Bilingual Children: How Do Their Two Languages Talk to Each Other?

Albenys Díaz Hernández '25, Zahira Flores-Gaona, Xochyl Pérez, Isabel Hernández

Advised by Dr. Ioulia Kovelman, *Department of Psychology*

Abstract

In the United States, English is the formal language of society and schooling instruction. Therefore, English language proficiency—in speaking, reading, and writing—is critical to academic and career success. For children from immigrant families, transitioning to English-only instruction can be challenging. This challenge raises a conflict: should one focus solely on English skills or should they also maintain their home or heritage language? This presents a logical paradox. On one hand, mastering any skill requires practice. Therefore, more practice in English should lead to better proficiency. On the other hand, bilingualism theories posit that bilinguals can transfer their language skills across both languages (Chung et al., 2019). Thus, practicing heritage language skills may also support English proficiency.

Keywords: language comprehension, cross-linguistic or cross-language transfer, semantics, morphology, language proficiency

Background

In the United States, where English is the primary language of instruction, English proficiency is crucial for academic and career success. For children from immigrant families, this creates a dilemma: should they focus exclusively on developing English skills, or maintain their heritage language? Bilingualism theories suggest that skills in one language can enhance abilities in another, indicating that practicing a heritage language, like Spanish, may support English proficiency (Chung et al., 2019). This study explores this dynamic by examining how Spanish-English bilingualism influences language comprehension, highlighting the interconnectedness of language proficiency and comprehension. Understanding how skills transfer between languages can provide valuable insights for supporting bilingual students in educational settings.

Language skills permeate many aspects of daily life. Language comprehension, a skill unique to humans, enables understanding of spoken or written language, including word meaning and sentence structure (Gibbs, 2021). Adding onto that, language proficiency is described as the degree of accuracy in speaking and language comprehension (Jaros-White, 2023). These two literacy concepts are interlinked and related to language use and learning because comprehension is a key indicator and facilitator of overall language proficiency (Al Quanayeer, 2021). For example, a study by Al Quanayeer (2021) examines the connection between vocabulary knowledge and reading comprehension in EFL (English as a Foreign Language) students, showing that a larger vocabulary size substantially improves comprehension and demonstrates more proficiency than those with a smaller vocabulary size. Additionally, various languages have different word structures, which influences how learners develop comprehension and proficiency, and cross-linguistic differences might interfere with or support language use. In this study, we explore the relationship between English comprehension and Spanish language proficiency, discussing how skills in one language can influence and enhance abilities in another for Spanish-English bilingual speakers.

Bilingualism is defined as the ability to speak more than one language or dialect (Spitzer, 2016). This definition encompasses a wide range of experiences, from individuals who grew up bilingual to those who became proficient through higher education at an older age. In the United States, approximately 68 million people speak a language other than English at home (United States Census Bureau, 2019). As the Latino population in the US has increased in recent years, Spanish has been one of the fastest-growing languages (Krogstad et al., 2023). In the fall of 2021, Spanish was the most often reported home language of EL (English Learner) pupils enrolled in public schools (4 million students), accounting for 76.4 percent of all ELs (National Center for Education Statistics, 2021).

The current study focuses on Heritage Language Learners (HLLs) and early bilinguals. HLLs are individuals who speak a home (minority) and a community (majority) language while early bilinguals are those who acquire both languages before puberty (Montrul, 2012). Bilingual children are at risk of low literacy rates when they lack the linguistic foundations necessary to access academic content, which can lead to long-term consequences such as an increased likelihood of dropping out of high school (Peña et al., 2020). Consequently, teachers in the United States face significant challenges in supporting bilingual learners. Therefore, our study focuses on this bilingual population to inform both theory and educational practice for bilinguals.

Bilingualism Theories

Within the brain, the two languages are thought to communicate with each other. This communication process is typically termed "cross-linguistic transfer." Cross-language transfer is key to bilingual development, as skills in one language can aid learning in another (Yang et al., 2017; Chung et al., 2019). Therefore, the bilingual brain sustains an interaction between L1 (first language) and L2 (second language). L1 morphology, which studies morphemes–the smallest unit of meaning combined to create complex words (Levesque et al., 2020), and phonology, the study of patterns of sounds or phonemes, the smallest units of sound in a language (University of Sheffield, 2022), have been developed and can positively impact the learning development of those elements in L2. Various frameworks, like the transfer facilitation model and the interdependence hypothesis, explain cross-language transfer (Koda, 2008; Cummins, 1981). In HLLs the two languages are often acquired simultaneously during early childhood. This phenomenon is better known as "dual first language acquisition." Instead of labeling one language as the first (L1) and the other as the second (L2), researchers often refer to them as the "home language" and the "school language." This is because children are learning both languages during a critical brain developmental period ideal for language learning. As they grow, their skill and preference for each language might change at different developmental stages t. This phenomenon is better known as "dual first language acquisition." Rather than using L1 and L2, researchers term those as, e.g., home and school languages, as children are acquiring both languages within the optimal brain developmental periods for language learning and their proficiency and dominance in these two languages may vary across different developmental stages. Chung et al. (2019) proposed an interactive framework to capture the complexity of dual-language interaction, and suggested that multiple factors contribute to this intricate process, necessitating further research into their interactions.

A recent study by Sun-Alperin (2011) found that among second and third grade Spanish-English bilingual children, Spanish phonological processing predicted English real word and pseudoword reading and spelling. Additionally, Spanish orthographic processing also predicted English word reading. These findings demonstrate that the heritage language (Spanish) supports the second language (English), validating the cross-language transfer theory, which posits that phonological and orthographic skills in Spanish (L1) are strongly linked to English (L2) reading. Further research on cross-language transfer has shown that English Language Learners (ELL) kindergarteners with a high level of knowledge in Spanish letters and sounds tend to exhibit high levels of knowledge in English letters and sounds (Cardenas-Hagan et al., 2007). This highlights the transferability of phonology and morphology in children who have a strong base in Spanish and implement it into English. Similarly, Bedore et al. (2023) discovered a robust relationship between oral language and reading measures in both languages, particularly in English, showing that having a good foundation in Spanish vocabulary helps one learn English vocabulary, which further helps one learn English morphosyntax and pre-reading abilities. This indicates that children's early readiness in Spanish facilitates English acquisition. For instance, Spanish vocabulary knowledge supports English vocabulary, which then aids in learning English pre-reading skills and morphosyntax (Bedore et al., 2023). These findings underscore the role of native Spanish skills in developing English proficiency, further supporting the cross-language transfer theory.

The acquisition of a second language is influenced by Age of Exposure to English (AoEE) and the amount of language exposure (input/output). Bedore et al. (2016) found that earlier AoEE improves English skills in bilingual children, especially first graders, but diminishes in importance as English exposure increases. However, early English exposure also correlates with lower Spanish performance, suggesting a trade-off in bilingual proficiency. The authors propose a usage-based approach, emphasizing the continuous use of Spanish to mitigate this trade-off. These findings align with other studies showing that as young children's English skills improve, their Spanish grammatical accuracy declines (Castilla-Earls et al., 2019), suggesting that while the age of acquisition is important, the amount of usage plays a crucial role. As these children use Spanish less frequently when they start school, their Spanish proficiency becomes limited. These studies highlight the importance of Spanish or heritage language maintenance and necessitate a closer look at the potential benefits of heritage language maintenance for children's dual-language proficiency, including listening comprehension in English, as addressed in our work.

Bilingual Language Assessment Tools

This early language exposure also influences the semantics and morphosyntax of bilingual children. Exploring the semantics, or the meanings of words and sentences(Yule, 2005, p. 100), and morphosyntax, the rules governing word formation and sentence structure (Ardila, 2021), in bilingual children unveils a compelling narrative of linguistic agility, cognitive flexibility, and the delicate interplay between two vibrant languages. Various measures have been created to evaluate bilingual children's language development in terms of semantics and morphosyntax. Tests like the Bilingual Spanish English Oral Screener (BESOS) and the Test of Narrative Language (TNL) are commonly used for bilingual Spanish-English kids to detect impaired language development. To identify the classification accuracy of these measures, Peña et al. (2020) studied the effectiveness of three tools (BESA-ME morphosyntax, BESA-ME semantics, and TNL) and sought to find the best combination of scores across all three measures for the highest classification accuracy in each grade. Their study focused on 175 Spanish-English bilingual children in the second and fourth grades in Central Texas. Among these children, only 26 (15%) had previously met the criteria for developmental language disorder (DLD). The age range of the children in the

sample was 7;2 to 11;6 (M = 8;7, SD = 1;0), with 49% female participants (Peña et al., 2020).

The study used reference measures (BESOS screener data, teacher concerns, ITALK) and index measures (BESA-ME morphosyntax and semantics, TNL). The BESA-ME morphosyntax assesses children's grammatical knowledge with "cloze and sentence repetition items." Meanwhile, BESA-ME semantics measures both semantic breadth and depth with receptive and expressive items assessing "naming words and categories, functions, definitions, analogies, associations, and similarities/differences" (Peña et al., 2020). The investigation revealed that the highest language scores, regardless of whether in Spanish or English, produced strong classification accuracy. Specifically, BESA-ME morphosyntax was the most accurate for second graders, while both BESA-ME morphosyntax and TNL were the most accurate for fourth graders. These findings suggest that bilingual children with DLD struggle with morphosyntactic structures and that English proficiency tends to increase with prolonged exposure, often impacting Spanish proficiency (Peña et al., 2020).

Additionally, only 25% of second graders and 9% of fourth graders scored higher in Spanish across all three domains. These results are consistent with Bedore et al. (2016), which found that third graders scored significantly lower on the Spanish BESOS exam than the first graders. This suggests that extended exposure to English leads to increased English proficiency, while Spanish skills either decline or remain stable in comparison.

Recent studies highlight the importance of studying bilingual development to support those at risk of language difficulties. Bedore et al. (2023) found that low semantic performance in first graders increased reading risks, emphasizing the need for a strong semantic foundation. Early readiness in Spanish aids English acquisition, as supported by Sun-Alperin (2011), who found that Spanish orthographic and phonological processing aid English reading. Chung (2019) proposed an interactive framework for cross-language transfer. Bedore et al. (2016) showed that earlier English exposure improves English performance but leads to variable Spanish proficiency. Castilla-Earls et al. (2019) found that increased English proficiency decreases Spanish grammatical accuracy in young children. Pena et al. (2020) demonstrated that BESA-ME morphosyntax measurements effectively predict developmental language disorder (DLD). These findings suggest that having knowledge in Spanish aids English learning, and greater English exposure enhances English competency while possibly reducing Spanish proficiency, emphasizing the need for effective diagnostic tools and a better understanding of bilingual children's language development.

The Present Study & Methods

The current study aims to explore the relationship between English comprehension and Spanish language proficiency among bilingual Spanish-English children in Southeast Michigan. Given the growing number of Spanish-English bilingual children, understanding their language development is crucial for improving educational practices and dispelling negative perceptions of bilingualism. This study aimed to answer the following question: Is there a significant correlation between English comprehension and Spanish proficiency among early Spanish-English bilinguals? Based on existing literature (Bedore et al., 2016; Peña et al., 2020), we hypothesize a positive linear correlation between children's Spanish proficiency and their levels of English comprehension.
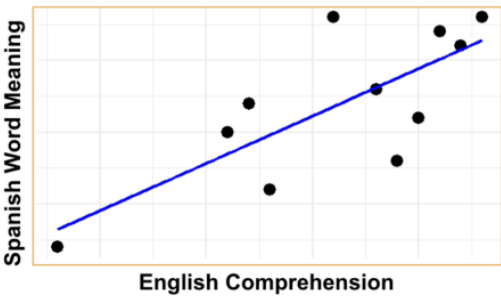
In this work, we recruited and tested 17 children. However, five of these children had incomplete assessments. Some children were unable to finish the tasks, while others frequently responded with "I don't know" on both the Spanish and English assessments. Such responses were scored as zero, and consistent use of them often indicates a lack of interest in participating. To respect the child's autonomy, we discontinued the assessments in these cases. As a result, only 12 of the 17 children fully completed all the assessments. Participants were all Latinx children: 66.67% Mexican, 16.67% Venezuelan, 8.33% Cuban, and 8.33% Colombian, with grade levels ranging from 1 to 6 (average grade level = 3.67).

To measure children's core linguistic competence in each of their languages, I used BESA-ME, which assesses a child's proficiency in semantics (language meaning) and morphosyntax (grammar and sentence structure)). It consists of two parts: morphosyntax and semantics. BESA-ME Morphosyntax evaluates the child's ability to construct sentences correctly, including sentence repetition and construction based on possessives, regular and irregular past tenses, plural nouns, and relative clauses. To assess a child's ability to conjugate regular past tense verbs, one question is: "Today he is talking to his friend. Yesterday, he did it too. What did he do yesterday?" The correct answer is: "Today he talked to his friend." BESA-ME Semantics examines the child's understanding of word meaning through tasks such as associations, comparisons, analogies, and categorization. For example, to assess the child's association with different words about their meanings, a question is: "If I say 'healthy,' what do you say?" Some possible answers are nutritious, carrots, and exercise.

To measure children's English comprehension, I used the Test of Narrative Language (TNL), which evaluates a child's language production and comprehension abilities through storytelling. During this task, the child answers comprehension questions based on a set story read by a research assistant, as well as produces and retells their own story based on set images shown to them. These specific measures were employed because both BESA-ME and TNL complement each other: BESA-ME provides insights into the child's processing of word meanings and grammaticality, while TNL offers an understanding of the child's vocabulary complexity.

To answer my research question, "Is there a significant correlation between English comprehension and Spanish proficiency among early Spanish-English bilinguals?", I used a correlational analysis approach to investigate the relationship

between Spanish proficiency and English comprehension. We anticipated a positive linear correlation between children's Spanish proficiency and their levels of English comprehension, as indicated by their BESA-ME and TNL scores. If a positive correlation is found, it will support the cross-language transfer theory, demonstrating that Spanish proficiency enhances English comprehension. This study aims to contribute to the existing literature by providing empirical evidence on how Spanish proficiency benefits English language development. The findings will guide the development of improved teaching strategies to better support Spanish-English bilingual children. This is particularly important in regions with limited access to a Spanish-speaking community, which may otherwise impede the continuous enrichment of Spanish language skills.

Results

Variable	N	Mean (M)	Standard Deviation (SD)	Minimum	Maximum
English Morphology	12	29.75	3.49	22	33
English Semantics	12	17.08	2.11	13	21
English Comprehension	12	36.33	5.73	23	43
Spanish Morphology	12	15.33	4.75	9	21
Spanish Semantics	12	17	4.97	7	23
Spanish Comprehension	12	34.42	5.68	21	39

Table 1. Descriptive Statistics for English and Spanish Proficiency Variables

Variables	English Morphology	English Semantics	English Comprehension	Spanish Morphology	Spanish Semantics	Spanish Comprehension
English Morphology						
English Semantics	0.73*					
English Comprehension	0.84***	0.74**				
Spanish Morphology	0.79***	0.68**	0.63*			
Spanish Semantics	0.82***	0.79***	0.76***	0.85***		
Spanish Comprehension	0.68**	0.62*	0.71**	0.68**	0.82***	

The correlation is significant at the 0.05*, 0.01**, and 0.001*** levels.

Table 2. Pearson Correlation Coefficients for English and Spanish Language Measures

Table 2 presents the Pearson correlation coefficients between English and Spanish language measures. Significant positive correlations were found between most measures of language proficiency within and across languages. The Pearson correlation analysis revealed a significant positive correlation between all Spanish proficiency variables (morphology, semantics, and comprehension) and English comprehension. Morphology showcased a significant correlation of $r(10) = 0.63$, $p < .05$, while semantics indicated a correlation of $r(10) = 0.73$, $p < .001$, and comprehension indicated a correlation of $r(10) = 0.71$, $p < .01$. This indicates that higher Spanish proficiency is associated with better English comprehension among early Spanish-English bilinguals. Table 2, along with Graph 3, show

Graph 3. Spanish semantics (meaning) is significantly correlated with English comprehension.

-cases that the most significant correlation between Spanish proficiency variables was Spanish meaning-based skills, or semantics, to English comprehension. This evidence suggests that meaning-based skills are more readily transferable between languages than morphosyntax or grammatical skills.

Discussion

The purpose of this study was to explore how the home language of heritage (L1) or early bilingual learners impacts their school language comprehension (L2). Usingdual-language proficiency tests such as BESA-ME and TNL, we assessed 12 Spanish-English bilingual children's language proficiency. We found significant positive correlations between English comprehension and Spanish language skills, suggesting that proficiency in one language is positively associated with comprehension in another. Semantics was the Spanish variable most strongly associated with English comprehension, suggesting that this skill can transfer easily between both languages. These findings support the cross-language transfer theory, which posits that skills in one language can aid the development of those skills in another language. The strong correlations suggest that bilingual individuals who excel in one language are likely to perform well in the other.

It is essential to highlight an interesting finding in this study, that one child's scores were significantly lower in both languages compared to the others. Given the larger project aims to identify language proficiency and diagnose potential developmental language disorders (DLD), this particular child could be a candidate for further evaluation. Children with DLD often perform poorly on screening tests like BESA-ME. However, upon reviewing the parent's survey, which detailed the child's language development and the amount of English and Spanish they hear (input) and produce (output), there were no notable concerns. The child may have been less motivated during the test, which could have affected their performance. Notably, this child was the youngest in the group, having just turned 7 before testing. This raises the question of how the age of acquisition and length of exposure impact language proficiency, as they had the least English ex-

posure in school. Further testing is needed to determine whether the child has DLD or if other factors caused the low scores.

These findings have important implications for bilingual education strategies. Understanding this cross-transfer of skills between languages validates the development of curricula that support a child's proficiency in their home language while simultaneously fostering skills in the second language. This approach can be particularly beneficial for younger children, such as the ones in this study, who may have had less exposure to English but still demonstrate potential for strong bilingual development. By promoting balanced instruction, educators can harness the power of cross-linguistic transfer to promote overall language comprehension and academic success in bilingual students.

Implications

The results underscore the importance of establishing support for bilingual children at various levels. At the educational level, educational policy should be developed to create bilingual programs to better support proficiency in both languages. Educational policy should advocate for curricula that integrate and strengthen skills in both languages. By considering bilingual experiences, schools can foster a more balanced and comprehensive language education.

At the teaching level, teachers should consider finding ways to capitalize on the child's first language to help them learn English, as well as incorporate strategies that reinforce both languages. For instance, activities that use vocabulary and comprehension in both languages simultaneously can support children's overall language development. Utilizing bilingual instruction methodologies can further enhance language skills and academic achievements, creating more competent future bilingual professionals.

At the family level, parents should encourage and support Spanish development at home and in surrounding communities, especially because these children are constantly enhancing their English skills at school. For instance, parents could enroll children in after-school programs that focus on building Spanish language skills or only communicating with the child back and forth in Spanish. By ensuring that their children are continuously practicing their Spanish skills, families can foster a comfortable environment where children feel encouraged despite making mistakes and motivate them to continue learning for themselves.

Limitations

Since this was a summer project, there are various limitations. First, our small sample size may limit the generalizability of these findings. A larger and more diverse sample may provide more insights into this relationship. Second, the population comes only from a state where Latinx families are smaller in proportion compared to states like New York or California,

which shows more constancy, but can lack diversity in children's bilingual experience. Additionally, the sample lacks diversity among Latinx groups, as more than half of the participants were Mexican. Third, using standardized testing may not capture all aspects of bilingual skills. Future research could incorporate alternative assessment methods to gain a more comprehensive understanding. Fourth, the study didn't consider the difference in the amount of Spanish exposure among the children, which can impact their scores. Future research should consider this and potentially compare those with more exposure to those with less exposure. Finally, given the nature of this study, causation cannot be drawn; further research is needed to find out how these skills transfer between Spanish and English. Lastly, since this study focused only on early bilinguals, future research should determine whether the correlational patterns found in this study can also apply to sequential and late bilinguals.

Acknowledgments

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About the Author

Albenys Diaz Hernandez, originally from the Dominican Republic and now residing in the Bronx, NY, studies Psychology and Spanish with a minor in Latin American Studies. She is completing her honors' thesis in the Families, Academics, Motivation, and Identity (FAM&I) lab at the UofR, exploring how racial, ethnic, and academic socialization affect STEM career choices among minoritized students, and how discrimination may impact these decisions. Albenys aims to become a bilingual therapist and researcher to support the Latino community.