonemic awareness instruction in English, as part of a comprehensive early literacy program, contributes to beginning literacy development (Ehri et al., 2001).

Phonemic Awareness and Orthographic Differences Among Languages

Phonemic awareness instruction probably helps promote early reading development in English because the orthographic structure of English (e.g., many CVC words and syllables, consonant clusters, digraphs) and the complex orthography make sound-symbol mapping less transparent than in languages such as Spanish and Italian with highly regular sound-symbol correspondences and more many more open syllables (CV). In languages such as English and French, with complex (or "opaque") orthographies, the same sound can be represented by different letters or letter groups, for example, the /f/ sound can be written *f, ph*, or *ugh*; conversely, the same letter can represent many different sounds, for example, the *a*s in

cat and *data*. Languages such as Spanish, Turkish, and Welsh have much simpler and transparent orthographies with much more consistent relationships between letters and their corresponding sounds (Conrad & Jacobs, 2004; Oney & Durgunoglu, 1997; Spencer & Hanley, 2003; Wimmer & Goswami, 1994). The *a* and *f* in Spanish, for example, always represent the same sound and no other, and the *a* and *f* sounds are always represented by those letters.

For both reasons—complex orthographic structures and orthographic opaqueness—we would expect beginning readers of English to benefit from instructional mediation aimed at phonemic awareness much more than would beginning readers of Spanish or Italian. As Ziegler and Goswami (2005) explain:

> Gaining access to phoneme-size units is a crucial step for the beginning reader of an alphabetic language. . . . Psycholinguistic grain size theory predicts that this problem is attenuated in languages like Italian and Spanish because of redundancy at smaller grain sizes. For example, languages like Italian [and Spanish] have many simple (CV) syllables, for which onset–rime segmentation is equivalent to phonemic segmentation (e.g., *casa, mamá*: here onset–rime units and phonemes are the same). Phoneme-sized units are in effect represented for many words via onset–rime representation, ready to be discovered as letters are learned. The discovery of phoneme-size units is more difficult in languages with a more complex phonological structure. For languages like English and German, which have many complex syllables ending in codas (e.g., *film*, . . . *hand*, . . .), onset–rime segmentation does not typically correspond to phonemic segmentation. (p. 19)

Researchers studying reading development among Spanish-speaking children have also hypothesized that phonemic awareness instruction is less relevant to learning to read in Spanish than it is in English (Ferreiro, 1991; Ferreiro, Pontecorvo, Moreira, & García Hidalgo, 1996; Ferreiro & Teberosky, 1982; Signorini, 1998; Vernon, 2004; Vernon & Ferreiro, 1999; Zamudio, 2008) due to the orthographic transparency and the relative simplicity of Spanish. The prevalence of CV syllables (e.g., /ma/-/ma/; /pe/-/lo/-/ta/) means that onset-rime pairs are "phoneme-sized," as Ziegler and Goswami say, "ready to be discovered as letters are learned." Thus, phonemic awareness *instruction* might not be as helpful, and perhaps even be unnecessary, for learning to read in Spanish.

Early Reading Instruction in the United States and Mexico

Reading pedagogy in the United States has been heavily influenced by research on phonemic awareness. This influence was greatly accelerated by the release of the report of the National Reading Panel (2000) and soon thereafter, passage of No Child Left Behind in 2001 ("No Child Left Behind," 2004) and its signature framework for teaching beginning reading,

Reading First (U.S. Department of Education, 2009). An evaluation of Reading First found that it significantly increased the amount of phonemic awareness instruction in elementary classrooms (Horst, Boulay, & Unlu, 2008). The report did not make reference to kindergarten classrooms, but many state language arts frameworks do; around 2000, they began to mandate phonemic awareness instruction as early as kindergarten (e.g., California Department of Education, 2007; Texas Education Agency, 2011). This was true even where students were taught to read in Spanish. In Texas, for example, the Education Code states that students learning to read in Spanish should be taught *phonemic* awareness. The Code says,

> Students are expected to . . . distinguish orally presented rhyming pairs of words from non-rhyming pairs; . . . recognize spoken alliteration or groups of words that begin with the same initial sound (e.g., "Pepe Pecas pica papas"); . . . blend spoken phonemes to form syllables and words (e.g., /m/ .../a/ says ma, ma-pa says "mapa"). (Texas Education Agency, 2008)

In contrast, these phonemic skills are not part of beginning reading pedagogy in Mexico, where the traditional reading method brought from Spain in the colonial period was the *cartilla y deletreo* (Tanck de Estrada, 1998). In this method, dating from the 16th century, the pupil was given a pamphlet (the *cartilla*) with the vowels, the alphabet, and then over 300 isolated syllables, followed by sentences embodying Catholic doctrine. An advance in method by the 19th century was to substitute the letter-by-letter reading (*el deletreo*) for the direct reading of the syllables with blended letter sounds (*el silabeo*). More recent versions of the syllabic method can still be observed in some classrooms in Mexico (Reese, Mejía Arauz, & Ray Bazán, 2011); however, the national curriculum published by the Secretaría de Educación Pública (SEP) currently indicates that the focus of teaching reading and writing should be a communicative and functional approach. A specific teaching method is not prescribed; rather, teachers are free to utilize the method best adapted to their needs and preferences with the condition that "*la enseñanza inicial de la lecto-escritura no se reduzca al establecimiento de relaciones entre signos y sonidos, sino que se insista desde el principio en la comprensión del significado de los textos*" ("the teaching of early literacy is not reduced to the establishment of relationships between symbols and sounds, but rather that it emphasizes from the beginning the comprehension of the meaning of texts") (SEP, 1993, p. 24). This orientation, which includes little explicit instruction in letter names and sounds or on phonological awareness of any sort, has been maintained in later revisions of the framework (SEP, 2000, 2008).

Our goal in the present study is to compare early Spanish reading growth among first- and second-grade Spanish-speaking children in Mexico and the United States in relation to children's phonemic awareness

and their classrooms' relative emphasis on phonologically oriented instruction. In addition to being in an all-Spanish social context, the Mexican children learn to read in a pedagogical context where there is little if any explicit emphasis on phonological or phonemic processing, at any level, that is independent of learning to decode written words and texts. As we have described, the prevailing practices in early literacy instruction in Mexico favor more of a communicative and functional approach over a phonologically based approach, although children are indeed taught letter-sound combinations and how letters combine (blend) to form syllables and words. Spanish speakers in the United States, on the other hand, receive instruction that has been strongly influenced by the prevailing patterns of English early literacy instruction, which place considerable emphasis on phonological—and especially *phonemic*—processes and understandings as precursors to reading instruction, as the previous excerpt from the Texas Education Code illustrates. In Mexico, in contrast, there is no phonological, or phonemic, instruction (i.e., focused exclusively on parsing words orally and without reference to corresponding letters) that precedes literacy instruction. Children are taught letters, sounds, and how to blend them to form syllables and words straightaway when they enter first grade.

Although comparisons must be done cautiously due to sample and national context differences, this study is an initial attempt to understand whether instruction in phonemic skills is required for promoting early reading achievement among Spanish-speaking students learning to read in Spanish. By examining early reading development in relationship to growth in phonemic awareness among Spanish-speaking children learning to read in the United States and Mexico, we address the question, "How important is teaching phonemic awareness to children learning to read in Spanish?"

Methods

Overview

This is a comparative study that examines the relationship between curricular emphases and language/literacy outcomes among three groups of children. More specifically, we examine relationships between phonemic awareness and Spanish reading skill acquisition among children in Mexico receiving reading instruction in Spanish and children in the United States receiving reading instruction in either Spanish or English. Data for this study come from two related projects, a U.S. study conducted with children in grades K–2 in California and Texas and a Mexico study conducted with children in the state of Jalisco, Mexico. Both projects are described in more detail in the following. Each was a longitudinal study that included individual assessments of children's early language and reading development in Spanish, structured classroom observations, a survey of parents of

participating children regarding family sociodemographic characteristics and home literacy practices, and observations of the communities in which the schools were located. In the present study we make use of assessment data for the children in first and second grade in both projects. Data from classroom observations, parent surveys, and community observations are used for sample and setting descriptions to better understand children's experiences that are relevant for their language and literacy development.

In addition to children learning to read in Spanish in Mexico and the United States, we have also included a sample of Spanish-speaking children in the United States (part of the U.S. study) who were learning to read in English. There are two reasons for including this sample. First, it will be informative to compare the Spanish reading and phonemic awareness trajectories of a generally similar group of students who are not receiving formal reading instruction in Spanish. Although we expect that these students will not do as well in Spanish reading as their counterparts receiving Spanish reading instruction, these English-instructed students, at least as much as students instructed in Spanish, receive considerable phoneme-oriented instruction. Because phonemic awareness is thought to transfer across languages (August & Shanahan, 2006; Genesee, Lindholm-Leary, Saunders, & Christian, 2006), English-instructed students' phonemic awareness skills in Spanish might therefore be greater than that of students in Mexico who are taught to read in Spanish but receive no such phonemic awareness instruction. Evidence of higher levels of phonemic awareness *in Spanish* among students who have only been instructed *in English* would provide perhaps the strongest evidence we have that phonemic awareness transfers across languages, in this case from the second language (English) to the first (Spanish). To date the evidence for phonemic awareness transferring across languages is correlational, consisting of strong associations between phonemic awareness measured in children's first and second languages (August & Shanahan, 2006; Genesee et al., 2006). Such designs cannot rule out the possibility that high correlations between phonemic awareness in both languages is due to an underlying phonological factor rather than transfer across languages. However, if children instructed in phonemic awareness in English—yet receiving no literacy instruction in Spanish—show greater phonemic awareness in Spanish than do children instructed in Spanish—but not instructed in phonemic awareness—the case for cross-language transfer of phonemic awareness instruction would be compelling.

In the present analyses, we compare gains in children's language and reading in Grades 1 and 2 in the U.S. sample, both Spanish-instructed children and English-instructed children, with gains in language and reading among the Mexico sample in the same grades. Although the U.S. children began school in kindergarten and received a curriculum that emphasized initial reading instruction, children in Mexico did not. Elementary schools in Mexico follow a national curriculum and begin reading instruction in

Grade 1. Prior to first grade, children attend preschool for one to three years. What is actually taught in preschool varies greatly from public to private preschool settings. In public schools the national curriculum does not call for explicit instruction in letter names, sounds, or decoding in preschool. Because of this variability in preschool/kindergarten experiences across the two national settings, our study examines oral language and early reading performance from the beginning of Grade 1 to the end of Grade 2 among children in both countries.

The two studies were aligned with respect to data collection procedures, measures, and national origin. All children in the Mexico study were born in Mexico; children in the U.S. samples were either born in Mexico or had at least one parent born in Mexico. The Mexico sample was drawn from public schools in Jalisco, one of the states with a long history of migration to the United States (Massey, Alarcón, Durand, & González, 1987).

Within the U.S. study, state educational policies differ, and students in Texas were more likely to be in a bilingual education program and therefore receive reading instruction in Spanish; students in California were more likely to receive all of their instruction in English. However, both groups of U.S.-schooled children attended kindergarten programs that included a strong focus on early literacy, including instruction in phonemic awareness, letter names and sounds, and sound blending. In Mexico, children may attend three years of preschool, with the mandatory third year corresponding to the American kindergarten year. Literacy instruction begins formally in Grade 1.

Participants

The U.S. study selected students from 35 schools in California and Texas. To be included, schools had at least 40% Latino enrollment overall and at least 30% Spanish-speaking English learner enrollment in grades K/1. These minimum percentages provided assurance of a sufficiently large Spanish-speaking population at the school and in the community. Sixty percent of English Language Learners (ELLs) in California and Texas attend schools that have greater than 30% ELL enrollment (August & Shanahan, 2006), so our sample schools were well within the typical range of ELL concentration in the two states where the study was conducted.

We sampled schools from a range of language programs for ELLs—English immersion, transitional bilingual education, developmental (or maintenance) bilingual education, and dual-language bilingual education (see Genesee, 1999, for more information on each of these program models)—and community types: ethnically heterogeneous, ethnically homogeneous (i.e., almost exclusively Latino), mixed income, and low-income communities. Because we wanted to study schools with at least adequate levels of achievement within each of these program categories, schools

were rank-ordered by achievement (Academic Performance Index, or API, in California; Texas Education Agency, TEA, ratings in Texas), within program (English immersion, etc.) and geographic site (urban and border Texas; urban California), and we attempted to contact schools that were relatively high on the rankings. In Texas, this criterion meant that schools had a rating of at least Acceptable, and in California the criterion meant that schools had an API score of 650 or better. We selected the 650 API by using schools in Texas that collected Stanford Achievement Test scores—the basis for calculating API scores—in addition to the Texas State Reading test. This allowed us to determine an API score that roughly reflected the cut-off for Acceptable schools on the Texas state assessment. In two cases, we recruited California schools with relatively low API scores but high Spanish reading scores in Grades 2 through 5 (64th through 77th national percentiles on the Spanish Assessment of Basic Skills; CTB-McGraw Hill).

All participating children in the U.S. study were Spanish-speaking English learners upon entry to kindergarten. For the present analyses, we report findings for the subset of children who were of Mexican origin (at least one parent born in Mexico). The U.S. children in the study were either in a bilingual program, and therefore learning to read in Spanish, or in an English immersion program, and therefore learning to read in English.

The Mexico project was designed as complementary to the U.S. study, adapting or using many of the measures and procedures. The Mexico study drew children from four public schools in Guadalajara, the second largest city in Mexico, from communities ranging from low to middle income. Two of the schools scored in Decile 10 on the national standardized evaluation ENLACE (*Evaluación Nacional del Logro Académico en Centros Escolares*; http://www.enlace.sep.gob.mx/) administered in all elementary schools in Mexico; one scored in Decile 8, and one scored in Decile 2. Thus, although the selection procedures were not identical, schools in both countries were relatively high achieving. All four Mexican schools followed the national curriculum, in which students receive free textbooks published by the Secretaría de Educación Pública. To meet the needs of an expanding student population, most urban public schools in Mexico operate on a half-day schedule, with one school operating in the morning and a different school utilizing the same campus in the afternoon. In the Mexico study, all schools operated on the morning schedule. Although migration of indigenous families, particularly from Southern Mexico, is on the rise in Guadalajara, none of the families in the Mexico study reported use of a language other than Spanish at home. For the present analyses, students from the Mexico study were selected if they began the study in Grade 1 and participated until end of Grade 2.

Table 1 reports the number, sex, age, and parent education level of the three groups of children.

Table 1
Demographic Information by Group

Demographic	Mexico	United States: Spanish Instruction	United States: English Instruction
N	189	280	102
Female (%)	55	55	50
Age in years (*SD*) September 1, Grade 1	6.46 (0.29)	6.49 (0.34)	6.38 (0.35)
Parent education (*SD*): Average of mother and father years of education	9.47 (3.42)	8.91 (3.17)	8.56 (3.50)

Note. The groups do not differ in proportion of females, $\chi^2(2) = 0.78$, $p > .05$. There is a group effect on age, $F(2, 568) = 4.09$, $p < .05$. Based on Tukey post hoc analysis, Spanish-instructed U.S. students are significantly older than English-instructed U.S. students ($p < .05$). There are no significant differences in age between the Mexican and the U.S. groups ($p > .05$). Parent education does not significantly differ by group, $F(2, 568) = 2.86$, $p > .05$.

Differences in parent levels of education across the Mexico and the two U.S. samples approached but did not reach statistical significance. A small number of parents in Mexico were employed in professional jobs such as doctor, professor, journalist, and financial analyst (5% of the fathers and 9% of the mothers), whereas none of the parents were employed in this level of work in the United States.

Community Contexts

The Spanish-speaking children in the U.S. project reside in 35 different communities in urban and suburban areas both along the U.S.-Mexico border as well as in cities located farther from the border. Although many children live in neighborhoods that are predominantly low income, Latino, and Spanish speaking, others reside in communities in which other languages such as Vietnamese or Khmer are regularly heard as well. In some communities, use of Spanish for a variety of religious, commercial, legal, and medical purposes is common. In other, English-dominant communities, Spanish language use may be confined to home and limited community locales. Even in communities made up of almost exclusively first- and second-generation Latino immigrants, however, there is penetration and use of English through the media, commercial establishments, and the schools.

Children in the Mexico project reside in four communities in a large metropolitan area. One of the communities is a middle-class community, sprinkled with small, gated communities and transected by one of the city's major commercial thoroughfares. Another community was originally an indigenous settlement that retains a small-town atmosphere, even though it is

located on a major highway (the *periférico*) at the edge of the city. In all of the communities, land use policies allow a mixture of residential, small business, larger commercial establishments, and light industry. Spanish is the language of school and the media, the home language of all of the families in our sample, and the dominant language observed throughout all of the communities. In two of the communities, however, migrants from other parts of Mexico who speak indigenous languages were observed.

Child Measures

Language and literacy assessments were administered by trained research assistants who were native speakers of Spanish, in the fall and spring of each school year (Grades 1 and 2). Detailed descriptions of some of the measures can be found in Branum-Martin et al. (2006, 2009).

Phonemic awareness (PA) was measured using five phonemic subtests of Test of Phonological Processes in Spanish (TOPPS), developed by Francis and Carlo (2001) to align with the English CTOPP (Wagner, Torgesen, & Rashotte, 1999). The Cronbach's alpha reliability coefficients for the five subtests in the present sample are estimated to be greater than .92 across all waves of Grades 1 and 2. A factor score was estimated using a two-parameter item response model fit to items from subtests measuring (a) Blending Phonemes Into Nonwords, (b) Blending Phonemes Into Words, (c) Phoneme Elision, (d) Segmenting Words Into Phonemes, and (e) First and Last Sound identification. This method was used instead of totaling or averaging the subtests because not all students in the United States were administered the First and Last Sound subtests. Therefore we estimated an item response theory (IRT) model to obtain estimates of item difficulties and individual ability levels. The full model was based on all students who participated in the Oracy/Literacy (Grades K–2) and DOLE (Grades 1–3) projects across all grades in which the students were evaluated (model N = 12,324 observations based on N = 4,388 unique individuals, who were tested between one and six times from kindergarten through Grade 3). The IRT estimated mean (*SD*) for all observations from kindergarten through Grade 3 is 0 (1). Estimated mean (*SD*) scores are –0.18 (0.88) and 0.59 (0.77) among beginning first-grade (N = 2.406) and end second-grade (N = 1.646) U.S. bilingual and Mexican students. These estimated means are helpful to compare children we are reporting on to all children on which the IRT estimates are based.

Other oral language skills were gauged by the Listening Comprehension (LC) and Picture Vocabulary (PV) subtests of the Woodcock Language Proficiency Battery-Revised (WLPB-R) in Spanish (Woodcock & Muñoz-Sandoval, 1995). The internal consistency reliability coefficients among 6-year-olds are estimated to be .86 for LC and .68 for PV.

Reading skills were measured using the Letter-Word Identification (LW), Word Attack (WA), and Passage Comprehension (PC) subtests from the WLPB-R. The internal consistency reliability coefficients among 6-year-olds are estimated to be .95 for LW, .91 for WA, and .89 for PC.

For each of the WLPB-R oral language and reading subtests we report W-scores.

Classroom Observations

Classroom data were collected using a structured classroom observation protocol developed by Foorman and colleagues (Foorman et al., 2006; Foorman & Schatschneider, 2003) and adapted for use in bilingual (Foorman, Goldenberg, Carlson, Saunders, & Pollard-Durodola, 2004) and Spanish-speaking settings. Observers use a tape-recorded designation of minutes and code the instructional format and content of teaching each minute. Various dimensions of classroom instruction are coded such as instructional group size (e.g., whole class or small group), the content of instruction (e.g., reading, writing, language development), and specific literacy skills that are the focus of instruction (e.g., book and print awareness, phonemic awareness, alphabet instruction, vocabulary, comprehension). In the present study we report a limited amount of data specifically related to our research questions on the prevalence of phonemic awareness instruction. Good interrater reliability has been achieved on this coding system in prior studies (i.e., >.80; Foorman & Schatschneider, 2003).

Missing Data and Attrition Analysis

U.S. Students

For the U.S. participants, we selected the 1,451 students who entered the study in kindergarten. Thirty-nine of these students were not consistently in an English language immersion (English instruction) or non-immersion (Spanish instruction) program during the course of the study (i.e., they switched between the two types of program), so were excluded, leaving 1,412 students. Of these students, parent questionnaires (PQs) were returned for 1,167 students (83% returned). (PQs provided the information on national origin of parents and children necessary for sample selection.) The percentage of students who had PQ data did not differ by instruction group, English versus Spanish, 81.0% versus 83.4%, $\chi^2(1) = 1.20$, $p > .05$. There were no significant differences between PQ and no PQ groups in Fall Kindergarten PA: English, $F(1, 382) = 0.73$, $p > .05$; Spanish, $F(1, 939) = 0.02$, $p > .05$.

For 867 students whose families completed questionnaires, either the mother or father was identified as being born in Mexico. The proportion of students who were identified as being of Mexican descent did not differ by language instruction group, Spanish versus English, 75.6% versus

71.2%, $\chi^2(1) = 2.44$, $p > .05$. Forty-seven students repeated grades and were excluded from analyses, leaving 820 students. The proportion of students who repeated grades did not differ by language instruction group, Spanish versus English, 5.3% versus 5.8%, $\chi^2(1) = 0.09$, $p > .05$. Of the remaining 820 students, 438 were missing data (either because they left the study or were missing data randomly during the study), leaving 382 students with complete data. The proportion of students who were missing data did not differ by language instruction group, Spanish versus English, 52.7% versus 55.3%, $\chi^2(1) = 0.43$, $p > .05$. Among the English-instructed students, students missing data had significantly higher Fall Kindergarten PA then students not missing data, –1.25 versus –1.44, $F(1, 212) = 6.03$, $p < .05$. Among the Spanish-instructed students, there were no significant differences between students with full data and those missing data in Fall Kindergarten PA, –1.23 versus –1.19, $F(1, 562) = 0.59$, $p > .05$.

Mexico Students

We selected the 240 students who entered the study in Grade 1 in years 1 or 2, thus potentially completing 2 full years of the study. Twelve of these students repeated first or second grade so were excluded. Thirty-nine students were missing data. There were no significant differences between the students with full data and those missing data on Grade 1 measures.

Analytical Approach

Our approach to analyzing these data was straightforward. We compared the three groups—Mexican children learning to read in Spanish, U.S. children learning to read in Spanish, and U.S. children learning to read in English—on the three language (phonemic awareness, listening comprehension, and picture vocabulary) and three reading (letter-word identification, word attack, and passage comprehension) scores. Mean scores in fall and spring of Grades 1 and 2 were plotted and compared across and within time points to determine the relationships among the development of language and reading skills for the three student groups. Tukey post hoc alpha was set at .05 for comparisons among the three groups at each time point (fall and spring of Grades 1 and 2).

To determine whether there is relationship between phonemic awareness and reading among Mexico students, we conducted regression analyses on the three reading outcomes with beginning-of-year reading and phonemic awareness as predictors of end-of-year reading performance in first grade.

We used descriptively limited data from community observations, parent questionnaires, and classroom observations to provide contextual information and help inform interpretations.

Results

Classroom Instruction

Before reporting comparisons among the three groups' language and literacy attainment, we clarify the key contrasts between the U.S. and Mexican classrooms we observed directly. These classroom observations confirmed that the national curriculum (including a reader and consumable workbooks) served as the basis for the majority of instruction in all Mexican classrooms. Books from classroom libraries or supplemental materials were used infrequently and only in some classrooms. Reading textbooks used in the classrooms are produced by the Secretary of Public Education; we saw no use of U.S.-produced textbooks.

Phoneme-oriented instruction was seen in 85% of the U.S. K classrooms (in nearly 94% of English-instructed classrooms and 79% of Spanish-instructed classrooms). In Grades 1 and 2, we saw phonemic instruction in 56% of U.S. classrooms but in fewer than 9% of Mexican classrooms. Aside from this contrast, the most noticeable difference between the Mexican and U.S. classrooms that we observed was the far greater percentage of time spent in activities and questions related to reading comprehension in Mexican classrooms compared to U.S. classrooms. In first grade, comprehension activities and questions were observed during 29% of the time in Mexico and between 7% and 8% of the time in the U.S. classrooms. The contrast in second grade was 24% of the time observed in the Mexican classrooms and between 13% and 15% of the time in the U.S. classrooms.

U.S. students in English instruction were in classrooms where virtually all of the instruction (97.5%) was in English; U.S. classrooms with students learning to read in Spanish provided a large majority (78.2%) of instruction in Spanish. Students in Mexican schools only received instruction in Spanish.

Patterns in Oral Language Skills Development

Table 2 and Figure 1 show children's oral language skills at each time point (fall and spring of each year) on the three language measures. On phonemic awareness, both groups of U.S. students outperformed Mexican students throughout first and second grade. Mexican students appeared to make faster progress than the U.S. students, but the gap between Mexican and U.S. students was still substantial at the end of second grade.

Even those U.S. students who received their reading instruction all in English had higher PA scores in Spanish than did the Mexican students. A likely explanation is that there is much more phonemically oriented instruction in the United States than there is in Mexico, and students learning in English developed higher levels of phonemic awareness that then transferred when the students were tested in Spanish. The differences we found in phonemically oriented instruction (reported previously) no doubt help

Table 2

Language Performance by Instructional Group and School Semester

		Mexico		U.S.-English		U.S.-Spanish		Post Hoc Differences (alpha = .001)						
Variable		*M*	*SD*	*M*	*SD*	*M*	*SD*	df 1	df 2	*F*	*p*	MS	ME	SE
Phonemic awareness														
Grade 1	Fall	–1.11	0.72	–0.16	0.55	0.23	0.72	2	568	211.13	<.0001	Y	Y	Y
	Spring	–0.44	0.77	0.31	0.56	0.73	0.60	2	568	180.10	<.0001	Y	Y	Y
Grade 2	Fall	–0.08	0.80	0.41	0.49	0.82	0.59	2	568	106.68	<.0001	Y	Y	Y
	Spring	0.18	0.79	0.50	0.58	0.95	0.60	2	568	78.70	<.0001	Y	Y	Y
Picture vocabulary														
Grade 1	Fall	477.45	15.58	444.38	20.20	471.74	21.61	2	568	101.17	<.0001	Y	Y	Y
	Spring	485.44	14.35	445.72	20.42	476.82	21.43	2	568	147.57	<.0001	Y	Y	Y
Grade 2	Fall	489.65	13.37	448.71	20.20	480.38	21.24	2	568	162.40	<.0001	Y	Y	Y
	Spring	493.38	13.33	453.01	22.42	485.75	19.79	2	568	167.34	<.0001	Y	Y	Y
Listening comprehension														
Grade 1	Fall	470.58	13.91	453.59	16.87	469.51	11.96	2	568	60.91	<.0001		Y	Y
	Spring	477.67	11.38	461.32	14.26	475.56	11.94	2	568	65.60	<.0001		Y	Y
Grade 2	Fall	483.43	11.50	465.03	14.10	479.71	11.21	2	568	83.49	<.0001	Y	Y	Y
	Spring	488.85	11.52	467.38	14.14	482.74	11.52	2	568	106.54	<.0001	Y	Y	Y

Note. MS = Mexico versus U.S.-Spanish; ME = Mexico versus U.S.-English, SE = U.S.-Spanish versus U.S.-English; Y = significant difference between groups.

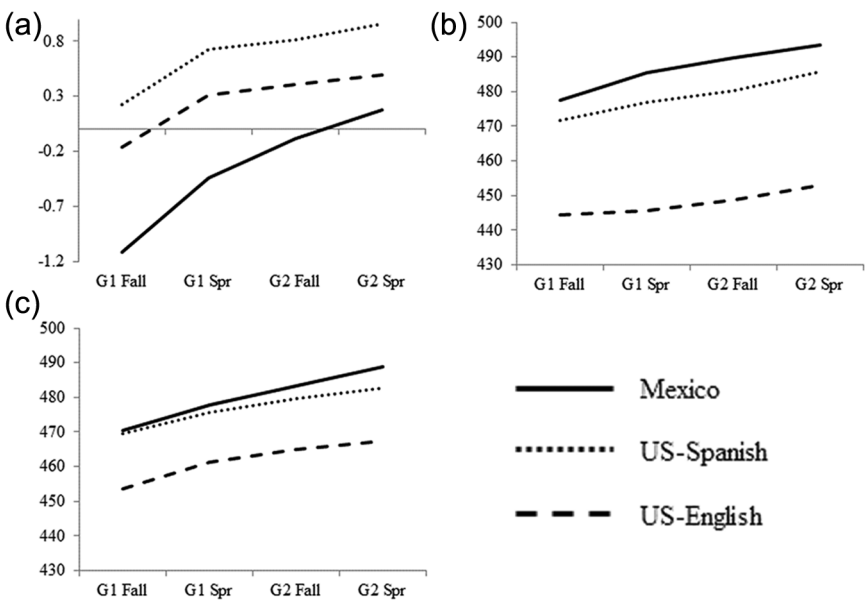

Figure 1. **Language performance by instructional group over time (a) phonemic awareness, (b) picture vocabulary, and (c) listening comprehension.**

explain the differences between children's phonemic awareness in Mexico and the United States we observed (Figure 1a).

On the other language measures—picture vocabulary and listening comprehension—children in Mexico had higher Spanish oral language scores than did their Spanish-speaking peers in the United States, modestly higher than that of the children in the United States receiving instruction in Spanish and far higher than children in English instruction. Higher scores on these measures by the Mexican children is not surprising since students in Mexico spoke only Spanish at home and community; had full access to media, texts, and environmental use of Spanish on a continual basis; and of course received all of their instruction in Spanish. Differences in oral language measures between the Mexican and U.S. Spanish-instructed groups were modest compared to differences between U.S. students who received Spanish or English reading instruction.

The English-instructed students were very low on both language measures. Not only were these children receiving no formal classroom instruction in Spanish, but they also began kindergarten with significantly lower scores on LC and PV measures in Spanish than did the children receiving Spanish instruction.[1] Nonetheless, the English-instructed students were superior to

the Mexican students in phonemic awareness. This was, once again, almost certainly the result of phonemic awareness instruction in the U.S. classrooms, particularly in kindergarten but also in most first-grade classrooms, tapering off, but still in about one-third of classrooms, in second grade.

Patterns in Reading Development

Just as the national curriculum in Mexico does not focus on explicit instruction of phonological skills, neither does it focus on learning the alphabet nor learning to read before first grade. Consequently, Mexican children entered Grade 1 with little reading proficiency. This is illustrated in Table 3 and Figure 2, which show that Mexican children's reading achievement at first grade entrance was far below that of the U.S. children in Spanish programs, who had been in kindergarten programs of instruction that taught beginning reading skills. Mexican children's initial reading achievement was on par with that of the U.S. children in English-only programs who had not received instruction in Spanish reading. Both the Mexican and English-instructed U.S. groups entered first grade with very low level reading skills in Spanish.

However, what happened in first grade was striking: Mexican children made far more rapid gains during the year than first graders in the United States, far exceeding the achievement of students receiving English instruction and nearly erasing beginning first-grade achievement differences with U.S. students instructed in Spanish. Remaining differences between the Mexican- and U.S.-instructed students were then eliminated altogether in second grade. The Mexican students had even higher scores than U.S. students on letter-word identification. Both the Mexican and U.S. Spanish-instructed students were well above the English-instructed students on all reading measures.

The box plot in Figure 3 provides more insight into the changes in reading scores over two years; the figure shows the growth in word attack means and changes in the distributions at each wave of data collection for the three samples. (Maximum and minimum scores are represented by horizontal lines at the ends of the vertical lines originating from each box; top and bottom of each box represent 75th and 25th percentiles, respectively; horizontal line within the box shows median score; group symbols shows mean.) The contrast between fall and spring of first grade in Mexico is dramatic. The score distribution goes from highly positively skewed at the beginning of the year to a negative skew at the end of first grade. We then see gradually higher means and less skew as the Mexican children master word attack skills in second grade. Due to space constraints we present data for word attack only; the other reading measures (letter-word identification and passage comprehension) show similar patterns: For the Mexican children, positive skew at the beginning of first grade, a sharp increase in mean score and

Table 3
Reading Performance by Instructional Group and School Semester

Variable		Mexico		U.S.-English		U.S.-Spanish		Post Hoc Differences (alpha = .001)						
		M	*SD*	*M*	*SD*	*M*	*SD*	df 1	df 2	*F*	*p*	MS	ME	SE
Letter-word identification														
Grade 1	Fall	407.38	59.96	402.84	36.77	478.68	42.74	2	568	163.15	<.0001	Y		Y
	Spring	495.00	44.82	435.81	32.45	511.70	28.63	2	568	172.19	<.0001	Y	Y	Y
Grade 2	Fall	519.31	30.35	445.41	31.40	516.51	25.03	2	568	277.88	<.0001		Y	Y
	Spring	532.86	18.08	460.21	33.45	523.86	26.09	2	568	302.65	<.0001	Y	Y	Y
Word attack														
Grade 1	Fall	434.21	36.76	435.64	26.03	480.38	27.56	2	568	158.25	<.0001	Y		Y
	Spring	491.74	29.65	461.34	22.42	502.46	19.00	2	568	113.31	<.0001	Y	Y	Y
Grade 2	Fall	502.99	20.08	469.02	20.77	503.70	17.48	2	568	137.70	<.0001		Y	Y
	Spring	508.38	15.43	476.11	22.22	511.58	17.55	2	568	155.72	<.0001		Y	Y
Passage comprehension														
Grade 1	Fall	391.77	36.20	398.30	27.48	441.86	30.27	2	568	161.49	<.0001	Y		Y
	Spring	450.97	31.28	425.77	27.79	468.24	12.64	2	568	129.08	<.0001	Y	Y	Y
Grade 2	Fall	467.09	18.36	435.56	26.43	472.81	10.34	2	568	183.86	<.0001	Y	Y	Y
	Spring	475.56	11.84	447.40	21.66	477.50	9.79	2	568	204.61	<.0001		Y	Y

Note. MS = Mexico versus U.S.-Spanish; ME = Mexico versus U.S.-English, SE = U.S.-Spanish versus U.S.-English; Y = significant difference between groups.

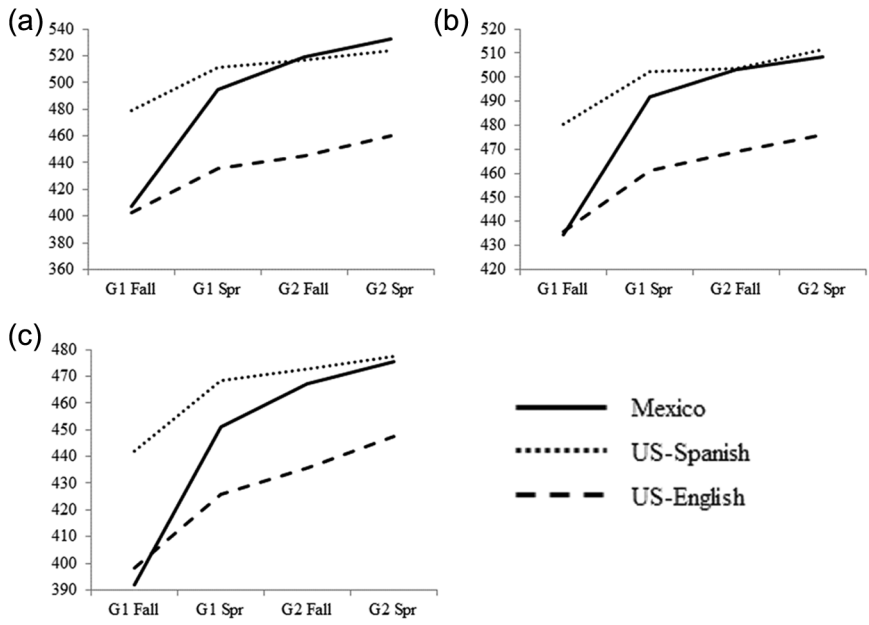

Figure 2. **Reading performance by instructional group over time (a) letter-word identification, (b) word attack, and (c) passage comprehension.**

shift to negatively skewed distribution in the spring, then more gradual increase in means and less skew over second grade. For word attack and passage comprehension, there are floor effects since so many children enter first grade non-readers. Among the U.S. children, in contrast, there is an increase in mean scores over the 2 years, but the distributions remain essentially normal at each time point.

Phonemic Awareness and First-Grade Reading Among Mexican Children

Phonemic awareness is not taught in Mexican schools, so observed score distributions represent naturally occurring variation probably influenced by children's developing literacy skills; the variation remains large across Grades 1 and 2 even while children are making rapid progress in acquiring reading skills. With the large range in the Mexican scores, there are some Mexican children with higher phonemic awareness levels than some of their U.S. counterparts. Even though phonemic awareness instruction does not appear necessary for Mexican children to reach or surpass achievement levels observed among Spanish-instructed children in the United States, it is still possible that high levels of phonemic awareness might

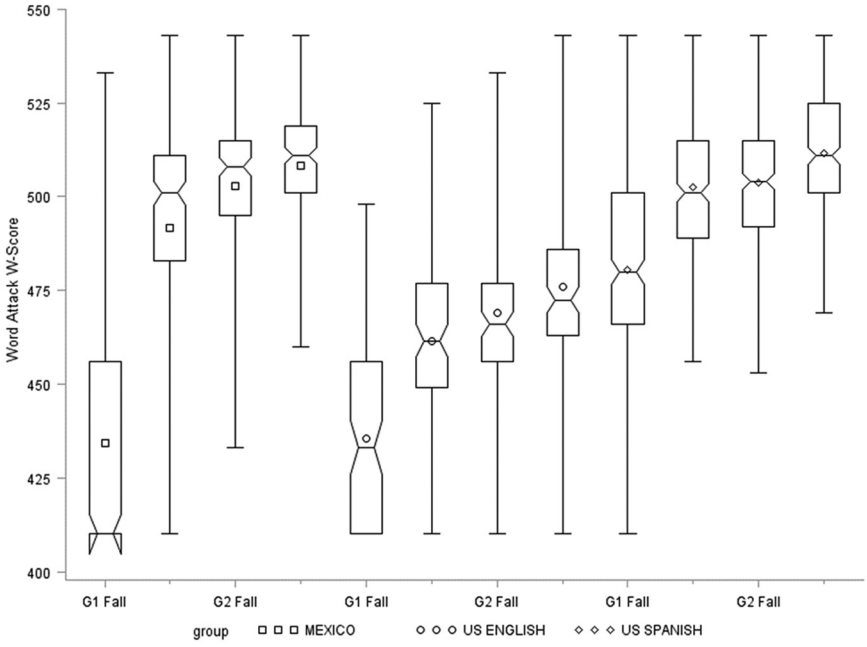

Figure 3. **Box plots of word attack score distributions. Group parameters (symbol): median (midline of box), mean (symbol in box), first quartile (lower edge of box), third quartile (upper edge of box), 95% confidence interval around median (lower and upper edges of box notches), minimum and maximum values (end of whiskers).**

help these Mexican children attain higher levels of early reading development.

To determine whether higher phonemic awareness might provide students in Mexico with a reading advantage, we conducted regression analyses among the Mexican students for the three reading outcomes at the end of Grade 1. We focused on Grade 1 because most of the change in reading skill among Mexican students occurred in Grade 1. We controlled for beginning Grade 1 reading and evaluated the effect phonemic awareness has on end of Grade 1 performance. We also included a phonemic awareness by beginning reading interaction term.

Before conducting the regression analyses we examined bivariate correlations between phonemic awareness and reading for the Mexican students. Beginning Grade 1 phonemic awareness is highly correlated with beginning

Grade 1 reading (.76, .77, .73, $p < .05$, for letter-word identification, word attack, and passage comprehension, respectively) and moderately correlated with end of Grade 1 reading (.41, .42, .47, $p < .05$, for letter-word identification, word attack, and passage comprehension, respectively). The latter correlations are comparable to the correlations between beginning and end-of-year reading skill (.47, .41, .44, $p < .05$, for letter-word identification, word attack, and passage comprehension, respectively). Mexican students' relative standing on phonemic awareness is stable during Grade 1 as indicated by the high correlation between beginning and end Grade 1 phonemic awareness (.77, $p < .05$).

Among Mexican students, the effect of initial Grade 1 phonemic awareness on end Grade 1 reading significantly varies as a function of initial reading. There is a significant initial reading by phonemic awareness interaction for all three reading measures, letter-word identification: $F(1, 185) = 10.14$, $p < .05$; word attack: $F(1, 185) = 8.97$, $p < .05$; passage comprehension: $F(1, 185) = 9.70$, $p < .05$. This interaction is the result of students with lower initial reading skill making greater gains in reading as a function of phonemic awareness compared to those with higher initial reading.

To illustrate the strength of the effect, two students at initial letter-word identification levels 1 *SD below* the mean, but who differ by 1 *SD* in phonemic awareness, differ by 20 W-score points on end-of-year reading, favoring the student with higher phonemic awareness. However, two students at initial letter-word identification levels 1 *SD above* the mean, but who differ by 1 *SD* in phonemic awareness, differ by only 2.5 W-score points, favoring the student with higher phonemic awareness (see Figure 4a).

Conversely, students who differ by 1 *SD* (60 W-score points, see Table 3) in initial letter-word identification but who are low on initial phonemic awareness (–1 *SD*) differ by 29 W-score points on end letter-word identification whereas students high on initial phonemic awareness (+1 *SD*) differ by 11 W-score points (Figure 4a). Similarly, a 37 W-score difference in initial word attack translates to 16 and 4 W-score differences on end word attack for students low and high in initial phonemic awareness (Figure 4b). A 36 W-score difference in initial passage comprehension translates to 16 and 5 W-score differences on end passage comprehension for students low and high in initial phonemic awareness (Figure 4c).

Summary: Phonemic Awareness Instruction and Beginning Spanish Reading

Children in Mexico begin first grade well behind Spanish-instructed U.S. students in reading achievement and phonemic awareness, but within two years catch up or surpass them in reading—while remaining below *both* English- and Spanish-instructed children on phonemic awareness. These results call into question whether phonemic awareness instruction actually helps promote, much less is necessary for acquiring, Spanish reading skills.

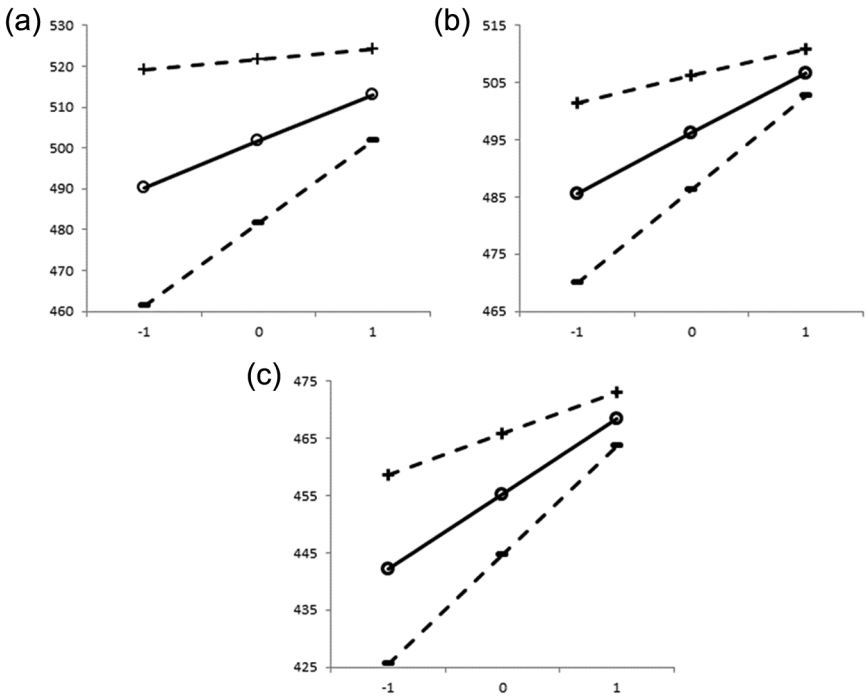

Figure 4. **Effects of phonemic awareness on end of Grade 1 (a) letter-word identification, (b) word attack, and (c) passage comprehension, controlling for beginning of Grade 1 reading among Mexican students. The vertical axes represent W-scores for the reading outcomes, the horizontal axes represent phonemic awareness scores (*z*-scores within the Mexican sample). The line within a graph represent the relation between beginning Grade 1 phonemic awareness and end Grade 1 reading for beginning reading at the sample mean (O), +1 *SD* (+), and –1 *SD* (–).**

A clear implication is that phonemic awareness instruction might be superfluous for children to learn to read in Spanish—at least (a) when children are in an all-Spanish context, such as Mexico, and (b) to the level attained by Spanish-speaking children in the United States being taught to read in Spanish. Mexican children reach or surpass that level in the absence of explicit phonemic awareness instruction. However, early reading achievement and phonemic awareness in Spanish are not independent, as the association between phonemic awareness and reading achievement among children in Mexico demonstrate. Future research should try to understand

further the nature of that relationship and its implications for phonemic awareness instruction when teaching children to read in Spanish.

Discussion

This study compared reading instruction and achievement in the United States and Mexico in order to understand further the role of phonemic awareness instruction in promoting early Spanish reading achievement. We found that Spanish-speaking children in the United States, regardless of whether their literacy instruction was in English or Spanish, begin first grade with higher levels of phonemic awareness in Spanish than children in Mexico. This superiority in phonemic skills by U.S.-instructed students is almost certainly due to the considerable emphasis on phonemic awareness instruction in U.S. classrooms, regardless of whether children are learning to read in Spanish or English. The higher levels of phonemic awareness *in Spanish* among students who have received phonemic awareness instruction only *in English* provide perhaps the strongest evidence we have that effects of phonemic awareness instruction transfer across languages, in this case from children's second language (English) to their first (Spanish).

More to the point of this paper, the U.S. children instructed in Spanish began first grade with much higher phonemic awareness and literacy skills in Spanish than did the Mexican children. Within 2 years Mexican children caught up with or surpassed U.S. children in reading skills yet remained behind the U.S. children in phonemic awareness. The clear implication is that phonemic awareness instruction might not be helpful, much less necessary, for learning to read in Spanish—at least to the achievement levels observed among Spanish-speaking children in the United States attending schools with higher than average achievement compared to other schools with substantial Spanish-speaking EL populations.

Results of the regression analyses suggest that phonemic awareness is most predictive of reading growth among Mexican students who enter school with little to no reading skill. Among these low reading skill students, those with higher phonemic awareness show greater improvement in reading than those with lower phonemic awareness. However, we cannot determine from these results if phonemic awareness instruction would help those students who enter school with little to no reading skill and low phonemic awareness.

Findings from the U.S.-Mexico comparisons, in contrast, support the contention of Spanish literacy researchers who argue that due to the transparency and relative simplicity of Spanish orthography, phonemic awareness instruction is probably unnecessary. Phonemic awareness instead develops adequately as children are taught to read and they learn (or discover) the alphabetic principle (e.g., Carreiras, Alvarez, & de Vega, 1993; Carreiras & Perea, 2004; Ferreiro, 1991; Ferreiro et al., 1996; González,

1997; Signorini, 1998; Vernon & Ferreiro, 1999) and learn to write (Vernon, 2004; Zamudio Mesa, 2008). Our findings suggest there is no need to precede early literacy instruction in Spanish with phonemic training; rather, directly teaching children to recognize letters and sounds and how letters combine to form syllables and meaningful words appears to be sufficient. As Goswami (1999) has observed, "teaching initial reading is a straightforward matter in highly transparent orthographies. It is a less straightforward matter in less transparent orthographies" (p. 154). Phonemic awareness instruction might facilitate reading acquisition in deep, or opaque, orthographies such as English by helping beginning readers understand the alphabetic principle, that is, that letters map to sounds in systematic ways. The mapping probably seems random to beginning readers, given the number of irregularities in deep orthographies; phonemic training might therefore help provide an important bridge between speech and print. But phonemic training might be unnecessary—perhaps even a waste of time—for learning to read in a transparent and relatively simple orthography where the sound symbol mapping is so consistent and the preponderance of onset-rime pairs are at the phoneme level.

The rapid growth in early literacy skills (letter-word identification, word attack, and passage comprehension) in Mexican schools is all the more striking given the disparate educational resources in public schools in the two countries. In urban Mexico, public school campuses typically house one school for the morning session and a separate school during the afternoon session. Students attend school for half a day, for 4.5 hours, and classrooms often include up to 50 students, as was the case in two of the schools in our sample. Classroom libraries are meager, and additional instructional classroom resources are rare.

On the other hand, Mexican children are in all-Spanish contexts, which provide great advantages to literacy development compared to the mixed language (often English-dominant) contexts that U.S. children learning to read in Spanish face. It is therefore possible that providing the U.S. children learning to read in Spanish with more advanced phonemic skills helps compensate for a less rich Spanish language and literacy environment and weaker vocabulary and listening comprehension skills. More advanced phonemic skill might then contribute to the U.S. children's end of second grade reading achievement, which is comparable to that of the Mexican children despite a less supportive language context and lower language skills (aside from phonemic awareness).

It could be further argued that in the absence of a pervasive Spanish language environment, explicit focus on phonemic awareness might actually be necessary for Spanish instruction in U.S. schools. Moreover, Spanish-speaking children in the United States will ultimately learn to read in English, and the phonemic focus in Spanish may facilitate the transition to English literacy instruction. But it is also possible that children learning to

read in Spanish could make much more rapid growth in early literacy skill acquisition or the development of comprehension skills were they not encumbered with an instructional focus derived from the research base in English. These are all plausible scenarios that we hope future research will be able to address.

There are a number of limitations to this study. The most obvious is that this is not an experimental design; we can therefore not claim causal linkages (or their absence) among the variables of interest. Although an experimental design would be desirable, such a study is highly improbable, if not impossible, in the current policy and practice context. As we point out previously, the assumption is widespread that phonemic awareness instruction is necessary to help children acquire Spanish reading skills. We know of no data that challenge this assumption directly. As a result, researchers and educators would have little empirical basis for proposing—and expecting to fund—a comparison of Spanish reading instruction with and without phonemic awareness instruction. Our findings point to the need for such a study.

Another limitation, largely due to the different national and linguistic contexts of our samples, is sample comparability. Family background characteristics, such as the level of education, home country experiences, and primary language of the parents of Mexican-origin children in both the United States and Mexico, were comparable and not statistically different, although as we pointed out there were a few parents at the higher end of the education continuum in Mexico but not in the United States. Given the association we found between parent education, phonemic awareness, and reading achievement, the greater range at the top of the education distribution could produce misleading results. We think this is unlikely, given the minor differences, if any, in the socioeconomic status (SES) of the samples in contrast to the very striking differences in reading and phonemic awareness trajectories that cannot be explained by changes in group SES. It is very difficult to explain the observed differences in development on the basis of SES differences that might have existed at the start of schooling because the children in Mexico begin at lower levels of performance, progress more rapidly, and finish at higher levels of performance. More typically, SES confers an advantage that is evidenced by higher performance levels at the start of school, not by lower skills and more rapid growth. Nonetheless, a more tightly controlled future study would be desirable.

Perhaps more problematic is the question of what grade is an appropriate beginning point for the study and whether a comparison that begins in Grade 1 in the two national settings is valid. In Mexico, first grade is the first year of elementary school and the year in which literacy instruction formally begins. For this reason, and because preschools are separate physically and administratively from elementary schools, beginning the Mexico study in Grade 1 is logical and feasible. Mexican children have quite different preschool experiences prior to Grade 1, however, depending on availability

of public preschools and the family's ability to pay for private preschool. In the United States, while children's preschool experiences may differ, their kindergarten experiences are much more consistent, and it is in kindergarten that children first participate in formal literacy instruction. Our study therefore began with children's language and literacy levels in Grade 1, regardless of prior school and home learning opportunities, and examined how these skills developed over the subsequent two years of school. But the Grade 1–2 span in Mexico and the United States might not be strictly comparable.

Finally, several factors distinguish the schooling of Mexican-origin children in the United States and those educated in Mexico that may contribute to the comparatively rapid growth in early literacy skills by Mexican students. These include increased instructional time, because less time is devoted to testing and test preparation in Mexican classrooms than in U.S. classrooms; possible positive influence on early literacy development (particularly letter-word identification and word attack) as a result of a primary emphasis on writing rather than reading in Mexican classrooms; and a greater emphasis on written language form over content in Mexican public schools (Jiménez, Smith, & Martínez-León, 2003).

Conclusion

Studies attempting international comparisons of educational inputs and outputs are necessarily fraught with dangers due to differences in community characteristics, language status, educational policies, and instructional practices. We believe, though, that there are useful lessons from this study for understanding possible differences in basic literacy instruction in a transparent orthography such as Spanish in contrast to an opaque orthography such as English.

Despite these caveats, our findings suggest caution in applying psycholinguistic and instructional principles across languages without taking into account potentially relevant differences in linguistic and orthographic characteristics, as well as differences in the sociocultural and socio-linguistic contexts in which learning is taking place. Our findings have significance for informing bilingual programs in the United States in which native speakers of Spanish receive their initial literacy instruction in Spanish. Instruction in Spanish literacy in the United States has been influenced by trends in English literacy research and instruction, most notably an emphasis on phonemic awareness *instruction* as a precursor to explicit Spanish literacy instruction. More generally, the findings also have implications for programs of reading instruction in other languages with transparent and relatively simple orthographies such as Italian and Turkish. There might simply be no need for foundational phonemic instruction in these languages. Future experimental research comparing instructional programs in these languages with and without foundational phonemic awareness training should be able

to yield reasonably definitive findings. Moreover, such studies can be carried out in tandem in different sociocultural and linguistic contexts to assess the extent to which the effects of instructional practices generalize across the different contexts and languages in which students learn to read. This can only enrich our understanding of the relationship between language and reading among diverse populations.

Notes

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[1]In analyses not detailed here, we found that at the beginning of kindergarten children in the study receiving Spanish instruction in the United States scored about one standard deviation higher on Spanish picture vocabulary and listening comprehension than the children receiving English instruction.

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