# Spanish and English Proficiency at Kindergarten as Predictors of Later Academic Achievement

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## Abstract

The growing linguistic diversity in U.S. schools creates a need to better understand how early bilingual language abilities contribute to later academic achievement. This study investigates English and Spanish oral proficiency at kindergarten as predictors of academic performance from third through sixth grade among second-generation Latino children of immigrants. Children's English and Spanish skills were directly assessed using the Woodcock Language Proficiency Battery-Revised, and achievement outcomes were obtained from state English Language Arts (ELA) and Math standardized exams (MCAS). Linear regression models controlling for poverty, gender, and maternal education demonstrated that English proficiency at kindergarten significantly predicted ELA and Math performance across all four grade levels. Importantly, Spanish proficiency uniquely contributed to predictions of later achievement above and beyond English, significantly predicting ELA through sixth grade and Math outcomes through fifth grade. Overall, models explained moderate proportions of variance in academic performance ($R^2$ = .22–.35). Findings demonstrate that both English and Spanish proficiency at school entry are meaningful predictors of long-term academic outcomes, drawing attention to the developmental and educational value of supporting dual language abilities. This work supports evidence-based practices and policies that leverage emergent bilingual children's full linguistic repertoire to promote equitable academic success.

*Keywords:* bilingual, children of immigrants, academic outcomes

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## Introduction

Today's schools have experienced an unprecedented increase in the numbers of emergent bilingual children. Currently, one in four children in American schools are from homes where a language other than English is spoken, the majority come from Spanish speaking homes (U.S. Census, 2020). An extensive amount of research has demonstrated the important role of English proficiency in predicting the long-term academic achievement of emergent bilingual students (Halle et al., 2012; Reardon & Galindo, 2009; Slama, 2012). However, there remains a critical need for additional research on the role of children's home languages and later academic performance (Duarte, 2020; Joshi, 2025). Theoretical work suggests strong associations between home language proficiency and school success. Theories related to linguistic transfer and dual language abilities indicate that children who fully develop both their home language and English are more likely have positive academic outcomes, yet, there is a continued need for more empirical studies to support this relationship (Collins et al., 2011; Heineke & Vera, 2022; Sun et al., 2018). The current linguistic diversity in U.S. public schools has not been met with evidence-based educational practices that best support emergent bilingual children. Understanding how early English and Spanish abilities influence emergent bilingual children's later achievement is critical for informing policies and practices that promote equitable educational opportunities for this rapidly growing population (Irwin et al., 2022).

Support for home language development that emergent bilinguals receive at school in the early grades may be associated with later academic outcomes. Research has evidenced links between children's language competence and school success, but these relations have yet to be fully examined in bilingual children and the contribution of both home and school languages (Toppelberg & Collins, 2025). Several longitudinal studies have shown that children's early language English proficiency predicts later decoding and reading comprehension skills and is also associated with academic performance in English (Luft Baker et al., 2023; Mancilla-Martinez & Lesaux, 2017). Furthermore, children's English proficiency have demonstrated to be the most important indicator of achievement their scores in both English and in later school years (Uriarte et al., 2011).

The academic achievement Latino children of immigrants, often measured through standardized assessments, has improved over the last several decades (Santiago et al., 2014). Historically, Latino children score below their peers on reading and math assessments with increasing gaps in later school years (Reardon & Galindo, 2009; Samson & Collins, 2012), therefore, identifying factors which support their long-term academic development during the early school years is imperative (Gandara & Contreras, 2009; Rumberger et al., 2009). Performance on high-stakes standardized tests have taken on an increasingly important role in determining academic achievement and are a key indicator of success for many schools. There are well warranted concerns and critiques of standardized testing when used as a singular measure of student achievement. Nevertheless, they do offer insight to students' academic performance with scores that are easily comparable to other subgroups and populations. Such reports have indicated that the majority Latino students in fourth and eighth grade are not proficient in reading and mathematics (National Center for Education Statistics, 2024) and persistent achievement gaps remain.

To a considerable extent, low achievement of Latino children of immigrants reflects the negative impact of factors associated with poverty and other socioeconomic variables (Duncan & Brooks-Gunn, 1997; Hernandez et al., 2007). Poverty is one of the strongest predictors of academic achievement (Fram et al., 2007; Shay et al., 2024). Socioeconomic status (SES) has

a significant role in academic achievement, including parental education, that impact students' potential for school success (Beals & Porter, 2000). As Latino bilingual children of immigrants are more likely from economically disadvantaged backgrounds they are at higher academic risk (Reardon & Galindo, 2009). Furthermore, the effect of gender on academic achievement has been documented with girls typically outperforming boys (Sáenz et al., 2023; Steinmann & Strietholt, 2026; Thomas et al., 2024). Beyond the effects of poverty and gender, however, factors leading to lower academic outcomes in Latino children are not fully understood. An additional such potential factor affecting academic performance is the high variability in dual language proficiencies (Spanish/English) of Latino children of immigrants. In order to meet the linguistic demands of diverse environments, children must have the language abilities necessary to perform academically and function in schools. Meaningful language interactions are foundational for learning (Vygotsky & Cole, 1978). Home language support in the early grades may leverage existing language skills and support literacy skill development for improved long-term outcomes (Espinosa & García, 2012; García & Kleifgen, 2018). Bilingual children who are proficient in both languages have better academic outcomes than children who have limited proficiency in one or both languages (Collins, 2014). On the other hand, children with low language abilities are more likely to be poor readers in elementary school and suffer long-term under-achievement (M. Kieffer, 2012; M. J. Kieffer, 2012; Proctor et al., 2005; Reese et al., 2000).

Dual language proficiencies have been recognized as important predictors of other types of school functioning, including engagement, motivation, social behavior (inter/intrapersonal, and affective interactions) essential for navigating school. Previous work has evidenced that Spanish and English proficiencies account for over one-third of the variance in school engagement in kindergarten (Collins et al., 2011), leading to present research questions that have yet to be investigated such as, how dual language proficiencies are related to children's academic outcomes in later school years. Oral language skills are key in the acquisition of knowledge and learning (Reed & Lee, 2020). Children's language proficiency (e.g., vocabulary knowledge, phonological processing, syntax, and listening comprehension) are closely associated with later academic success therefore requires unique consideration.

Many studies have found strong links between language proficiency and academic performance among monolingual samples (Snow & Matthews, 2016), with language development consistently linked to later academic achievement in mathematics and English Language Arts (Duncan et al., 2020). However, there is a lack of research on bilingual children and the role of their dual language proficiencies on their academic achievement. Emergent bilingual children who are able to leverage their full linguistic repertoire are better able to progress in learning new concepts and content knowledge which is not language specific and may be learned and retrieved through either language (García et al., 2025).

Therefore, the present study investigates Latino children of immigrants' academic achievement at 3$^{rd}$ to 6$^{th}$ grade as predicted by their English and Spanish proficiency kindergarten. Emergent bilingual children's proficiency in their home and school language at school entry may be supportive of long-term academic outcomes. These relationships are particularly important for children from economically disadvantaged backgrounds that are at higher risk of academic struggles and challenges related to high stakes standardized tests, which are often a key indicator of school success (Duncan et al., 2007). We aim to extend current knowledge about the relation between early language abilities and later academic outcomes to address the following research questions:

RQ1. After considering socioeconomic factors, do children's Spanish and English proficiency at kindergarten predict academic outcomes at third through sixth grade? RQ2. Does Spanish proficiency explain unique variance beyond English?

## Methodology

This study investigates how Spanish and English proficiencies in the early school years are related to children's performance on standardized academic exams in later elementary grades. Second-generation Latino immigrant children were recruited at kindergarten entry from urban public schools in a large Northeast United States school district.

### Participants

Children in this study were selected by rigorous eligibility criteria resulting in a sample with demographics and backgrounds similar to those of Spanish-speaking families living in urban areas in the Northeast U.S. Children of immigrants who were born in the US and were first language speakers of Spanish were included in the study. All children were screened to meet the following inclusion criteria. All children were born in the continental U.S. with at least one parent who was born in Puerto Rico, Dominican Republic or other Latin American country and currently residing in the mainland US. Puerto Rican families were included as they share many characteristics of other Latino immigrant families and account for a substantial proportion of this population in the Northeast U.S. Children must have been living in a predominantly Spanish-speaking home with minimal or no exposure to English before age three. Children with developmental disorders or other severe sensory-motor sequelae of neurological trauma or disorder were excluded.

### Measures

Spanish and English oral language abilities were directly assessed using the Woodcock Language Proficiency Battery-Revised (WLPB-R) at kindergarten (mean age 6;1). School records of individual children's performance on State exams (MCAS) were obtained from the school district.

#### *Dual Language Proficiencies*

Children's oral language proficiencies in each language were directly assessed using the English and Spanish versions of the Woodcock Language Proficiency Batteries-Revised (WLPB-R): (Woodcock, 1991; Woodcock & Muñoz-Sandoval, 1995). The WLPB-R measures specific linguistic domains of language skills and is considered a strong standardized measure of oral language proficiency of English and Spanish. Four individually measured test scores (Memory for Sentences; Picture Vocabulary; Listening Comprehension, and Verbal Analogies) yield an oral language cluster score, which is used in the present analyses. Memory for Sentences is a mixed expressive-receptive measure of syntactic and semantic competence, where the child is asked to repeat words, phrases and then whole sentences that increase in length. Picture Vocabulary is a measure of expressive semantics (vocabulary) that requires naming pictures of items. Listening Comprehension is a receptive measure of syntactic and semantic competence, where the child listens to increasingly complex sentences or passages and is asked to provide the word that is missing at the end of the sentence or the passage. Verbal Analogies is a receptive measure of semantics, where the child is asked to provide a brief verbal answer to a missing item in a sentence that carry logical relationship. The WLPB-R

demonstrates strong psychometric properties with reliability coefficients for both forms alphas from 0.84–0.92 across all age ranges (Woodcock & Muñoz-Sandoval, 1995).

### *Academic Outcomes*

Children's academic performance was measured at third through sixth grade using test scores from The Massachusetts Comprehensive Assessment System (MCAS). This assessment of academic achievement is required for of all students and includes Reading (Grade 3), English Language Arts (Grades 4, 5, 6), Math (Grades 3, 4, 5, 6) and is administered each Spring (Massachusetts Department of Education, 2008). The MCAS has been the primary measure of academic achievement in Massachusetts for more than three decades and are aligned with Massachusetts learning standards. MCAS tests are not graded on a curve. The MCAS ELA test is divided into 2 sessions and the Math test is also divided into 2 sessions. All MCAS test sessions are untimed. However, test sessions have been designed to be completed within 150 minutes for each ELA session and 90–120 minutes for each Math session. The MCAS ELA measures reading and comprehension, written expression and understanding of language, grammar, and vocabulary in context. Includes selected-response and constructed-response questions. The MCAS Math measures conceptual understanding and skills, problem solving, and grade-specific domains such as operations and algebraic thinking, number and operations in base ten, number and operations in fractions, and measurement and data and geometry. Includes multiple-choice, short-answer, and open-response questions that require showing work.

### *Covariates*

Poverty, Child Gender, and Maternal Education data were collected when the children were in kindergarten, through multidimensional surveys administered during the parent interviews at home. Questions adapted from the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) study (Goodman et al., 1998) were used to determine the primary caregiver, socioeconomic status (poverty, and maternal education) and child's gender. A child was considered to be living in poverty when his or her household was a recipient of at least one government program which ties eligibility to income threshold levels (Census, 2000); these programs included: WIC, Food Stamps, Head Start, Section 8 housing assistance, and Welfare. The highest level of schooling the parents completed (elementary only, partial high school, complete high school, etc.) was recorded using ordinal scores ranging from 0 (no formal education) to 12 (MA/PhD) reflecting both education level attained and years of education.

### *Analytic Strategy*

We examined the academic outcomes of children at third through sixth grade predicted by their English and Spanish language proficiencies at kindergarten. Bivariate correlations were first conducted to investigate the association of Spanish and English proficiency and later academic performance. Our analyses included linear regression models controlling for socioeconomic variables of poverty, gender, and maternal education. In each regression model we sequentially included the predictors, starting first with the socioeconomic control variables then entering children's English oral language proficiency and lastly children's Spanish oral language proficiency. A separate regression model was conducted testing the contribution and prediction of each variable above and beyond previous variables entered in the model academic performance on MCAS exams at 3$^{rd}$, 4$^{th}$, 5$^{th}$ and 6$^{th}$ grade. We hypothesized that children with higher language proficiency at kindergarten would have higher academic outcomes in later

school years. Furthermore, we hypothesize that children's Spanish and English proficiencies will uniquely account for substantial variance of academic outcomes above and beyond the contribution of community, socioeconomic factors.

## Results

Preliminary analyses of all study variables were conducted with measures of central tendency and variability and were determined to be suitable for further analyses. Regarding missingness, analyses of each variable were conducted to check whether missing status was associated with other study variables. For the predictor variables collected in kindergarten, including language proficiency and control variables, coverage was higher than 99%. The academic outcome variables collected in third-sixth grade coverage was 80–63%, respectively, mostly due to attrition from children leaving the school district. Children with missing and complete data were compared using t-test analyses and did not differ significantly on any of the study variables. Descriptive findings (Table 1) include group sizes (N), unadjusted means (M), and standard deviations (SD) for each of the independent variable subgroups including demographic, language proficiency, and MCAS raw score means.

Results indicate that 86% percent of the children were living in poverty. The sample was evenly split with 50% girls and boys. Maternal education indicated that 70% of mothers had completed secondary school. The mean score for the language proficiencies at kindergarten for both Spanish (M = 67, SD = 21) and English (M = 70, SD = 19) were both well below the normed mean standard score (SS) of 100. Below-average performance for dual language children on measures of oral academic language proficiency is typical when using standardized measures with monolingual norms and has been reported in studies of similar populations using the same measures (Oller & Eilers, 2002; Páez et al., 2007).

**Table 1**
*Descriptive Statistics of All Study Variables*

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Poverty | 228 | 0 | 2 | 1.72 | 0.696 |
| Gender | 228 | 0 | 1 | 0.50 | 0.501 |
| Mother's Education | 228 | 0 | 12 | 5.14 | 2.740 |
| WLPB-R English Oral Proficiency (K) | 226 | 18 | 114 | 69.64 | 18.666 |
| WLPB-R Spanish Oral Proficiency (K) | 227 | 6 | 113 | 67.37 | 21.142 |
| MCAS ELA 3rd grade | 184 | 8 | 47 | 27.51 | 9.345 |
| MCAS ELA 4th grade | 174 | 17 | 64 | 41.95 | 11.529 |
| MCAS ELA 5th grade | 160 | 8 | 47 | 30.96 | 9.239 |
| MCAS ELA 6th grade | 144 | 8 | 68 | 39.34 | 12.794 |
| MCAS MATH 3rd grade | 184 | 6 | 38 | 24.04 | 7.959 |
| MCAS MATH 4th grade | 174 | 7 | 49 | 30.63 | 9.719 |
| MCAS MATH 5th grade | 159 | 5 | 52 | 30.35 | 12.045 |
| MCAS MATH 6th grade | 144 | 7 | 53 | 30.28 | 11.674 |

Bivariate correlations were conducted between all study predictors and outcome variables (*see Table 2).* We found significant, moderate correlations (r = .158–.288; $p \leq 0.01$, 2-tailed) between the socioeconomic variables and academic outcome variables. Moderate and strong associations (r = .196–489; $p \leq 0.01$, 2-tailed) were found between all kindergarten language

proficiency scores for English and Spanish and MCAS ELA and Math scores at 3rd, 4th, 5th and 6th grade.

**Table 2**
*Bivariate Pearson Correlations of Study Predictor and Outcome Variables*

| | MCAS ELA | | | | MCAS MATH | | | |
|---|---|---|---|---|---|---|---|---|
| | 3rd Grade | 4th Grade | 5th Grade | 6th Grade | 3rd Grade | 4th Grade | 5th Grade | 6th Grade |
| Poverty[a] | -.158* | -.203** | -.238** | -.225** | -.258** | -.242** | -.198* | -.191* |
| Gender[b] | .029 | -.049 | -.056 | -.114 | .079 | .029 | .000 | -.050 |
| Mother's Education | .222** | .227** | .288** | .174* | .074 | .214** | .274** | .159 |
| English Oral Proficiency (K) | .455** | .489** | .472** | .414** | .390** | .426** | .406** | .435** |
| Spanish Oral Proficiency (K) | .263** | .329** | .352** | .347** | .247** | .214** | .330** | .196* |

*Significant at the p < 0.05 level
** Significant at the p < 0.01 level
a. Not in poverty is denoted as 1 and in poverty is denoted as 2
b. Female is denoted as 0, and male is denoted as 1

In the controlled regression analyses, socioeconomic variables of poverty, gender, and maternal education were somewhat significantly related to children's performance on measures of English Language Arts and Math. Poverty was negatively related to children's ELA scores at 4th–6th grade, and children's Math scores at 3rd and 4th grade. Gender had a mainly non-significant role in children's later academic performance on ELA and Math scores. Maternal education significantly predicted children's ELA scores at 3rd–5th grade, and children's Math scores at 4th and 5th grade. Overall, the control variables accounted for low amounts of variance in the regression models ($R^2$ s' .07–12).

English proficiency predicted scores on ELA MCAS scores at 3rd ($\beta$ = .42; $p$ < .001), 4th ($\beta$ = .45; $p$ < .001), 5th ($\beta$ = .41; $p$ < .001), and 6th ($\beta$ = .39; $p$ < .001) grade. After considering English, Spanish proficiency at Kindergarten significantly predicted English MCAS scores at 3rd ($\beta$ = .22; $p$ < .001), 4th ($\beta$ = .26; $p$ < .001), 5th ($\beta$ = .27; $p$ < .001), and 6th ($\beta$ = .24; $p$ < .001) grade. Overall, the predictors of these models significantly accounted for moderate percentages ($R^2$s = .27–.33) of variability in the outcome measures (*see Table 3*).

**Table 3**
*Multiple Regression Models Predicting MCAS ELA in Grades 3,4,5, and 6*

| | **MCAS 3 ELA** | | | **MCAS 4 ELA** | | | **MCAS 5 ELA** | | | **MCAS 6 ELA** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 |
| Poverty | -.13 | -.08 | -.08 | -.16* | -.12 | -.12 | -.18* | -.15* | -.15* | -.19* | -.17* | -.14 |
| Gender | .01 | .01 | .05 | -.06 | -.05 | .00 | -.08 | -.08 | -.03 | -.15 | -.15* | -.10 |
| Maternal ED | .20** | .11 | .11 | .20** | .10 | .10 | .26** | .15* | .15 | .15 | .05 | .06 |
| English | | .42** | .39** | | .45** | .41** | | .41** | .36** | | .39** | .34** |
| Spanish | | | .22** | | | .26** | | | .27** | | | .24** |
| $R^2$ | .07** | .23** | .27** | .08** | .27** | .33** | .12** | .28** | .35** | .09** | .23** | .28** |
| $\Delta R^2$ | .07** | .16** | .04** | .08** | .19** | .07** | .12** | .16** | .07** | .09** | .14** | .05** |

Similar results were demonstrated for English proficiency predicting children's later performance on Math MCAS scores at 3rd ($\beta$ = .37; $p$ < .001), 4th ($\beta$ = .38; $p$ < .001), 5th ($\beta$ =

.35; $p < .001$), and 6th ($\beta = .42$; $p < .001$) grade. After considering English, Spanish proficiency at Kindergarten significantly predicted Math MCAS scores at 3rd ($\beta = .22$; $p < .001$), 4th ($\beta = .17$; $p < .05$), 5th ($\beta = .27$; $p < .001$) grade; Spanish did not significantly predict Math MCAS at 6th grade. Overall, the predictors of these models significantly accounted for moderate percentages ($R^2$s = .22–.28) of variability in the outcome measures (*see Table 4*).

**Table 4**

*Multiple Regression Models Predicting MCAS Math in Grades 3,4,5, and 6*

| | **MCAS 3 MATH** | | | **MCAS 4 MATH** | | | **MCAS 5 MATH** | | | **MCAS 6 MATH** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 |
| Poverty | -.26** | -.22** | -.22** | -.21** | -.17* | -.18* | -.14 | -.12 | -.12 | -.16 | -.14 | -.13 |
| Gender | .08 | .08 | .12 | .02 | .03 | .06 | -.03 | -.02 | .03 | -.09 | -.09 | -.07 |
| Maternal Ed | .02 | -.06 | -.06 | .17* | .09 | .08 | .24** | .15 | .15* | .13 | .02 | .03 |
| English | | .37** | .34** | | .38* | .36** | | .35** | .30** | | .42** | .40** |
| Spanish | | | .22** | | | .17* | | | .27** | | | .08 |
| $R^2$ | .08** | .20** | .25** | .09** | .22** | .25** | .10** | .26** | .28** | .06* | .22** | .22** |
| $\Delta R^2$ | .08** | .13** | .05** | .09** | .14** | .03* | .10** | .11** | .07** | .06** | .16* | .07 |

Overall, each of the regression models showed consistent and direct associations of children's English and Spanish proficiency at kindergarten and their performance on later academic standardized measures. These associations were evidenced after controlling for important socioeconomic factors which have been shown to be related to children's academic achievement. Children's ability in both their home and school language as they enter school has a lasting effect on how they will perform in later school years.

## Discussion

The primary purpose of this study was to investigate changes in dual language proficiencies of Latino children of immigrants in their first year of school (kindergarten) in relation to their later academic success. These findings underscore the importance of home and school language proficiency as key predictors of achievement for emergent bilingual children. There was a consistent positive relationship between children's English and Spanish proficiency at kindergarten and their scores in both ELA and Math at 3rd–6th grade. This indicates that the higher the level of English or Spanish proficiency when children begin school, the higher their scores in both English and Math will be later in elementary school. Moreover, the findings not only support previous research demonstrating the important role that English plays in academic success (Halle et al., 2012; Reardon & Galindo, 2009*),* but also demonstrate that emergent bilinguals' proficiency in their home language, Spanish, significantly predicts their later academic performance. The study determines that English and Spanish at kindergarten uniquely predict third through sixth grade performance in English Language Arts and Math assessments, even after controlling for important socioeconomic variables. Children with higher proficiencies in English and Spanish were likely to have higher levels of academic outcomes.

Children's English oral language proficiency in kindergarten consistently predicted later academic performance in ELA and Math at each grade levels. English proficiency significantly predicted ELA outcomes from third through sixth grade, with standardized coefficients ranging from β = .39 to .45. Similar magnitudes were observed for Math outcomes (β = .35 to .42). These findings align with extensive literature identifying oral language as foundational for literacy development and later academic achievement. Early oral proficiency likely supports

reading comprehension, vocabulary growth, academic discourse skills, and the ability to access increasingly complex curricular content.

The strength and stability of English proficiency as a predictor across consecutive grade levels underscores the long-term academic implications of school-entry language skills. These findings support developmental theories suggesting that early language competence begins a cumulative processes with initial advantages in vocabulary and processing skills facilitating greater academic engagement and learning opportunities over time.

## Unique Contribution of Spanish Proficiency

A key finding of this study evidences that Spanish proficiency at kindergarten uniquely predicts later academic achievement above and beyond English proficiency and socioeconomic factors. Spanish proficiency significantly predicted ELA outcomes across all grades examined ($\beta = .22$ to .27) and predicted Math outcomes at third, fourth, and fifth grade ($\beta = .17$ to .27), though not at sixth grade. These findings provide empirical support for interdependence and cross-linguistic transfer theories, which propose that proficiency in the home language facilitates the development of academic skills across languages. Spanish oral language skills contribute to conceptual knowledge, morphosyntactic knowledge, vocabulary depth, and metalinguistic awareness which support academic learning in English. Importantly, Spanish proficiency accounted for unique variance in academic outcomes even after English proficiency was entered into the regression models. This suggests that home language competence is not merely a proxy for general language ability but represents a distinct developmental capacity. These findings challenge deficit-oriented perspectives that prioritize rapid English acquisition at the expense of home language maintenance. Instead, they support additive bilingual models that promote dual language development.

The finding that both English and Spanish proficiency predicted achievement in Math further underscores the language demands inherent in mathematical thinking and learning which requires comprehension of word problems, understanding of specialized vocabulary, and engagement in abstract reasoning expressed linguistically. Our findings extend a previous study which found in a sample of 270 Latino dual language learners that oral language skills attribute to mathematics performance (Foster, 2016). Oral language proficiency, both in English and in Spanish may contribute to conceptual understanding related to looking for patterns and relationships, making connections, reasoning that extends beyond literacy-based tasks.

## Socioeconomic Factors

Consistent with prior research, poverty and maternal education were associated with academic outcomes, though the amount of variance explained by these socioeconomic variables was relatively low ($R^2 = .07–.12$). Poverty was negatively associated with ELA outcomes in later grades and with early Math outcomes, while maternal education predicted several ELA and Math outcomes. As children from economically disadvantaged backgrounds have been shown to be at higher academic risk based on end-of-year standardized testing (Winke & Zhang, 2019), our findings demonstrate that language proficiency may be an even more important predictor.

Interestingly, in our models, gender showed minimal effects which contradicts extensive research demonstrating girls at an academic advantage. Notably, language proficiency substantially increased the explained variance in academic outcomes ($R^2 = .22–.33$),

highlighting that early language skills account for meaningful differences in academic trajectories beyond structural socioeconomic risks.

## Implications

Our findings have the potential to inform educational practices and support interventions targeted at specific skills associated with successful academic outcomes. Supporting the development of dual language proficiencies at school has been shown to be beneficial to children's academic achievement (Thomas & Collier, 1995). The present study offers new information which may inform educational programs that support dual language development and curriculum aimed at promoting academic achievement and school success. This study directly responds to the calls to contribute to greater understanding to our increasingly diverse student populations in the U.S. and around the globe. A number of scholars (Garcia-Coll et al., 1996; National Academies of Sciences, 2017) have urged the field of education to consider multiple factors and processes that affect outcomes among linguistically and culturally diverse students. A recent report (National Academies of Sciences, Engineering, and Medicine, 2017) emphasized a need for more longitudinal studies to investigate how academic achievement is related to variations in children of immigrants' levels of home and school language proficiency.

The present study contributes to our understanding of children of immigrants in a number of ways. While most studies have focused on immigrant adolescents and adults, research on younger children is lacking, making it difficult to piece together their developmental trajectories. The current study analyzes the association between early language experiences to collectively predict children's later academic skills. Findings from the present study have the potential to inform broad educational practices and support interventions that target dual language children of immigrants.

Additional longitudinal studies that investigate academic trajectories and how home language and English relate to school-based outcomes while accounting for relevant control variables are needed. The present study benefits from a longitudinal design spanning kindergarten through sixth grade, the use of standardized assessments, and rigorous eligibility criteria that produced a relatively homogeneous sample of second-generation Latino children from Spanish-speaking homes. The study findings have important implications for educational practice and policy. Given that the majority of the children in our sample was living in poverty, these findings are particularly striking, suggesting that language development may be modifiable and potentially protective factor within economically marginalized contexts. Variability in children's English and Spanish proficiency significantly predicted later academic outcomes. Language-focused interventions may represent a leverage point for reducing achievement gaps among children from immigrant and low-income backgrounds.

Our findings underscore the importance of assessing and supporting oral language development in both languages at school entry. Early screening and intervention for children with lower performing dual language profiles may yield long-term academic benefits. Furthermore, the unique contribution of Spanish proficiency provides empirical support for dual language and bilingual education programs that foster home language development alongside English and adds to a body of research which supports programs that continuously, and simultaneously, develop children's skills in both their home language and English (Collier & Thomas, 2017; Collins, 2014; García & Kleifgen, 2018; Goodrich et al., 2021).

## Limitations and Recommendations

Several limitations of this study should be noted. Attrition mainly due .to the high mobility of immigrant families reduced outcome data coverage to 63% by sixth grade, though our analyses indicated no systematic differences between children with complete and missing data. Additionally, the lack of bilingual language assessments with bilingual norms may underestimate bilingual competence. Research incorporating dynamic and bilingual norm-referenced assessments would provide more relative estimates of language competence among dual language learners. Likewise, there are many serious concerns regarding the appropriateness of end of the year standardized testing as a central measure of student achievement. Additionally, the present study focused exclusively on oral language proficiency and did not include measures of instructional context or classroom language practices, which may mediate observed associations. Nevertheless, it does allow insight of student academic performance and provide comparisons across time, groups, and districts which was simply not measured in certain subgroups of students, such as emergent bilinguals, from many years (Gort et al., 2008). Lastly, the present study reports on Latino children of immigrants from an urban district in the Northeast U.S., which may limit generalizability to other Latino subgroups or geographic contexts.

Future research should explore mechanisms underlying the observed cross-linguistic effects, including potential mediators such as executive functioning, literacy development, and instructional experiences. Longitudinal path analysis would shed light on individual patterns of change over time and could further demonstrate direct and indirect relationships of early language proficiency on later achievement. Further investigation of bilingual instructional models and classroom practices would also help determine how educational contexts leverage early language advantages.

## Conclusion

This study has the potential to inform educational policy and instruction for emergent bilingual children in schools. Findings from this study may further inform our understanding of factors related to their academic achievement and help inform interventions and educational supports for Latino children of immigrants for school success. Our findings demonstrate that early bilingual oral language proficiency, both in English and in Spanish, plays a significant and lasting role in shaping academic achievement among Latino children of immigrants from Spanish-speaking homes. English proficiency at school entry predicts their later ELA and Math performance, while Spanish proficiency provides additional, unique predictive variation across multiple grades. These results challenge deficit perspectives of emergent bilingual learners and demonstrate that home language proficiency is a critical academic asset. Supporting dual language competence in the early years is not merely culturally affirming—it is academically consequential.

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