

The Cross-Language Transfer of Phonological Skills of Hispanic Head Start Children

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Abstract

This article determines the interlanguage relationships between oral language skills and phonological awareness abilities in 100 Spanish-speaking Head Start children learning English. Children's oral language abilities, measured using the pre-Language Assessment Scale 2000, along with their phonological awareness, measured using the Phonological Sensitivity Test, were assessed in both English and Spanish. A hierarchical multiple regression was conducted in which the unique variance of oral proficiency in each language and phonological awareness in Spanish indicated an effect on performance for phonological awareness tasks in English, with Spanish phonological awareness and English oral proficiency accounting for the most variance. Results suggest strengthening the language and metalinguistic skills of these children in their first language as a tool for later acquiring English literacy skills.

Introduction

Phonological awareness is a metalinguistic skill that has been studied interdisciplinarily for several decades. Educational researchers have focused on the relationship between phonological awareness and reading. Linguists have focused their research on the phonological system and a child's ability to pronounce sounds both independently and in coordination with other sounds. Studying sound production and audition has helped linguists better understand the mechanisms of languages worldwide.

Researchers of bilingualism have more recently discovered that phonological awareness skills at school age have the ability to transfer across languages. Two main theories have been developed with regard to this idea of cross-language transfer, the phonological core model and the linguistic interdependence model, both of which are described in the Cross-Language Transfer section of this paper.

The purpose of the present study is to focus on cross-language transfer, based on Cummins's (1979) linguistic interdependence model, which states that skills in the first language (L1) will aid in developing skills in the second language (L2). While previous research has been conducted on this topic with school-age children, the main objective of this study was to determine the interlanguage relationships of Spanish and English for both oral language skills and phonological awareness with Spanish-speaking preschool children.

Literature Review

Phonological Awareness

Phonological awareness involves the ability to segment sounds used in speech (International Reading Association, 1998). Research has demonstrated a relationship between phonological awareness skills, such as rhyming and alliteration, and the pathway to reading. Additionally, Lonigan, Burgess, Anthony, and Barker (1998) have identified these relationships in low-income populations. Phonological awareness simplifies the acquisition of phonics and the alphabetic principle in the path to reading. "An awareness of phonemes is necessary to grasp the alphabetic principle that underlies our system of written language" (Chard & Dickson, 1999, p. 263). Mastering phonological awareness will help children master both phonics and reading (Calfée & Norman, 1998; Chard & Dickson, 1999). The ability to tie phonology to the alphabetic principle allows children to understand the mechanics of reading. Malicky and Norman (1999) have noted that once the connection between phonology and letter-sound correspondence is made, reading can progress.

It has been empirically demonstrated that the different types of phonological awareness are all in some way related to reading. Each phonological skill provides for an individual component of learning to read. Moreover, not only has research demonstrated a relationship between phonological awareness and reading, it has also established correlations among the different types of phonological abilities. For example, blending phonemes (i.e., combining sounds to make a word) and segmenting phonemes (i.e., dividing a word into its phonemes) are both highly correlated with each other (Yopp, 1988).

It has also been argued that a reciprocal relationship exists between phonemic awareness and reading (Perfetti, Beck, Bell, & Hughes, 1987). Perfetti et al. argue that reading is in fact an easier task to master than is phonemic segmentation. However, at some point, reading also requires phonemic awareness. This is especially true when a child encounters a new word and must sound out the word in order to determine what it is. This process involves use of both the alphabetic principle and phonemic awareness, as mentioned previously. Phonemic awareness, in fact, helps children to better understand letter-sound correspondence, or the alphabetic principle. Children's knowledge

of the sounds in the words helps them associate the sounds with the letters. The alphabetic principle, in conjunction with phonemic awareness and the child's early reading and spelling ability, furthers the child's development of more complex phonemic awareness. It is important to note that children can begin the process of reading before acquiring phonemic awareness.

Rhyme and alliteration are the first signs of a child's acquisition of phonological awareness. Rhyme involves categorizing words into families based on identical final sound structure (e.g., cat, hat, mat, sat). Alliteration involves categorizing words based on identical initial sound structure (e.g., wind, watch, wide, well). A child's ability to comprehend the structure behind rhyming and alliteration is one of the first steps in the child's grasping the true underpinnings of literacy (Chard & Dickson, 1999). Some children are capable of performing tasks involving rhyming and alliteration as early as 3 years of age (Maclean, Bryant, & Bradley, 1987). A greater number of children are capable of completing these tasks at age 4. A predictive relationship between phonological skills in 3-year-old children and the ability of these children to begin reading has been shown (Maclean et al., 1987).

Cross-Language Transfer

Phonological awareness, as described previously, does not only occur in the context of the English language. Other alphabetic languages, in which words are divided into smaller units, rely on phonological awareness as a method in the learning to read process. Jiménez González and Haro García (1995) explored the similarities and differences related to word linguistic structure and phonological awareness between two alphabetic languages, English and Spanish. The researchers found that similarities in the syllable structure of the two languages allowed for children to have less difficulty segmenting initial phonemes in a consonant-vowel-consonant word than in breaking up a consonant blend, such as a consonant-consonant-vowel word. Phonological awareness was seen as similar for both English and Spanish. However, unlike English, Spanish is orthographically transparent, allowing for the facilitation of writing acquisition once a learner has acquired grapheme-phoneme correspondence (de Manrique & Signorini, 1998).

Within the last decade, research has emerged related to the effect of bilingualism on phonological awareness (Chiappe & Siegel, 1999; Comeau, Cormier, Grandmaison, & Lacroix, 1999; Durgunoglu, 1998). Primarily, this research has investigated a cross-language transfer effect in which knowledge and skills related to phonological awareness in one language can be applied to a second language (Cisero & Royer, 1995; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Durgunoglu & Oney, 1999). Most of the available research focuses on Spanish-speaking children and their development of English reading skills. Durgunoglu et al. (1993) were among the first to empirically test the idea that cognitive abilities in one's L1 can transfer into the skills necessary to acquire reading in an L2.

Two main hypotheses regarding the development of phonological skills in an L2 have emerged. As summarized by Chiappe and Siegel (1999), the phonological core model predicts that children will have a more difficult time processing and manipulating the sounds in an L2 due to differences in phonemic and syllabic structure between languages. Conversely, the linguistic interdependence hypothesis (Cummins, 1979) predicts a strong relationship between phonological capabilities in the L1 and the L2. Because the relationship between the L1 and the L2 is dependent on children's proficiency in the L1, a distinction may exist between children from middle-income families and those from low-income families, since children from middle-income families may have more advanced language development skills prior to school entry. Children from low-income families who are provided only with intensive L2 instruction upon school entry are expected to lose all knowledge of the L1 as well as have difficulty in their development of the L2 (Cummins, 1979). These children, although functional in their L1, will have difficulties in acquiring the L2 at the same speed as their classmates due to a deficiency in their knowledge of the L1. On the other hand, children from middle-income families often have a strong conceptual framework in the L1 and are able to quickly develop skills in an L2 while maintaining their L1. Cummins argues for the development of children's L1 prior to intense instruction in an L2. Once children have developed an understanding of their L1, meeting the prerequisites considered necessary to develop literacy, they will then be able to use this information in helping them master an L2.

During L2 acquisition, transfer occurs at the phonological, morphological, and syntactical levels (Romaine, 1995). Children tend to first develop the lexicon of the L2. Some phonological interference with regard to pronunciation may occur based on the sound system of the L1. Discrimination of sounds, however, is usually not affected, resulting in an asymmetry between production and perception, common among young L2 learners (Romaine, 1995).

The importance of these studies is emphasized by the fact that there is a growing Spanish-speaking population of children enrolled in schools throughout the United States. While Spanish-speaking children comprise the largest student population of L2 speakers, there are other ethnic groups residing in the United States who speak languages other than English. As reported by the National Center for Education Statistics, U.S. Department of Education (Henke, Choy, Geis, & Broughman, 1996), according to the 1993–1994 Schools and Staffing Survey, over 2.1 million public school students in the United States were identified as limited English proficient students and account for 5% of all public school students. A substantial percentage of English language learners throughout the United States are enrolled in classes in their L1 to help transition them into English. Yet, the importance of bilingual education is often questioned in today's school system, as has been seen in California, Massachusetts, and Arizona.

Durgunoglu (1998) investigated how language and literacy evolved within transitional bilingual first-grade classrooms. Durgunoglu found literacy development in Spanish and English to be very similar, with phonological

awareness playing a significant role for both languages. The children in Durgunoglu's sample used their Spanish skills to help them in developing English literacy skills. Durgunoglu suggested that these children continue to be taught Spanish as a bridge into their English literacy development. In a previous study, Durgunoglu et al. (1993) explored the relationship between both phonological awareness ability at the phoneme, syllable, and onset-rhyme levels, and oral Spanish-language proficiency with English word recognition in first-grade children. Spanish phonological awareness and word recognition ability were strong predictors of English decoding skills.

Cisero and Royer (1995), expanding on the findings of Durgunoglu et al. (1993), further analyzed the developmental properties of phonological awareness and explored the relationship between phonological awareness in English and Spanish. The phonological skills assessed in their sample of kindergarten and first-grade children included rhyme and initial and final phoneme detection. This study found a cross-language transfer with regard to the initial phoneme detection task. Increased general performance in Spanish also led to an increase in general performance in English.

As mentioned previously, there is a history of research with regard to the transfer of oral language and preliteracy skills across languages. Children in kindergarten and first grade have the ability to use their knowledge in one language in the acquisition of an L2. Opposing theories have arisen throughout the years regarding the development of an L2 in young children. At separate extremes, functionalists find the process of learning an L2 to be very different than learning an L1, while innatists feel that all language emerges from the same linguistic structure, therefore resulting in similar processes for all languages acquired (Bialystok, 2001).

Applied research has found a threshold effect with regard to bilingualism in which performance in the L1 affects educational achievement in the L2. For example, children with poor skills in Spanish would be at a disadvantage for educational achievement in English (Cobo-Lewis, Eilers, Pearson, & Umbel, 2002). It is evident, then, that children must have a grasp on language skills in an L1, specifically phonological, morphological, and syntactical skills, before beginning the process of learning to read. Therefore, it is important to study these children earlier than kindergarten, as they are developing their language and preliteracy skills, in order to better understand this relationship across languages. Focusing on children who are exposed to an L2 during pre-kindergarten will help clarify the transitional process from language to literacy in an L1, as well as between an L1 and L2, before they begin the process of learning to read.

Present Study

Comprehensive developmental programs such as Head Start, which are available nationally to serve low-income families with preschool children, have a significant number of Hispanic children enrolled. Strengthening the

home language skills of children at an early age will facilitate both their transition into kindergarten and their acquisition of English. Head Start is committed to serving a diverse population and has “maintained a leadership role in bilingual education and in innovative work with families speaking other languages” (National Head Start Association, 2000, p. 19). Nationally, of the 905,235 children enrolled in Head Start programs in 2001, 29.7% were Hispanic. These children are expected to enter the school system and acquire English literacy skills at the same rate as those children for whom English is their L1.

The present study looks at the Spanish and English oral language abilities and phonological awareness of a group of Spanish-speaking Head Start children. It is important to look at these skills, not only within language but also across language, in order to better develop curricula to meet these children’s needs in both languages simultaneously. The main objective of the present study is to determine the interlanguage relationships between oral language skills and phonological awareness abilities in Spanish-speaking Head Start children learning English.

Methodology

Sample

The sample consisted of 100 children (49 males and 51 females) with a mean age of 56 months (range: 48 months–66 months). All of the children in the study were participants in the Miami–Dade County Community Action Agency Head Start program. Only children whose parents provided consent participated in the study. Study participation was offered to children in 11 classrooms within three different Head Start centers; the researchers chose the Head Start centers based on the ethnicity of the children attending the centers. The researchers chose the three centers to represent different Hispanic neighborhoods in the community, with respect to nationality, primarily Cuban, Honduran, and Nicaraguan. All children in this study were identified as Hispanic based on the Head Start registration form filled out by parents at the beginning of the year.

Measures

Oral language proficiency was measured using the pre-Language Assessment Scale 2000 edition (preLAS 2000) (Duncan & DeAvila, 1998). The preLAS 2000 (Form C) is an oral language proficiency assessment utilizing a convergent approach to measure receptive and expressive language. This assessment consists of both oral language and preliteracy components. Various aspects of language are tested separately in individual subtests and scored separately, and then the scores are weighted and combined into a total score. Durgunoglu et al. (1993) recommend the use of the preLAS when measuring the oral language proficiency of preschool children in both English and Spanish because “one advantage of this test is that the Spanish and English versions

are not translations of each other, but they have identical formats and administration procedures” (p. 456).

The five subtests of the oral language component include “Simon Says” (20%), a measure of receptive vocabulary in which the child must show abilities in listening comprehension and following directions. The second (10%) and fourth (10%) subtests (“Art Show” and “The Human Body”) are measures of expressive language in which vocabulary and semantics are assessed. The third subtest (20%), “Say What You Hear,” measures both receptive and expressive language, focusing on morphological and syntactical features. The fifth subtest (40%), “Let’s Tell Stories,” also measures receptive and expressive vocabulary, focusing on story retelling, natural language production, sequencing of events, demonstration of syntax, and vocabulary. The subtests and content tested are the same for the Spanish version. The percentages in parentheses represent the amount of weight given to each subtest, with the greatest amount of weight given to narrative production. On the English preLAS 2000, the reliabilities of these subtests as determined by Cronbach’s α ranged from .86 to .90 (Duncan & DeAvila, 1998). On the Spanish preLAS 2000, the reliabilities of these subtests ranged from .66 to .88 (Duncan & DeAvila).

The authors developed the Phonological Sensitivity Test to measure the phonological awareness of the children. The Phonological Sensitivity Test is designed to measure three types of phonological skills in preschool children: rhyming, alliteration, and sentence segmenting. Maclean et al. (1987), as well as Lonigan et al. (1998), suggest measuring rhyming and alliteration in preschool samples, as these are the least complex of the phonological awareness skills. Sentence segmenting is also included in the measure of phonological awareness in order to determine the ability to differentiate between words. This is considered a more difficult phonological task than rhyming or alliteration.

The authors designed the test using a comparative sample of 50 Hispanic Head Start children ranging in age from 3 to 5. As a first step in creating this measure, the authors pilot tested a set of 154 pictures representing words being considered for use in the rhyme matching and alliteration matching subtests; the comparative sample consisted of a group of Hispanic children from 15 different nationalities at Head Start centers throughout the area (one of the centers was used in the present study).

The pilot assessment used an expressive vocabulary format, in which the children were probed for the name of the picture in either English or Spanish, depending on the session. The child turned the page, saw the new picture, and was asked if he or she knew the name of the picture. If the child gave a descriptive name, he or she was then asked for a more precise name. Once the researchers collected this information, they determined which words were identified by at least 50% of the children. Words were looked at independently

in both languages. The authors used these words and pictures when creating the rhyming and alliteration subtests.

The Rhyme Matching subtest involves the child identifying three pictures, one target and two choice pictures. One choice picture (e.g., floor) rhymes with the target picture (e.g., door), whereas the other choice picture (e.g., nose) does not. The child's task is to choose the choice picture that rhymes with the target picture. The child is first asked to try to identify the picture in order to avoid confounding vocabulary with rhyming ability. The subtest uses pictures instead of words so that the children focus their attention on identifying the words that rhyme instead of trying to store the words in memory. Each trial presents the child with three practice items, on which he or she may receive a correction, explanation of the correct answer, and re-administration, if the child provides the incorrect answer. Sixteen test trials are then given, in which the examiner does not provide the child with any feedback (see Appendix A).

The Alliteration Matching subtest is identical to the Rhyme Matching subtest, except that one of the choice pictures (e.g., cat) starts with the same sound as the target picture (e.g., car), whereas the other choice picture (e.g., swing) does not. The child is asked to name the three pictures and then asked to choose the choice picture that begins with the same sound as the target picture (see Appendix B).

The Sentence Segmenting subtest measures children's ability to segment words in a sentence. Six blocks are placed in a line in front of the child. The task is modeled for the child using the sentence, "My name is [child's name]." The examiner says the sentence, moving one block for each word. The child is then asked to repeat the same sentence while moving one block for each word, just as the examiner did. Once the child has done this, he or she is then read a sentence and asked to repeat the sentence as he or she moves one block for each word said in the sentence. Two practice trials are administered in which the child is provided with the correct answer and an explanation for the correct answer, and is re-administered the sentence if he or she moves the incorrect number of blocks. There are 10 test trials, in which the examiner provides no feedback (see Appendix C).

Procedure

A research assistant individually administered the assessments in the corresponding language to each child in a separate room each morning. Each session took approximately 45 minutes to administer. Each research assistant assessed an average of two children in one morning. Each child was assessed once in English and once in Spanish. Approximately one half of the sample was tested in Spanish first, with the other half tested in English first. If a child did not understand the instructions in the assigned language, the child received instructions in his or her native language. Students were administered the second assessment at least 1 week after the first administration in order to avoid practice effects. Individual testing was conducted from October 2000 to

February 2001. All of the children were administered the preLAS 2000 first, followed by the Phonological Sensitivity Test. For the preLAS 2000, if the child obtained five incorrect answers for a subtest, the examiner moved on to the next subtest. The Phonological Sensitivity Test was completed in full.

Results

The researchers first examined means and standard deviations for the two assessments in each language to assure sufficient variability in all measures. We used hierarchical multiple regression to test cross-language transfer effects. English proficiency, Spanish proficiency, and Spanish phonological awareness were entered into the equation to predict English phonological awareness in an order that allowed for the ability to analyze the relationship between Spanish and English phonological awareness, controlling for proficiency in both languages.

Table 1 reports the means and standard deviations for the preLAS 2000 and the Phonological Sensitivity Test. The preLAS 2000 was designed to provide a composite measure of oral language ability assessing receptive and expressive language abilities including vocabulary, semantics, morphology, syntax, storytelling, and event sequencing. Although five subtests are presented in the preLAS, the manual allows for the total scores of each subtest to be combined into one score for the entire assessment, which is used to evaluate young children’s language skills. To confirm the validity of the composite score, we calculated correlations for the subtests of the preLAS 2000 for each language. The subtests were all significantly correlated ($p < .01$) within language. Therefore, we used the total preLAS 2000 scores in the analysis as recommended by the test publishers.

Table 1

Means and Standard Deviations for the Oral Language Proficiency and Phonological Awareness Assessments

Measures	Spanish	English
Oral language proficiency (measured by the pre-Language Assessment Scale 2000)		
<i>M</i>	63.90	40.11
<i>SD</i>	19.24	28.32
Phonological awareness (measured by the Phonological Sensitivity Test)		
<i>M</i>	21.70	21.73
<i>SD</i>	5.98	7.89

Performance on all of the subtests for the Phonological Sensitivity Test were significantly correlated with each other ($p < .05$). Due to the relatively high consistency and the significant correlations across subtests for each measure, we used total performance scores for subsequent analyses. Sufficient variability existed in all measures to allow for subsequent hierarchical regression analysis.

As can be seen in Table 2, the phonological awareness measures were significantly correlated with each other across language (English Phonological Sensitivity Test and Spanish Phonological Sensitivity Test correlated) as well as with oral language proficiency, measured by the preLAS, within language (English preLAS correlated with English Phonological Sensitivity Test, and Spanish preLAS with Spanish Phonological Sensitivity Test). The between-language correlation related to oral language proficiency was not significant. In order to determine the existence of a cross-language transfer of phonological awareness skills for this sample, we found it necessary to look at the unique effect of phonological awareness in Spanish on phonological awareness in English.

Table 2

Correlations for the pre-Language Assessment Scale 2000 (preLAS) and Phonological Sensitivity Test (PST)

	preLAS (English)	preLAS (Spanish)	PST (English)	PST (Spanish)
preLAS (English)	1			
preLAS (Spanish)	-.18	1		
PST (English)	.52*	.18	1	
PST (Spanish)	.15	.33*	.41*	1

* $p < .01$.

A hierarchical multiple regression was conducted using English phonological awareness as the dependent variable. English oral proficiency, Spanish oral proficiency, and Spanish phonological awareness were entered respectively as independent variables in a stepwise multiple regression format to control for the variance attributable to proficiency when comparing phonological awareness across languages. All three independent variables were significant predictors of English phonological awareness (see Table 3). The first variable entered into the equation, English oral proficiency, significantly accounted for the most variance (27%), when alone in the model. Spanish oral proficiency, entered next, accounted for 8% of the variance associated with English phonological awareness. Spanish phonological

awareness, entered last, uniquely and significantly accounted for 6% of the variance associated with English phonological awareness. It should be noted that once Spanish phonological awareness was included in the equation, the effect of Spanish proficiency on English phonological awareness, although still significant, dropped to 3%, indicating that most of the variance attributed to Spanish proficiency was shared with Spanish phonological awareness.

Table 3

Multiple Regression Analysis with English Phonological Sensitivity Test (PST) Scores as the Dependent Variable

Model	Variable	B	SE B	R ²	Adjusted R ²	Beta
1	(Constant)	15.893	1.178			
	English pre-Language Assessment Scale 2000 (preLAS)	.145	.024	.272	.272	.522**
2	(Constant)	.7992	2.603			
	English preLAS	.159	.023			.572**
	Spanish preLAS	.115	.034	.348	.076	.280**
3	(Constant)	3.527	2.863			
	English preLAS	.143	.023			.513**
	Spanish preLAS	.074	.035			.181*
	Spanish PST	.356	.113	.410	.061	.269**

* $p < .05$. ** $p < .01$.

Discussion

The present study extends prior research on the cross-language transfer of phonological skills during the critical preschool age. The findings from the present study revealed that phonological awareness in English was directly related to phonological awareness in Spanish in Hispanic Head Start children, which supports prior research with older children that found phonological awareness skills in one language are related to phonological skills in a second language. English phonological awareness, beyond its unique relationship with Spanish phonological awareness, was also related to both English- and

Spanish-language proficiency. The relationship of Spanish proficiency with English phonological awareness was in part shared variance with Spanish phonological awareness. Once Spanish phonological awareness was included in the model, this prior relationship, while still significant, diminished. It is important to mention that suppression was also a factor in this analysis. The low correlation between English- and Spanish-language proficiency resulted in an overrepresentation of both factors when they were included together in the equation. Once Spanish phonological awareness was added to the equation, a true representation of each variable was revealed.

With all of the variables entered into the equation, it is evident that English proficiency and Spanish phonological awareness are both important predictors of English phonological awareness for this sample. As Spanish proficiency is correlated with Spanish phonological awareness, it is apparent that oral language skills in Spanish influence phonological awareness in English. Detecting a unique relationship between phonological awareness skills in Spanish and English beyond the effect of proficiency supplements past research, which identified a similar cross-language transfer in older children.

Durgunoglu et al. (1993) empirically tested the cross-language transfer effect for phonological awareness with a sample of first graders (extended here for a sample of preschoolers). Teaching a child phonological skills in one language will help the child master these skills in an L2. These skills go beyond proficiency when focusing on the L2. Language proficiency has an indirect effect on phonological awareness in an L2. Looking back to this study's other findings, there appears to be an underlying mechanism relating phonological awareness to proficiency, such that strengthening phonological skills in one language will help strengthen these skills in an L2. In turn, acquiring these skills in the L2 may then strengthen their proficiency in the L2.

Limitations

It is important to reiterate the capability of children to succeed at these metalinguistic skills, beyond the language abilities. While we found a relationship between language proficiency and phonological awareness within language, these skills did not relate to each other across language. However, while language proficiency had no relationship across language, the metalinguistic skills did relate across language. Comparing the non-transfer of language skills to the significant transfer of these "metalinguistic" skills emphasizes the difference involved in accomplishing these skills. Past studies, such as that by Durgunoglu et al. (1993), have indicated that these metalinguistic skills continue to transfer even after oral language no longer has any effect on outcome. Future studies should try to better capture the essence of this cross-language transfer of metalinguistic skills, pinpointing the actual skills that are at the center of these tasks and that surpass language proficiency.

Implications

There are important implications for this cross-language transfer research with the community of children learning English as an L2. Determining that this transfer does occur as well as understanding its relational role between the languages will facilitate the transition to English for these Spanish-speaking children. The research on bilingualism points to this interaction between languages, which strengthens communication and pushes toward a multilingual society. With the expanding immigration into the United States, research must continue to focus on this transitioning, in order to continue improving the education of children in this nation.

It is important for bilingual educators to understand the dynamics of this cross-language transfer. Building on a child's language abilities in his or her L1 will not only help the child fully master that language, but provide him or her with the tools to deconstruct the L2. Early development of language skills, such as semantics, syntax, narrative discourse, and morphology, as well as phonological awareness, will provide the child with a "meta" understanding of language that he or she can then apply to language development and literacy skills in the L2.

Conclusion

The findings reported here support the importance of bilingual education and the linguistic interdependence hypothesis as proposed by Cummins (1979). The linguistic interdependence hypothesis theorizes that a relationship occurs between the acquisition of an L2 and the child's competence in his or her L1. It is, therefore, suggested by Cummins, and reiterated with these findings, that the child should be involved in an additive bilingual program in which the phonological skills in the L1 continue to be strengthened while beginning language instruction in the L2. The more competent the child in his or her L1, the easier the transition from the L1 to the L2 as the skills learned in one language are applied to the other language, as is seen here with phonological awareness. The data in the present study explicitly show that in order for a Spanish-speaking child to succeed in English phonological tasks, he or she should be trained on phonological tasks in Spanish as well as taught English language skills, indicating that this "meta" task may be the same regardless of language. It is important to note, however, that when educating our children, we should not simply focus on intensive language and phonological training, which may be seen as the easy way out. Rather, we should employ a proper pedagogical method that will stimulate cognitive operations, allowing children the opportunity to learn and develop linguistic knowledge.

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Appendix A

Rhyming Task

English

Practice:

1. **Balloon**, Ice Cream, Moon
2. **Door**, Nose, Floor
3. **Eye**, Sky, Whale

Test:

4. **Dog**, Fish, Frog
5. **Rain**, Train, Chair
6. **Cake**, Snake, Apple
7. **House**, Rabbit, Mouse
8. **Car**, Shoe, Star
9. **Bone**, Phone, Money
10. **Bed**, Red, Mirror
11. **Hat**, Cat, Cheese
12. **King**, Umbrella, Swing
13. **Plate**, Tail, Skate
14. **Bear**, Hair, Strawberry
15. **Clock**, Sock, Plane
16. **Duck**, Truck, Corn
17. **Ball**, Clown, Wall
18. **Key**, Tree, Crib
19. **Hand**, Cup, Sand

Spanish

Practice:

1. **Gato**, Plato, Casa
2. **Conejo**, Reloj, Espejo
3. **Dinero**, Culebra, Sombrero

Test:

4. **Cola**, Bola, Puerta
5. **Helado**, Pescado, Estrella
6. **Silla**, Sombrilla, Carro
7. **Plato**, Llave, Zapato
8. **Ojo**, Rojo, Lluvia
9. **Avión**, Camión, Oso
10. **Rana**, Patine, Manzana
11. **Hueso**, Media, Queso
12. **Fresa**, Mesa, Mano
13. **Maíz**, Perro, Nariz
14. **Arena**, Ratón, Ballena
15. **Vaso**, Payaso, Árbol
16. **Luna**, Cuna, Tren
17. **Pelo**, Rey, Cielo
18. **Flor**, Columpio, Tenedor
19. **Globo**, Lobo, Cama

Note. “Target” items are listed in bold.

Appendix B

Alliteration Task

English

Practice:

1. **Car**, Cat, Swing
2. **Snake**, Umbrella, Star
3. **Tree**, Ice Cream, Train

Test:

4. **King**, Key, Nose
5. **Fish**, Cake, Fork
6. **Clown**, Skate, Clock
7. **Money**, Moon, Shoe
8. **Door**, Dog, Eye
9. **Bed**, Bone, Frog
10. **Plane**, House, Plate
11. **Sock**, Duck, Sand
12. **Hand**, Phone, Hat
13. **Red**, Rabbit, Truck
14. **Chair**, Balloon, Cheese
15. **Ball**, Bear, Rain
16. **Flower**, Apple, Floor
17. **Whale**, Hair, Wall
18. **Corn**, Cup, Sky
19. **Table**, Tail, Mirror

Note. “Target” items are listed in bold.

Spanish

Practice:

1. **Cama**, Plato, Carro
2. **Pescado**, Puerta, Fresa
3. **Rey**, Reloj, Maiz

Test:

4. **Árbol**, Gato, Avión
5. **Ballena**, Rojo, Bola
6. **Estrella**, Dinero, Espejo
7. **Lobo**, Luna, Sombrero
8. **Patine**, Pato, Conejo
9. **Mano**, Helado, Manzana
10. **Sol**, Sombrilla, Payaso
11. **Vaca**, Vaso, Zapato
12. **Media**, Nariz, Mesa
13. **Pelo**, Perro, Cola
14. **Cuna**, Arena, Culebra
15. **Llave**, Columpio, Lluvia
16. **Oso**, Ojo, Tren
17. **Ratón**, Rana, Globo
18. **Casa**, Camión, Hueso
19. **Silla**, Flor, Cielo

Appendix C

Sentence Segmenting Task

English

Practice:

1. Dogs bark.
2. She can play.

Test:

3. He came.
4. I eat.
5. Go to bed.
6. The girl jumps.
7. She runs.
8. School is fun.
9. Come to my house.
10. We can run fast.
11. Candy is good.
12. Cats sleep.

Spanish

Practice:

1. Perros ladran.
2. Ella puede jugar.

Test:

3. Él vino.
4. Yo como.
5. Vamos a cantar.
6. La niña brinca.
7. Ella corre.
8. Me gusta comer helado.
9. Ven a mi casa.
10. Gatos duermen.
11. La mamá llama.
12. El niño gana.

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