ASSESSING EARLY LITERACY DEVELOPMENT IN SPANISH SPEAKERS WHEN SPANISH IS THE LANGUAGE OF INSTRUCTION

by

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Title: ASSESSING EARLY LITERACY DEVELOPMENT IN SPANISH SPEAKERS WHEN SPANISH IS THE LANGUAGE OF INSTRUCTION

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One of the fastest growing populations of students in American schools today is that of Spanish speaking English language learners. Many of these students are taught in classrooms in which Spanish is the language of instruction for the development of early literacy skills. There is a need for valid and reliable progress monitoring measures for Spanish speakers in these classrooms, as many of the current measures in use were designed for and normed on English speaking populations of students. Phonological awareness is one of the strongest predictors of success in learning to read. Therefore, the purpose of this replication study was to determine the efficacy of five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level to predict scores on Spanish Word Reading and Sentence Reading Fluency assessments for 41 first-grade and 41 second-grade native Spanish speaking students whose early literacy instruction was in Spanish.

Correlational and multiple regression analysis showed that, of these variables, performance on a test of Syllable Sounds was the best predictor of performance on both the Word Reading Fluency and Sentence Reading Fluency tests. Results show that, for students receiving early literacy instruction in Spanish, tests of syllable sounds demonstrated the most efficacy in accounting for the variance in predicting future reading success in Spanish.

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CHAPTER I

INTRODUCTION

Spanish speaking English language learners are currently the fastest growing group of English language learners enrolled in public schools, and this is projected to be the case well into the future. According to the National Center for Educational Statistics (2007), the number of children ages 5–17 who spoke a language other than English at home more than doubled between 1979 and 2005, from 3.8 million to 10.6 million, or from 9% to 20% of the population in this age range. Although school-age children who spoke a non-English language at home varied by race, ethnicity, citizenship, and poverty status, in 2005 Spanish was the language spoken at home for over three-fourths of school-age children whose native language was a language other than English (NCES, 2007).

Understanding the Assessment Challenges of Native Spanish Speakers

Hispanic Americans present a tremendous challenge to the assumptions of tests within our current accountability systems. This challenge was best summarized by Wolf et al. (2008):

> Although the validity of the assessment of ELL students has been a topic of research and expert recommendation (i.e., the Standards for Educational and Psychological Testing; American Educational Research Association, American

Psychological Association, & National Council on Measurement in Education [AERA, APA, & NCME], 1999), the actual conduct of validity studies for ELL students has been limited.

As a result, the decisions made on the basis of assessments may not be warranted. Not only is the validity of measures of ELP and content performance uncertain, other critical aspects of the ELL assessment process also need attention, such as the initial designation of students as ELL and the redesignation of the students upon achieving English language proficiency. Recent test results of states with large percentages of ELL student populations provide dramatic examples of the urgent need to better understand and improve ELL students' performance. For example, on the basis of test scores in mathematics in the 2003–2004 school year across 48 states, the GAO reported that ELL students' math proficiency level averaged 20% lower than the overall population (GAO, 2006). For the 2005 National Assessment of Educational Progress (NAEP) in mathematics, 46% of Grade 4 ELL students scored Below Basic as compared to 18% of non-ELL students. In Grade 8, 71% of ELL students still scored Below Basic as compared to 30% of non-ELL students (Perie, Grigg, & Dion, 2005). What are the sources of these significant gaps? What role is played by the validity of the assessments for ELL students—for example, do the language demands of content assessments in English underestimate ELL students' accomplishments in subject matter fields? What role might language proficiency play in effective access to instruction and content assessment? What role do other background

> variables play? What is the role of ELL students' opportunities to learn the knowledge and skills measured on assessments? Effective policies and practices for reducing the gap in ELL learning first require the use of valid measures of ELL students' achievement, including both their English proficiency and academic content proficiency. Accurate assessment must undergird any credible analyses of the complex relationships between English proficiency, academic achievement, redesignation criteria, opportunity to learn (OTL), and academic learning, which are essential in understanding and improving ELL students' academic success. Unless these validity limitations of current ELL assessment practices are addressed, researchers' ability to trust and make decisions based on the results of ELL students' performance is sharply reduced (pp. 3-4).

Adding to Wolf et al.'s (2008) concern, Huempfner (2004) noted that despite the fact that most large scale standardized tests were developed to monitor school progress toward standards, they are often used for other purposes. Huempfner goes on to describe the situation in some Chicago Public Schools in which third, sixth, and eighth grade students were required to go to summer school and sometimes held back when they were performing below an established level on a large scale standardized test and the countless numbers of English language learners placed in special needs programs based on their performance on English-language achievement tests. These decisions are based on the assumption that the tests administered are valid for these purposes and for the students involved.

These assumptions are challenged in Figueoroa and Hernandez's (2000) report to the President's Advisory Commission on Educational Excellence for Hispanic Americans, entitled *Testing Hispanic Students in the United States: Technical & Policy Issues*. They noted a number of considerations for test makers. Figueroa and Hernandez reported that these students come to school with varying levels of exposure to and proficiency in English and Spanish. In addition, those student populations came from a variety of linguistic backgrounds and cultures, and their cultural experiences in the United States was broad, multigenerational, and reflected wide variance in acculturation levels, socioeconomic differences, and political power. They also pointed out that in the rush to implement world-class standards supported by systems of accountability in public schools, education leaders have compromised the future of Hispanic students by making high-stakes decisions based on inaccurate and inadequate testing information. Students may be assessed in English with tests they do not understand and/or in Spanish with alternative tests that are less rigorous or valid, and without considering whether the students are receiving instruction in Spanish. The report also noted that neither testing in English or Spanish regardless of student language proficiency or language of instruction produced accurate information about student learning.

Nevertheless, test results are used to make high stakes educational decisions such as graduation, eligibility for special education, grade promotion, and acceptance to higher education (Huempfner, 2004), and these decisions affect the futures of these students. As stakes rise for schools and individuals, it is critical to develop and design assessments and

assessment systems that allow valid decisions to be made for students whose first language is not English.

Bilingual Education Programs: An Additional Challenge for Assessments

Not only is the number of native Spanish speaking students increasing, the number of students enrolled in bilingual education programs is increasing as well. There is an ever-increasing body of research and practice supporting the development of native language literacy and/or development of bi-literacy as an effective and value added approach in leading to the eventual acquisition of proficiency in English (Cummins, 1984; Ramirez et al.1991; Thomas & Collier, 1997, 2002). Bilingual programs in which students receive their literacy instruction in Spanish have proliferated over the past 20 years. The Center for Applied Linguistics (CAL) database indicated that two-way immersion programs alone have increased from 8 in 1980 to 330 in 2006 (CAL, 2007).

Some of these programs have the goal of transitioning students into English, and others are aimed at developing and maintaining literacy in two languages. In her meta-analysis, Willig (1985) noted that although there were few studies that were very well done, the greater the quality of experimental design in the study, the more the study favored bilingual education over English immersion. Likewise, Greene (1998) completed a meta-analysis of 11 studies meeting minimal quality standards for research design. The study compared standardized test scores for 2,719 students, 1,562 of whom were in bilingual programs, from thirteen different states. Tests were generally administered in third grade after two years of bilingual instruction. Results showed that bilingual education students outperformed their peers in English only classrooms on English

measures and the difference in performance was even greater on assessments offered in Spanish. Greene concluded there were slight benefits in achievement for students in bilingual programs when compared to students enrolled in English only instruction.

In their longitudinal study, Ramirez et al. (1991) compared students in structured English immersion, early-exit transitional bilingual, and late-exit transitional bilingual program models designed to support English language learners' development. The results of this study indicated that students participating in late-exit transitional bilingual education programs with consistent primary language instruction outperformed students in structured English immersion and early-exit transitional bilingual programs in the areas of mathematics, reading, and English proficiency.

Ramirez et al.'s (1991) findings were supported and expanded on by the work of Thomas and Collier's (1997, 2001) longitudinal studies that compared the achievement of students in a range of program models. Their results indicated that students in two-way bilingual program models eventually outperformed all other students including their native English peers on tests of English reading and mathematics. Similarly, August and Hakuta's (1997) report, *Improving Schooling for Language-minority Children: A Research Agenda,* studied a range of programs using native language literacy development to support the development of literacy in the second language. Like Ramirez et al. and Thomas and Collier, August and Hakuta's results supported bilingual education. Additionally, in the 2006 *Report for the National Literacy Panel on Language Minority Children and Youth: Developing Literacy in Second-Language Learners,* the panel of researchers found that students instructed in their native language as well as in

English performed better on measures of English reading proficiency than those instructed only in English (August, 2006).

Support for bilingual programs is found in studies that suggest literacy skills and strategies developed in a student's first language (L1) transfer across languages and assist with the development of literacy in the second (L2) (Cummins, 1989; Durgunoglu, 2002; Geva & Wang, 2001; Verhoeven, 1994). This evidence supports the practice of designing programs that include first language literacy development as a basic tenet Cummins (1984, 1989) put forward the *language interdependence principle* positing that a common underlying proficiency makes the transfer of certain literacy skills across languages possible. Verhoeven (1994), in a study with 6-year old Turkish students learning Dutch, demonstrated that this transfer not only occurred, but was bi-directional.

Evidence of first language transfer from Spanish to English was reported by Durgunoglu, Nagy, and Hancin-Bhatt (1993) and by Nagy et al. (1997). These and other studies have also documented the ability of measures of specific early literacy skill development in Spanish, particularly phonological awareness and word reading fluency, to predict later reading ability in both Spanish (L1) and English (L2) (Carlos & Royer 1999; Durgunoglu et al.1993; English, Leafstedt, Gerber, & Villaruz, 2001; Lopez & Greenfield, 2004; Nagy et al. 1997; Nagy & Durgunoglu, 2002). These studies suggest the need for assessments developed specifically to meet the needs of Spanish speaking students receiving instruction in their native language.

Assessing Bilingual Students

Given the proliferation of bilingual programs and what we currently understand about the relationship between first and second language in early literacy development, it is not surprising that the National Literacy Panel on Language-Minority Children and Youth (2006) included a large focus on assessment. States have struggled to develop assessments to meet the needs of language minority students (Baker, Plasenci-Peinado & Lezcano-Lytle, 1998) with the focus of most assessment development on measures of English proficiency. The No Child Left Behind (NCLB) (2002) legislation requires states to annually measure and report the progress of English language proficiency of all K-12 ELL students. This mandate requires states to have a fully operational test in place. The Oregon English Language Proficiency Assessment (ELPA) is such a measure. The ELPA is administered to all ELL students in Oregon, and the results are used in making a range of decisions about students, schools, and districts (Luecht, & Ackerman, 2008). Researchers on the National Literacy Panel on Language-Minority Education and Youth (2006) determined that current assessments for making critical decisions around instruction for English language learners are inadequate, do not generally include the monitoring of student progress over time, and should be conducted in the students' first language as well as in English. The report emphasizes the importance of further research into the development of reliable measures that allow educators to make valid decisions for students developing literacy in two languages.

Although there are studies demonstrating the transferability of skills from Spanish to English and English to Spanish literacy (Durgungolu et al. 1993; Leafstedt & Gerber,

2005), there are also studies providing evidence that differences between Spanish and English orthographies lead to variations in literacy learning and pedagogy for students receiving instruction in Spanish (Alvarez, Carreiras, & Perea, 2004; Carreiras & Perea, 2004; Defior, Martos, & Cary 2002; Huempfner, 2004; Jimenez, Gonzalez, & Garcia, 1995). These *language specific* elements have implications in the development of measures, particularly those such as Curriculum Based Measures (CBMs) that are designed to be sensitive to instruction.

Furthermore, evidence that supports that a common method for developing assessments for students receiving instruction in Spanish (translating the English text to Spanish) is flawed in that the translations generally change the psychometric properties and thus the validity of the assessments (Figeuroa, 1989; Figeuroa & Hernendez, 2000; Huempfner, 2000; Olmedo, 1981). Based on these differences, the prevalence of students receiving literacy instruction in Spanish, and the fact that students are arriving at school with varying levels of bi-literacy, it is logical and important that we consider further developing and adapting CBMs for progress monitoring and instructional decision-making systems in ways that may better predict and inform levels of reading proficiency for bilingual students (Baker, Placencia-Peinado & Lytle, 1998; Geva & Wang, 2001; Gonzalez, Alonzo, & Tindal, 2007; Huempfner, 2004).

Student Progress Monitoring and Curriculum-Based Measures

As the stakes have increased, state accountability systems have been challenged in constructing a reliable large-scale summative test that enables valid interpretations to be made for second language students. Further, school systems have experienced even

greater difficulties in constructing formative assessment systems that can be used for benchmarking and progress monitoring of students in bilingual programs.

Nationally, there are well-established and well-documented measurement systems for screening, diagnosing, and monitoring student progress in developing literacy. The reliability and validity of these measures have been critical to their widespread use and success. Historically, and now with an urgency relative to the stakes attached, the appropriateness of these measures for bilingual students and students receiving bilingual instruction is being questioned.

Over the past decade there has been a strong movement toward *leaving no child behind* in terms of literacy development and in implementing prevention and early intervention strategies supporting all students in becoming proficient readers by the end of third grade (Reading First, 2000). This arena has seen rapidly expanding research and resources supporting the use of curriculum-based measures (CBMs) for screening and student progress-monitoring in early literacy development.

Curriculum-based measurement. Curriculum-based measurement (CBM) is a system of progress monitoring used to enhance the instructional decision-making of teachers and, thereby improve student achievement (Deno, 1985, 2003). The measures in a CBM progress monitoring system are designed to be valid and reliable indicators of proficiency in an academic area as well as being time efficient, easy to score, and easy to understand (Deno, 1985, 2005; Shinn, 1998). Shinn & Bamonto (1998) described the *big ideas* in CBM progress monitoring systems as measures that are (a) reliable and valid for use as dynamic indicators of basic skills, (b) used principally in formative assessment,

and (c) used in a problem-solving approach to making instructional decisions. In a problem-solving approach, schools typically create systems that provide increasing levels of support for greater levels of need. A problem-solving process occurs within each level of the system. It is a collaborative process in which all faculty and staff collect and share data to increase student learning. Teams generally have well-defined roles and responsibilities and clear and measurable outcomes, use research-based interventions and best practices, and monitor student progress to ensure student success.

A large body of research supports the use of CBMs for guiding and evaluating early intervention strategies for the acquisition of basic early literacy skills in English (Kaminski & Good 1998). Based on recommendations of the National Reading Panel (2000), these skill areas include (a) phonemic awareness, (b) knowledge of the alphabetic principle (phonics), (c) fluency with text, (d) vocabulary, and (e) comprehension. Adams (1990) supported this recommendation as well, indicating that phonological awareness, language skills, and awareness of print are the most critical early literacy skills. The primary purpose for the use of CBMs in monitoring early literacy skills is prevention (Kaminski & Good, 1998). Adams (1990) noted that the greatest indicator of whether or not a student would be successful in first grade was what they had already learned about reading prior to getting there.

Curriculum-based literacy measures assess a student's automaticity with (a) phonemic awareness, (b) alphabetic principles, and (c) fluency with connected text and then predict performance on more general outcomes. Typical CBMs for early literacy skills include: (a) letter naming fluency, (b) letter sounds fluency, (c) phoneme

segmentation fluency, (d) word list reading fluency, and/or (e) nonsense word fluency (Good, Kaminski, Simmons, & Kame'enui, 2001). When teachers compare their students' results to norms, these assessments can inform whole class instruction, small group instruction, and individual instruction.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) exemplifies a CBM system that has demonstrated reliability and validity for English speaking students for whom the language of instruction is English (Good, Kaminski, Simmons, & Kame'enui, 2001, Kaminski & Good, 1998, 2002). DIBELS are a set of standardized, individually administered measures of early literacy development. They are designed to be short fluency measures used to regularly monitor the development of pre-reading and early reading skills. There are, however, questions as to the predictive validity of these assessments for measuring early literacy development for English language learners, particularly those receiving literacy instruction in Spanish. Baker, Plasencia-Peinado and Lezcano-Lytle (1998) suggest that the relation between Spanish reading fluency and overall Spanish reading proficiency may have a different psychometric relationship than the relation between English fluency and overall English proficiency.

Many CBMs in use were designed for students receiving instruction in English and were normed primarily on English speaking students. Studies trying to validate decisions based on CBMs for students whose language of literacy instruction is Spanish are rare (Baker & Good, 1996; Baker et al. 1998; Good et al. (1990). The studies available provide insight into design considerations for future assessment development and for research toward more appropriate measures. The validity and general utility of the

Spanish version of DIBELS, called IDELS, for the purpose of predicting Spanish reading proficiency has also been questioned based on assumptions made in regards to the way early literacy skills in Spanish are actually taught and learned (Escamilla, 2000; Huempfner, 2004).

Purpose of this Study

This study was designed to address a gap in the research on curriculum-based measures for English language learners. The purpose of this study was to not only replicate a study by Alonzo, Gonzalez, and Tindal (2008), but to expand the original sampling plan to include native Spanish speaking students. Given the growing number of Spanish-speaking immigrant students, the numbers of students in bilingual programs, and the importance of early literacy development and support for this population of students, it is of critical importance to ensure that there are valid and reliable measures available for screening and progress monitoring systems. Alonzo et al. carried out their original study at a Spanish Immersion School in Eugene, Oregon during the spring of 2007, testing 100 students in first and second grade (50 per grade level). Students in this school were generally native English speakers whose literacy instruction was being delivered in Spanish. The initial findings from that study conflicted with studies of CBM reading measures in use with English-speaking students in regards to measures serving as *best predictors* of general reading outcomes. This conflict, along with the researchers' desire to re-run the study with a sample of native Spanish speaking students, prompted the interest in running a replication study in a district with access to a similar number of

native Spanish speaking students who are also receiving their literacy instruction in Spanish.

In this study, I answered the following two questions:

1) What is the efficacy of the five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level in accounting for the variance in predicting Word Reading Fluency for native Spanish speaking students?
2) What is the efficacy of the five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level in accounting for the variance in predicting Sentence Reading Fluency for native Spanish speaking students?

CHAPTER II

REVIEW OF THEORY AND LITERATURE

The impact of having well-developed systems for the progress-monitoring of early literacy skills and for guiding processes and evaluation of early intervention for struggling readers has been well documented (Deno, 1985, 2003). The No Child Left Behind Act (NCLB) (2002) and the subsequent federal National Reading First initiative requires that scientifically-based practices for instruction and assessment be used when receiving federal school funding. Most *proven* progress-monitoring systems have been designed for students receiving instruction in English, and many of those designed for Spanish speakers have been experimental or found to be flawed (August & Shanahan, 2006; Figueroa & Hernandez, 2000; Olmeda, 1981). Given the increasing number of students receiving early literacy instruction in Spanish, it follows that well-designed progress-monitoring systems and assessments should be available for students in these bilingual programs as well.

Developing Literacy in Two Languages

Over 75% of English language learners in United States schools are Hispanic, with Spanish identified as the home or native language (NCES, 2007), and many are enrolled in programs in which they are systematically developing literacy in two languages. The diversity of these instructional programs and the language proficiencies of

the students in them present challenges to the development of technically adequate (reliable and valid) CBMs for progress monitoring of early literacy skills for these students.

There are a variety of program models that serve bilingual Spanish students learning English as a second language. They broadly fall into the categories of (a) ESL pull-out where students are mainstreamed with their English only peers and pulled out for focused instruction in English language development; (b) transitional bilingual programs in which students receive instruction during some part of the day in their first language with the goal of eventual transition to English only curriculum; (c) one-way developmental bilingual programs in which bi-literacy is the goal and students receive instruction in both languages throughout their schooling; and (d) two-way developmental or dual language programs in which bi-literacy is the goal and Spanish and English students learn side by side, each developing a second language.

Several well-known studies (August, 2006; August & Hakuta, 1997; Cummins, 1989, 2000; Thomas & Collier, 1997, 2001) support the view that English language development in students whose first language is something other than English is best facilitated by first developing strong proficiency in the native or home language. These studies suggest that students can actually develop literacy in two languages without negative effects (and potentially enhanced effects) on the development of proficiency in English (August, 2006; August & Hakuta, 1997; Cummins, 1989, 2000; Ramirez et al.1991; Thomas & Collier, 1997, 2001). Thomas and Collier's (1997) longitudinal study reported that by 8th grade, students in one-way and two-way developmental bilingual

programs actually outperformed the average native English speaker on tests of reading in English. Based on this research, increasing numbers of students in America's schools are enrolled in bilingual programs and receiving early literacy development in Spanish (CREDE, 2007).

The implications for assessment of students developing literacy in two languages are complex. Assessment of students in Spanish bilingual programs presents a number of pedagogical and psychometric challenges for educators. Some researchers have begun to explore this field. Quality assessment practices and instructional interventions in literacy are most likely to occur when they are grounded in a level of understanding of the interactions between the two languages. This includes an understanding and accounting for patterns of early bi-literate skill development, basic differences in the orthographies of the languages of instruction, and the influence of cross-linguistic transfer from Spanish to English and English to Spanish (Bialystok, 2007; Durgunoglu, 2002; Escamilla, 2000; Rolla San Francisco, Carlo, August & Snow, 2006).

For example, Rolla San Francisco et al. (2006) studied the influence of the language of instruction on kindergarten and first grade English monolingual and English-Spanish bilingual students' development of phonological awareness. They found that students whose language of instruction was English responded as English speakers on assessments of phonological awareness regardless of their native language, but those bilingual students for whom Spanish was the language of instruction responded differently and were influenced by their Spanish language knowledge on English assessments of phonological awareness. Evidence indicates that Spanish-English

bilingual students with stronger knowledge of their first language (L1) phonology and orthography use this knowledge on tasks assessing phonological awareness. Awareness of the language interactions involved in literacy development of bilingual students can reduce misinterpretation of errors produced on assessment tasks.

A Theoretical Perspective for Cross-Linguistic Transfer and Assessment

A primary assumption of bilingual education as it applies to learning English is that certain elements of literacy development will have cross linguistic transfer from one language to the other (Cummins, 1979; Durgunoglu et al. 1993; Escamilla, 1992; Geva & Wang, 2001; Leafstadt & Gerber 2005; Verhoeven, 1994). Cross-linguistic transfer refers to the concept that certain skills and strategies developed in one language can influence the language and literacy skills developed in another. Cummins (1979, 2000), for example, argued for a *common underlying proficiency* or *interdependence hypothesis* in which cross-lingual proficiencies promoted the development of cognitive, academic skills. Common underlying proficiency refers to the interdependence of concepts, skills and linguistic knowledge found in a central system.

Cummins (1979, 2000) demonstrated that cognitive and literacy skills established in L1 transferred across languages given sufficient exposure and motivation to learn. This idea is often presented visually as two icebergs representing the two languages, which overlap and share underneath the water line a common underlying proficiency or operating system. Both languages are outwardly distinct but are supported by shared concepts and knowledge derived from learning and experience and the cognitive and linguistic abilities of the learner. He noted *academic* proficiency transferred across

languages such that students who have developed literacy in their first language will tend to make stronger progress in acquiring literacy in their second language. His hypothesis was that for first and second language, academic language skills are developmentally linked to common underlying proficiencies.

Verhoeven (1994) revisited Cummins' (1979, 2000) interdependence hypothesis in her study with six year old Turkish children living in the Netherlands and also found positive evidence of transfer (interdependence) in bilingual children related to pragmatic, phonological, and literacy skills. Her conclusions cited the need to assess and focus instruction on an understanding of the interactions between languages in bilingual students and an understanding of which skills transfer across languages and which skills do not. Denton, Hasbrouck, Weaver, & Riccio (2000) studied of the role of phonological awareness in Spanish and concluded that phonological awareness in Spanish with sensitivity to syllables may be particularly important in later reading success in Spanish. They emphasized the need for more psychometrically sound measures of phonological awareness in Spanish.

Durgunoglu (2002) described research demonstrating that language independent metacognitive processes transfer across languages. These processes included phonological awareness, syntactic awareness, knowledge of genres, and meaning making strategies. She suggested that understanding the relationships between L1 and L2 in these areas can lead to the establishment and use of measures in either language that predicted success in the other (e.g., strong phonological awareness in L1 predicted that this skill will develop well in L2). Leafstedt and Gerber (2005) in their study of 90 native Spanish

speaking students, some enrolled in English only and some in Spanish bilingual programs, determined that students' language of instruction will influence their performance on measures of phonological awareness and word reading.

Based upon Cummins' (1979, 2000), Durgunoglu's (2002), Verhoeven's (1994), Denton et al.'s, (2000), and Leafstedt and Gerber's (1995) call for more sensitive measures of academic proficiency, my dissertation study examined CBMs designed for use with native speakers of Spanish.

Curriculum-based Measurement

Curriculum-based measurement (CBM) is a system of progress monitoring used to enhance the instructional decision-making of teachers and thereby improve the achievement of students (Deno, 1985, 2003). Decisions supported by CBM may include screening for identification, formatively evaluating instruction, determining eligibility for placement in programs, and evaluating the effectiveness of instructional interventions. More recently, CBMs have been used to monitor and measure growth in content areas, to predict success on high-stakes tests, and to assess growth in the acquisition of early literacy skills (Deno, 2003; Kaminski & Good, 2002).

The measures in a CBM progress monitoring system are designed to be valid and reliable indicators of a more general proficiency in an academic area as well as being time efficient, easy to score, and easy to understand (Deno, 1985, 2005). Reliability and validity are critical and primary characteristics of a good CBM. Effective curriculum-based measures are generally short so they may be given frequently, and in this regard the availability of multiple equivalent forms of the CBM is also an important feature. Other

characteristics of quality CBMs are their sensitivity to instruction and changes in student achievement, and their low cost in terms of their creation and production (Deno, 2003, Quenemoen, Thurlow, Moen et al. 2004). Efficient and standard administration is critical as well, and CBMs must be prescriptive in selection, administration, and scoring (Deno, 2003).

Curriculum-based measurement has undergone significant evolution, but began with Deno's work with special education teachers in the early 1970s. A significant amount of research occurred in the late 70s and early 80s when Deno and his team, (Lynn Fuchs, Gerald Tindal, Doug Marston, Steve Robinson, Caren Wesson, and Mark Shinn) under contract from the U.S. Bureau of the Educationally Handicapped, studied the technical adequacy of selected *simple* measures, and further explored their use in educational decision making (Shinn & Bamonto, 1998). Curriculum-based measurement was developed to serve as dynamic indicators of basic skills (Shinn, 1998) and is intended to check the *vital signs* of achievement in critical areas of achievement. CBMs are often referred to as *academic thermometers* (Shinn & Bamonto, 1998). Temperature is used as a critical indicator (and monitored regularly) in medicine regardless of the nature of the visit to the doctor. It is often used as an indicator of whether or not a medical intervention is working. Likewise, a CBM may be used to determine if an academic intervention is working.

DIBELS as a CBM

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is one of the best-known examples of a reading CBM system currently in use in schools around the

country. DIBELS measures were originally created for use with English speaking students receiving instruction in English. Researchers designed DIBELS to be economical and efficient indicators of progress toward more general reading outcomes. These measures were developed to monitor student progress in the development of phonological awareness, alphabetic understanding (phonics), accuracy and fluency reading connected text, vocabulary, and comprehension.

The results of DIBELS assessments can be used to identify students having difficulty acquiring these basic literacy skills and to evaluate the effectiveness of interventions being used to support students. DIBELS measures are designed to measure efficiently and frequently which students may be at risk for not developing the basic skills necessary to be successful readers. DIBELS data can point toward further diagnostic measures and allow for in-time interventions and for evaluation of these interventions in terms of student response to instruction. The measures were developed based on the essential early literacy domains discussed in both the National Reading Panel (2000) report, *Teaching Children to Read, An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction,* and National Research Council (1998) reports. They were designed to assess student development of phonological awareness, alphabetic understanding, and automaticity and fluency with the code of reading English.

DIBELS measures connect to several of the *big ideas* of reading as defined by the National Reading Panel's 2000 report (phonemic awareness, knowledge of the alphabetic principle (phonics), fluency with text, vocabulary, and comprehension). The report has

been used as the basis for the federal Reading First initiative that was part of the NCLB legislation. The DIBELS measures were specifically designed to assess three of the five Big Ideas of early literacy: (a) phonological awareness, (b) alphabetic principle, and (c) fluency with connected text. The measures are linked to one another, both psychometrically and theoretically, and have been found to be predictive of later reading proficiency (Kaminski & Good, 2002). The initial research around DIBELS focused on establishing their technical adequacy for these purposes (Good & Kaminski, 1997; Kaminski & Good, 1996). Each measure has been demonstrated to be a reliable and valid indicator of early literacy development (Good & Kaminski, 2006). They are designed to be formative in nature, and when used as recommended, the results have high levels of predictive validity for student success in reading (Kaminski, Good, Baker et al. 2006).

Oral Reading Fluency and CBM

The most researched, efficient and standardized predictive measure for reading proficiency is oral reading fluency (ORF) (Fuchs, Fuchs, Hosp, & Jenkins 2001; Hasbrouk & Tindal, 1992, 2006; Kaminski & Good, 1998, 2002). Oral reading fluency is the culminating measure of the DIBELS assessment system. The ORF measure has students read an unfamiliar passage of grade-level material for one minute. The final score is the number of words read correctly in that minute. There is a large body of research supporting the relationship between oral reading fluency (ORF) and later success on general tests of reading comprehension, particularly for students in the primary grades (Fuchs et al. 2001; Hasbrouk & Tindal, 1992, 2006; Shinn, 1998). The assumption is that efficient low-level word recognition frees up capacity for higher level,

integrative comprehension processing, thus making the case for oral fluency as a performance indicator for overall reading proficiency.

Similarly, the relationship between phonological awareness and *learning to read* has been clearly demonstrated (Adams, 1990; National Reading Panel, 2000). Measures of phonological awareness can predict later success or difficulty on assessments of word and sentence and fluency (Kaminski & Good, 2002; Kaminski, Good, Baker et al. 2006). In either case, reading development presumes increasing letter, sound, or word recognition speed and fluency which is associated with increasing capacity to give attention to comprehension processing when engaging with text. The efficiency with which a student translates text into spoken sounds/words should then serve as an indicator of the ability to comprehend the text.

My study explored further how curriculum-based measures of phonological awareness may be adapted to meet the needs of language minority students, specifically, students whose native language and language of instruction is Spanish. The literature presents a number of issues related to early literacy assessment, including CBMs for students developing literacy in two languages and strengthens the case for the need for further study in this area.

Problems with Current Assessments for Bilingual Students

A limited, but increasing body of research indicates that assessments designed for use with English speaking populations of students may not be appropriate for students learning English as a second language, particularly those receiving literacy instruction in Spanish. In fact, in their position paper, *Use of DIBELS for Diverse Learners,* the

Dynamic Measurement Group (Kaminski, Good, Baker et al. 2006) stated that DIBELS measures would not be appropriate for students who were receiving literacy instruction in a language other than English. They recommended students be assessed in the language in which they are receiving instruction. Baker, Plascenci-Penado, and Lezcano-Lytle (1998) suggest that their may be a different psychometric relationship between Spanish reading fluency and overall reading proficiency in Spanish than there is between English reading fluency and overall reading proficiency in English. A study by Ramirez and Shapiro (2006) determined that Spanish speaking students in bilingual programs did not learn Spanish at the rate that English speaking students learned English in general education suggesting more research to determine expected rates of gain in reading for Spanish speakers in their native language. Given the importance of a test's ability to predict, it is critical to note Figueroa and Hernandez (2000) also cautioned that predictive validity bias was created because those tests were designed for and normed with monolingual English speakers. Furthermore, those assessments lost predictive validity relative to the amount of exposure the student had to Spanish. The *Standards for Psychological Testing* (Standard 9.3) (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education [AERA, APA, & NCME], 1999) also advised that bilingual students be tested in the language in which they are most proficient. It is important to consider if the relationship between Spanish reading fluency and overall Spanish reading proficiency has a different psychometric relationship than the relationship between reading fluency in English and overall English reading proficiency.

A common assessment solution to the concerns noted above has been to translate tests of English into Spanish. However, analysis of assessments that have been translated from English to Spanish have noted problems with the instruments when they do not take into account the differences between early literacy instruction and development in English and in Spanish and cultural nuances associated with vocabulary and item selection. Olmedo (1981) demonstrated that translated items generally exhibit psychometric properties that are different from those of the original English items, and Figueroa (1990) concluded that these complexities mean that translated test results cannot be interpreted and have little or no validity.

The Standards for Educational and Psychological Testing (AERA, APA, NCME, 1999) addressed the guidelines for testing of students from diverse linguistic backgrounds in Chapter 9. A basic premise is that tests should be constructed and administered in a way that reduces threats to validity and reliability. Standard 9.7 advised that whenever a test was translated, its reliability and validity for the groups and uses intended should be established. Because in norming a test, the item difficulty levels and the actual norms flow from the responses of the norming sample, a translated test does not necessarily create an equivalent or useful instrument. Baker and Good (1995) made note of this in their study of curriculum-based measurement of English reading with bilingual Hispanic students. They cautioned that their curriculum-based measure of Spanish language fluency is translated from the English measure, and warned that the results could vary considerably because of the issues associated with translating words and concepts from one language to another. They further recommended that comparing proficiency across

languages in this way should be done only at a very general level, if at all. (Baker et al. 1998; Escamilla, 2000; Huempfner, 2004).

Phonological Awareness in Early Literacy Progress Monitoring in Spanish

The importance of phonological awareness as a predictor of later success in reading English is well established (Adams, 1990). Phonological awareness has also been determined to be a strong predictor of later reading success in Spanish (Durgunoglu et al. 1993; Leafstedt & Gerber, 2005). Given its prominence as a measured skill in progress monitoring systems for early literacy development in English (Deno 1985; Deno & Fuchs 1987; Good, Simmons, Kame'ennui, Kaminski, & Wallin, 2002; Hasbrouk & Tindal, 1992; Shinn, 1989, 1998), it seems a logical skill to consider in terms of developing valid and reliable instruments for use in the measurement of early Spanish literacy development. Supporting the idea that phonological awareness predicts advanced reading ability are studies by Hogan, Catts, and Little, (2005), Stahl and Murray (2004), and Wagner (2007).

Durgunoglu, Nagy, and Hancin-Bhatt (1993) studied factors influencing English word reading performance of 27 first grade Spanish speaking students who received most of their instruction in Spanish. They found that Spanish word reading and Spanish phonological awareness significantly predicted English word and pseudoword reading. Leafstedt and Gerber (2005) studied 90 first grade Spanish speaking English learners who had participated for two years in programs that differed in their language of instruction. They found that reading instruction in English did not necessarily improve students' phonological skills in English better than reading instruction in Spanish.

Likewise, a study by Stahl and Murray (1994) linked levels of phonological awareness in Spanish to success in reading ability in English and Spanish in native Spanish speaking students. In another study, this one involving 61 native Spanish speaking students living in Mexico City, Good (1990) found that Spanish reading fluency was significantly correlated with all other reading comprehension measures. Evidence of the crossover of phonemic skills as measured by their reading awareness in L2 suggests that these skills are not language specific in children developing literacy. Durgunoglu et al. (1993) investigated L2 (English) word and pseudo-word recognition in L1 (Spanish) beginning readers and found that both phonological awareness and Spanish word recognition levels predicted English and pseudoword recognition. Cisero and Royer (1995) examined crossover of phonological awareness skills in native English and native Spanish speaking first graders and concluded that the ability to isolate initial sounds in L1 predicted that same ability in L2. Riccio et al. (2000) found evidence that performance on phonological subtests of onset, rhyme recognition final phoneme and phoneme/syllable deletion all correlated to L1 Spanish reading fluency and transferred to L2 (English) reading fluency.

Durgunoglu (2002) took the application and significance of this work a step further and made the case that dynamic assessments of L1 early literacy skills provided the basis for determining whether reading difficulties in L2 are due to low linguistic proficiency or more general learning impairments and that proficiencies identified in L1 can be used to facilitate developing proficiencies in L2.

Although a number of studies explored the use of CBMs for Hispanic English language learners (Baker & Good, 1996), few have looked carefully at the validity of curriculum-based measures in Spanish designed for native Spanish speakers who are receiving literacy instruction in Spanish for the purpose of predicting Spanish reading ability (Alonzo, Gonzalez, & Tindal, 2008). It has been demonstrated that, as in English, success on measures of basic early literacy skill development (phonological awareness) in Spanish predicts later reading success in Spanish reading as well as in L2 (English) (Durgunoglu et al.1993).

Spanish and English Orthographies and Assessment

In developing CBMs for progress monitoring in early Spanish literacy development, it is important to consider the similarities, the differences, and the interactions of the Spanish and English languages. The orthographic structure is different in English and Spanish (Bialystok, 2007; Durgunoglu & Oney, 2000). Spanish is almost completely phonetic, while a high percentage of frequently used English words have irregular spellings (Adams, 1990; Baker, Plascencia-Peinado, Lezcano-Lytle, 1998).

Several studies have been designed to shed light on the relationship between differences in the orthographies of the languages and the development of early literacy skills in bilingual students (Bialystock, 2007; Durgunoglu & Oney, 2000; Geva & Siegel, 2000; Geva & Wang, 2001; Goswami, 1999). In these studies, the differences in orthographies are generally described in two ways. The orthography may be as *consistent, shallow, and transparent* as in Spanish, or *inconsistent, deep and opaque* as in English. The following excerpt from Adams' (1990) book, *Beginning to Read* (p. 20),

made the point that written English, despite its alphabetic script, does not have a one-to-one mapping of the letters onto phonemes and helped to exemplify the inconsistent or *deep* orthography of the English language.

Hints on Pronunciation for Foreigners

I take it you already know
Of tough and bough and cough and dough?
Others may stumble but not you,
On hiccough, thorough, laugh and through.
Well done! And now you wish perhaps,
To learn of less familiar traps?

Beware of heard, a dreadful word
That looks like beard and sounds like bird,
And dead: it's said like bed not bead-
For goodness' sake don't call it "deed"!
Watch out for meat and great and threat
(They rhyme with suite and straight and debt.)

A moth is not a moth in mother
Nor both in bother, broth in brother,
And here is not a match for there
Nor dear and fear for bear in pear,

And then there's dose and rose and lose-
Just look them up-and goose and choose,
And cork and work and card and ward,
And font and front and word and sword,
And do and go and thwart and cart-
Come, come, I've hardly made a start!
A dreadful language? Man alive,
I'd mastered it when I was five.
(From a letter published in the Sunday London Times (January 3, 1965) cited by Chomsky, 1970)

Spanish, on the other hand, has a much more consistent and *shallow* orthography (Bialystok, 2007; Geva & Siegel 2000; Geva & Wang, 2001). Geva and Wang (2001) noted that "task demands associated with learning to read in different orthographies vary and yield steeper learning curves" (p. 182). While phonological awareness is well supported as a universal principle in learning to read, because of the nature of the development of phonological awareness, orthographical differences in the languages may influence the nature of early literacy assessment in Spanish in this area. Geva and Wang (2001) suggested that phonological processing skills are relevant for a shorter period when children learn to read in a transparent orthography. Additionally, studies by Escamilla (1992), Huempfner (2004); and Geva and Wang (2001) supported the nature of these orthographical differences and informed assessment development and analysis for students receiving instruction in Spanish.

Evidence increasingly supports the use of measures of syllables rather than phonemes in predicting reading success in Spanish. A study by Alvarez, Correira, and Perea (2004) found evidence that strengthened the view that at least in Spanish, syllables are phonological units critical in word recognition. This evidence caused me to ask if current measures of phonological awareness for students developing literacy in Spanish are the most appropriate.

A recent study by Alonzo, Gonzalez, and Tindal (2008) explored curriculum-based measures for students receiving early literacy instruction in Spanish. The original study was carried out at a Spanish Immersion School in Eugene, Oregon in the spring of 2007, testing 100 students in first and second grade (50 per grade level). Students in this school were generally native English speakers. The study was prompted by teachers working with these students who continued to share their dissatisfaction with the English-language measures being used and supported by available research. These teachers suggested that it might be more appropriate to use a measure of syllables rather than phonemes for students receiving instruction in Spanish.

Alonzo et al.'s (2008) initial findings conflicted with studies of CBM reading measures in use with English-speaking students in finding that a measure of syllable sounds was a better predictor of word and sentence fluency than those of letter sounds and phoneme segments. This discrepancy along with the researchers' desire to re-run the study with a sample of native Spanish speaking students, prompted the interest in running a replication study in a district with a similar number of native Spanish speaking students. Initial findings in the original study indicated that the syllable level measure may be a

more appropriate measure for students receiving instruction in Spanish. However, the sample was made up of primarily English speaking students enrolled in a Spanish immersion program.

Literature Review Summary

As a whole, the literature cited establishes a strong need for continued field testing, data gathering, and analysis of results with curriculum-based measures in early literacy for native Spanish speaking students in bilingual programs (De la Colina, Parker, Hasbrouck, & Lara-Alecio, 2001; Gonzalez et al. 2007; Royer & Carlo, 1991). Many students developing literacy in two languages do so without valid and reliable progress monitoring instruments available. Durgunoglu (2002) reflected on research indicating that language learners, historically over-represented in special education populations, may now be missing opportunities for early interventions. Durgunoglu postulated that educators are reluctant to identify English language learners with special needs until certain levels of linguistic proficiency are developed and expressed the need for further study in this area.

There is evidence supporting the cross linguistic transfer from Spanish to English of skills in phonological awareness and the use of measures of syllable sounds as a strong predictor of word and sentence fluency for students developing early literacy skills in Spanish. These findings make further testing of such instruments with native Spanish speakers an important step in the development of a more reliable and valid measure predicting Spanish reading proficiency. Therefore, this study has the potential to provide

important validation and confirmation of previous research on these curriculum-based measures for early literacy in Spanish.

My study serves to answer the questions:

1) What is the efficacy of the five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level in accounting for the variance in predicting Word Reading Fluency for native Spanish speaking students?
2) What is the efficacy of the five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level in accounting for the variance in predicting Sentence Reading Fluency for native Spanish speaking students?

CHAPTER III

METHODOLOGY

This chapter presents the general methods used in this study and addresses (a) design, (b) setting and participants, (c) instruments, (d) procedures, and (e) data analysis.

Research Design

As this is a replication and extension study, the methodology of the original study was followed with the exception of including native Spanish speaking students in the sample and in considering the influence of these students' level of English proficiency. Students were administered a series of short Spanish-language CBMs by a team of trained assessors. All students were administered the same measures in the same order in a single setting that lasted approximately 4 minutes per student. I used a multiple regression analysis to explore the ability of five independent variables to predict word reading fluency and sentence reading fluency in Spanish with Spanish-as-first-language first- and second-grade students. In the multiple regression analysis, the Word Reading Fluency and Sentence Reading Fluency measures served as dependent variables.

Setting and Participants

The participants in the study included 41 first grade students (24 in a one-way bilingual class, 17 in a two-way immersion class) and 41 second grade students (23 in a one-way bilingual class and 18 in a two-way immersion class). Four 1st graders and four

2nd graders were designated as fluent in English as a second language. Seventeen first graders and 20 second graders were designated as limited English proficient, and 20 first graders and 17 second graders were designated as having negligible English proficiency. Some basic demographics are described in Table 1.

Table 1

Sample Statistics

Subgroup	Grade 1	Grade 2
Total Students	41	41
Males	19	24
Female	22	17
English Proficiency Level		
Fluent English	4	4
Limited English	17	20
Negligible English	20	17

Table 2 summarizes general processes and criteria used in determining the language proficiency code for each student. These processes and assessments are used for determining if a student is eligible for services as an English language learner and to some extent the program placement of the student.

Table 2

Process and Criteria for Determining English Proficiency Level

English proficiency level	How proficiency level was determined.
English is 1st language:	On home language survey, parents' answers to interview questions indicated that the student's first language is English.
Fluent in English as a 2nd language	On home language survey, parents' answers to interview questions indicated that the student's first language is something other than English; however, on initial entry, the student demonstrated via assessment that s/he is also fluent in English as a second language (Students scored 5 on the Pre-LAS English or a 4, 4-5, or 5 on the Woodcock-Munoz Language Survey in English).
Limited English	On home language survey, parents' answers to interview questions indicated that the student's first language is something other than English, and on initial entry and/or most recent assessment the student demonstrated via assessment that s/he is still limited in English as a second language (scoring a 2, 3, or 4 on the Pre-LAS English or a 2, 2-3, 3, or 3-4 on the Woodcock-Munoz Language Survey in English).
Negligible English	On home language survey, parents' answers to interview questions indicated that the student's first language is something other than English, and on initial entry and/or most recent assessment the student demonstrated via assessment that s/he is still limited in English as a second language (scoring a 1 on the Pre-LAS English or a 1 or 1-2 on the Woodcock-Munoz Language Survey in English).

The school setting was a K-5 elementary school located in the Pacific Northwest with 450 students. Approximately 75% of the students in the school are English language learners who speak Spanish as their first language. The school features traditional, one-way bilingual and two-way bilingual classrooms. The teachers in the study averaged 8 years of experience. They followed a well laid out curriculum in Spanish, English, and

for English language development with well-defined minutes of instruction for literacy and instructional materials to be used. All participating teachers used similar methodology and planned together weekly to coordinate curriculum and share student results. All the teachers were native speakers or had native-ability fluency in Spanish.

Instruments

The curriculum-based measures used in this study were developed by researchers at Behavioral Research and Teaching (BRT) at the University of Oregon in 2007. A technical report describing the process used in the development of these measures in available (Gonzalez et al. 2007). The CBMs included four measures of phonological awareness and two fluency measures.

Letter Sounds. The Letter Sounds measure consisted of 40 letters written on a chart (See Appendix A). Students were given 30 seconds to read as many of them as they could.

Syllable Sounds. On the Syllable Sounds test (See Appendix B), students were shown a list of 40 syllables written on a chart and given 30 seconds to read as many of them as they could.

Phoneme Segmentation. The Phoneme Segmenting assessment (See Appendix C) was presented orally. Assessors read a word in Spanish, and the students responded by breaking the word into its constituent phonemes. Students were given 60 seconds to complete this measure.

Syllable Segmentation. The Syllable Segmenting measure (See Appendix D) was presented orally. Assessors read a word in Spanish, and the students responded by

breaking the word into its constituent syllables. Students were given 60 seconds to complete this measure.

Word Reading. In the Word Reading test (See Appendix E), students were presented with a list of words in a chart and given 30 seconds in which to read them. There were 20 possible points on this test.

Sentence Reading. On the test of Sentence Reading Fluency (See Appendix F), students were presented with a list of sentences on a piece of paper and given 30 seconds in which to read them. There were 110 possible points on this test.

English Language Proficiency Assessment (ELPA). The ELPA is a completely web-based assessment that is administered to all English Language Learner (ELL) students in Oregon. The test is designed to measure progress in English language acquisition and proficiency, including academic language skills, over time. The ELPA assesses four domains— listening, speaking, reading and writing—for academic readiness in each of these skill areas. The test is delivered in test forms directed to students in specific grade bands: K-1, 2-3, 4-5, 6-8 and 9-12. The ELPA utilizes a locator phase at the beginning of the test to identify each student's general level of proficiency and then delivers the remaining items at an appropriate level for each student at the beginning, intermediate or advanced proficiency level. This allows the assessment to adjust to each student's general level of proficiency and ultimately improve the test experience for each student.

There are approximately 80-90 items on the test, roughly 20 items in each domain. The ELPA is not a timed assessment, thus each student progresses at his or her own pace. Generally, students will complete the entire assessment in about 60-65

minutes. The ELPA is an across-grade (Kindergarten through 12th Grade), multi-domain assessment covering reading, listening, writing, and speaking. The assessment employs multiple item types including multiple-choice (MC); picture-click (PC); cloze (CZ); elicited information (EI); short-answer (S2), word-builder (WB); and extended response (ER) items.

For purposes of scoring and item analysis, ELPA items can generally be classified into one of two categories: selected-response (SR) or constructed-response (CR). SR items typically provide multiple response options and require the examinee to select one of the options. CR items essentially allow free response, and the response performance is scored by some established rubric. Rubrics can be dichotomous (i.e., correct = 1, incorrect = 0) or polytomous, with scores ranging from 0 to 3 points. The ELPA is also administered as a two-stage computer-adaptive multistage (ca- MST) test (Luecht & Nungester, 1998, 2000; Luecht, 2004). The type of test presents a fixed-length locator block. If an examinee scores poorly on the locator block, (s)he is routed to an easier testlet of items. If an examinee performs extremely well on the locator block, (s)he is routed to an harder block of items; otherwise, the examinee is administered a moderate-difficulty block.

Table 3 provides a brief summary the measures administered in my study.

Table 3

Summary of Measures Administered in This Study

Measure	Brief Description	Time Needed
Letter Sounds	40 letters arranged on a chart	30 seconds
Syllable Sounds	40 syllables arranged on a chart	30 seconds
Phoneme Segmenting	Oral administration; assessor says a word, and student segments into constituent phonemes	60 seconds
Syllable Segmenting	Oral administration; assessor says a word, and student segments into constituent syllables	60 seconds
Word Reading Fluency	40 words arranged on a chart	30 seconds
Sentence Reading Fluency	One page of sentences, ranging in length from just a few words to 14 words.	30 seconds
ELPA	Multi-domain assessment covering reading, listening, writing, and speaking. item types include, multiple-choice (MC); picture-click (PC) items; cloze (CZ) items; elicited information (EI) items; short-answer (S2), word-builder (WB) items; and extended response (ER).	60 minutes

Procedures

Six different early literacy measures were administered to students in the first grade, and six different early literacy measures to students in the second grade. Trained personnel administered all assessments. Assessors were Research Assistants or Research Associates employed by Behavioral Research and Teaching at the University of Oregon. The assessment team was trained and led by a bilingual (English / Spanish) Research

Associate with a Ph.D. in assessment from the University of Oregon. Additional assessors included two who were fluent in Spanish: the Research Assistant who was primarily responsible for developing the measures and a Research Assistant who has lived in Central America for extended periods of time. The fourth member of the assessment team had only rudimentary Spanish language knowledge, but had undergone two hours of intensive instruction on how to administer and score the assessments used in this replication study prior to administering any of the measures. The assessment team leader supervised each member of the assessment team to ensure reliable test administration. Assessments were administered to students individually over the course of one day, with each student participating in testing for a maximum of four minutes.

Data Analysis

I used correlational and regression analysis to determine the strength of the relationships between the measures used in the study. The analysis was extended by using multiple regression to explore the strength of the relationships among the results of these measures and the grade and English proficiency level of the students. I used multiple regression to determine the extent of the relationships between (a) Spanish phonological awareness (letter sounds, syllable sounds, phoneme segmenting and syllable segmenting), and (b) grade level.

CHAPTER IV

RESULTS

Before answering the two research questions, I provide descriptive statistics for this study and analyze the two criterion variables (Word Reading Fluency and Sentence Reading Fluency) for issues of collinearity.

General Performance Levels

I analyzed Word Reading Fluency separately from Sentence Reading Fluency by grade because of significant differences between mean scores. The mean Word Reading Fluency score for first grade ($M = 22.67$, $SD = 7.19$) was significantly lower ($t(90) = -2.00$, $p = .05$) than the mean score for second grade ($M = 25.66$, $SD = 7.17$). The same differences by grade level existed for Sentence Reading Fluency. The mean first grade Sentence Reading Fluency score ($M = 22.89$, $SD = 11.05$) was significantly lower ($t(89) = -4.78$, $p < .0001$) than the second grade score ($M = 35.77$, $SD = 14.53$). Table 4 contains descriptive statistics for all native Spanish speaking students who participated in this study. Data include the mean scores and standard deviations for each of the measures used in the study as well as the range of scores for each of the measures.

Table 4

Descriptive Statistics of Results for Native Spanish Speaking Students

Measure	Count	Mean	Std. Dev.	Minimum	Maximum
Word Reading	78	24.13	7.57	5	40
Sentence Reading	77	30.32	14.47	4	59
Letter Sound	78	15.99	8.88	6	40
Syllable Sound	78	28.28	8.93	4	40
Phonemic Segmentation	78	21.81	8.90	3	46
Syllable Segmentation	78	20.44	4.15	7	34
ELPA	72	501.65	8.65	483	519

Table 5 extends the descriptive statistics for the various measures used in this research for native Spanish speaking students by splitting their mean scores by grade level.

Table 5

Descriptive Statistics of Native Spanish Speaking Students by Grade

Measure	Count	Mean	Std. Dev.	Minimum	Maximum
Word Reading					
First	41	22.90	7.54	5	39
Second	37	25.49	7.47	5	40

Table 5

Descriptive Statistics of Native Spanish Speaking Students by Grade (Continued)

Measure	Count	Mean	Std. Dev.	Minimum	Maximum
Sentence Reading					
First	40	24.13	11.42	5	49
Second	37	37.03	14.56	4	59
Letter Sounds					
First	41	15.61	8.93	6	40
Second	37	16.41	8.93	6	37
Syllable Sounds					
First	41	25.32	9.10	4	40
Second	37	31.57	7.59	7	40
Phonemic Segmentation					
First	41	21.85	9.19	4	46
Second	37	21.76	8.70	3	36
Syllable Segmentation					
First	41	19.83	4.25	7	24
Second	37	21.11	3.98	13	34
ELPA					
First	37	501.84	10.14	483	519
Second	35	501.46	6.87	489	512

Analyzing Variables for Collinearity

I examined the correlations of the adjusted two criterion variables (Word Reading Fluency and Sentence Reading Fluency) for issues of collinearity. The correlation results for the two criterion variables indicated that collinearity was present because of the correlation between Word Reading Fluency and Sentence Reading Fluency, $r = .83$; $r^2 = .69$. Any correlation over .80 may be too closely related to provide useful information and should not be used together in a regression analysis (Abacus Concepts, 1996). Therefore, because the correlation for Word Reading Fluency and Sentence Reading Fluency was above .80, the two criterion variables were analyzed in separate regression analyses.

Efficacy of the Five Variables in Predicting Word Reading Fluency

My first research question asked which of the five variables showed the greatest efficacy in accounting for the variance in predicting Word Reading Fluency for native Spanish speaking students. The question studied the dependent variable of interest, Word Reading Fluency, in relation to each of the five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level.

ANOVA results ($F(5, 72) = 11.784$, $p < .0001$) indicated that one or more of the five independent variables contributed significantly to predicting Word Reading Fluency. Further, the coefficient of determination, $R^2 = .45$, indicated a moderate relationship among the Word Reading Fluency scores and the scores of (a) Letter Sounds, (b) Phonemic Segmentation, (c) Syllable Sounds, (d) Syllable Segmentation, and (e) Grade

Level. In all, 45% of Word Reading Fluency's variability could be explained by those five factors. The Table 6 regression coefficients indicate that two scores were statistically important ($p < .05$) in explaining variation in Word Reading Fluency. Those two scores were Syllable Sounds ($p < .001$) and Syllable Segmentation ($p = .020$). Further, the semi-partial correlations in Table 6 show that Syllable Sounds ($r = .519$) accounted for more of the variance than Syllable Segmentation ($r = .208$).

Table 6

Regression of Word Fluency on the Five Predictors

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
(Constant)	-.832	4.058		-.205	.838
Letter Sound	.038	.080	.045	.483	.631
Syllable Sound	.504	.085	.595	5.940	.000
Phonemic Segmentation	.121	.075	.142	1.611	.112
Syllable Segmentation	.390	.164	.213	2.382	.020
Grade Level	-1.086	1.417	-.072	-.766	.446

The semi-partials were verified by the Beta statistics, which showed that Syllable Sounds contributed about one-half point ($\beta = .504$) and Syllable Segmentation added approximately one-third ($\beta = .390$) to the Word Reading Fluency score. Finally, the moderate R^2 also equated to a large effect size, $ES = .818$ (Soper, 2008). See Table 7 for complete statistics related to the part and partial correlational analysis.

Table 7

Part and Partial Correlations: The Five Predictors of Word Reading

Model	Correlations		
	Zero-order	Partial	Semi-Partial
Letter Sound	.243	.057	.042
Syllable Sound	.616	.573	.519
Phonemic Segmentation	.127	.187	.141
Syllable Segmentation	.313	.270	.208
Grade Level	.172	-.090	-.067

Efficacy of the Five Variables in Predicting Sentence Reading Fluency

The second question asked which of the five variables showed the greatest efficacy in accounting for the variance in predicting Sentence Reading Fluency for native Spanish Speaking students (see Table 8). The question investigated if the dependent variable of interest, Sentence Reading Fluency, had a high linear correlation with any of the five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level for native Spanish speaking students (see Table 9).

ANOVA results ($F(5, 71) = 9.888, p < .0001$) indicated that one or more of the five independent variables contributed significantly to predicting Sentence Reading Fluency. Further, the coefficient of determination, $R^2 = .410$, indicated a moderate relationship among the Sentence Reading Fluency scores and the scores of (a) Letter

Sounds, (b) Phonemic Segmentation, (c) Syllable Sounds, (d) Syllable Segmentation, and (e) Grade Level. As in the earlier analysis, 41% of Sentence Reading Fluency's variability could be explained by those five factors. The Table 8 regression coefficients verified that two scores were statistically significant ($p < .05$) in explaining variation in Sentence Reading Fluency. Those two scores were Syllable Sounds ($p = .001$) and Grade Level ($p = .004$).

Table 8

Regression of Sentence Fluency on the Five Predictors

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
(Constant)	-7.991	8.047		-.993	.324
Letter Sound	.199	.160	.121	1.239	.220
Syllable Sound	.599	.169	.372	3.544	.001
Phonemic Segmentation	.188	.149	.116	1.266	.210
Syllable Segmentation	.495	.327	.142	1.514	.134
Grade Level	8.305	2.819	.289	2.946	.004

Further, the semi-partial correlations in Table 9 show that Syllable Sounds ($r = .323$) accounted for more of the variance than Grade ($r = .268$). The semi-partials were verified by the Beta statistics, which showed that Syllable Sounds ($\beta = .599$) contributed just over half a point and Grade Level ($\beta = 8.305$) contributed approximately 8 points to the Sentence Reading Fluency score. Finally, the moderate R^2 also equated to a large effect size, $ES = .695$ (Soper, 2008).

Table 9

Part and Partial Correlations: The Five Predictors of Sentence Reading

Model	Correlations		
	Zero-order	Partial	Semi-Partials
Letter Sound	.270	.145	.113
Syllable Sound	.533	.388	.323
Phonemic Segmentation	.112	.149	.115
Syllable Segmentation	.261	.177	.138
Grade Level	.448	.330	.268

Summary of Findings

Of the five variables [(a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level], the Syllable Sounds measure was the only variable that predicted student performance on both the Word Reading Fluency and Sentence Reading Fluency measures. Further, student performance on the Syllable Sounds measure was moderately correlated with their performance on both criterion variables.

CHAPTER V

DISCUSSION

The results of this study are discussed here with respect to the research questions asking which of five independent variables: (a) Letter Sounds, (b) Syllable Sounds, (c) Phonemic Segmentation, (d) Syllable Segmentation, and (e) Grade Level, accounted for the most variance on measures of Word Reading Fluency and Sentence Reading Fluency for native Spanish speaking students receiving literacy instruction in Spanish.

Word Reading Fluency

Only two variables accounted for a significant portion of the variance in predicting student performance on the Word Reading Fluency measure. Those statistically important measures were the Syllable Sounds and Syllable Segmentation tests. The moderate R^2 also equated to a large effect size.

Sentence Reading Fluency

Only two variables accounted for a significant portion of the variance in predicting student performance on the Sentence Reading Fluency measure. The two variables that were statistically important in explaining variation in Sentence Reading Fluency were Syllable Sounds and Grade Level. The moderate R^2 also equated to a large effect size.

Limitations

Besides a small sample size, the study had three major limitations: (a) research setting, (b) student instructional focus, and (c) English and Spanish language proficiency.

Research setting. This study focused on native Spanish speaking language minority children in first and second grade, living and schooling in a particular socio-cultural and socio-political environment of the Pacific Northwest. I do not claim that my findings could be generalized to other age groups, geographical regions, school communities, or socio-cultural or political settings.

The four teachers involved in this study had common training in a balanced literacy approach, common curriculum and materials, common proficiency levels in Spanish, and opportunities to collaborate in the design and delivery of early literacy instruction in Spanish (which included an emphasis on the syllable as a unit of phonological awareness). Although this setting added to the potential internal validity of the results of my study, one should question whether the results could be generalized to teachers with differing degrees of training and proficiency levels in Spanish.

Furthermore, my study was conducted with students in Spanish one-way and two-way immersion programs in which Spanish was the language of literacy instruction. Other bilingual program models, such as transitional, simultaneous, or 50-50 type bilingual programs, differ in the amount of English literacy instruction students receive (Ramirez et al. 1991). Therefore, my findings may or may not generalize to other program models.

It is possible that students in programs in which literacy instruction is conducted

in Spanish and English simultaneously would yield more varied results (Durgunoglu et al., 1993; Leafstedt & Gerber, 2005). Bialystock (2007) noted this concern when he stated that as students are exposed to different oral and written forms of their first and second language, identifying components of literacy skill acquisition become increasingly complex. The research around the effects of bilingualism on early literacy development is thin (Bialystock, 2007; Cisero & Royer, 1995; Escamilla 2000), although there is a substantial body of literature that describes this process for monolingual children (Adams, 1990). Bialystock (2007) mentioned the need for research and that studies should not only consider elements of learning to read in the weak language, elements of learning to read in the native language, and elements of becoming fluent in a second language, but also of the effect of bilingualism itself. Bialystok pointed out that all of these elements may develop differently if children are learning two languages in childhood instead of just one.

Geva (1997) found that the best predictor of literacy attainment was general reading ability regardless of language and that reading ability in either language tended to obscure or monopolize the variance in results in one language or another. In agreement, Goswami (1999) provided a good summary of those issues by describing the relationships among different orthographies, different languages within orthographies, and the nature of phonological skills children need to develop to read in each of them. Durgunoglu, (2002), Verhoeven (2000), and Escamilla (2000) declared that the sociolinguistic aspect of literacy development becomes increasingly a factor when students are learning both languages simultaneously as issues of language status, power,

and opportunity for use of the target language play increasing roles in the equation. Bilingualism, therefore, will play a role in learning to read where these language specific skills transfer across languages. Students may encounter interference when learning to read in one of their languages when the two languages are orthographically dissimilar as are Spanish and English (Leafstedt & Gerber, 2005).

Student instructional focus. Students in the second grade of my sample had a full year of literacy instruction beyond the first grade students in my study. The focus of second grade instruction tended to be more fluency-based while first grade instruction focused more on phonological awareness and decoding. My study's results are consistent with other studies in showing that grade plays a significant role in determining or influencing outcomes on fluency measures (Alonzo et al., 2008; Hogan, Catts, & Little, 2005). This finding suggests a decreasing efficacy and utility for measures of phonological awareness as students mature, develop proficiency in phonemic awareness, and teachers focus more on fluency development in their instruction.

Student language proficiencies. The combination of language proficiencies, both Spanish and English, were not accounted for in this study; although results of a single standardized measure of English language proficiency (ELPA) were reported as a demographic variable. Data on each participating student's Spanish language proficiency were not available at the time of data collection.

Geva (1998) observed that in part literacy emerges out of specific knowledge of the linguistic forms and orthographic principles of individual languages and is unique to each of the child's languages. Factors, such as orthographic depth greatly influence

reading acquisition (Durgunoglu, 2002, Geva & Wang, 2001). Earlier, I described Spanish as a shallow or transparent orthography with 27 letters representing 24 phonemes, while English has a deep or opaque orthography with 26 letters representing 40-45 phonemes. Such orthographic depth may determine what strategies children will need to use when learning to read the language and the success they will achieve as they acquire these skills.

Language-specific differences in phonemic sensitivity are pervasive. If different languages generate different levels of phonological awareness, and phonological awareness transfers across languages, then bilingual children who enter school with varying proficiency levels in two languages differ in their accessibility to phonological structure. This may have an overall effect on the acquisition of literacy (Cisero & Royer 1995) and ultimately on the measures used to monitor progress.

The Nature of Bilingual Programs and Early Literacy Skill Development

Research indicates benefits for native Spanish speaking students developing literacy in their first language prior to or while transitioning to literacy in English (Ramirez et al. 1991; Thomas & Collier, 1997, 2001). Reese et al. (2000) demonstrated that children who performed better on Spanish reading measures in Kindergarten were better at maintaining grade-level Spanish reading, were earlier to transition into English and performed at a higher level of English reading later on. Evidence supporting cross language transfer of early literacy skills, such as phonological awareness, from English-to-Spanish and Spanish-to-English supports the use of bilingual models that provide early literacy development in a student's native language (Cisero & Royer 1995; Durgunoglu

et al. 1993; English, Leafstedt, Gerber, & Villaruz, 2001; Leafstedt & Gerber 2005).

Research has also shown that the differences between Spanish and English orthographies result in differences in early literacy skill development and thus the nature of teaching and learning strategies used by teachers and students in early Spanish literacy skill development (Baker, Cummings, Good et al. 2007; Durgunoglu, 2002; Geva & Wang, 2001). Phonological awareness, a critical skill in learning to read, in Spanish is based more on syllable sounds and segments than the letter sounds and phoneme segments taught and learned in English (Alvarez et al. 2004; Escamilla, 2000; Jiminez et al. 1995).

While some argue that the alphabetic nature of Spanish would require the explicit teaching, learning, and assessment of letter sound and phoneme segments (Baker, Cumming, Good, & Smolinski, 2007), my research, and the original Alonzo et al. (2008) study it replicates, hypothesized that native Spanish speaking students receiving their early literacy instruction in Spanish would depend more on syllable sounds and segments than on letter sounds and phoneme segments as they learn to read. These students rely on their Spanish phonological awareness and related instruction in reading. Thus, my belief that curriculum-based measures of phonological awareness more consistent with Spanish phonology (syllable sounds and syllable segments) and orthography (the written symbols) would be better predictors of Spanish reading ability than measures typically used and designed for English speaking students (i.e., letter sounds and phoneme segments) (Kaminski, Good, Baker et al., 2006) Again, my findings supported this language logic. For native Spanish speaking students, Syllable Sounds was the best predictor of word and

sentence reading.

Again, my findings indicate that, of the measures studied, the Syllable Sounds test was the best measure to consider for use in monitoring the progress of native Spanish speaking students enrolled in Spanish bilingual programs in developing the skills they will need to become successful readers in Spanish. It is important to note that this measure is different than the measures of letter sounds and phoneme segments generally reported to be the best predictors of developing English literacy (i.e., letter sounds and phoneme segments). The development of phonological awareness will depend on the language/languages the child speaks, the phonological relationships between the languages, the tasks used for assessment, and the experiences with instruction (Bialystok, 2007). My findings are empirically supported by research showing Spanish orthography is more transparent than English and students tend to progress faster toward Spanish reading than in English (Baker et al., 2007; Geva & Wang, 2001).

The emergence of the Syllable Sounds measure as the best predictor of Spanish word and sentence reading fluency also supports teachers' reports (Alonzo et al., 2008) that early literacy instruction in Spanish takes a different path in terms of the development of phonological awareness and requires a measure for progress monitoring that is different from those typically used in English. Escamilla (1994, 2000) stated that students benefit from instructional environments that promote and take advantage of their Spanish language strengths and conversely that instructionally there is potential to use strategies (used in English) to develop aspects of phonological awareness in Spanish that are not appropriate or necessary for Spanish literacy development.

While Alonzo et al. (2008) considered results at each grade (first and second), my study accounted for the effect of grade level by making that factor an independent variable in the regression model. In deliberating my results regarding the influence of grade level, it is important to ponder the general differences in pedagogy and reading tasks typically observed and reported between first and second grade early literacy instruction. Students in first grade are *learning to read* and tend to focus on decoding, while students in second grade tend to focus on developing fluency (Bialystok, 2007), which helps to explain differences in the influence of Grade Level on performance on Word and Sentence Reading Fluency measures.

Furthermore, because of the shallow nature of the Spanish language, students may be able to move more quickly into word recognition and reading fluency in Spanish, and thus have access to more vocabulary and concepts. Instruction and assessment should reflect this understanding. Durgunoglu (2002) quotes a student from her study who explained that is was easier to read and write in Spanish because "When you read or write something [sic] you just sound it out. When you do it [in] English you have to remember" (p. 167). Geva and Wang (2001) suggested that in Spanish, phonological processing skills are relevant for a shorter period of time. This research may in part explain the reduced efficacy of the Syllable Sounds measure for Sentence Reading Fluency in my study. As mentioned previously, Alonzo et al. (2008) analyzed results by grade level and found that performance on the Syllable Sounds measure was a stronger predictor of performance on the Word Reading measure than on the Sentence Reading Measure at each grade level, but that the Syllable Segmenting was moderately correlated with

performance in second grade. Again, I considered the effect of grade as an independent variable, and results showed that Grade Level did not have a significant role in predicting performance on Word Reading, but it was a significant predictor of performance on the Sentence Reading measure. Grade Level produced a significant effect and accounted for nearly as much of the variance (27%) as Syllable Sounds (32%) for performance on the Sentence Reading Fluency test.

The variance accounted for by Syllable Sound performance was small for Sentence Reading Fluency (32%) compared to Word Reading Fluency (52%). This may indicate a ceiling effect for Syllable Sounds as students mature, increase in grade, become more fluent readers, and fluency becomes the focus of instruction. This transition would be accelerated in Spanish (Durgunoglu, 2002, Geva & Wang 2001) because the Spanish orthographic system is shallow/transparent (almost a one to one correspondence between graphemes and phonemes) and students receiving literacy instruction in Spanish develop word and sentence reading fluency at a faster rate than the typical English speaking student develops fluency in English. This difference can be attributed to English being a deep/opaque language with only about 50% its words spelled the way they sound phonetically. This depth and degree of opaqueness influences the nature and pacing of classroom instruction as well the type of progress monitoring and associated measures that would be most appropriate for use (Bialystock, 2007; Cisero & Royer, 1995; Durgunoglu, 1993; Kaminski et al., 2006).

For students, tests are one of the most important sources of information related to how they are progressing in skill development. Language minority groups have not had the opportunity to participate fully in American society, including educational opportunity, and educational and performance on tests is one of the factors controlling access to opportunity (Figueroa & Hernandez, 2000; Huempfner, 2004; Olmeda, 1981; Valdez & Figueroa, 1989). The *Standards for Psychological Testing* (Standard 9.3) (AERA, APA, & NCME, 1999) make numerous recommendations related to the testing of linguistic minorities. Unfortunately, students bear the weight of misguided assessment systems. As a way to ameliorate this problem, my study evaluated an assessment for the progress monitoring of basic early literacy in Spanish for native Spanish speaking students. Results of my study provide important data on how native Spanish speaking students respond to the assessments, adding significantly to the study by Alonzo et al. (2008).

My study illuminates the need to further our understanding of the differences in developing literacy between bilingual and monolingual speakers and the interaction of the two languages. The most simple assessment tasks, such as reading a list of words, requires that we take into account which words would be especially difficult for students given their primary language and the language of the word list (August & Shanahan, 2006). When considering placement or eligibility for special services, valid and reliable assessments are increasingly critical as access to core instruction and advanced placement may be at risk.

Spanish speaking second language learners bring their own set of language and literacy resources and experiences to the classroom, and many of these resources transfer across languages, some to a greater extent than others. Durgunoglu et al. (1993) showed that phonological awareness and word recognition in Spanish predicted word recognition in English, the second language. Extending this research, Durgunoglu (1998) reported strong correlations between phonological awareness in English and Spanish for bilingual children and significant influences between phonological awareness and word recognition across languages. Developing appropriate assessments to monitor progress for early literacy skill development for these students requires an understanding of the relationships between languages being learned and the language of instruction.

For example, students developing literacy skills in Spanish depend more on syllable sounds and less on letter sounds and phoneme segments for word reading than students learning to read in English. As mentioned, instruction in Spanish generally supports this way of learning. In Spanish, students learn vowels first, then are taught consonants paired with the vowels, then combine these syllables in making words. Teaching the names of letters in Spanish is usually delayed until students have learned the grapheme-phoneme relationship. There are implications for instruction and progress monitoring measures in simply understanding these basic differences between learning to read in Spanish and learning to read in English (where consonants are learned first and the identifying of letter names and letter sounds. These differences provide clues as to why assessments used to gauge language minority students' language proficiency in both

their first and second language tend to be inadequate (August & Shanahan, 2006; Figueroa & Hernandez, 2000; Olmeda, 1981).

Researchers (Baker & Good, 1995; Baker et al., 1998; Kaminski et al., 2006) recommend assessment in both languages or the language of instruction for students involved in bilingual education, but the assessments currently in use (a) have a tendency to focus on English language proficiency, (b) do not measure progress over time, and (c) assume, whether in English or Spanish, pedagogy more consistent with the skills and strategies used in English literacy development rather than Spanish literacy development (August & Shanahan, 2006; Escamilla, 2000; Figueroa & Hernandez, 2000; Huempfner, 2004). Given our understanding of the role of the development of phonological awareness in learning to read (Adams 1990), the relationship between word and sentence reading fluency and eventual success in reading (Crawford, Tindal, & Steiber, 2001; Fuchs, Fuchs, & Hosp, 2001; Hasbrouk & Tindal, 2006), and the success of curriculum-based measures to inform instruction and intervention (Deno 1985, 2003; Kaminski & Good, 1998; Shinn, 1989), it follows that the results of my study, confirming the results of the study by Alonzo et al. (2008) add to the work in the field in the development of curriculum-based measures for Spanish reading.

CBM Predicting Spanish Reading Proficiency

Increasingly, students are learning to read in Spanish prior to learning to read in English or simultaneously (CAL, 2007). The longitudinal study by Cisero and Royer (1995) offered evidence that performance on the initial tasks of phonological awareness in kindergarten predicted performance on the same tasks in grade 1 for the opposite

language. Hence, children who were more adept at isolating the initial sound of a word in kindergarten were generally better in this skill and could apply it to a different language a year later, indicating that an initial proficiency level may be a variable influencing later performance. Measures of phonological awareness in Spanish may be critical components in the identification of children in early grades (i.e., kindergarten, first grade) at risk of developing reading difficulties in Spanish and English. (Denton et al., 2000; Riccio et al., 2001). The results of my study indicate that the measure of Syllable Sounds might serve as a CBM for predicting levels of proficiency in the basic early skills of Spanish reading. The use of such curriculum-based measures for the identification of students with reading difficulties has been effective in supporting timely and early intervention and, thus, preventing future reading difficulties for young children (Deno 1985; Kaminski et al., 2006).

Curriculum-based measures are designed to be short but valid predictors of more general outcomes (Deno 1985; Kaminski & Good, 1998; Kaminski et al., 2002), in this case, overall Spanish reading. Alvarez et al. (2005), Durgunoglu (2002), Geva and Wang (2001), and Escamilla (2000) suggested that word analysis is taught differently in the two languages. In Spanish, there is a focus and sensitivity to the syllable rather than vowel sounds and single-double letter combinations (Escamilla, 2000). Geva and Wang (2001) suggest that these language specific processes should be attended to during instruction and assessment. When language specific tasks for word recognition differ, resulting assessments for progress monitoring should be different as well. Results of my replication study confirm the results of the Alonzo et al. (2008) study. Both studies

indicate that the efficacy of curriculum-based measures of early literacy skills being taught in Spanish are enhanced by using measures of syllable sounds and syllable segments more consistent with the pedagogy that is reported and observed in use in K-2 Spanish classrooms.

My results forewarn users that curriculum-based measures of phonological awareness oriented toward basic English literacy skill development may give a false negative view of Spanish speaking students learning Spanish (Baker & Good, 1994; Escamilla, 2000; Huempfner, 2004; Leafstedt & Gerber, 2005). The evidence from my study suggests that for native Spanish speaking students receiving literacy instruction in Spanish, a measure of Syllable Sounds is the best predictor of the variance in performance on word and sentence reading fluency measures. Research shows that measures of fluency in turn, predict eventual success in general overall Spanish reading (Baker et al., 1998; Fuchs et al., 2001). Further development, field-testing, and use of this and similarly developed measures will be of critical importance to our students receiving literacy instruction in Spanish.

Besides affirming the results of Alonzo et al. (2008), my study's findings provide further evidence that the results hold true when testing a sample of native Spanish speaking students. The development and use of measures developed in Spanish for Spanish speaking students receiving early literacy development in Spanish has the potential to reduce errors observed with native Spanish speakers when measures (such as letter naming, letter sounds, and phoneme segmenting) designed to be consistent with how early literacy skills are taught and learned in English are used exclusively (Baker et

al., 2006; Baker et al., 1998; Escamilla, 1994). The errors such measures induce for Spanish-speaking students tend to misdiagnose students with reading difficulties when the errors could, in fact, be more their use of Spanish phonology and orthography (Carlos & Royer, 1995; Huempfner, 2004). Native Spanish speaking students appear to benefit from assessments that reflect the way early Spanish literacy skills are taught and learned (Baker et al., 1998)

Results of my study raise questions about the utility of the measures related to the maturity of the students and their sensitivity to instruction. Well-designed CBMs are brief, have alternate forms, and are sensitive to small changes in performance (Baker & Good, 1995; Fuchs et al., 2001). My results provide further evidence that when Spanish is the language of instruction, curriculum-based measures of syllable sounds might be the sensitive measures needed for formatively assessing the development of Spanish reading proficiency rather than using the more traditional measures of early literacy skills, such as letter sounds and phoneme segments. As noted earlier, the Syllable Sounds test was the strongest predictor of performance on the Word Reading measure, accounting for 52% of the variance in performance on Word Reading (see Table 6). My claim is reinforced by the Alonzo et al. (2008) study, which found that first grade students' performance on the Word Reading test was highly correlated (R=.87) with performance on the Syllable Sounds test. For students in second grade, the Syllable Sounds test was still positively correlated with performance on the Word Reading test (R = .59), but the correlation was considerably less than for first grade. Alonzo et al. also found that the Sentence Reading test had a strong correlation with the syllable sounds measure (R = .69), while the

Syllable segmenting test was also positively correlated to performance on the Sentence Reading test ($R = .52$). These findings led Alonzo et al. (2008) to suggest that as students mature the syllable segmenting test may become increasingly appropriate.

Furthermore, the significant effect of Grade Level (in essence the effect of being in second grade) in my results can be explained by a possible ceiling effect for the Syllable Sounds measure given the 30 second timing and the proficiency level of the students. Research showing that students may move more quickly through phonological awareness and into word reading in Spanish (Baker et al., 2006; Denton et al., 2000; Durgunoglu, 2002; Geva & Wang, 2001) supports these results. The lower correlations between the Syllable Sounds measure and the Sentence Fluency measure for second grade students as compared to first grade in the Alonzo et al. (2008) study also supports research (Hogan et al., 2005) that as students mature, tests of phonological awareness are less able to predict future success in reading. These results should be considered as curriculum-based measures are being developed in the future in regards to their sensitivity to instruction (Baker et al., 2006; Baker & Good, 1994).

Generally, the results of my study with native Spanish speaking students support the conclusions of all previous research (Alonzo et al., 2008; Baker & Good, 1994; Baker et al., 1998; Escamilla, 1994; Huempfner, 2004; Riccio, 2001; Royer & Carlo, 2001; Valdes & Figueroa, 1994), indicating that assessments widely in use, such as DIBELS or IDELS may not be as valid for students receiving early literacy instruction in Spanish, rather than English, and that further development and field testing of more appropriate measures is essential.

Future Research

Based upon my findings and the findings of prior research, I would propose several follow-up research projects: (a) a kindergarten project, (b) a grade one / two research project, and (c) a project to assess bilingual program models for comparability on Spanish CBMs.

Increase Sample Size and Include Kindergarten in Developing Spanish CBMs

Typical CBMs for early literacy skills in English include: (a) letter naming fluency, (b) letter sounds fluency, (c) phoneme segmentation fluency, (d) word list reading fluency, and/or (e) nonsense word fluency (Good et al., 2001). By comparing results to norms, CBM results can inform whole class, small group, and individual instruction. In English, these assessments are recommended for kindergarten and first grade students.

I have cited literature that provides evidence that because of its orthography, students *learn to read* in Spanish more quickly than English speakers *learn to read* in English. Based upon my current research, I propose that future research should include testing the Syllable Sounds and Syllable Segments measures at kindergarten and increasing the first and second grade sample sizes to a level at which the results may be analyzed by grade with increased power. Procedures such as test-retest should be incorporated to establish reliability for these measures. This research should lead to the eventual development of kindergarten and first grade norms on these measures for the purpose of developing and piloting decision rules informing instruction and intervention necessary to support students' early literacy development in Spanish.

Increase Sample Size and Develop Grade 1-2 Spanish CBMs with Connected Text

The measures of phonological awareness in Spanish (syllable sounds) used in my study were designed to predict performance on measures of reading fluency. Research supports the relationship between oral reading fluency and later success on general tests of reading comprehension, particularly for students in the primary grades (Fuchs et al. 2001; Hasbrouk & Tindal, 1992, 2006; Shinn 1998). De la Colina et al. (2001) found in their study with first and second Spanish speaking students in bilingual classrooms, that literacy development, as measured by oral reading fluency and comprehension measures, was improved when an intensive fluency intervention was provided. The study supports the recommendation for the development of Spanish CBMs that can improve a school's ability to detect reading difficulties, provide intervention, and generate accurate feedback regarding the effectiveness of the intervention. In regards to developing early literacy in Spanish, I suggest that future research focus on expanding measures of fluency upward from first grade. Research should evaluate whether Spanish first and second grade measures (under development) could parallel the types of CBMs used for English speaking first and second grade students. The focus of these Spanish CBMs would be more on word and sentence fluency and fluency with connected text and should be developed with sensitivity to expected rates of progress for Spanish speaking students reading in Spanish.

Test Measures with Students in Other Bilingual Program Models

Finally, future research should expand the sample to native Spanish speaking students who are receiving bilingual instruction in program models outside of immersion

models. This would include exploring the efficacy of the measures in 50-50 type programs and other models in which Spanish and English literacy are being developed simultaneously. This would have the potential of increasing the utility of the measures and the ability to generalize these results to a more varied group of students receiving early literacy instruction in Spanish.

APPENDIX A

LETTER SOUNDS

Letter Sounds

Student: _____ School: _____

Grade: _____ Date: _____ Assessor: _____

Procedures

Place the probe marked "Letter Sounds Student Copy" in front of the student.. Read the directions to the student

Directions

"Cuando yo digo empieza, dí el sonido que cada letra hace. Empieza con la primera línea y después lee las líneas siguientes." Demonstrate by sweeping your finger from left to right across the first row. **"Después de terminar una línea, mueve a la próxima línea."** Demonstrate. **"Si no sabes un sonido, debes decir 'No sé' y continuar con la próxima letra. ¿Tienes alguna pregunta?....¿Estás listo/a?...Empieza."** Stop the test after ***30 seconds.***

Scoring

If student:

- Says letter name instead of sound, say **"¿Puedes decirme cuál sonido la letra hace?"** If student says letter name again, count as incorrect.
- Self corrects, write S.C. above letter and count as correct.
- Says incorrect letter sound, slash through letter, write the response above and count as incorrect.
- Hesitates more than 3 seconds, supply the letter and count as incorrect.
- Skips letter, circle the letter and count as incorrect.
- Clearly loses his/her place, point to the next letter.
- Says one of multiple correct letter sounds, count as correct. (e.g., for the letter *g*, either /g/ or /h/ is acceptable.)

A	**e**	**S**	**I**	**a**	**O**	**R**	**d**	**8**
I	**n**	**D**	**R**	**ll**	**t**	**u**	**L**	**16**
c	**M**	**P**	**T**	**Ch**	**U**	**ñ**	**b**	**24**
J	**g**	**rr**	**X**	**y**	**h**	**V**	**x**	**32**
q	**F**	**Z**	**Br**	**pl**	**Fl**	**gl**	**Cr**	**40**

 # Correct _____/40

APPENDIX B

SYLLABLE SOUNDS

Syllable Sounds

Student: _____ School: _____

Grade: _____ Date: _____ Assessor: _____

Procedures

Place the probe marked "Syllable Sounds Student Copy" in front of the student. Read the directions to the student

Directions

"Cuando yo diga empieza, dí el sonido de cada sílaba. Empieza con la primera línea y después lee las líneas siguientes." Demonstrate by sweeping your finger from left to right across the first row. **"Después de terminar una línea, mueve a la próxima línea."** Demonstrate. **"Si no sabes una sílaba, debes decir 'No sé' y continuar con la próxima sílaba . ¿Tienes alguna pregunta?....¿Estás listo/a?...Empieza."** Stop the test after ***30 seconds.***

Scoring

If student:

- Self corrects, write S.C. above syllable and count as correct.
- Says incorrect syllable, slash through syllable, write the response above and count as incorrect.
- Hesitates more than 3 seconds, supply the syllable and count as incorrect.
- Skips syllable, circle the syllable and count as incorrect.
- Clearly loses his/her place, point to the next syllable.
- Says one of multiple correct syllable sounds, count as correct. (e.g., for the syllable *ra*, either /ra/ or /rra/ is acceptable.)

Da	**se**	**So**	**ri**	**pa**	**To**	**Ra**	**du**	**8**
Chi	**ni**	**De**	**ru**	**lla**	**ti**	**nu**	**Le**	**16**
co	**Ma**	**po**	**Te**	**Chu**	**Lu**	**ñi**	**ba**	**24**
Ju	**ge**	**rro**	**Xi**	**ya**	**hu**	**Vi**	**xa**	**32**
que	**Fu**	**Za**	**Bro**	**ple**	**Fli**	**gla**	**Cru**	**40**

 # Correct _____/40

APPENDIX C

PHONEME SEGMENTING

Phoneme Segmenting

Student: _____ School: _____

Grade: _____ Date: _____ Assessor: _____

Say to student: **Voy a decir una palabra y debes responder con todos los sonidos que oyes en la palabra. Por ejemplo, si digo *bota*, debes decir /b/ /o/ /t/ /a/. Si digo *pan*, debes decir /p/ /a/ /n/. Si digo *gato*, debes decir /g/ /a/ /t/**

Give the student 3 practice trials using *me, dos*, and *sino*. After each response, provide the student with feedback by saying '**correcto**' or '**incorrecto**.' For incorrect responses, give the student the correct response before going to the next practice item. After the three trials, begin the test. Stop the test after ***30 seconds***.

Item	Teacher Says	Student Says	Number Correct
1	mesa	/m/ /e/ /s/ /a/	___ / 4
2	llena	/ll/ /e/ /n/ /a/	___ / 4
3	para	/p/ /a/ /r/ /a/	___ / 4
4	luto	/l/ /u/ /t/ /o/	___ / 4
5	cama	/c/ /a/ /m/ /a/	___ / 4
6	canto	/c/ /a/ /n/ /t/ /o/	___ / 5
7	felina	/f/ /e/ /l/ /i/ /n/ /a/	___ / 6
8	cielo	/c/ /i/ /e/ /l/ /o/	___ / 5
9	partido	/p/ /a/ /r/ /t/ /i/ /d/ /o/	___ / 7
10	abeja	/a/ /b/ /e/ /j/ /a/	___ / 5

Total Number Correct ___ / 48

APPENDIX D

SYLLABLE SEGMENTING

Syllable Segmenting

Student: _____ School: _____

Grade: _____ Date: _____ Assessor: _____

Say to student: **Voy a decir una palabra y debes responder con las sílabas que oyes en la palabra. Por ejemplo, si digo *cama*, debes decir /ca/ /ma/. Si digo *agua*, debes decir /a/ /gua/. Si digo *escuela*, debes decir /es/ /cue/ /la/.**

Give the student three practice trials using *hijo*, *puerta* and *pareja*. After each response, provide student feedback by saying **'correcto'** or **'incorrecto.'** For incorrect responses, give the student the correct response before going to the next practice item. After the three trials, begin the test. Stop the test after ***30 seconds***

Item	Teacher Says	Student Says	Number Correct
1	masa	/ma/ /sa/	___ / 2
2	llano	/lla/ /no/	___ / 2
3	pero	/pe/ /ro/	___ / 2
4	lata	/la/ /ta/	___ / 2
5	como	/co/ /mo/	___ / 2
6	conta	/con/ /ta/	___ / 2
7	fulano	/fu/ /la/ /no/	___ / 3
8	ciega	/ci/ /e/ /ga/	___ / 3
9	portado	/por/ /ta/ /do/	___ / 3
10	abajo	/a/ /ba/ /jo/	___ / 3

Total Number Correct ___ / 24

APPENDIX E

WORD READING

Word Reading

Student: _____ School: _____

Grade: _____ Date: _____ Assessor: _____

Place the student copy of the Word Reading test in front of the student. Say, **Favor de leer esta lista de palabras. Lee la primera línea de izquierda a derecha y después lee las líneas siguientes.** (Demonstrate by sweeping your finger from left to right across the first row and then sweeping across the second row of words.)

If the student self-corrects, write S.C. above the word and count it as correct. If the student says the incorrect word, mark a ~~slash~~ through the word and count it as incorrect. If the student hesitates for more than 5 seconds, supply the word and count it as incorrect. If the student skips a word, circle the word and count it as incorrect. ***Stop the test after 30 seconds.***

sí	más	con	vez	qué	5
casa	como	mamá	rojo	solo	10
estoy	porque	algo	donde	cuando	15
ahora	había	siempre	también	mientras	20
cita	cheque	justo	pequeño	gigante	25
visita	caballo	grande	afuera	chivo	30

Total Words Read _____

APPENDIX F

SENTENCE READING

Sentence Reading

Student: _____ School: _____

Grade: _____ Date; _____ Assessor: _____

Place the student copy of the Sentence Reading Assessment in front of the student. Say, **Favor de leer estas oraciones. Cuando termines con una oración, continúa con la siguiente.** (Demonstrate by moving your finger from the first sentence to the second.) **¿Estás listo/a? ¿Tienes alguna pregunta? Empieza.**

If the student self corrects, write S.C. above the word and count it as correct. If the student says an incorrect word, mark a ~~slash~~ through the word, and count it as incorrect. If the student hesitates more than 3 seconds, supply the word and count it as incorrect. If the student skips a word, circle the word and count it as incorrect. ***Stop the test after 30 seconds.***

El pato nada.	__/3
El niño necesita dormir.	_/4
El perro ladra mucho.	_/4
La gallina pone huevos.	_/4
Quiero encontrar un conejo bonito.	/5
Juan y yo bailamos y cantamos.	_/6
Tengo una cita con el señor.	/6
Puedes tomar leche con tus uvas.	_/6
Sí, tienes que ayudar a tu mamá.	_/7
Quieren comer en la casa con su papá.	_/8
Hay muchas estrellas en el cielo esta noche.	_/8
¿Quién es ese hombre con la cabeza grande?	/8
Mi tío llama a mi abuelo todos los días.	/9
Ella quiere ir al cine también, pero no quiere pagar.	/10
Estoy triste porque todos mis amigos viven en otra ciudad.	/10
Mi hermano es muy alto y corre tan rápido como un zorro.	/12

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