ENGLISH LANGUAGE LEARNER PRESCHOOL STUDENTS WITH BILINGUALVERSUS MONOLINGUAL TEACHERS: EARLY LITERACY OUTCOMES

by

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ABSTRACT

The student population in the United States is diversifying. With larger numbers of English language learners (ELLs), schools across the nation are struggling to meet their academic needs. The current study looked at retrospective data from an Early Reading First preschool program to measure the impact of teacher variables on literacy and receptive language outcomes for ELLs whose home language was reported as Spanish. The teacher variables of focus were lingual and ethnic backgrounds, level of education, and years of experience of both lead and assistant teachers. The literacy and receptive language measures used were two subtests from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) and the Peabody Picture Vocabulary Test-Third Edition (PPVT-III) and its Spanish version, the Test de Vocabulario en Imagenes Peabody (TVIP), which were administered three times across the school year. The relationship between teacher variables and reading and language outcomes was examined in 4-year-old ELL students within a literacy-rich preschool program. The study specifically looked at whether bilingual teachers and teacher aides had significantly more impact than nonbilingual teacher on increasing early literacy and receptive language outcomes in this 4-year old ELL population within the program. Results were examined using hierarchical linear modeling to consider within- and between-group differences, as well as moderating and interaction effects. Data analyses could not establish any significant relationships between teacher characteristics and literacy and receptive language outcomes for ELL

students. However, supplementary analyses using regression demonstrated that there was a strong predictor relationship between initial English receptive language score (PPVT-III) and both end-of-year early literacy measures (DIBELS Letter Naming and DIBELS Initial Sound Fluency). The same strongly significant relationship did not hold true for initial Spanish receptive language scores (TVIP) for either end-of-year early literacy measure.

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INTRODUCTION

The English language learner (ELL) student population in the United States is increasing at a rapid rate, with a reported increase from 4.7 to 11.2 million between 1980 and 2009 (U.S. Department of Education, 2011). Currently, students who speak another language at home other than English comprise about 21% of the U.S. student population aged 5-17. Of the ELL student population, 73% speak Spanish as their first language (U.S. Department of Education, National Center for Education Statistics, 2011). Currently, the largest group of ELLs and the fastest growing ELL population is comprised of foreign-born students who have immigrated before kindergarten and U.S.-born children of immigrant families (Francis, Rivera, Lesaux, Keiffer, & Rivera, 2006), the largest proportion of which are Hispanic. This large group of Hispanic ELLs struggles to perform academically at the same level as their non-Hispanic/Caucasian[1] peers who speak English as their primary language (Fitzgerald, 1995). Fortunately, early intervention literacy programs have been shown to bridge the gap and help increase the learning and academic performance rates for the ELL population. There are a number of criteria that make reading programs for ELL students more effective. August and Shanahan (2006) reported the findings of the National Literacy Panel on Language-Minority Children and Youth and listed the important criteria for effective instruction for ELLs, including: coverage of the five main areas of reading including phonemic

awareness, fluency, phonics, text comprehension, and vocabulary; enhancing oral proficiency in English; and utilization of native language (L1) to facilitate learning in English (L2). Even with increasing knowledge on how to better educate ELL students, the effectiveness of ELL and bilingual reading programs has been and continues to be debated in the educational system. Schools are challenged to provide the best educational practices to help ELL students succeed, but there are many potential variables that can influence outcomes for these students. Implementation of program materials, instructional variables, students' background (acculturation, language, etc.), and whether students respond to the instruction all can influence intervention outcomes. Throughout the years research studies have examined some of these variables, but few have studied the influence of teacher characteristics. The current study aimed to determine whether teacher variables affected early literacy outcomes for preschool-aged ELL students.

English Language Learners (ELLs) in the Schools

ELL is just one term commonly used to describe individuals whose primary language is other than English. The terminology used by the federal government is "limited English proficient," or LEP, which is defined in Title VII of the Improving America's Schools Act of 1994 (Public Law 103-382) as a person who:

1. was not born in the United States or whose native language is a language other than English and comes from an environment where a language other than English is dominant
2. is a Native American or Alaska Native or who is a native resident of the Outlying Areas and comes from an environment where a language other than English has had significant impact on such individual's level of English language proficiency; or
3. is migratory and whose native language is other than English and comes from an environment where a language other than English is dominant

   Note: They must have sufficient difficulty speaking, reading, writing, or understanding the English language and whose difficulties may deny such individual the opportunity to

> learn successfully in the classroom where the language of instruction is in English or to participate fully in our society due to one or more of the previous reasons. (sec. 7501)

In the public school system, however, the way the LEP definition is applied differs from state to state, and these definitions have an impact on how ELL students are identified and served. Furthermore, states have some room for interpretation of the Improving America's Schools Act and require different information and criteria for LEP classification, such as documented difficulty reading, speaking and writing in English, falling below established achievement test cutoffs, and grade reports (Ochoa, 2005c). It is important for practitioners to be cognizant of the criteria their particular state uses in order to appropriately identify LEP students who need services. After a child is identified as LEP and in need of services, ongoing data collection is critical to monitor the child's language, reading, and writing progress in order to evaluate the effectiveness of the placement and services the child is receiving.

The U.S. government categorizes students with limited English skills into a single group: LEP. However, it is important to understand that there is a range of individuals within this heterogeneous group, and their proficiency in both native and English languages can vary considerably. It is well documented that bilingualism should be viewed as a continuum and that individuals fall on this continuum based on their language and cognitive skills in both native and English languages. Furthermore, the LEP population also varies in terms of their socioeconomic status, level of acculturation, educational background, expectations of schooling and personal experiences in the United States (Genesee, Lindholm-Leary, Saunders, & Christian, 2006.) All of these

factors are important to consider when assessing and planning interventions for ELL students in schools.

U.S. public schools try to account for varying proficiency levels among ELLs by assessing their proficiency in oral language, written language, reading, and listening in both their native language (L1) and in English (L2). These proficiency levels can help identify specific areas in which the student may need targeted intervention and aid in making an appropriate educational placement. After language proficiency and academic performance is assessed, the data need to be interpreted with several factors in mind. First, school personnel must consider the student's previous educational services and language/literacy in the home. Second, the student's language proficiency should be compared to other ELL students who have had similar educational services. Third, the language data should be checked for consistency across measures both formal (e.g., Woodcock- Muñoz Language Survey) and informal (e.g., observations and classroom assignments). Finally, considering all the previous factors, one must decide where the student falls along the continuum of second-language acquisition (Ochoa & Ortiz, 2005).

Bilingual Education and English as a Second Language

Bilingual education is most commonly viewed as the use of two languages as a means of teaching students. Schools across the nation interpret and mold this definition to fit the needs of their bilingual students because, as stated previously, there is no single educational prototype for ELL/bilingual students, and instruction varies accordingly. Another noteworthy point is that many refer to language instructional programs as bilingual/bicultural programs because culture is considered a key component in the

curriculum. Nieto (2000) stated that the cultures and languages ELL students bring to school should be viewed as assets and utilized accordingly in their educational curriculum. Many school programs try to integrate culture into their students' academic program, but may fall short because of the students' diverse levels of assimilation and backgrounds, and teachers' lack of knowledge concerning cultural differences. The insufficient incorporation of culture in educational programs for ELLs could limit their educational experience (Brisk, 2005).

Culture aside, there are numerous types of bilingual education programs with a range of different educational goals. These programs are implemented for language maintenance, language enrichment, to assist diverse language populations to learn English, and to serve bilingual populations. In the United States, the main goal of bilingual programs can be to help maintain an individual's native language, but bilingual programs are more often used as a means for individuals to acquire the English language (Brisk, 2005).

One of the types of bilingual programs used in the United States public schools is transitional bilingual education (TBE). TBE programs are frequently implemented to aid ELLs in gaining English language proficiency. There are multiple ways of implementing TBE programs; pull-out, integrated, and bilingual structured immersion are all regularly used strategies in the United States (Brisk, 2005). The common factor among TBE programs is that they are all used primarily with ELL students who speak the same native language. These programs usually last 2 to 4 years, because their main purpose is to use some native language instruction to help transition students to the dominant language, which is English in most cases (Ochoa, 2005a).

Another bilingual education format is maintenance programs; these are similar to transitional programs in the fact that they serve a similar population of ELL students who speak the same native language. The distinguishing factor is that maintenance programs typically last 4 to 6 years and utilize more of the students' native language to implement the curriculum. Furthermore, these programs help individuals maintain their native language (L1), as well as, acquire English (L2) (Ochoa, 2005a).

There are also dual-language programs that are classified as either one-way or two-way programs. One-way programs provide instruction in both L1 and L2 and are tailored towards only one language group, such as Hispanic students with varying degrees of Spanish and English language proficiency. Two-way programs offer a unique opportunity for both ELL and English-speaking students to receive instruction in both their native language and English from a bilingual teacher, with the goal of students becoming bilingual (Collier & Thomas, 2004). These programs are viewed as additive programs because they do not try to eliminate the native language (L1), but aim to enrich L1 skills as well as teach English (L2) (Ochoa, 2005a). ELL and English-speaking students are placed in dual-language classrooms for different reasons. ELL students are placed in dual-language programs to improve their language skills in English, while English-speaking students are often volunteered by their parents in order for them to learn a second language. Dual-language programs are frequently viewed positively by parents of both ELL and English-speaking students because ELL parents appreciate that their children are not being segregated from the rest of the students at the school, and the English-speaking parents believe it will help their children become more culturally competent (Ochoa, 2005a).

"English as a Second Language" (ESL) is another commonly used educational strategy that differs from bilingual education. The differences are that ESL-only programs utilize English as the language of instruction, and are typically used as a pullout classroom model for students in an English immersion classroom, where instruction is provided only in English. One of the benefits of ESL programs is that students from a number of different cultural backgrounds who may speak different native languages can all be taught in the same classroom. ESL programs use total physical response (TPR) to teach ELL students academic curriculum in English. TPRs are visual cues and physical gestures that help ELL individuals better understand the context of the instructional information (Ochoa, 2005a). Students can spend half a day or their entire school day in a content-based ESL program, or they can be pulled out of their regular education classrooms for portions of the day to attend a pullout ESL program. The fundamental difference between the content-based ESL program and the pullout ESL program is that content-based ESL is used to gain academic skills in L2 and pullout ESL is used to help further develop L2 skills, not to teach academic information.

ESL and transitional programs are the most commonly used methods in the U.S. public school system for students who are ELLs (August & Hakuta, 1997); however, these programs are less effective for closing the achievement gap than dual-language programs (Collier & Thomas, 2004). Dual-language and maintenance programs, although infrequently used in U.S. schools, have the best long-term outcomes in strengthening L2 and also continuing to reinforce L1. However, it should be noted that ELL students who receive some language support (ESL, transition, dual-language, etc.) tend to perform

significantly higher in academic achievement than ELL students in mainstream English-only classrooms (Collier & Thomas, 2004).

The differences in academic success between various bilingual programs suggest that the type of academic instruction ELLs receive does have a significant impact on student outcomes. Placing an ELL student in a less effective program could hinder academic outcomes and language acquisition. Strides to reform language education and create more effective bilingual education programs are important for the academic success of ELL students in the United States.

Disproportionality of ELLs in Special Education

For many years, the assessment and placement of minority students, including ethnic minority and culturally and linguistically diverse students, has been a controversial topic in special education. Language and cultural influences on educational performance are difficult to assess, but need to be ruled out as over-arching factors when underachievement is noted. Many ELLs are placed in special education due to difficulties determining language and cultural impacts on learning deficits. In an effort to equalize this disproportion, litigation has lead to legislative changes designed to reform assessment and reduce special education classification for minority students in the schools. However, an inflated number of minority students (differing according to ethnic group) still remain in special education (Ochoa, 2005b).

Little research has specifically looked at lack of English proficiency as an important factor impacting the disproportionate number of ethnic minority students in special education. In fact, assessments used to measure achievement and intelligence

have been criticized for not sufficiently capturing cultural and language differences among ELLs. On the other hand, Gersten and Geva (2003) argue that qualified school personnel should have the proper training to be able to distinguish between limited English skills and learning disabilities in students. Research supports the contention that there are a disproportionate number of ELL students receiving special education services. Education reform needs to move towards developing more effective language interventions and special education screening for ELL students in order to better serve the ELL student population.

Emerging Literacy and Early Literacy Programs

Research suggests that Hispanic ELL children in the United States are less likely to have as many emergent literacy skills in English than their non-Hispanic peers. For example, early childhood-aged Hispanic children are significantly less likely to be able to recognize all of the letters of the alphabet compared to their non-Hispanic peers (U.S. Department of Education, 2011). At present, the education field has focused on early literacy intervention programs to better understand how young ELL readers respond to supplemental reading instruction. Along with studying literacy intervention programs, researchers have highlighted the importance of teacher cooperation and successful implementation of reading curriculum. An early literacy intervention program has been found to be more effective with teacher buy-in and proper implementation. For example, a study done by Gunn, Smolkowski, Biglan, Black, and Blair (2005) examined the benefits of a 2-year supplemental reading program that focused on developing decoding skills and reading fluency for kindergarten through third-grade students. Hispanic and

non-Hispanic children were included in the sample, and results indicated that Hispanic children benefitted from the reading instruction in English as much or more than their non-Hispanic counterparts. Therefore, it seemed that the use of native language was not a critical variable for positive literacy outcomes for ELLs.

Other studies have looked specifically at the effectiveness of reading and language interventions for ELL students. One study examined ELL first-graders at risk for reading problems (Vaughn et al., 2006). Vaughn et al. (2006) used four trained bilingual reading intervention teachers to administer supplemental literacy and language intervention in English throughout the school year. The intervention reflected the six instructional strategies in reading that are effective for beginning ELL readers: (a) explicit teaching, (b) promotion of English language learning, (c) phonemic awareness and decoding, (d) vocabulary development, (e) interactive teaching, and (f) instruction geared toward low performers (Gersten & Geva, 2003). Students were assessed before and after the supplementary literacy and language intervention with assessments that measured the students' language proficiency in both Spanish and English. The students in this study did not have grade-level language/reading skills in either Spanish or English prior to the intervention. The results indicated that the students made the most gains in English, which was expected because the intervention was solely implemented in English. Furthermore, the results indicated that the intervention group made significantly more gains than the students who received only core reading instruction, and helped the students improve in phonetics, letter knowledge, passage comprehension, word attack skills, and spelling.

Results of the studies of both Gunn et al. (2005) and Vaughn et al. (2006) indicate that ELL students can learn effectively from English-only instruction, and that, overall, both ELL and non-ELL students benefit from supplementary reading programs. In the study by Vaughn and colleagues (2006), bilingual teachers were used to implement the supplemental reading intervention; however, the variable of teacher bilingual status was not explored as a possible independent variable. How bilingual status as well as other teacher variables affects ELL literacy gains continues to be a research avenue in need of further exploration.

Second-Language Acquisition

By the time students enter preschool they have spent most of their lives learning their first language. Native English speakers are at an advantage, because upon entering school in the U.S. they have an English language base to apply to learning academics, and the curriculum can help further develop their native language skills. However, it is a more difficult early educational experience for ELL students who are acquiring a second language while also learning the curriculum. Students learning a second language go through four lengthy stages of second-language acquisition: preproduction, early production, speech emergence, and intermediate fluency (Ochoa, 2005a). The preproduction stage occurs during the first 3 months of exposure to L2. During preproduction ELL students go through a silent period, during which they try to focus more on comprehension; therefore, it is important to limit required oral responses to yes-no responses or one-word answers. It is suggested that students in this stage be given activities in which they can express their ideas and abilities through drawing/painting,

copying, pointing, circling or underlining, choosing among items, or matching. From 3 to 6 months of L2 exposure, ELL students move to the early production stage in which they continue focusing primarily on comprehension, but begin to use more one- to three-word utterances and common phrases. Students in this stage can begin to answer in short phrases, name and label things, and answer a number of different types of questions (i.e., either/or, who/what/when/where). Further, students in this stage can categorize and label objects and provide simple written responses to questions. The next L2 acquisition stage is speech emergence, which occurs 6 months to 2 years after initial L2 exposure. Students at this stage have increased comprehension skills, can use simple sentences, and have expanding vocabularies, but may continue to make grammatical errors. Oral responses can include recalling, telling/retelling, describing, comparing, sequencing, and carrying on a conversation. During this stage students can provide more extensive written responses, and can participate in more role-playing activities and cooperative group tasks. The last stage before proficient L2 acquisition is intermediate fluency. During this stage students have improved comprehension, are more proficient conversationally, have more extensive vocabularies, and make few grammatical errors. ELL students in this stage can provide more advanced oral responses, including narrating, predicting, summarizing, giving opinions, and debating/defending an argument. Written responses advance to creative writing, essays, and summaries, and students can take comprehensive written exams.

When understanding second-language acquisition, it is important to be aware of the difference between two types of language proficiencies; basic interpersonal skills (BICS) and cognitive academic language proficiency (CALP) (Cummins, 1984 as cited in

Ochoa, 2005a). BICS includes conversational skills used in informal social settings, and it is thought that second-language students typically learn BICS in 2 to 3 years (Cummins, 1984 as cited in Ochoa, 2005a). On the other hand, CALP is crucial for academic work, and takes second-language students at least 5 to 7 years to master. With that said, Cummins (1984) proposes that ELL students who first achieve CALP in their L1 will have an easier time gaining CALP in L2 (as cited in Ochoa, 2005a). Therefore, it is important to teach and enrich a student's L1 to further aid a student's progress in achieving CALP in L2. This concept has also been supported by Thomas and Collier's (2002) studies looking at language acquisition of ELLs based on the bilingual/ESL program they have received. A better understanding of the difference between the two ELL language proficiencies and what level of BICS and CALP a student has achieved in L1 and L2 can aid in tailoring interventions to meet his/her specific language needs (Ochoa, 2005a).

Roseberry-McKibbin (2002) has identified several language characteristics that ELLs display while learning L2, including silent periods, code switching, language loss, interlanguage, and interference. As stated previously, silent period refers to the 3- to 6-month period of time when ELLs are being exposed to L2, during which their oral communication skills are very limited. (Roseberry-McKibbin, 2002). Code switching is when an ELL student switches between L1 and L2 from sentence to sentence while speaking. Not surprisingly, students who receive intense instruction in L2 and little to no instruction in L1 usually experience language loss in L1 over time. Interlanguage is a student's own individual combination of L1 and L2, sometimes within sentences (Rosenberry-McKibbin, 2002). Lastly and importantly, students' first language can

interfere with their communication in their second language. An example of interference is when a student directly translates a phrase from L1 to L2, much like online translators, which can lead to a miscommunication of what the student is actually trying to say. With a solid understanding of CALP and BICS, and knowing some common language characteristics of ELLs, one can begin to obtain a better understanding of where a student may be along the second-language acquisition continuum.

Receptive and Expressive Language Skills

Although English-only instruction can be effective for teaching ELL students, there are still language barriers that may be best overcome by a teacher who speaks the same native language as his/her students. Language is a critical component to learning in a classroom, and serves as a solid communication foundation between the teacher and his/her prospective students. The teacher uses language to communicate lessons and skills, and the students need to be able to interpret their teacher's language correctly via instructions and lessons and apply it in the classroom. When lessons are taught in a language different than the student's L1, the communication between teacher and student can be impacted and interfere with the ELL student's academic success (Cloud, 1994). These language breakdowns can occur because there are many expressive and receptive language properties that may differ from language to language.

For example, there are different phonemes in the English language than there are in the Spanish language. These phonetic differences can lead to the mispronunciation of words due to the fact that ELLs are drawing on their phonetic knowledge from their native language (Cloud, 1994). The mispronunciation of words may lead to teachers

incorrectly interpreting these mispronunciations as a lack of intelligence. However, because the phonemic differences and difficulties that many ELL students encounter are predictable, teachers can focus early on phonetic instruction to help alleviate these problems (Gersten & Geva, 2003).

Syntax, or word order, can also vary from language to language. The English language has a very rigid word order that is quite different than many of the Romance languages such as Spanish. Cross-language conversations between English-born speakers and Spanish-born speakers could include a number of miscommunications due to differences in word order. In addition, the semantics of cultures vary greatly and may severely confuse or offend individuals if they do not know the connotation of the phrase or word being used. For individuals learning a new language, semantic mishaps can occur when the meaning of the word or phrases used by a native speaker is perceived as a literal translation. The entire meaning of the conversation could be lost or greatly skewed by semantic breakdowns in communication.

All these components of language can greatly impact an ELL's understanding of classroom instruction in English. Furthermore, language as a whole has been hypothesized to greatly affect the thought process of the native speaker, in that individuals who speak different languages think in a different way. This hypothesis was first proposed by linguist Benjamin Whorf (1956), and is most commonly known as the hypothesis of linguistic relativity. This theory could further explain why ELLs often struggle in U.S. classrooms, since ELLs not only have to learn all the different language properties of English (L2), but also have to do so using a different cognitive system.

Teachers should be cognizant of these thought process differences in order to accommodate ELLs in the public school system.

The Effect of Language on Literacy Outcomes for ELLs

Research has consistently shown that there is a large gap in reading abilities between ELLs and non-ELLs (U.S. Department of Education National Center for Education Statistics, 2011). It is believed that this gap in academic performance is due to the difficulty of ELL students in obtaining content from the texts that they are required to read in L2 (English). August and Shanahan (2006) reported that most literacy programs focus on teaching ELLs word-level skills such as decoding, word recognition and spelling; however, this is not sufficient for ELLs to attain the same text-level skills (including reading comprehension and written language skills) as English speakers. Because text-level skills are highly correlated with well-developed English oral proficiency, instruction for ELL students should focus on increasing English oral proficiency, intensely and early, in order to achieve the same text-level skills as their English-speaking peers (August & Shanahan, 2006). Further, it is thought that one of the major contributing factors inhibiting ELLs' comprehension is lack of vocabulary in L2 (Carlo et al., 2004). Therefore, it is thought that one way to increase comprehension is to increase vocabulary in L2. However, it is important to note that the relationship between language and reading is not one-way, but reciprocal (Carlo et al., 2004); that is, the larger the vocabulary, the more a child will comprehend, and the more a child reads, the larger his or her vocabulary will become.

The strong relationship between language skills and literacy outcomes, however, is not only found in L2, but a strong foundation in L1 vocabulary knowledge has also been shown to be predictive of reading fluency in English (Proctor, August, Carlo, & Snow, 2006). Proctor and colleagues (2006) found that Spanish vocabulary knowledge (L1) had a positive effect on English reading outcomes. More specifically, vocabulary knowledge in L1 was correlated with increased fluency in L2, and those students with average-to-faster fluency rates had a steeper slope between reading comprehension in L2 and L1 vocabulary. The hypothesized reason for the increased reading comprehension is that those ELL students gained automaticity in L2 and could then focus more on the content. August, Carlo, Dressler, and Snow (2005), also posit that relying on a student's L1 vocabulary is useful because there may be many cognates between the two languages, and using the cognates to help facilitate L2 vocabulary is a useful strategy for ELL students.

Low Socio-economic Status

ELL and minority populations are often of lower socio-economic status (SES), which is frequently defined by families' financial resources, occupational status, and access to opportunities (Ostrove, Feldman, & Adler, 1999). Individuals in lower income status brackets generally have significantly fewer opportunities to succeed in society, and therefore, have significantly poorer outcomes. Growing up in a low-SES household can have detrimental effects not only on children's educational outcomes, but also can lead to deficits in their health and socio-emotional well-being. A number of factors impact

outcomes, including limited access to resources, living in a stressful environment, and a lack of social connections (Bradley & Corwyn, 2002).

With regard to physical health, children raised in low-SES families may be disadvantaged from birth. According to the U.S. Department of Health and Human Services (2000) (as cited in Bradley & Corwyn, 2002), children from low-SES families are more likely to experience health complications stemming from poor prenatal care, including maternal substance abuse and lack of proper nutrition. Furthermore, children who live in poverty through age 3 are more likely to have growth problems, struggle with good health, and have issues with intelligence and behavior. These early impairments can have long-lasting negative impacts on their lives (Bradley et al., 1994).

More pertinent to the current study is the association between poverty and poor cognitive and academic outcomes. For example, Zill, Moore, Smith, Stief, and Coiro (1995) found that young children on welfare had slower than normal cognitive development, and when they grew older they were twice as likely to fail in school. Poor parenting may also contribute to lower cognitive functioning and academic success. Low-SES parents often have less education and less-prestigious occupations, both of which are known to have adverse effects on parenting (DeGarmo, Forgatch, & Martinez, 1999) and may also contribute to poorer academic success for their children.

There also is evidence to suggest that there is a strong relationship between SES and verbal language skills (Mercy & Steelman, 1982). This is demonstrated in Hart and Risley's (1995) study that found significant differences in language proficiency and number of words learned based on economic advantages, with higher SES children having significantly better verbal abilities. Hoff-Ginsberg (1991) also found

discrepancies in language performance in young children by observing mother-child interactions. This study postulated that higher-SES parents spend more time interacting with their children, leading to the development of higher verbal skills in their children. The opposite would then be true for low-SES children; they receive less verbal interaction time, which in turn hinders their verbal language skills.

Low SES is also highly correlated with poor school attendance and early high school dropout (Brooks-Gunn & Duncan, 1997). In addition, Brooks-Gunn and Duncan (1997) found that the timing of poverty makes a difference on academic success; children who experience poverty at a young age have much poorer outcomes than children who live in poverty later in life. Young children living in poverty are also less likely than their peers to demonstrate emerging literacy skills (U.S. Department of Education, 2011). The pre-literacy skills that children living in poverty are most lacking are the ability to recognize letters (U.S. Department of Education, 2011), knowing that text reads left to right, knowing where to read next when a line of text ends, and knowing when the story has ended (Espinosa, 2005). Due to research support for early intervention to improve literacy skills, the National Early Literacy Panel (2009) further endorsed the need to improve early literacy skills in low-SES students. With that said, interventions and research need to focus on teaching preschool-aged low-SES students emergent literacy skills, targeting areas of known deficiency.

Teacher Demographics

As the United States' student population is diversifying, the nation's teacher population is experiencing an opposite trend. Teachers in the United States have

increasingly become a more homogeneous population of Caucasian, monolingual, middle-class females (Nieto, 2000). The disparity between the U.S. teacher and student populations could be a contributing factor in the minority achievement gap. As described in Dee (2005), the student-teacher mismatch could be affecting the achievement gap in two ways, both actively and passively. The active explanation is that teachers have unintended biases that may negatively impact their perception and interactions with minority students. The passive explanation can be described as the "role-model" effect, in which students have someone similar to look up to and motivate them academically. Another related passive effect is "stereotype threat," where perceived stereotypes can negatively affect a student's academic motivation and performance.

Furthermore, many of our nation's teachers lack confidence, experience and training in cross-cultural issues, and would prefer to work in school districts where they feel most comfortable (Hollins & Guzman, 2005). Therefore, many teachers may already begin their career teaching multicultural students with a sense of uneasiness. However, the lack of knowledge and confidence in addressing diversity issues among students and how to best serve low-income, minority students cannot be blamed solely on teachers. Teacher educators and education programs are failing to make an impact because they themselves are a group of predominantly Caucasian, monolingual English speakers with little academic experience with diverse populations (Nieto, 2000). Teacher education programs could help change this ongoing lack of diversity by altering admission requirements and giving priority to applicants who speak a second language, and who have personal and professional experience working with diverse groups of learners (Nieto, 2000).

The academic impact that teachers can have on their students is well documented. Espinosa (2005) states that school personnel can have a direct impact on students by adapting their school's curriculum and environment to mimic their students' home environments. This can foster better school-home relationships and may improve academic success. The lack of diversity among the U.S. teacher population could be adversely affecting minority students' academic outcomes. More bilingual, highly trained and ethnically diverse teachers could have a major impact on outcomes for minority students and ELLs, through acknowledgment and acceptance of differences in their students' learning styles and culture (Nieto, 2000).

Aside from cultural and language factors, the training of teachers can have a significant impact on the literacy skills of students. Wasik and Hindman (2011) found that ongoing professional development of Head Start teachers over a 1-year period increased students' pre-literacy skills. This is an important finding, in that intensive professional development focused on knowledge and instruction can have a direct impact on teacher performance and ultimately enhance student academic outcomes.

Rationale for Current Study

Across the U.S., schools and teachers are falling short in providing ELL students with an appropriate education that will enrich their English skills and lead to future academic success and opportunities. English reading skills are crucial to ELL students' success in the schools and work force in the United States. Therefore, it is important to explore factors that could help educators better serve the ELL population in the schools.

When discussing the education of ELL students, it is important to note that quality education needs to be provided to ELLs at a young age because it is well documented that acquiring early reading proficiency is beneficial to later academic success. The current study aimed to examine the impact of teacher variables on early literacy skill acquisition among preschool ELL students. Literacy research has continued to investigate the effectiveness of reading intervention programs for ELLs; however, few have specifically examined the impact of teachers' language and ethnicity. These factors could influence reading outcomes for students who are stronger in L1 (Spanish), and who may need explanation or encouragement in their native language rather than in L2 (English). Moreover, the ethnicity of teachers and students may influence reading and language outcomes as well because the student might better identify with a teacher who speaks the same native language or shares the same country of origin. Having a cultural connection with a teacher may lead to students being more motivated to learn and improve in L2 (English). It is possible that the limited numbers of culturally diverse teachers and bilingual certified teachers on a national level could negatively affect minority students' academic outcomes. However, the specific impact of the lack of certified ELL/bilingual teachers and the increasingly homogeneous Caucasian teacher population in the United States on the academic outcomes of ELL students needs to be further researched. This study attempted to examine several teacher demographic variables as predictor variables for early literacy and receptive language outcomes among preschool ELLs whose native language was identified as Spanish.

Aside from teacher variables, the effectiveness of an Early Reading First (ERF) preschool classroom experience for ELL students was also examined. ERF is a

government-funded program that primarily provides services to low-income families and strives to develop successful early childhood centers with curriculum focusing on all developmental areas, especially cognitive, early language, and pre-literacy skills. The curriculum is meant to prepare children for continued academic success (U.S. Department of Education, 2012). ERF was evaluated by Congress, and positive results were found for overall improvement of teacher knowledge, curriculum delivery, and child-teacher interactions. Further, ERF had statistically significant impacts on students' print and letter knowledge, but not on phonological awareness or oral language skills (U.S. Department of Education, 2007). In general, ERF has been found to have positive results; however, few if any researchers have specifically looked at ERF's impact on ELL students' literacy and language outcomes.

Research Questions

The following questions were the focus of this research project:

1. In a population of at-risk ELL preschoolers, does having a bilingual teacher or teacher aide to potentially facilitate teaching reading curriculum in L2 influence English or Spanish early literacy acquisition? Is there a relationship with students' early literacy outcome measures?
2. In a population of at-risk ELL preschoolers, does the level of education and teaching experience among the teachers and teacher aides make a difference in English or Spanish early literacy outcomes? What is the relationship of differing levels of education and years of experience of educators on literacy outcomes?

Supplementary Research Question:

1. In a population of at-risk ELL preschoolers, do receptive language gains in either Spanish or English influence early literacy gains in ELL students?

Notes

[1]The use of Non-Hispanic/Caucasian refers to the population Non-Hispanic White.

CHAPTER 2

METHOD

Participants

The participants were enrolled in Early Reading First (ERF) preschool classrooms located in an urban school district within a large Western city. The preschool classrooms specifically served low-income students ages 3-4 years old. A majority of the students qualified for free and reduced lunches, with rates ranging from 66% to 88% by school. The total sample included 485 students, of which 36% were 3-year-olds and 64% were 4-year-olds. Of the 4-year-old sample, 6% reported speaking both Spanish and English as their home languages, 4% reported speaking a language other than English or Spanish as the home language, and 45% reported English as their primary language spoken at home. The total number of 4-year-old ELL students with Spanish as their primary language enrolled in the ERF preschool program was 141, making up 45% of the initial 4-year-old sample. Of note, 15% of the entire 4-year-old ELL sample received special education services. Retrospective data from this participant pool were examined.

All of the participants utilized in the study had turned 4 years old on or before the cut-off date of September 1 of the year the student enrolled in the preschool program. Only 4-year-old preschoolers were targeted in the study so that a broader range of emerging literacy skills could be assessed as outcome variables. Students from families who indicated that they spoke English at home, both Spanish and English at home, or

another language other than Spanish, were excluded from the sample because they did not meet criteria for inclusion as a Spanish-speaking ELL student. Students who were in special education were also excluded from the final sample in order to target typically developing Spanish-speaking ELL students. A final total of 127 ELL regular education students who reported that Spanish was their home language were used for the analyses. The sample was 47.2 % male (*n*=60) and 52.8% female (*n*=67). A majority of the student participants were Hispanic 99.2% (*n*=126), and 0.8% (*n*=1) reported being interracial. (See Table 1 for a summary of demographic information for the sample.) It should be noted that the total number of participants in each analysis varies slightly due to missing data for specific dependent variables.

The teachers and teacher aides participating in the study worked full-time in the ERF preschool classrooms. They all had intensive training with the We Can! Early Childhood Curriculum (Gibson, 2002) used in the ERF preschool program. Furthermore, the teachers and teacher aides had full access to literacy coaches who provided regularly scheduled, ongoing training and also were readily available for consultation. The literacy coaches were all licensed teachers with specialization and training in early literacy, equivalent to that of a reading specialist. The teacher sample consisted of 24 teachers, who were 66.7% Caucasian, 29.2% Hispanic, and 0.4% "Other" ethnicity. Data were analyzed by classroom; therefore, 12 classrooms were used for data analysis. A classroom that had either a lead teacher or a teacher aide who was Hispanic was considered a "Hispanic" classroom. A classroom that had a lead teacher or teacher aide who spoke Spanish in addition to English was considered a "bilingual" classroom. Based on the reported ethnicity of the teachers and teacher aides, the classroom sample was

made up of 58.3% Hispanic classrooms (*n*=7) and 41.7% Caucasian classrooms (*n*=5). Based on languages spoken by the teachers and teacher aides, 66.7% of classrooms were considered bilingual classrooms (*n*=8) and 33.3% were English-speaking classrooms (*n*=4). The education level and experience of the educators in each classroom were also examined as independent variables. The years of teaching experience were totaled between the lead teacher and the teacher aide in each classroom. A total of 33.3% of classrooms had 1-7 years of combined educator experience (*n*=4), 50% of classrooms had 8-14 years of combined educator experience (*n*=6), and 16.7% had 14 or more years of combined educator experience (*n*=2). Also, the 12 classrooms were housed in 7 different schools. Classrooms 1 and 2 were in School 1, Classrooms 3 and 4 were in School 2, Classrooms 5 and 6 were in School 3, Classrooms 7 and 8 were in School 4, Classrooms 9 and 10 were in School 5, Classroom 11 was in School 6, and Classroom 12 was in School 7.

Setting

Student participants attended a full-day Early Reading First (ERF) preschool program located in their neighborhood school as previously described. The ERF program was federally funded by the U.S. Department of Education and included 15 literacy-rich preschool classrooms that were housed in seven different elementary schools. The students in the study attended preschool 5 full days per week. The ERF classrooms used the We Can! Early Childhood Curriculum (Gibson, 2002) published by Sopris West. This literacy-rich curriculum emphasized positive classroom management techniques and

instruction in early literacy. The full-time teachers and teacher aides implemented all aspects of this early literacy curriculum, and they had ongoing support from a "literacy coach" who provided regular scheduled training and ongoing consultation.

Measures

Dependent Variables

Literacy Measures

All students were regularly assessed at the beginning, middle, and end of the school year using two early literacy subtests (DIBELS), both in English, and two receptive language measures, one in English (PPVT-III) and one in Spanish (TVIP). The assessments were completed by trained school personnel or graduate research assistants.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS). The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assesses early literacy in early childhood; it is more specifically used as a means to track student progress in key literacy categories that lead to reading proficiency (Good & Kaminski, 2002). The current study utilized two subtests from the DIBELS, Initial Sound Fluency (ISF) and Letter Naming Fluency (LNF), to assess student level of prereading skills at three different occasions during the school year. Initial Sound Fluency (ISF) measures the number of correctly pronounced sound responses a student gives within 1 minute when presented with a picture and spoken word; the student then has to correctly pronounce the first syllable. This subtest identifies whether a student can correctly identify, isolate and say the first syllable of a word. The ISF subtest takes about 3 minutes to administer and score, and has 20 alternate forms. ISF is a revision of another measure formally known as Onset

Recognition Fluency. The Dynamic Measurement Group (2004) states that the single probe reliability during kindergarten is .61 and the multiple probe reliability is .89 (as cited in Dynamic Measurement Group, 2008). Further, Dynamic Measurement Group (2004) found that ISF has concurrent validity of .47 with the Phoneme Segmentation Fluency (PSF) subtest on the DIBELS and .36 with the Woodcock-Johnson reading scales.

Letter Naming Fluency (LNF) measures the number of letters the student correctly identifies in 1 minute when presented with a stimulus page filled with randomly ordered lower and uppercase letters. The LNF single probe reliability for kindergarten is .89 and the multiple probe reliability is .96. Also, the concurrent validity with the Woodcock-Johnson reading scales is .70 (Dynamic Measurement Group, 2004 as cited in Dynamic Measurement Group, 2008).

Receptive Language Measures

Peabody Picture Vocabulary Test (PPVT-III). The Peabody Picture Vocabulary Test - Third Edition (PPVT–III; Dunn & Dunn, 1997) measures children's understanding of standard American English vocabulary. The examiner says a vocabulary word, the student is shown a card with four pictures and then is asked to point to or tell the number of the picture that best depicts the vocabulary word. The test can be administered in 10-15 minutes and covers 20 receptive vocabulary areas of content. Dunn and Dunn (1997) state that the internal consistency of the PPVT-III has an alpha median of .95, a split-half reliability median of .94, an alternate-form reliability median of .94, and a test-retest reliability median of .92. Further, validity data was reported with an average correlation

of .69 with the OWLS Listening Comprehension scale and .74 with the OWLS Oral Expression scale. The PPVT-III also correlates with the WISC-III Verbal Intelligence Quotient with a coefficient of .91.

Test de Vocabulario en Imagenes Peabody (TVIP). The Test de Vocabulario en Imagenes Peabody (TVIP; Dunn, Lugo, Padilla, & Dunn, 1989) is a Spanish adaptation of an earlier version of the PPVT-III (PPVT-R) that contains 125 translated items to measure bilingual and Spanish-speakers' receptive vocabulary. The administration is the same as the PPVT-III, where a stimulus page is shown with pictures on it and a vocabulary word is said; the student is the asked to point to a picture that best corresponds to the word. The norms of the TVIP were standardized on both combined and separate Mexican and Puerto Rican samples.

Independent Variables

Demographic Variables

The current study examined several demographic variables for both the student participants and their respective teachers, collected from the ERF database. The target variables for the student participants were age, sex, ethnicity and primary home language. The variables that were examined for teachers and teacher aides were ethnicity, whether they were bilingual (Spanish/English), level of education, and teaching experience. This study used the teachers' and teacher aides' ethnicity and whether or not a bilingual (Spanish/English) teacher or teacher aide was available in the classroom, along with education level of the lead teacher and combined experience of the teacher and teacher aide as possible predictor variables for student outcomes. These outcome variables

included student participants' progress on the early literacy measures in English and receptive language measures in both English and Spanish.

Procedure

Throughout the school year students were assessed three times as part of the Early Reading First (ERF) preschool program, for language, early literacy skills and school readiness. The current study only examined receptive language and early literacy outcomes. The early literacy measures included two subtests from the Dynamic Indicators of Basic Literacy Skills (DIBELS); Initial Sound Fluency (ISF) and Letter Naming Fluency (LNF). The receptive language measures included the Peabody Picture Vocabulary Test (PPVT-III) and its Spanish version, the Test de Vocabulario en Imagenes Peabody (TVIP). These assessments were individually administered once in the Fall, once in the Winter, and once in the Spring. School personnel and trained graduate research assistants administered all of the language and literacy measures in the students' neighborhood schools. These assessments were administered as an integral part of the ERF preschool, and all students in the program received these measures, regardless of whether or not they were included as participants in the current study. Assessment data were then entered into a database by ERF research staff and deidentified, for data analysis purposes.

Study Design

Dependent and independent variables from the current study were intercorrelated in a way that normal linear analysis could not be used. The data were nested in students, classrooms and schools. For this reason, the statistical model of Hierarchical Linear

Modeling (HLM) was required to account for the nested multilevel structure of the data. Due to the complexity of the study's model, the participants' scores on the various measures collected in the Fall, Winter, and Spring, were used to create gain scores (GS) for the four outcome variables. The Fall scores were subtracted from the Spring scores to calculate the gain scores for participants across the school year. These gain scores for students on the early literacy and receptive language measures were the treatments at Level 1 of the model. The participants' gain score observations were nested within classrooms, which was Level 2 of the model, and classrooms were nested in schools, which was Level 3 of the model. However, since schools and classrooms were thought to be measuring the same thing the model was collapsed from a three-level model including students, classrooms, and schools into a two-level model including only students and classrooms.

Unlike traditional statistical models, it cannot be assumed that individual variables are independent of other variables within the HLM model. HLM was used to enable examination of differences within and between groups at each of the levels, as well as to look at moderating effects while also considering correlations due to the nested design. The dependent variables (Level 1) for each research question were the gain scores on all of the literacy and language measures: DIBELS ISF, DIBELS LNF, PPVT-III, and TVIP. The independent variables (Level 2) were teacher and teacher aide demographic information such as ethnicity, total years experience of classroom teachers and teachers' aides within a classroom, education level of the lead teacher, and language status of educators in the classroom (bilingual vs. English only.)

Hierarchical Linear Modeling

There are several assumptions in traditional linear models that the analyzed data must meet, including linearity, normality, homoscedasticity, and independence (Raudenbush & Bryk, 2002). Data from the current study, however, are in a multilevel structured nested design that do not meet the assumption of independence; therefore, Hierarchical Linear Modeling (HLM) must be utilized. See Figure 1 for an illustration of the study's hierarchical design. The reason why it is so important to use HLM is because traditional statistical analysis does not consider data as nested and an underestimate of the standard error increases the risk of making a Type I error (Luke, 2004). A Type I error occurs when a null hypothesis is falsely rejected when it is in fact true, also known as a false positive (Hays, 1994).

HLM uses continuous or noncontinuous variables to predict outcome scores while accounting for the data's nested structure. For example, a student's test scores across time are usually going to be similar because it is the same student taking the tests. Moreover, students from the same classrooms or schools may have correlated test data because they are receiving similar instruction. As previously stated, HLM considers these correlations that occur due to the nested structure of the data, reducing the risk of Type I error (Luke, 2004). Furthermore, HLM uses "model building" procedures to develop and test research hypotheses. This procedure begins with a null model without predictor variables, and then predictor variables are inserted at Level 2 and then at Level 3. This "model building" process helps pinpoint which variables uniquely contribute to outcome scores in the nested design models, much like the current study's model (Roberts, 2004).

The current study used a two-level model. In order to answer the three research questions, null models were built for each dependent variable. Level 1 was a linear model of ELL students' gain scores (Yijk). The Level 1 model used the classroom mean (π_{0jk}) and random error to predict each student's gain score. At Level 2, classroom means served as outcome measures. Teacher and classroom variables were then used to predict classroom means. The following equations show the Level 1 and Level 2 models:

Student-Level 1

$Y_{ijk} = \pi_{0jk} + r$

Classroom-Level 2

$\pi_{0jk} = ß_{0j} + ß_{1j}X_j + u_{0j}$

Y_{ijk} represents the gain score of student i in classroom j in school k on the outcome variable. The symbolic representation of the mean gain score of the outcome variable for ELL students in classroom j is π_{0j}. The Level 2 coefficients are $ß_{0j}$ and $ß_{1j}$. The Level 2 predictor variables are denoted by X_j (i.e., bilingual status of classroom, teacher ethnicity, and educational experience). The error term is *r,* and $u_{0,}$ is the random effect of classroom j.

After building a null model, predictor variables were added at Level 2 in a one by one fashion to determine if a specific predictor variable made a unique contribution to the significance of the entire model. If a Level 2 predictor variable made a unique contribution it was left in the equation. Also, it should be noted that any nonsignificant random effects were fixed, unless it greatly altered the significance of the model.

Table 1

Demographic Characteristics of Participants

	Frequency	Percentage
Student Participants (*N*=127)		
Ethnicity		
Hispanic	126	99.2%
Interracial	1	.8%
Gender		
Male	60	47.2%
Female	67	52.8%
Home Language		
Spanish	127	100%
Teacher Participants (*N*=24)		
Ethnicity		
Hispanic	7	29.2%
Caucasian	16	66.7%
Other	1	.4%
Classrooms (*N*=12)		
Ethnicity of Teachers/Teacher Aides		
Hispanic	7	58.3%
Caucasian	5	41.7%
Language of Teachers/Teacher Aides		
Bilingual (Spanish/English)	8	66.7%
English only	4	33.3%
Combined Years of Teaching Experience		
1-7 years	4	33.3%
8-14 years	6	50%
14 or more years	2	16.7%
Highest Degree of Lead Teacher		
Associates Degree/Equivalent	3	25%
Bachelor's Degree	6	50%
Advanced Degree	3	25%
Schools (*N*=7)		

Level 1

Level 2

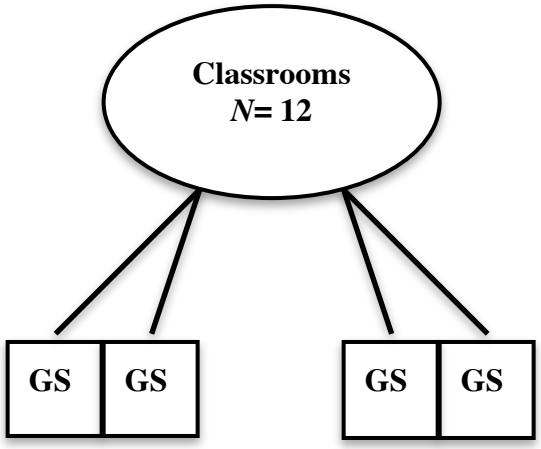

Figure 1. Model of the nested design for the study using gain scores (GS).

CHAPTER 3

RESULTS

Descriptive Statistics

The current study investigated early literacy and language outcomes of 4-year-old ELL students in ERF classrooms. Students whose parents reported they were bilingual and students with disabilities were excluded from the study to specifically examine language and literacy development of typical ELLs. Although the initial sample size was *N*=127, there were a number of students with missing data, and those students had to be removed from the study because the HLM statistical analysis program, HLM 6, cannot process missing data. After the participants with missing data were removed from the sample, the Level 1 sample size was *n*=90 for DIBELS LNF, *n*=90 for DIBELS ISF, *n*=94 for PPVT-III, and *n*=96 for TVIP. These sample sizes are based on the number of students who completed the literacy or language measure at both the first (Fall) and last (Spring) testing session in order to compute a gain score. Table 2 reports the classroom means and standard deviations (Level 2) for each dependent measure. Means and standard deviations for Level 2 predictor variables: teacher experience, lead teacher education, whether a classroom has a bilingual teacher or only English–speaking teachers, and combined number of years teaching experience, are reported in Table 2.

Inferential Statistics

The statistical program HLM6 was used to estimate parameter values and to compute statistical results for analysis. The variable codes are presented in Table 3 to help the reader to more easily follow the development of models to account for variance in students' gain scores.

Research Questions #1,2, 3

Early Literacy Skills

Initial Sound Fluency

Unconditional model. The unconditional model for early literacy skills as measured by DIBELS Initial Sound Fluency (ISF) allowed significant random effects to remain in the model. The Level 1 intercept was not significant, indicating that the sample did not improve on the DIBELS ISF measure. The preliminary results indicate that when all effects were allowed to vary randomly, there was significant variation in gain scores at Level 2. This indicates that there were significant differences among classrooms (Level 2). Table 4 shows the unconditional model. The null equation was as follows:

Students-Level 1

$ISFGAIN_{tij} = \beta_{0j} + r_{IJ}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

The results in Table 4 indicate a slight negative growth in literacy scores on the DIBELS ISF measure. The estimated average gain score for the sample $\gamma 00$, was -0.233. A

conditional model could be built because there was reliable variance among classrooms at Level 2.

Conditional model. The final model was developed to account for variability in gain scores between classrooms. Significant Level 1 predictors remained in the model. See Tables 5 and 6 for the conditional models. The summary of the conditional model equation was as follows:

Students-Level 1

$ISFGAIN_{tij} = \beta_{0j} + r_{IJ}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + \gamma_{01}(YEARSEXP) + u_{0j}$

Students-Level 1

$ISFGAIN_{tij} = \beta_{0j} + r_{IJ}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + \gamma_{01}(TEACHBIL) + u_{0j}$

Results from the analysis indicate two variables that accounted for significant variability in DIBELS ISF at Level 2. The two variables were tested in one conditional model, but seemed to explain the same variance; therefore, two conditional models were built. In the first conditional model, the predicted average gain score increased by 0.063 percentage points as years of teaching experience increased. In the second conditional model, the predicted average gain score decreased by -0.732 percentage points for classrooms with

bilingual teachers. Lead teacher degree was added as a predictor variable, but was found not to be significant.

For both models, the percentage of variance accounted for by each significant predictor was calculated. Teacher experience and bilingual status both significantly accounted for about 1% of the variance. The Level 2 effect remained significant for gain score change in the teaching experience model, but not in the bilingual status model indicating that there is further variance to explain in the teaching experience model.

Letter Naming Fluency

Unconditional model. The unconditional model for early literacy skills as measured by DIBELS Letter Naming Fluency (LNF) did not include significant random effects in the level 2 equation. The intercept at Level 1 was not significant, indicating that the student sample did not make significant gains on the DIBELS LNF measure. Further, the preliminary results indicated that when all effects were allowed to vary randomly, there was no significant variation in gain scores at Level 2. Table 7 shows the unconditional model. The unconditional equation was as follows:

Students-Level 1

$LNFGAIN_{tij} = \beta_{0j} + r_{IJ}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

The results in Table 7 indicate general nonsignificant growth in literacy scores on the DIBELS LNF measure. The estimated average gain score for the sample was γ_{00}=-.082.

A conditional model could not be built because there was no variance between classrooms to be accounted for at Level 2.

Receptive Language

English

Unconditional model. The unconditional model for English receptive language skills as measured by the PPVT-III included significant random effects in the Level 2 equation. The Level 1 intercept for fixed effects was significant, indicating that significant gains were made by the sample on the PPVT-III measure. The preliminary results indicated that there was significant variation in gain scores at Level 2. This indicates that there were significant differences among classrooms (Level 2). Table 8 shows the unconditional model. The null equation was as follows:

Students-Level 1

$PPVTGAIN_{tij} = \beta_{0j} + r_{IJ}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

The results in Table 8 indicate general positive growth in English receptive language scores on the PPVT-III measure. The estimated average gain score for the sample $\gamma_{00,}$ was 1.071. Once the unconditional model was fit, predictor variables were added. Teacher's bilingual status, teacher experience, and lead teacher's degree were all added to the model; however, none of these variables accounted for variance in gain scores. The variables were removed, and no conditional model was successfully created.

Spanish

Spanish receptive language skills as measured by the TVIP were included in this study to monitor ELL students' language gains or losses in L1. The unconditional model examined whether gain scores were significantly different from zero. However, the TVIP measure was used in the supplementary statistical analysis.

Unconditional model. The unconditional model for TVIP did not allow for any significant Level 1or Level 2 predictors. These results indicate that there were no significant random effects among classrooms. This indicates that there were no significant increases or decreases in TVIP gain scores among ELL students, and there was no variation between classrooms. Since there was no significant variance, no predictor variables were added to the model, and no conditional model was necessary. The model in equation format was as follows:

Students-Level 1

$\underline{\text{TVIPGAIN}}_{tij} = \beta_{0j} + r_{IJ}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

The results in Table 9 indicate no significant growth in Spanish language scores on the TVIP measure. The estimated average gain score for the sample was γ_{00}=0.080, which did not differ significantly from zero.

Supplementary Statistical Analysis

Based on results of the primary data analyses, an additional research question was posed: Did language gains in either Spanish or English influence literacy gains in ELL students? Regression analysis using HLM focused on the students' language gain scores (PPVT-III and TVIP) and how those variables may have moderated or strengthened ELL students' literacy gains (DIBELS Letter Naming Fluency and DIBELS Initial Sound Fluency). Exploring the language and literacy relationship is important because early language skills have been correlated with academic achievement. For example, Hart and Risley (1995) discussed the specific importance of early language enrichment for low-SES students to help bridge the academic achievement gap. In the current study, 66% to 88% of student participants qualified for free and reduced lunch. Since early language skills are a good indicator for future academic achievement, it is possible that the language gains were highly correlated with the literacy gains.

The general HLM equation for the supplementary analysis was slightly different than the model used for the main findings. The system of equations followed a random intercepts and slopes model because the regression coefficients of concern were at Level 1 and the variability at Level 2 no longer needed to be used as predictors (Luke, 2004). The general equation used in the supplementary analysis was as follows:

Student-Level 1

$$Y_{ij} = \beta_{0j} + \beta_{1j} X_{ij} + r$$

Classroom-Level 2

$$\beta_{0j} = \gamma_{0j} + u_{0j}$$

$\beta_{1j}=\gamma_{10}$

Early Literacy Skills and Language Gains

DIBELS Initial Sound Fluency

Results for the unconditional model indicated nonsignificant growth in literacy scores on the DIBELS Initial Sound Fluency (ISF) measure for ELL students, with an estimated average gain score of -0.233 (see Table 4). After the unconditional model was fit, a conditional model was built.

Conditional model 1. The conditional model for DIBELS ISF was developed to explore its relationship with language gains in English (PPVT-III). The PPVT-III was used to predict DIBELS ISF. Table 10 shows the conditional model using PPVT-III. The conditional supplementary equation is modeled below:

Students-Level 1

$ISFGAIN_{ij}= \beta_{0j} + \beta_{1j}$ (PPVTGAIN) + r_{ij}

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10}$

The results in Table 10 indicate that overall, scores did improve for ELLs, with gain scores averaging $\gamma_{00} = -0.220$. The effect of PPVT-III was not significant indicating that gain scores in English receptive language skills (PPVT-III) and gain scores in DIBELS ISF were not correlated. The variance component at Level 2 was significant (p=0.022) indicating that there is variance at Level 2; however, no level two variables were input

into the model to explain the variance because the research question focused on the relationship between reading and language measures at Level 1.

Conditional model 2. A second conditional model was built to explore the relationship between DIBELS ISF gains and TVIP gains. The TVIP was used to predict DIBELS ISF. Table 11 shows the conditional model using TVIP. The conditional model is presented below:

Students-Level 1

$ISFGAIN_{ij} = \beta_{0j} + \beta_{1j}\,(TVIPGAIN) + r_{ij}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10}$

The results in Table 11 indicate that overall, DIBELS ISF scores did not significantly change for ELLs. The effect of TVIP on DIBELS ISF was not significant (p=.112), indicating that gain scores in Spanish receptive language skills (TVIP) and DIBELS ISF were not correlated. The variance component at Level 2 was significant indicating that there is variance at Level 2; however, no Level 2 variables were input into the model to explain the variance because the research question focused on the relationship between reading and language measures at Level 1.

DIBELS Letter Naming Fluency

The results for the unconditional model indicated general positive growth in literacy scores on the DIBELS Letter Naming Fluency (LNF) measure for ELL, students

with an estimated mean of -0.082 (see Table 12). After the unconditional model was fit, a conditional model was built.

Conditional model 1. The conditional model for DIBELS LNF was developed to explore the relationship between language gains in English (PPVT-III) and literacy gains for DIBELS LNF. PPVT-III gain scores were used to predict gains in DIBELS LNF. Table 12 shows the conditional model using PPVT-III. The conditional equation is presented below:

Students-Level 1

$LNFGAIN_{ij} = \beta_{0j} + \beta_{1j}\,(PPVTGAIN) + r_{ij}$

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10}$

The results in Table 12 indicated that overall, DIBELS LNF scores did not improve for ELLs. The estimated mean gain score was $\gamma_{00} = -0.173$ and did not differ significantly from zero. The effect of PPVT-III gains in English receptive language skills (PPVT-III) and DIBELS LNF was not significant. The variance component at Level 2 was not significant indicating that there was no variance at Level 2.

Conditional model 2. A second conditional model was built to explore the unique relationship between DIBELS LNF gains and TVIP gains. The TVIP was used to predict gains in DIBELS LNF. Table 13 shows the conditional model using TVIP. The conditional model is presented below:

Students-Level 1

$LNFGAIN_{ij} = \beta_{0j} + \beta_{1j}$ (PPVTGAIN) + r_{ij}

Classroom-Level 2

$\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10}$

The results in Table 13 indicated that overall, DIBELS LNF scores did not improve for ELLs. This result indicates that gain scores in Spanish receptive language skills (TVIP) and DIBELS LNF gains were not correlated. The variance component at Level 2 was not significant indicating that there was no variance at Level 2.

Table 2

Classroom Means and Standard Deviations for Early Literacy Gain Scores

DIBELS ISF	1 (*n*=8)	2 (*n*=3)	3 (*n*=5)	4 (*n*=6)	5 (*n*=11)	6 (*n*=14)
	.039 (1.166)	**-.492** (.779)	**-.748** (.721)	**-.417** (.862)	**.128** (.959)	**.129** (.705)
	7 (*n*=5)	8 (*n*=11)	9 (*n*=7)	10 (*n*=9)	11 (*n*=6)	12 (*n*=11)
	-.811 (1.140)	**-.444** (.807)	**-.883** (1.229)	**.153** (1.089)	**.846** (.955)	**-.621** (.370)
DIBELS LNF	1 (*n*=8)	2 (*n*=3)	3 (*n*=6)	4 (*n*=6)	5 (*n*=11)	6 (*n*=12)
	-.282 (.502)	**.280** (.269)	**-.639** (.586)	**-.342** (.496)	**-.064** (.700)	**.049** (.671)
	7 (*n*=5)	8 (*n*=10)	9 (*n*=7)	10 (*n*=7)	11 (*n*=6)	12 (*n*=11)
	-.012 (.879)	**-.236** (.874)	**.187** (.728)	**-.577** (.647)	**.293** (1.301)	**.268** (1.051)
PPVT-III	1 (*n*=8)	2 (*n*=3)	3 (*n*=6)	4 (*n*=6)	5 (*n*=11)	6 (*n*=12)
	1.645 (.869)	**1.466** (1.058)	**1.297** (.723)	**.962** (.751)	**1.174** (1.126)	**1.362** (.689)
	7 (*n*=5)	8 (*n*=10)	9 (*n*=6)	10 (*n*=10)	11 (*n*=7)	12 (*n*=10)
	.979 (.431)	**.329** (.384)	**1.120** (.701)	**1.526** (1.062)	**.523** (.733)	**.613** (1.004)
TVIP	1 (*n*=10)	2 (*n*=4)	3 (*n*=7)	4 (*n*=6)	5 (*n*=10)	6 (*n*=12)
	.332 (.735)	**.218** (.348)	**.170** (.426)	**.090** (.478)	**.239** (1.044)	**-.025** (.461)
	7 (*n*=5)	8 (*n*=9)	9 (*n*=7)	10 (*n*=10)	11 (*n*=7)	12 (*n*=9)
	.154 (.999)	**-.032** (.835)	**.659** (.847)	**-.025** (.683)	**-.413** (.767)	**-.266** (.339)

Note: Means are reported in bold type and standard deviations are reported in parentheses.

Table 3

HLM Variables

Code	Variable
Level 1	
ISFGAIN	DIBELS ISF gain score
LNFGAIN	DIBELS LNF gain score
TVIPGAIN	TVIP gain score
PPVTGAIN	PPVT-III gain score
Level 2	
YEARSEXP	Number of years teaching
TEACHBIL	Bilingual classroom status

Note: Only variables that were included in the final HLM models are included.

Table 4

Unconditional Model: Two-Level Analysis of DIBELS Initial Sound Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Mean gain score, γ_{00}	-0.233	0.144	-1.611	11	0.135
Random Effect	Variance Component	*SD*	X^2	*df*	*p*-value
Level 1					
Temporal Variation, *r*	0.816	0.904	--	--	--
Level 2					
Average difference in classroom gain score, u_0	0.140	0.374	25.340	11	0.008

Table 5

Conditional Model: Two-Level Analysis of DIBELS Initial Sound Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	-0.913	0.215	-4.254	10	0.002
Years Experience, γ_{01}	0.063	0.018	3.682	10	0.004
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.805	0.897	--	--	--
Level 2					
Average difference in classroom gain score, u_0	0.014	0.119	10.424	10	0.404

Table 6

Conditional Model II: Two-Level Analysis of DIBELS Initial Sound Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	0.242	0.167	1.450	10	0.178
Bilingual Status, γ_{01}	-0.732	0.211	-3.462	10	0.006
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.806	0.898	--	--	--
Level 2					
Average difference in classroom gain score, u_0	0.022	0.150	11.340	10	0.331

Table 7

Unconditional Model: Two-Level Analysis of DIBELS Letter Naming Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	-0.082	0.085	-0.974	11	0.351
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.638	0.799	--	--	--
Level 2					
Average difference in classroom gain score, u_0	0.000	0.025	11.656	11	0.390

Table 8

Unconditional Model: Two-Level Analysis of PPVT-III Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	1.071	0.129	8.326	11	<0.001
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.699	0.836	--	--	--
Level 2					
Average difference in classroom gain score, u_0	0.103	0.321	23.569	11	0.015

Table 9

Unconditional Model: Two-Level Analysis of TVIP Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	0.080	0.079	1.018	11	0.331
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.501	0.708	--	--	--
Level 2					
Average classroom gain score, u_0	0.107	0.012	13.028	11	0.291

Table 10

PPVT-III Conditional Model: Two-Level Analysis of DIBELS Initial Sound Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	-0.220	0.198	-1.111	11	0.290
Average difference in gain score on PPVT-III, γ_{10}	-0.015	0.123	-0.118	73	0.906
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.852	0.923	--	--	--
Level 2					
Average classroom gain score, u_0	0.129	0.359	22.323	11	0.022

Table 11

TVIP Conditional Model: Two-Level Analysis of DIBELS Initial Sound Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Mean gain score, γ_{00}	-0.220	0.141	-1.566	11	0.146
Mean difference in gain score on TVIP, γ_{10}	-0.228	0.142	-1.609	73	0.112
Random Effect	Variance Component	SD	X^2	df	p-value
Level 1					
Temporal Variation, *r*	0.833	0.913	--	--	--
Level 2					
Average classroom gain score, u_0	0.111	0.334	21.278	11	0.030

Table 12

PPVT-III Conditional Model: Two-Level Analysis of DIBELS Letter Naming Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	-0.173	0.138	-1.259	11	0.234
Average difference in gain score on PPVT-III, γ_{10}	0.067	0.100	0.666	73	0.507
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.652	0.807	--	--	--
Level 2					
Average classroom gain scores, u_0	0.000	0.006	11.869	11	0.373

Table 13

TVIP Conditional Model: Two-Level Analysis of DIBELS Letter Naming Fluency Gain Scores

Fixed Effect	Coefficient	*se*	*t-ratio*	*df*	*p-value*
Average gain score, γ_{00}	-0.102	0.088	-1.162	11	0.270
Average difference in gain score on TVIP, γ_{10}	-0.009	0.121	-0.070	73	0.945
Random Effect	Variance Component	*SD*	X^2	*df*	*p-value*
Level 1					
Temporal Variation, *r*	0.655	0.809	--	--	--
Level 2					
Average classroom gain score, u_0	0.000	0.012	10.978	11	>0.500

CHAPTER 4

DISCUSSION

The current study aimed to explore different teacher variables' effects on ELL literacy and language scores in an Early Reading First preschool program. The number of ELL students in the United States is increasing rapidly, and successful teaching strategies and variables influencing academic growth need to be explored in order to better serve the ELL student population. Previous research has examined different teaching strategies for increasing language and literacy acquisition for ELL students, but few studies have looked specifically at teacher variables and their effects on education outcomes. Moreover, this study aimed to expand the literature base regarding how these factors impact the emergent literacy skills of ELLs in order to inform early intervention efforts to further aid in their academic success.

Hierarchical linear modeling (HLM) was utilized due to the nested structure of the data. Many previous studies looking at literacy outcomes did not use statistical analyses that accounted for the data's nested structure, and violated the assumption of uncorrelated errors. For these reasons, HLM helped to create an unbiased sample that did not violate the assumption of uncorrelated errors. The sample for the current study consisted of at-risk ELL preschool students who were receiving intensive full-day, full-week instruction with an emphasis on early literacy through an Early Reading First (ERF) preschool

program. The students enrolled in the Early Reading First preschool classrooms were considered at-risk academically because the student population primarily included ELLs from low socioeconomic backgrounds.

The current study was conducted to better understand the relationship that teacher variables may have on preschool age at-risk ELL students' literacy and language outcomes. Teacher variables were the focus of examination in order to determine whether they had any significant impact on the language and literacy outcomes of ELL students. Analyses were aimed at determining whether certain teacher variables or combinations of teacher variables had a greater impact on these students' language and literacy measure gains. This chapter discusses main research findings, the strengths and limitations of the study, and explores implications for future practice and research.

Main Findings

Teacher Variables and Literacy Outcomes

Bilingual teacher status was targeted for analysis to further understand whether teachers' language fluency in Spanish influences the acquisition of literacy skills among ELL students. It has been well documented that bilingual education programs have positive effects on facilitating language gains in both L1 and L2 for this population (Ochoa, 2005a). However, there are few research studies that specifically look at whether bilingual teachers facilitate more language and literacy gains for ELLs than monolingual English-speaking teachers. This research is important to explore because bilingual education programs are not available in every school in the U.S., creating a need to know which factors may help facilitate English literacy acquisition for ELL students who do

not have access to bilingual instruction. The current study hypothesized that having a bilingual teacher in the classroom would help facilitate teaching early reading concepts in English to ELL students who may not fully understand the concepts presented in L2. Although the bilingual facilitation concept was not well documented in this study, bilingual status was considered a possible predictor variable for variation in achievement.

The independent variables, teachers' level of education and years of teaching experience, were explored to better understand their effects on literacy and language achievement. Research has been mixed when it comes to teacher effects. Some studies claim teachers have an extraordinary effect on achievement, while others found that teacher effects were negligible. One study using HLM found some effects for teacher experience and education on student achievement gains in second grade math and effects for teacher experience on student achievement gains in third grade reading for both minority and nonminority students (Nye, Konstantopoulos, & Hedges, 2004). Although Nye and colleagues (2004) studied a different student population, the study supports the idea that teacher experience and education level can impact classroom outcomes.

As stated, the main research questions targeted in the current study explored the influences of bilingual teacher status, and years experience and level of education as possible predictor variables for literacy and language outcomes in English for ELLs. A Spanish receptive language measure was also examined to ascertain the relationship between English language and literacy variables with a Spanish language variable. Only the DIBELS Initial Sound Fluency (ISF) model allowed the variables of bilingual teacher status and years of teaching experience to be explored.

The results indicate that there was variance at Level 2 (classrooms) for two outcome measures, DIBELS ISF and PPVT-III (English receptive language). The Spanish receptive language measure, TVIP, showed no significant variance at Level 1 or 2. The variance for DIBELS ISF allowed for both teacher bilingual status and years experience teaching to be considered as predictor variables. Each of these variables accounted for a significant amount of variance in DIBELS ISF gain scores at Level 2; however, both variables only accounted for around 1% of the variance and the rest remained unexplained. Since the study's predictor variables did not account for significant variance in the PPVT-III model, this variance may be explained by other factors.

Interestingly teacher bilingual status may have negatively contributed to the ELL students' success on DIBELS ISF. This is counter to the hypothesis that the bilingual teachers could use their language skills in L1 and L2 to facilitate learning, and/or act as a model for correct and incorrect pronunciation of initial letter sounds in L2. However, the teachers' experience could have had a significant impact on outcome measures due to more knowledge about teaching and facilitating learning.

Of considerable interest, although not surprising, is the finding that there were no significant gains made by ELL students on the Spanish receptive language measure, TVIP, and no significant variance between classrooms or schools on this outcome measure. The literacy curriculum used in the ERF preschool classrooms focused on exclusively enriching literacy skills in English for the entire class including ELL and non-ELL students. The program did not aim to improve or maintain Spanish language skills; therefore, the lack of gains or variance between classrooms or schools for ELL

students on the TVIP was expected. This result also lends support to previous research findings that suggest loss of L1 skills for ELLs who do not receive specific instruction in L1 (Ochoa, 2005a).

Also of significant note, the sample in general did not make significant gains on any of the outcome measures. This is surprising given the evidence-base for supplemental reading programs (Gunn et al., 2005; Vaughn et al., 2006), and the use of a federally funded reading intervention program, ERF. A possible explanation for the non-significant gains could be the limited time frame of only 1 year, and also the age of the participants. The participants may show the effects of the early intervention later in their academic career.

Supplementary Research

Language Influences on Literacy Outcomes

During the data analysis process an additional research question was proposed to address the potential effects of language gains on literacy gains. Research in the field has documented a strong relationship between ELL students' vocabulary knowledge in L1 and L2 with access to content through reading (Carlo et al., 2004; Proctor et al., 2006). Further, the relationship between language and reading is reciprocal (Carlo et al., 2004), and the larger a student's vocabulary the more a student will comprehend, and the more a student reads the larger his/her vocabulary will become.

The current study wanted to explore this relationship in the sample and analyze if there was a similar relationship between literacy scores and receptive vocabulary scores in L1 and L2 among a preschool ELL population. Through statistical analysis using

Hierarchical Linear Modeling it was concluded that gainsin English receptive language (PPVT-III) was not a significant moderating variable for gains on either early literacy measure (DIBELS Letter Naming Fluency or DIBELS Initial Sound Fluency). DIBELS ISF had an uncorrelated gain slope with PPVT-III (p=0.906) and DIBELS LNF had similar uncorrelated findings (p=0.507). The nonsignificant correlation between English receptive language gains and early literacy gains in English was unexpected because the relationship between language and literacy skills has been well documented. Similarly, there was no correlation between gains in Spanish receptive language (TVIP) with literacy gains in English. DIBELS ISF gain slope was not significantly correlated with Spanish receptive language gains (p=0.112), nor was DIBELS LNF gains (p=0.945). These similar findings remain puzzling. The low correlation between English receptive language gains and literacy gains was unexpected because the reading curriculum was provided exclusively in English and the literacy probes measured emergent literacy skills in English. The ERF curriculum was intended to enrich emergent English literacy and language skills, but not Spanish emergent literacy and language skills. The non-significant correlation between English receptive language and literacy gains does not support the supplementary reading program's intentions, to increase gains in English, but not in Spanish.

Another possible explanation for the lack of ELL gains on the Spanish receptive language measure is that teachers were likely not using Spanish to deliver instruction, but more likely in social interactions or clarifications on occasion. This brings up the point of BICS vs. CALP. BICS are the more conversational and social L2 skills, while CALP are the academic skills that may impact a Spanish receptive language measure (Cummins,

1984 as cited in Ochoa, 2005a). Although it is unclear the extent to which Spanish was used in the bilingual classrooms, it is possible that when Spanish was being used by the bilingual teachers, it was more likely at a BICS level than used to help improve CALP in Spanish, subsequently having little impact on the Spanish receptive language measure.

Additionally, although the English and Spanish receptive language measures were not correlated with English literacy measures, the results do not clearly uncover why this relationship occurs. The correlation between English literacy and language measures could be the resultsof other factors not addressed by this study.

Strengths and Limitations

Statistically, the use of Hierarchical Linear Modeling (HLM) for analysis was a major strength of the study, because literacy and language outcomes were analyzed without bias. Traditional analyses require that several assumptions about the data must be met, independence being one of those assumptions. For the current study, student data were nested within classrooms and schools; therefore, the assumption of independence was not met. Also, the probability of a Type I error was significantly reduced when using HLM because data that break the independence assumption tend to increase the chances of making a Type I error with traditional analyses.

Unfortunately, the use of HLM may have limited the study's findings in other ways. HLM reduced the power of the sample by accounting for all the intercorrelations among the nested data. Therefore, due to the relatively small sample size used in the current study, variance between classrooms may not have been powerful enough to be observed in all of the HLM models.

Aside from the restrictions imposed by the statistical analyses, the sampling of 73 to 96 (out of 127 due to missing data) 4-year-old ELL students attending a literacy-rich preschool for this study can be viewed as a real strength. The research literature is more limited regarding emergent literacy skills among ELL preschool students than it is for elementary school-aged students. Also, the effects of early supplementary reading interventions on decreasing the achievement gap between ELL and non-ELL students still needs to be further explored. Expanding the knowledge base of how to improve reading at an early age could lead to strategies to support greater academic success for ELL students.

Another major limitation of the current study is that even though the study included a focus on bilingual versus monolingual teachers in the classrooms, there was no way of knowing the degree to which the bilingual teachers used Spanish in their classrooms to aid learning for ELL students. With this limitation, it is unclear if the classrooms actually differed in their use of bilingual skills in instruction, but the speculation was that ELL students at least had access to this additional resource in these specific classrooms. This limitation is unfortunate, because it has been documented that the use of Spanish language in the classroom can help facilitate academic gains for preschool-aged ELL students (Burchinal, Field, Lopez, Howes, & Pianta, 2011). The use of language, whether L1 or L2, to facilitate literacy instruction for ELLs needs to be continually explored to better understand the most impactful way to use L1 and L2 in instruction.

It is important to note that the preschool program examined in the current study was an Early Reading First (ERF) program, which is a unique federally funded program.

Most preschool-aged students, especially low SES students who have access to fewer allocated resources, do not typically receive this level of intensive literacy instruction. The teachers and teacher aides in the current study are also unique. They received intensive training in the early literacy-based curriculum by a literacy coach as part of the ERF program, and literacy coaches were readily available for consultation to address their questions and help teachers troubleshoot possible problems. The teachers in this study were therefore highly trained in implementing the curriculum, and therefore, differences in teacher performance may not have been as pronounced between classrooms as might be seen in traditional preschool classrooms. Due to the fact that all of the teachers were highly trained in the curriculum, the sample of teachers included in the study may have been unusually homogeneous due to their similarly intensive training and the results may not generalize to other preschool populations.

Although there were a number of strengths in the current study, there was not sufficient power or variability within the classroom samples to accurately assess the impact of all of the intended teacher variables on all of the literacy and language outcomes. Additional studies designed to analyze the impact of teacher variables on student literary and language gains is warranted to better understand how to close the ELL achievement gap and improve academic outcomes for this population.

Implications for Future Research and Practice

Expanding the research base on how to better serve at-risk ELL preschool students in the classroom is important for increasing these students' current and future academic success. The low income ELL students in the current study are especially at-

risk because adverse effects of poverty are compounded by language and cultural variables (Mercy & Steelman, 1982; Zill et al., 1995). The results from this study have implications for future research on early literacy programs for ELL students. The results indicated that preschool-aged ELL students did not make immediate significant gains on emergent literacy skills from early supplemental reading instruction in English. The reason for the lack of significant gains could be due to the limited 1-year time frame, and the reading instruction could have a lasting impact on this population. Studies examining supplemental reading programs may want to focus on more long-term progress, and consider a longitudinal design.

Further, the study was aimed at better understanding the effects that teacher variables may have on early literacy outcomes for preschool students. The results of the study indicate that a much larger sample of ELL students and teachers may be needed to better understand the impact of differential teacher variables including bilingual capabilities, and years and level of experience on ELL literacy and language acquisition. The need for a larger sample size is particularly true when using HLM for analyses, due to the fact that HLM takes into account nested data, and when accounting for nested data the sensitivity of an effect is lowered. To increase the power and sensitivity of an effect a larger sample size is needed.

More research on teacher variables in other preschool settings could be examined for a possible relationship on student literacy and language gains for ELL students. For example, it may be helpful to examine preschool settings that do not use a federally funded and highly intensive curriculum such as the ERF classrooms in this study; preschool classrooms with only ELL students; or preschool classrooms that regularly use

Spanish to implement curriculum. Also, exploration of different teacher and classroom variables in preschool programs is needed in the field to better understand how to best serve this age group of ELLs. For example, different teaching styles, number of students in the classroom, student-to-teacher ratio in the classroom, and emotional supportiveness of the teacher could all impact the functioning and academic achievement of ELLs.

In the current study, the results of language and literacy measures indicated that the students benefitted from the curriculum in a similar manner across all of the classrooms, except for the variation noted on the measure of DIBELS ISF. This finding leads to an interesting implication, in that a lack of significant differences between classrooms could be due to the fact that teachers in the study were highly trained in the literacy-rich curriculum and had access to a literacy coach. All the teachers were thoroughly trained in the curriculum; therefore, the teachers may have been teaching at a similar level of expertise. However, on DIBELS ISF, teacher variables had an additional impact above the training and resources that teachers accessed. Further exploration of the impact of teacher training and teacher access to training resources could lead to important implications for education in the classroom. Moreover, future research should look specifically at why some early intervention literacy and language programs are more successful than others. Variables such as teacher training, access to teacher resources (coaches, curriculum tools, etc.), non-ELL peers in the classroom to serve as models, role of acculturation of student and parents, and other school climate variables would be helpful to better understand program success among ELL students.

Further, the current study focused on only one school year. This only provided a small snapshot of ELL literacy and language gains. To obtain a more in-depth look at

long-term effects of teacher variables on ELL student outcomes, a longitudinally designed study would be beneficial. A longitudinal design could reveal in which years ELL students make the most progress so that specific ages or academic years could be targeted for further analysis in order to better utilize limited resources. The same type of analyses could also illuminate reasons for minimal or no progress in literacy and language skills at specific ages or grades. Another benefit of a longitudinal design is that researchers could view the lasting effects of early intervention on future academic success in reading as well as related academic areas, such as language arts. Reading is an essential skill for academic and community success (National Early Literacy Panel, National Institute for Literacy, 2009) and is especially critical for students who are at risk due to factors such as being a non-native English speaker. It would be interesting to follow up on the current study's sample to better understand the effects of these students' preschool experience on their long-term literacy and language progress over time.

It also would be interesting to explore early literacy interventions with at-risk ELL children even younger than preschool age. Hart and Risley (1995) found that children from disadvantaged homes had fewer verbal interactions at 1 and 2 years of age, which led to later vocabulary growth rate, lower vocabulary use and lower IQ scores. It would be interesting to replicate these types of studies specifically with disadvantaged ELL children from birth to school-age to determine the effects of intensive early language exposure. This could also be taken a step further by exploring early literacy exposure in the homes of disadvantaged ELLs. The academic gap between ELL and non-ELL students suggests that it is critically important to obtain a better understanding of the effects of early literacy and language exposure on ELL students. As Thomas and Collier

(2002) found, the achievement gap between ELL and non-ELL students increases as students progress through each school year, falling further and further behind. To prevent the achievement gap from expanding further, or from even beginning, it is important to intervene when educators can have the most impact. Therefore, interventions for ELLs at preschool-age and younger should further be explored as to their ultimate impact on long-term literacy and language gains, as well as progress in closing the achievement gap for this at-risk population.

Another implication of this study is that the lack of success of this ERF as an effective preschool program could be attributed to factors other than teachers' knowledge and skill in implementing the curriculum. Other classroom variables and dynamics between the students could have influenced the program's success. Classroom dynamics is another avenue of research that could help better explain whether one classroom can be more successful than another classroom. In the current study, since there was no significant variation between classrooms on most of the outcome measures the classrooms may have had similar dynamics that made the classes similarly successful with the curriculum used. With that said, teachers remain a critical component of a successful classroom dynamic, and teacher variables should continue to be an avenue of exploration in the field of literacy and language interventions in ELL student samples.

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