The national population of 5- to 17-year-old English language learners (ELLs) grew by 46% from 1990 to 2000 (NCELA, 2002). From 1991 to 2002, the total ELL population grew 95% (NCELA, 2002), so that between 1990 and 2004, ELL enrollment doubled, with approximately three fourths coming from homes where Spanish is the primary language. According to the National Assessment of Educational Progress (NAEP, 2005), 66% of the ELL population in the United States scored below the basic reading level in fourth grade and 67% in eighth grade. It is well established that ethnic minority students and students living in poverty have been disproportionately placed in special education (Artiles, Trent, & Palmer, 2004). Furthermore, ELLs tend to receive special education services with more frequency than do monolingual children, and many of these referrals

**ABSTRACT: Purpose:** The purpose of this study was to examine the effects of initial first and second language proficiencies as well as the language of instruction that a student receives on the relationship between native language ability of students who are English language learners (ELLs) and their development of early literacy skills and the second language.

**Method:** This study investigated the development of early language and literacy skills among Spanish-speaking students in 2 large urban school districts, 1 middle-size urban district, and 1 border district. A total of 1,016 ELLs in kindergarten participated in the study. Students were administered a comprehensive battery of tests in English and Spanish, and classroom observations provided information regarding the Spanish or English language use of the teacher.

**Results:** Findings from this study suggest that Spanish-speaking students with high Spanish letter name and sound knowledge tend to show high levels of English letter name and sound knowledge when they are instructed in English. Letter name and sound identification skills are fairly highly positively correlated across languages in the beginning of the kindergarten year. In addition, phonological awareness skills appear to be the area with the most significant and direct transfer of knowledge, and language skills do not appear to be a factor in the development of phonological awareness. Finally, the relationship between oral language skills across languages was low, suggesting little relationship between oral language skills across languages at the beginning of the kindergarten year.

**Implications for Practice:** Results from this study suggest that pedagogical decisions for ELLs should not only consider effective instructional literacy strategies but also acknowledge that the language of instruction for Spanish-speaking ELLs may produce varying results for different students.

**KEY WORDS:** cross-linguistic transfer, English language learners, early literacy skills
are for academic problems, such as difficulties with reading (Garcia, 1993).

Consequently, the acquisition of English literacy among ELLs has become a critical focus in education and is essential to their academic success. Because a developmental and linguistic interdependence between a person’s primary language (L1) and secondary language (L2) has been proposed (Cummins, 1979), theories on cross-linguistic transfer may provide a better understanding of how a student’s L1 knowledge influences his or her ability to acquire literacy in L2. Cross-linguistic transfer occurs when students learning another language have access to and use linguistic resources from their L1 (Leafstedt & Gerber, 2005). Research on monolingual speakers in many languages affirms that phonological awareness is a precursor for learning to read (National Reading Panel, 2000); in fact, it is one of the common underlying proficiencies (Cummins, 1996) that forms the bulwark for bilingual education programs (Durgunoglu, Nagy, & Hancin-Bhatt, 1993). Specifically, the cross-linguistic transfer of foundational skills such as phonological awareness and the alphabetic principle may increase our understanding of the role of language on literacy acquisition for ELLs. Thus, the transfer of reading skills may vary based on students’ initial literacy in L1 and L2. Because ELLs enter school with varied strengths and weaknesses in L1 and L2, it is possible that the language of instruction may produce varying results for different groups of ELLs. It is also possible that one mode of instruction may not meet the needs of all learners.

This study explores the role of language of instruction, L1 and L2 skills, and the cross-linguistic transfer of early literacy skills such as phonological awareness among Spanish-speaking ELLs. In today’s classrooms, language arts instruction for ELLs has been guided by hypotheses regarding language and literacy development. These hypotheses are introduced first; subsequently, current practices for instructing Spanish-speaking ELLs are described.

**Bilingual Education Theories and Research**

One theory that frames our knowledge of the cross-linguistic transfer of L1 and L2 can be summarized through the common underlying proficiencies, which propose that an underlying knowledge about language exists beneath the surface of bilingualism (Cummins, 1996). According to this theory, students learning to read in L2 benefit from their L1 reading knowledge because skills in L1 have components that transfer to learning to read in L2 (Leafstedt & Gerber, 2005).

Cummins’ (1979; Cummins et al., 1984) developmental interdependence hypothesis suggests that in the relationship between L1 abilities and L2 acquisition, the acquisition of L2 is mediated by the level of L1 proficiency that children have at the time they begin to acquire L2. This developmental interdependence between L1 and L2 results in a linguistic interdependence that is reflected in both written and spoken language.

Specifically, when L1 vocabulary and conceptual knowledge is highly developed and supported by the child’s environment outside of school, then intensive immersion in L2 may be beneficial, resulting in high competence in L2. Conversely, students with less developed L1 vocabulary and conceptual knowledge who are immersed in L2 before the ability to abstract in L1 has been developed may not experience continued development of L1 in the early grades. In this case, low levels of L1 vocabulary and conceptual knowledge have a limiting effect on the development of L2. Cummins (1979) reported that there is an interaction between the language of instruction and the type of competence that a child has developed before schooling. Language of instruction must facilitate the development of vocabulary, concept knowledge, print awareness (making meaning from print), and language. There is an interaction between these aspects of L1 development and the language of instruction. For children who have not been exposed to a literate environment before school, the initial language of instruction is crucial. When reading is introduced via L2, the task is likely to be more difficult because children cannot relate L2 linguistic and emergent literacy knowledge to their spoken native language (Smith, 1977). Additionally, the transfer of skills that are fundamental for reading acquisition, such as phonological awareness, is expected to be enhanced when students receive some instruction in L1 and have made a transition to L2 reading and instruction (August, Calderon, & Carlo, 2000).

Because the relationship between L1 and L2 is at least partially dependent on the child’s proficiency in L1, Cummins (1979) suggested that a distinction may exist for students whose L2 skills differ at the point of school entry. That is, some students exhibit high L2 abilities and others exhibit low L2 abilities. Furthermore, students who begin school with low-level L1 skills who are instructed only in L2 may lose all knowledge of L1 and may also have difficulty acquiring L2. Conversely, students who begin school with higher L1 skills are hypothesized to acquire L2 more easily and also retain their L1 skills. Thus, Cummins argued for the development of students’ L1 skills before intense instruction in L2. Lopez and Greenfield (2004) reiterated Cummins’ suggestion in their study of the cross-linguistic transfer of phonological awareness skills among Spanish-speaking preschool learners who were enrolled in Head Start programs. Results of their study indicated that although phonological awareness in English was most strongly related to English language proficiency, Spanish language proficiency and Spanish phonological awareness skills also contributed significantly to the variance in English phonological awareness. Therefore, understanding the cross-linguistic transfer of early literacy skills such as phonological awareness in addition to attaining a thorough understanding of students’ language proficiency can assist instructors to make informed decisions regarding language and literacy instruction.

In a study of native English and English as a second language (ESL) kindergarten students, Chiappe, Siegel, and Wade-Woolley (2002) found that both language groups performed relatively similarly in regard to English acquisition when they were taught in an English immersion setting. The researchers concluded that the same instructional methods could be used to foster decoding development for students from a variety of language backgrounds. In this study, children were classified as being at risk and not at risk based on a rhyme detection task.

Examination of the performance of at-risk and not-at-risk groupings of students in another study (based on initial English skills) suggested that students with low initial English skills (beginning of kindergarten) tended to perform at lower levels on later English performance measures (Grade 1) (Muter, Hulme, Snowling, & Taylor, 1997). The lack of significant interactions between language group and at-risk status seemed to suggest that the development of English skills for these students was dependent primarily on their initial English skills. However, it should be noted that the ELL students’ initial L1 skills were not examined in this study, and the role of L1 and L2 initial proficiency for these students could not be directly addressed. Contrary to these findings, some researchers...
believe that children with poor L1 (Spanish) skills will be at a disadvantage for educational achievement in English (Cobo-Lewis, Eilers, Pearson, & Umbel, 2002). They report that it is critical for children to have a grasp on language skills in L1 before beginning the process of learning to read in L2. The present study examines L1 and L2 proficiency levels and their relationship to early literacy development among Spanish-speaking ELLs.

Phonological Awareness Theories

Research indicates that phonological awareness is a necessary precursor to successful reading acquisition in all alphabetic languages (Adams, 1990; Bradley & Bryant, 1983; Casalis & Louis-Alexandre, 2000; Juel & Minden-Cupp, 2000; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001; Snow, Burns, & Griffin, 1998; Wagner & Torgesen, 1987). Phonological awareness refers to the ability to identify and manipulate units of speech (e.g., syllables, phonemes, onsets, rimes), and the connection between phonology and letter sound correspondence provides the initial foundation on which reading, writing, and spelling develops. It is considered an individual’s awareness of the sound structure of the oral language (Wagner, 1988). Beginning readers who understand or are aware of phonemes are more likely to learn the orthographic–phonologic correspondences (Juel, Gough, & Griffith, 1986). In addition, many studies have demonstrated strong correlations between phonological awareness and word recognition skills (Bradley & Bryant, 1983; Rayner et al., 2001; Snow et al., 1998; Wagner & Torgesen, 1987).

There is converging evidence that phonological awareness plays a critical role in learning to read not only in English but also in many other languages (Chappe et al., 2002; Gersten & Geva, 2003; González, González, Monzó, & Hernández-Valle, 2000; Juel & Minden-Cupp, 2000). Phonological awareness is also a skill that appears to transfer from one’s L1 to his or her L2 (Cisero & Royer, 1995; Durgunoglu et al., 1993). Several studies have provided support for the cross-linguistic transfer of phonological awareness skills among kindergarten and first-grade English- and Spanish-speaking students (Denton, Hashbrouck, Weaver, & Riccio, 2000; Lindsey, Manis, & Bailey, 2003; Lopez & Greenfield, 2004; Quiroga, Lemos-Britton, Mostafapour, Abbott, & Berninger, 2002). The present study examines phonological awareness and the cross-linguistic transfer of these skills among Spanish-speaking ELLs.

Current Practices

As many as 50% of ELLs in the United States receive reading instruction in their primary language (August & Hakuta, 1997; Saunders, 2001). This instruction is premised on theoretical frameworks that assert that Spanish-speaking ELLs who learn to read in L1 may position themselves for higher levels of literacy in both L1 and L2 (Goldenberg, 1996; Hakuta & Snow, 1986; International Reading Association, 2001; Ramirez, Yuen, & Ramey, 1991) because Spanish phonological awareness and word recognition skills transfer from Spanish to English reading (August & Hakuta, 1997; Durgunoglu et al., 1993). Hopstock and Stephenson (2003) reported that more than 76% of ELLs speak Spanish in the home. In addition, they described extensive native language support in schools that are considered Spanish language majority campuses. Schools with no language majority were more likely to provide instruction in English. ELL students who are enrolled in classrooms with native language support have as their goal to transition into English language instruction. However, the importance of bilingual education is frequently being questioned in today’s school system, as has been demonstrated by new mandates for English-only instruction laws in states such as Arizona (Title 15, Chapter 7, Article 3, 2000) and California (Title 5, Chapter 11, Subchapter 4, 1998). Such mandates do not acknowledge the developmental and linguistic interdependence between L1 and L2 and presume that all ELLs benefit when the language of literacy instruction is provided in English.

The main goal of bilingual programs is the acquisition of English by ELLs so that they may be successful in the mainstream (Lara-Alecio, Galloway, Iry, Rodriguez, & Gomez, 2002; Ramirez et al., 1991). What distinguishes these programs is their use of L1 in the acquisition of L2 (Moran, Stobbe, Tinajero, & Tinajero, 1993). For example, transitional programs are those that rely on instruction that uses some combination of L1 and L2, with L1 serving as a conduit for facilitating learning L2 (Baca & Cervantes, 1989; Lara-Alecio et al., 2002). Over time, instruction transitions from the language of instruction being provided in students’ L1 in all classes to English as the primary language of instruction until the student exits the bilingual program (Brisk, 1999). The amount of L1 instruction varies from early-exit programs to late-exit programs.

In early-exit programs, instruction in L1 is provided initially, especially during language arts class, and is rapidly decreased over time. Conversely, in late-exit programs, L1 serves as the language of instruction from kindergarten to sixth grade, with at least 40% of the instructional time in L1 (Ramirez et al., 1991). Some researchers propose that early-exit programs do not facilitate the development of academic proficiency in L1, and students in such programs may be less “academically successful” than other students participating in late-exit programs that emphasize L1 as the language of instruction (Lara-Alecio et al., 2002; Thomas & Collier, 2002). Four bilingual programs are provided in various states: ESL, English immersion, transitional bilingual, and dual language, or two-way immersion.

ESL programs focus on the development of English and incorporate strategies to facilitate the development of L2. Immersion programs provide primarily L2 instruction. Transitional bilingual programs include L1 instruction and gradually introduce L2. The goal of this program is L2.

In dual language programs, the goal is for students to maintain L1 while learning L2 (Cloud, Genessee, & Hamayan, 2000). Therefore, the language of instruction is both L1 and L2, with an emphasis on maintaining L1 while acquiring L2. Students participating in this program are ELLs as well as monolingual English speakers. This program reflects the theory that it takes 5 to 7 years for cognitive academic learning (Cummins, 1991), and students can transfer skills and knowledge from one language to another. One goal is to provide a balance between the development of academic knowledge, language, and social skills within the context of maintaining two languages (Christian, 1994).

Although dual language programs vary in the amount of instructional time used to teach content in L1 and L2, the two languages are segregated and are rarely mixed during instruction. Program types are usually the 50/50 model, whereby instruction is divided equally between English and Spanish, or 90–10, in which 90% of the instructional day is provided in L1 during the early school entry years (Lara-Alecio et al., 2002). In this study, the language of instruction that a student receives is analyzed as well as its relationship to ELL’s literacy and language development.
Gaps in the Research

The interrelationship of L1 and L2 proficiency and the role of language of instruction in the relationship between L1 and L2 prereading and reading skills development has most often been examined through studies of the correlations between L1 and L2 skills (August & Hakuta, 1997). For the past two decades, most studies of cross-linguistic transfer have focused on studying the acquisition and production of L2 structures as a function of the characteristics of L1 (August et al., 2000). Few if any studies have considered the simultaneous role of both initial L1 and L2 skills on the later acquisition of L2 skills.

Although some research supports beginning instruction in L1 for ELLs (August et al., 2000), other research supports L2 instruction (Chiappe et al., 2002). In many instances, conclusions regarding the language of instruction tend to be based on indirect results of populations within a specific language of instruction condition or extrapolated from the students’ reported performance levels in each language. Few studies enumerate the possibility that language of instruction decisions may produce varying results for different groups of students, and may produce different results in students with varying levels of initial L1 and L2 skills. Thus, the concurrent examination of the possible moderating effects of language of instruction on the relationship between initial L1 skills and L2 development has not been systematically examined.

A further limitation of previous studies of cross-linguistic transfer is that many have focused on a relatively narrow range of skills, mainly phonological awareness and word reading (Cisero & Royer, 1995; Durgunoglu et al., 1993). It is clear that, especially in kindergarten, letter naming and oral language skills are also prime predictors for later reading (Scanlon & Vellutino, 1996).

**PURPOSE OF STUDY**

The present study examines the relationship between ELLs’ L1 letter naming and sound identification, phonological awareness, and oral language skills and the development of these skills in L2. In the present study, the effects of both L1 and L2 proficiency, as well as the language of instruction received, are examined as possible moderators of these relationships.

**METHOD**

The present study represents a subsample of a large, multistate, multisite, longitudinal project focusing on language and literacy development in Spanish-speaking ELLs from kindergarten through second grade. Data for the present study were collected during the first year of the longitudinal study, when the students were in kindergarten.

**Participants**

**Regions, sites, and schools.** The state, site, school, classroom, and student participants were selected according to prespecified criteria from a larger longitudinal project focusing on second language and literacy development in Spanish-speaking ELLs from kindergarten through second grade (Foorman, Goldenberg, Carlson, Saunders, & Pollard-Durodola, 2004). Data for the present study were collected during the first year of the longitudinal study, when the students were in kindergarten. Thirty-five schools from four sites across three different regions (Urban Texas, Border Texas, and Urban California) participated in both the larger longitudinal study and the present study. Within each site, schools were entered in the initial selection pool if they met all of the following criteria: (a) 40%+ Latino population, (b) 30%+ ELL (limited English proficient) population in kindergarten and first grade (based on district-mandated language tests), and (c) adequate performance as indicated by state accountability ratings (Foorman et al., 2004).

Language of instruction was established via the principal investigator’s interviews with campus principals and/or literacy specialists to determine the bilingual instructional program that was used at the school: (a) English language immersion, where language arts are conducted primarily in English; (b) transitional bilingual, where L1 is used in kindergarten and first grade, with progressive shifts to English; and (c) dual language, where students are instructed equally in English and L1 in language arts courses.

Once the initial school selection pool was established, the principal investigators conducted informal interviews with each potential campus principal and/or literacy specialist to determine which bilingual program was being implemented at the school. The language of instruction designation for each campus was made based on the school’s reported adherence to one of the above-mentioned instructional programs.

A total of 9 schools implemented an immersion program, 14 implemented a transitional bilingual program, 7 implemented a dual language program, and 5 implemented two language programs in different classrooms within the school (3 used both immersion and dual language, and 3 used both transitional bilingual and immersion). Thus, overall, 15 schools had classrooms implementing an immersion program, 14 schools had classrooms implementing a transitional bilingual program, and 10 schools had classrooms implementing a dual language program.

**Classrooms.** In general, two classrooms from each school were selected for participation in the project. However, in schools with more than one language program, two classrooms from each program were selected when possible. Across the 35 schools, there were 97 kindergarten language arts instructional groups included in this study: 34 immersion, 38 transitional bilingual, and 25 dual language.

**Students.** In each classroom, 10 students were randomly selected for participation from a pool of all students who were designated as ELLs (described above), indicating that the student’s primary language was Spanish and that the student had little or no English language skills upon entry into kindergarten.

Because analyses examine performance at the beginning and end of the school year, only students who participated in the study at both time points could be included in the present study. A total of 1,016 kindergarten ELLs participated (100% Hispanic, 50% female; age: M = 5.3 years; SD = 0.4 years). One hundred and nine students participated in the beginning-of-year assessments and left the study campuses before the end of the year. At the end of the year, there was a range of 18 to 64 students from each of the 35 schools in the present sample (M = 29.8; SD = 8.4).

**Procedure**

**Student achievement.** Approximately 6 weeks into the school year (fall) and again approximately 6 weeks before the end of
the school year (spring), research staff individually administered oral language and literacy measures to kindergarten students in a designated testing area. The assessment battery took approximately 45–90 min to complete. Spanish and English batteries were completed on separate days approximately 1 week apart in order to minimize both fatigue and disruptions to classroom instruction. L1 (Spanish) assessments were completed first. All assessments were administered by project research assistants (RAs), all of whom completed a 5-day assessment training program and were required to pass a mock administration of the assessment to the project coordinator. Project coordinators conducted the same training for RAs in all geographic sites. Site coordinators supervised testing and RA performance at all schools.

**Classroom language.** Teacher language use during reading and language arts instructional time was measured at three time points during the school year. The instrument used for these observations is described below (timed reading record observation, TRR). Trained bilingual RAs conducted three observations during the school year (in mid fall, mid winter, and late spring). All RAs had previous experience collecting observational data with this instrument. Observer training consisted of 2 days at a central site, an additional week of site-based training, and two 1-day follow-up trainings at each site. Observers met with project coordinators on a weekly basis to address any difficulties that arose with the observation process.

Observers were required to obtain an interrater reliability score of 80% or higher before conducting any observations in the field. In addition, fidelity observations were conducted during each wave, and observers were required to maintain 80% or higher reliability in order to continue conducting observations.

Observations were completed in the classroom from a location that allowed for adequate viewing and listening to instruction while being as unobtrusive to the classroom instruction as possible.

**Measures**

The measure of classroom instruction used an observation schema that was developed by Foorman and colleagues (Foorman et al., 2004), called timed reading record observation. Several aspects of instruction are recorded using this observational system; however, for the present study, the language of instruction was of primary interest. Teacher language was recorded each minute throughout the entire language arts block. Language was recorded as Spanish (S), English (E), Mixed (50–50 English and Spanish, M), No Language (X), or Inaudible (I). “No language” and “inaudible” codes accounted for less than 1% of all codes and as such were not addressed in the present study.

For letter name and sound identification, students were asked to identify each of the 26 letters of the English alphabet and each of the 30 letters of the Spanish alphabet. Children were also asked to provide at least one sound for each letter from both the Spanish and English alphabets. Internal consistency reliabilities (coefficient alpha) across languages and testing waves ranged from 0.92 to 0.95 for the letter name and sound identification composite score. The dependent measure was the total percentage of names and sounds that was identified correctly.

The Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) has nine subtests measuring phonological awareness, rapid naming, and phonological memory. Evidence of reliability and content, concurrent, predictive, and construct validity is provided in the CTOPP manual (Wagner et al., 1999).

For this study, the five subtests measuring phonological awareness from the CTOPP were examined; Elision (phoneme and syllable deletion), Blending Phonemes into Words, Blending Phonemes into Non-words, Segmenting Words into Phonemes, and Sound Matching (first sound and last sound). Branching rules were used to shorten testing time based on empirical modeling of performance on this test using item response methods (Schatschneider, Francis, Foorman, Fletcher, & Mehta, 1999), as well as work in the larger longitudinal project, which examined the properties of this assessment in a larger sample (N = 1,600). That is, students who could not complete any blending subtest items were not administered higher level phonological awareness subtests such as Segmenting Words into Phonemes and Elision but were administered the lower level phonological awareness tasks of Sound Matching. Students who were able to complete at least some of the blending items were administered the higher level phonological awareness tasks. Scores from each of the subtests were combined, and a total percentage correct, the phonological awareness score, was calculated and used in analyses for the present study to allow for performance comparisons with the Spanish version of this instrument (see below).

The Test of Phonological Processing—Spanish (TOPP–S) was developed to align with the English CTOPP in terms of the skills addressed and the linguistic complexity of the items within each subtest. Each subtest on the TOPP–S consists of the same number of items as those found on the CTOPP. Except for Sound Matching, all subtests were built entirely of production-based items, and items were targeted to match CTOPP items in linguistic complexity (e.g., number of phonemes, area of manipulation). Reliability estimates for the TOPP–S were determined on a sample of approximately 1,500 students, and the coefficient alphas ranged from 0.93 to 0.97. Branching rules similar to those used for the CTOPP were also used while administering the TOPP–S. As with the CTOPP, scores from each of these TOPP–S subtests were combined, and a total percentage correct phonological awareness score was calculated and used in analyses for the present study.


All measures used in this study were available in Spanish and English, and the scaling process on the WLPB–R places the Spanish language norms on the same scale as the English language norms, allowing English and Spanish language assessments to be compared directly (Woodcock, 1991; Woodcock & Muñoz–Sandoval, 1995). Subtests of the WLPB–R used for this study included Listening Comprehension, Picture Vocabulary, and Verbal Analogies. In the WLPB–R, the W scores from these three subtests are averaged to create a composite oral language score, which was used in the present study.

**Analysis Approach**

*Design and analysis.** Because language of instruction is the focus of this study, an English language ratio was created by
calculating the percentage of time that instruction was in English, plus half of the total time spent in mixed language, as a function of the total session time. The correlations of English ratios across observation time points were fall and winter = .91; winter and spring = .88; and fall and spring = .87. Because of the high correlation of teacher language use over the course of the kindergarten year, one index of English language use was created for each teacher by averaging the English language ratios across all three time points (average percentage of time spent in English instruction across the year). A description of instructional language use across language programs is provided in the Appendix. Based on the analyses presented in the Appendix, the transitional bilingual and dual language categories were collapsed for the purposes of the present study. The resulting variable consisted of two levels—primarily English or primarily Spanish instruction in the classroom.

The analyses focused on examining the relationship between L1 (Spanish) language skills and L2 (English) language development, and the degree to which the relationship between L1 and L2 skills varied as a function of instructional language (primarily English or primarily Spanish). Multilevel mixed model analyses using the mixed procedure of SAS (Littell, Milliken, Stroup, & Wolfinger, 1996; SAS Institute, Inc.; 2003) were used for these analyses. This approach allows for the nesting of students within classrooms. By examining the relationships between students’ Spanish and English skills and the instructional language using a nested model, a more conservative estimate of the relationships examined is obtained. Thus, the magnitude of the relationships will not be overinflated simply because students who receive instruction from the same teacher may perform more similarly than will students receiving instruction from different teachers. As the skills being examined are those related to literacy and language, students were nested within classes based on their language arts teacher. Therefore, similarities between students that may be a result solely of the fact that they have the same language arts teacher are controlled for in this study.

Language and literacy skills were analyzed separately by skill set and language of instruction. English skills at the end of the kindergarten year were predicted by beginning-of-year Spanish skills and instructional language after controlling for beginning-of-year English skills (see below).

## RESULTS

Student performance means are presented in Table 1 for each time point by language of instruction. In the beginning of the school year, Spanish and English performance for letter name and sound identification appears relatively similar in that students were able to, on average, identify approximately one third of the names or sounds of the letters of the alphabet. Similarly, students’ phonological awareness skills appear relatively similar across languages in that students were able to correctly respond to approximately one fourth of the phonological awareness items. (It is important to note that the phonological awareness measure that was used in this study includes items that span the kindergarten though first-grade ability levels. Thus, performance of 100% would not be expected until the end of first grade). In contrast, oral language standard scores were, on average, higher in Spanish than in English at the beginning of the kindergarten year. However, it must be noted that average oral language performance levels in both languages were well below the normative population mean (100).

By the end of the school year, students’ letter name and sound identification skills in both languages were higher. On average, students were able to identify approximately 71% and 67% of the names and sounds of the letters of the Spanish and English alphabet, respectively. Similarly, students’ phonological awareness skills were higher by the end of the kindergarten year. On average, students were able to correctly respond to approximately 44% and 39% of the phonological awareness items in Spanish and English, respectively. In contrast, Spanish and English oral language skills, on average, showed minimal increase over the course of the year.

The analyses that were conducted to examine language transfer in the present study focused on the relationship between students’ fall L1 (Spanish) skills and their spring L2 (English) skills as a function of initial L2 (English) skills. Specifically, transfer was defined as the degree to which L1 (Spanish) skills predicted L2 (English) skills above and beyond initial L2 (English) skill levels. This relationship was examined separately by language of instruction using multilevel models, described previously in the Analysis Approach section.

### Table 1. Achievement measure means by time of year and language.

<table>
<thead>
<tr>
<th>Measure – Language</th>
<th>Fall</th>
<th>Spring</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Letter name and sound identification – Spanish</td>
<td>0.39</td>
<td>0.28</td>
<td>0.84</td>
<td>0.18</td>
</tr>
<tr>
<td>Letter name and sound identification – English</td>
<td>0.29</td>
<td>0.27</td>
<td>0.57</td>
<td>0.29</td>
</tr>
<tr>
<td>Phonological awareness – Spanish</td>
<td>0.23</td>
<td>0.15</td>
<td>0.39</td>
<td>0.15</td>
</tr>
<tr>
<td>Phonological awareness – English</td>
<td>0.24</td>
<td>0.14</td>
<td>0.47</td>
<td>0.18</td>
</tr>
<tr>
<td>Oral language composite – Spanish</td>
<td>80.90</td>
<td>19.50</td>
<td>87.95</td>
<td>18.76</td>
</tr>
<tr>
<td>Oral language composite – English</td>
<td>52.43</td>
<td>19.34</td>
<td>54.25</td>
<td>19.09</td>
</tr>
</tbody>
</table>

Note. Scores for letter name and sound identification and phonological awareness represent the percentage correct of the total possible (range 0–1.00; see Method section). Oral language composite values are standard scores from the Woodcock Language Proficiency Battery—Revised (Woodcock, 1991; M = 100; SD = 15).
Letter Name and Sound Identification

For both Spanish and English instruction, there were significant two-way interactions between fall L1 (Spanish) letter name and sound identification skills and fall L2 (English) letter name and sound identification skills (Spanish instruction \( p < .0001 \); English instruction \( p < .0112 \); Table 2). Because there were significant two-way interactions including both predictors in the models, significant main effects were qualified by the two-way interactions and are not discussed independently.

Follow-up analyses of the interactions showed that for students who had higher fall L1 (English) letter name and sound identification skills, there was no relationship between fall L1 (Spanish) letter name and sound identification skills performance and spring L2 (English) letter name and sound identification skills. However, for students with lower fall L1 (English) letter name and sound identification skills, there was a significant positive relationship between fall L1 (Spanish) letter name and sound identification skills performance and spring L2 (English) letter name and sound identification skills.

Phonological Awareness

For Spanish instruction, main effects were seen for fall L2 (English) and L1 (Spanish) phonological awareness skills (both \( p < .0001 \); Table 3). Thus, fall L2 (English) and L1 (Spanish) phonological awareness skills contributed independently to spring L2 (English) phonological awareness skills when the language of instruction was Spanish.

For English instruction, main effects were noted only for fall L2 (English) phonological awareness skills (\( p < .0007 \); Table 3). Thus, fall L1 (Spanish) phonological awareness skills did not contribute significantly to spring L2 (English) phonological awareness skills beyond the effect of fall L2 (English) phonological awareness skills.

Oral Language

For Spanish instruction, main effects were seen for fall L2 (English) and L1 (Spanish) oral language skills (both \( p < .0001 \); Table 4). Thus, fall L2 (English) and L1 (Spanish) oral language skills contributed independently to spring L2 (English) oral language skills when the language of instruction was Spanish.

For English instruction, main effects were noted only for fall L2 (English) oral language skills (\( p < .0007 \); Table 4). Thus, fall L1 (Spanish) oral language skills did not contribute significantly to spring L2 (English) oral language skills beyond the effect of fall L2 (English) oral language skills.

DISCUSSION

Summary of Findings

Results from the present study suggest a relationship between L1 (Spanish) abilities and L2 (English) acquisition; that is, L1 (Spanish) competence mediates the acquisition of L2 (English) at the time that a child begins to acquire L2 (English). Specifically, for all three skills examined in this study, early Spanish skills predicted English outcomes at the end of kindergarten after controlling for early English skills. However, this relationship did differ to some degree by the skill examined and by language of instruction.

For letter name and sound identification, regardless of the language of instruction, the level of L1 (Spanish) skills that students who began the year with high L2 (English) letter name and sound identification skills had little impact on their end-of-year L2 (English) letter name and sound identification skills.

However, for students who began the year with low L2 (English) letter name and sound identification skills, the level of initial L1 (Spanish) skills did impact their end-of-year L2 (English) letter name and sound identification skills. Specifically, students who had low initial L2 (English) letter name and sound identification skills performed at higher levels in English at the end of the year the stronger their Spanish letter name and sound identification skills were, regardless of the language of instruction.

Therefore, when early English letter name and sound identification skills are low, strong Spanish letter name and sound identification skills are related to higher later letter name and sound identification skills in English, whether the students are instructed in Spanish or in English. Thus, it appears that knowledge of Spanish letter name and sound identification skills is being transferred.

Table 2. Fixed effects for letter name and sound identification spring L2 (English) skills.

<table>
<thead>
<tr>
<th>Language program</th>
<th>Spanish</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>F value</td>
</tr>
<tr>
<td>Full model predictors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall L2 (English) skills</td>
<td>1, 683</td>
<td>157.09</td>
</tr>
<tr>
<td>Fall L1 (Spanish) skills</td>
<td>1, 683</td>
<td>6.36</td>
</tr>
<tr>
<td>Fall L2 skills * fall L1 skills</td>
<td>1, 683</td>
<td>18.01</td>
</tr>
<tr>
<td>Follow-up comparisons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall L2 (English) skills (high)</td>
<td>1, 220</td>
<td>0.86</td>
</tr>
<tr>
<td>Fall L1 (Spanish) skills</td>
<td>1, 463</td>
<td>29.34</td>
</tr>
</tbody>
</table>
such that it has a positive impact on later English letter name and sound identification skills.

For phonological awareness and oral language skills, early Spanish skills predicted later English skills after controlling for early English skills; that is, when instruction was in Spanish. When instruction was in English, early Spanish skills did not predict later English skills after controlling for early English skills.

**Implications for Practice**

Findings from this study suggest that pedagogical decisions for ELLs should not only consider effective instructional literacy strategies but also acknowledge the language of instruction. That is, different groups of Spanish-speaking ELLs who exhibit an array of strengths and weaknesses in initial Spanish and English literacy skills may produce varying results. Furthermore, it is plausible that there may be some moderating effects of language of instruction on the relationship between initial L1 literacy skills and L2 development. This is supported by empirical evidence that transfer is facilitated when a child has received some instruction in L1 and has transitioned to L2 reading and instruction (August et al., 2001).

Because Spanish-speaking children living in the United States are required to learn to read in English on grade level, there is evidence that providing explicit instruction in foundational skills (phonological awareness, phonics) in L1 (Spanish) may assist ELLs in transitioning to reading in L2 (English) (Simmons et al., in press). However, for students who begin the year with weak foundational skills in L2, their level of initial L2 (Spanish) skills and the language of instruction they receive does impact their end-of-year performance. Cummins’ (1979; Cummins et al., 1984) hypothesis also suggests that the relationship between L1 and L2 is at least partially dependent on the child’s proficiency in L1, and that a distinction may exist for students whose L2 skills differ at the point of school entry.

Although oral language standard scores of students in the study were normally distributed across the year, there was little improvement in oral language abilities in either L1 or L2, suggesting that oral language proficiencies might be boosted via a more rigorous and purposeful language instruction. For Spanish-speaking ELLs, such instruction might facilitate oral verbal exchanges in which students practice complex syntactic structures and use academic language (Cirino, Pollard-Durodola, Foorman, Carlson, & Francis, in press; Gersten & Baker, 2000). Students may also be encouraged to expand comments and employ Tier 2 (high level/useful) words (Beck, McKeown, & Kucan, 2002) that assist them in making connections between new concepts and word knowledge (Hickman, Pollard-Durodola, & Vaughn, 2004).

Ultimately, prereading skills development for Spanish-speaking ELLs should emphasize strategic scaffolding in which teachers are knowledgeable of orthographic, phonemic, semantic, and alphabetic similarities and differences between L1 and L2 and are able to mediate instruction by making instructional decisions that facilitate the development and transfer of skills across languages. In some instructional settings, when students have low L1 and L2 literacy skills, students receive instruction in English with the justification being that students are weak in both L1 and L2 proficiencies and should begin schooling with L2 language of instruction. Future studies may include the longitudinal effect of language of instruction and early literacy performance on the language and literacy outcomes of ELLs. In summary, initial literacy instruction for ELLs should take into consideration both L1 and L2 skills, as decisions about language of instruction could be enhanced to better serve children if both the L1 and L2 literacy skills of the student are taken into account. The results of this study suggest that L1 or L2 instruction may not be an ubiquitous benefit for all students.
IMPlications for future studies

Future studies examining a broader range of skills over a longer period of time (i.e., into first and second grades) and in varied populations are necessary. In this way, the relationship between students’ L1 and L2 proficiencies and language of instruction can be explored further. It may be that L1 language proficiency plays a different role in L2 language development, and that this relationship may vary with older students or with students who struggle in their language and literacy development.

In summary, this study examined the simultaneous role of initial L1 and L2 language and early literacy skills on the acquisition of the same skills in L2. Results indicate that students’ L1 and L2 skills should be considered when making decisions for placement into language of instruction programs, as varying results may be achieved. Further studies are necessary because this study focused primarily on early language and literacy outcomes during the kindergarten year.

acknowledgments

This research was supported in part by Grant P01HD39521, Oracy/Literacy Development of Spanish-Speaking Students, which was jointly funded by the National Institute for Child Health and Human Development and the Institute of Education Sciences. The attitudes and opinions expressed in this article are those of the authors and do not necessarily reflect those of the funding agencies. The authors wish to thank their many collaborators, coworkers, students, parents, and district officials who made this research possible.

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Received November 8, 2005
Revision received April 19, 2006
Accepted November 21, 2006
DOI: 10.1044/0161-1461(2007/026)

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APPENDIX. INSTRUCTIONAL LANGUAGE USE ACROSS LANGUAGE PROGRAMS

An ANOVA was conducted using language program (transitional [T], immersion [I], or dual [D]) as the independent variable and the English language ratio as the dependent variable. English immersion, transitional bilingual, and dual programs were compared using three pair wise contrasts with Bonferroni adjustment (i.e., .05/3 = .02). Results indicate significant differences (see Table A) in English language ratios across programs such that teacher’s mean English language usage in the immersion classrooms was significantly higher than that in either the dual language classrooms or the transitional bilingual classrooms (D: M = .32, SD = .13, CI = .27–.38; I: M = .92, SD = .17, CI = .86–.99; T: M = .27, SD = .13, CI = .21–.31). There was no significant difference in mean language use across the transitional bilingual and dual classrooms.

On average, teachers in English immersion classrooms used English during 92% of the reading language arts instructional session, dual language teachers used English an average of 32% of the time, and transitional bilingual teachers used English an average of 27% of the time. Thus, it is apparent that during the kindergarten year, the transitional bilingual and dual language classrooms are, on average, similar in regard to the amount of English and Spanish used in the classroom.

Table A. ANOVA results for program type predicting composite English language ratio.

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>F ratio</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall model</td>
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</tr>
<tr>
<td>Language program</td>
<td>2</td>
<td>220.99</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>program model</td>
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<td></td>
</tr>
<tr>
<td>Contrasts</td>
<td></td>
<td></td>
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<tr>
<td>Dual versus immersion</td>
<td>2</td>
<td>243.33</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Dual versus transitional bilingual</td>
<td>2</td>
<td>3.22</td>
<td>.0985</td>
</tr>
<tr>
<td>Immersion versus transitional bilingual</td>
<td>2</td>
<td>375.15</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>