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Abstract

The purpose of the current study was to examine the relationship between English oral language proficiency and English early literacy skills. It was hypothesized that English oral language proficiency would significantly predict later English early literacy skills. Likewise, it was hypothesized that English early literacy skills would significantly predict later English oral language proficiency. Measures of English oral language proficiency and English early literacy skills were collected at three time points. Participants \((N = 31)\) were in Grades 1 through 3, identified as Mexican, spoke Spanish as their first language, and attended a Migrant Education Program. Multiple regression analyses were used to investigate the relationship between English oral language proficiency and English early literacy skills over time. When controlling for the variance accounted for by age and the previous measure of literacy outcomes, English oral language proficiency was not a significant predictor of later literacy outcomes. Previous measures of English early literacy skills accounted for the most variance. Likewise, when controlling for the variance accounted for by age and the previous measure of English oral language proficiency, English early literacy skills were not significant predictors of later English oral language proficiency. Previous measures of English oral language proficiency outcomes accounted for the most variance. Age also was found to be a significant predictor of later language and literacy outcomes. Future directions for research are discussed.
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Introduction

Researchers and practitioners have recognized the significant need for effective early literacy instruction and assessment for students identified as English Language Learners (ELLs; August & Hakuta, 1997; August & Shanahan, 2006). For example, the National Research Council and Institute of Medicine formed the Committee on Developing a Research Agenda on the Education of Limited English Proficient and Bilingual Students (NRC LEP Committee) that reviewed student assessment as part of its charge (August & Hakuta, 1997). The NRC LEP Committee members concluded that methods used to place ELLs in language education programs and to monitor ELL achievement varied across states and school districts. Furthermore, these methods ranged from a review of student demographic information (e.g., report of home language different from English) to an administration of informal and formal English language tests (August & Hakuta, 1997). A separate report released by the National Literacy Panel on Language-Minority Children and Youth (August & Shanahan, 2006), concluded formal reading assessment methods inadequately measure ELL literacy strengths and weaknesses.

The NRC LEP Committee outlined three directions for future research: (a) further examination of the relationship between student English proficiency and student performance on subject matter tests, (b) development of common benchmarks of English proficiency and English subject matter for language minority students, and (c) examination of the relationship between benchmarks in English proficiency and performance standards for English-language arts (August & Hakuta, 1997). In sum, the NRC LEP Committee recommended the completion of future studies to examine
assessment methods used to measure ELL language proficiency and academic achievement.

Assessment moved to the national forefront when The No Child Left Behind Act of 2001 (NCLB) was passed into federal law. Although there is variability in ELL assessment procedures across school districts, the most common approach to language program placement is the administration of language proficiency tests in English (Fleishman & Hopstock, 1993). As in mainstream classrooms, student progress is measured and monitored within language programs to determine student achievement level within the curriculum. Teachers have traditionally monitored student progress within their classrooms, but the current emphasis on assessment and accountability has extended this responsibility to other school professionals. Specifically, school psychologists currently conduct assessments to not only determine academic deficiencies but also provide recommendations that can be used to directly influence instructional programs. One way to link assessment to classroom instruction is by monitoring student progress in the curriculum.

Research evidence has shown a relationship between the use of Curriculum Based Measurement Reading (CBM-R) and reading achievement gains for monolingual English-speaking students. Two commonly administered CBM-R tasks require a student to read a passage aloud within a specified time limit (i.e., oral reading fluency; ORF; Fuchs & Fuchs, 1993) or to decode nonsense words (i.e., nonsense word fluency; NWF; Good & Kaminski, 2002). The use of CBM-R with ELLs has been suggested as a reading assessment alternative to standardized reading tests (August & Shanahan, 2006; Bentz and Pavri, 2000).
Curriculum based measurement is a specific type of the more broadly defined Curriculum Based Assessment (CBA). The most notable difference between CBA and CBM is that CBA is not conducted using a standardized method to assess a student’s level of achievement (Fuchs & Deno, 1994), and CBM is a standardized measure of student performance within the curriculum (Shinn, 2002). Furthermore, Fuchs and Deno (1994) suggested that it is more informative to use comparable materials that represent the entire curriculum for a school year rather than curriculum materials that represent varying points of mastery for a school year; this approach is referred to as General Outcome Measurement (GOM). General outcome measurement provides a dynamic assessment of a student’s progress toward a long-term instructional goal (e.g., reading).

Use of CBM and GOM with ELLs: Key Studies

Baker and Good (1995) examined the reliability, validity, and sensitivity of Curriculum Based Measurement Reading scores, specifically CBM-ORF in English, with bilingual students. Participants included 76 second-grade students who identified as bilingual ($n = 50$) or English only ($n = 26$; EO). Results indicated that students in the EO group and bilingual group did not differ significantly on number of words read correctly throughout the data collection period (Baker & Good, 1995). Alternate-form reliability coefficients for CBM-ORF scores indicated that the results were stable, and strong correlation coefficients were observed between CBM-ORF scores and the Stanford Diagnostic Reading Test (SDRT) pretest and posttest reading comprehension subtest scores for bilingual students. Discriminant construct validity between Language Assessment Scale (LAS) scores and CBM-ORF scores indicated a moderate relationship.
Baker and Good (1995) concluded that CBM-ORF scores were a reliable and valid measure of bilingual student reading progress. This conclusion should be interpreted cautiously due to limitations noted by the authors such as heterogeneity of language proficiency among participants and instrumentation used to measure language proficiency. The identified limitations support the need for future studies that examine the use of CBM-ORF with students with similar first and second language backgrounds.

Graves, Plasencia-Peinado, Deno, and Johnson (2005) conducted a study, which examined the reading achievement scores of first grade ELLs. Also, Graves et al. examined the relationship between first grade GOM-ORF scores and Kindergarten English language proficiency scores. The authors collected General Outcome Measurement-Oral Reading Fluency (GOM-ORF) scores and nonsense word fluency (NWF) scores from 77 first grade students identified as ELLs.

Graves et al. (2005) concluded that GOM scores were sufficiently sensitive to detect growth in the reading performance of ELLs. Also, a small correlation coefficient was observed between language skills and GOM scores. Graves et al. noted the limitation of using outdated language proficiency scores when examining the relationship between language proficiency and reading performance. They suggested future studies may want to include current English language proficiency scores to determine if a stronger correlation exists between English language proficiency scores and GOM scores (Graves et al.).

**Rationale for the Current Study**

A primary role for a school psychologist is conducting psychoeducational evaluations to determine a student’s eligibility and need for special education. The
evaluation process is multidisciplinary in that a variety of professionals contribute
information about the student’s academic, social-emotional, and developmental
functioning. A school psychologist is required to review the information to determine the
presence of a disability as outlined in federal and state law. If evaluation results support
the presence of an educational disability, then the school psychologist reviews the data to
determine if there is a need for specially designed instruction.

Sattler (2001) outlines four pillars of assessment: norm-referenced tests (e.g.,
intelligence tests), informal assessment (e.g., GOM), observation, and interview. Each
pillar is required in order to conduct a comprehensive evaluation and minimize inherent
limitations in the evaluation process. Nonetheless, culturally and linguistically diverse
students continue to be represented disproportionally within special education (Ochoa,
2005). Researchers and clinicians have offered various guidelines for conducting
psychoeducational assessment for ELLs while at the same time, acknowledging the need
for future research in areas of assessment and instruction (Rhodes, Ochoa, & Ortiz,
2005).

In response to this need, as part of my school psychology doctoral training, I
chose to complete a Specialization in Culture and Language Education (SCALE)
fellowship. The training required the completion of coursework in the areas of applied
linguistics and ESL instruction and the completion of a 9-month practicum in an
elementary ESL classroom.

During the completion of my school psychology coursework and subsequent
SCALE experiences, I increased my cultural awareness. As a White woman who speaks
predominantly English, I realized that I needed to make a conscious effort to understand
the experiences of students who are acquiring the English language and familiarizing themselves with the cultural expectations of the U.S. education system. By increasing my understanding of the second language acquisition process, I gained insight about student behavior (e.g., the silent period; Ochoa, 2005). Furthermore, acquiring knowledge about the second language acquisition process assisted me with the interpretation of assessment data. For example, a below grade-level reading score may indicate that a student is at-risk for learning to read; however, the student may be a proficient reader in her first language and learning to read in a second language. In the latter instance, the reading score may not represent a deficit; rather, it indicates that she may need time to apply first language reading skills to her second language.

While I recognize that my primary area of training is not as an ESL teacher or as an expert in the area of bilingualism, as a school psychologist, at times, I am required to make educational placement decisions for culturally and linguistically diverse students. The educational opportunities afforded to me during my training expanded my knowledge base of first and second language acquisition and ESL instruction. Furthermore, I gained insight as to how to apply existing psychoeducational practices within the context of first and second language acquisition, and I developed my dissertation research interests.

In an effort to address a small component of assessment practices, instructional strategies, and the communication of ELL educational performance with integral stakeholders (parents, teachers, and administrators), I decided to examine the use of GOM with ELLs. Specifically, I chose to study English GOM indicators and ELL oral English language development because in Pennsylvania school districts, teachers use the
English language to instruct ELLs. Moreover, various school professionals (e.g., teachers and reading specialists) use GOM to monitor ELL and monolingual student progress, to make decisions regarding the need for intervention, and to support decisions for psychoeducational assessment.

Initially, I had planned to examine the validity evidence for the use of GOM with ELLs and to examine the growth rates of ELL English Reading scores and English oral language proficiency scores over the course of 1 school year. Following my dissertation proposal meeting, I refined the purpose of my study to focus on English oral language proficiency scores as a predictor of growth in English early literacy scores. For 2 years (May 2007 – May 2009), I contacted administrators who worked within school districts serving large populations of ELLs. In Fall 2009, prospective participants were identified ($N = 100$). Due to the reduced numbers of prospective participants, I revised the purpose of my study to focus on the examination of the reciprocal relationship between English oral language proficiency and English early literacy skills. Prior to data collection (Fall 2009), members of the school district research review board denied my formal request to complete my project at the identified elementary school. In January 2010, I secured approval from an alternate research site (Migrant Education Program). Data collection commenced in February 2010.

**Purpose of the Current Study**

The purpose of the current study was to examine the relationship between English oral language proficiency and English early literacy skills. Research studies employing general outcome measurement of early literacy skills with ELLs is limited; however, results provide direction for future studies investigating the use of GOM for students
within this population. For example, researchers who have examined ELL English reading performance using CBM or GOM oral reading fluency (ORF) and nonsense word fluency (NWF) scores have identified limited measures of their participants’ English oral language proficiencies (Baker & Good, 1995; Graves et al., 2005) as a significant limitation. Other studies have not addressed English oral language development when examining the predictive power of ELL English GOM-ORF scores on state academic assessment performance (Wiley & Deno, 2005). Therefore, the current study measured concurrently student EOLP and EELS.

In sum, the current study investigated the reciprocal relationship between English oral language proficiency and English early literacy over time. It was hypothesized that English early literacy skills are a significant predictor of later English oral language proficiency. Also, it was hypothesized that English oral language proficiency is a significant predictor for later English early literacy skills.
Literature Review

A discrepancy exists between the academic achievement of students identified as ELL and students identified as monolingual in English (Ochoa, 2005). For example, on statewide assessments of English reading comprehension, only 16% of ELLs scored above the state requirements (Kindler, 2002). Furthermore, retention and drop-out rates are higher for ELLs when compared with monolingual peers (Kindler). These trends have led to the development of a national effort focused on the examination of assessment methods used to measure the academic achievement of linguistically diverse students.

One national committee, The National Research Council and the Institute of Medicine, formed the Committee on Developing a Research Agenda on the Education of Limited English Proficient and Bilingual Students (NRC LEP Committee) to review student assessment as part of its charge (August & Hakuta, 1997). The NRC LEP Committee identified assessment methods used to place ELLs in special programs (e.g., English as a Second Language; ESL) and to monitor their progress within the programs; these methods included a review of student demographic information as well as informal and formal testing. Although researchers, practitioners, and national organizations have not reached a consensus on assessment methods to use with linguistically diverse students, they have a professional responsibility for ensuring that methods are valid and reliable (August & Hakuta).

Educational services delivered to ELLs are intended to integrate knowledge of language proficiency and academic achievement. The most common approach to language program placement is the administration of language proficiency tests in English (Fleishman & Hopstock, 1993). Within language program classrooms, student
progress is measured and monitored to determine student achievement level within the language curriculum. Bentz and Pavri (2000) suggested the use of Curriculum Based Measurement (CBM) with ELLs based upon research evidence that has indicated a relationship between use of CBM and achievement gains for monolingual English speaking students.

Curriculum based measurement is a specific type of the more broadly defined Curriculum Based Assessment (CBA). Fuchs and Deno (1994) identified the limitations of CBA: (a) varying degrees of difficulty found in curriculum texts, (b) interference of student familiarity with actual student knowledge, and (c) failure to demonstrate reading success outside of the curriculum. As an alternative to CBA, Fuchs and Deno suggested an approach called General Outcome Measurement (GOM). An evaluator employing GOM uses comparable materials that represent the entire curriculum for a school year as opposed to using curriculum materials that represent varying points of mastery throughout a school year (Fuchs & Deno). Furthermore, GOM provides a dynamic assessment of a student’s progress toward a long-term instructional goal (e.g., reading).

Assessment practices used with ELLs can be described as an intersection of multiple disciplines. As such, the following literature review provides an overview of the information to consider in the assessment and interpretation of academic achievement for students identified as ELLs. Several relevant literatures were reviewed: (a) demographic information and current definitions used to describe linguistically diverse students, (b) language proficiency definitions and measurement approaches, (c) primary and secondary language acquisition theories, (d) language education and assessment practices with linguistically diverse students, (e) use of CBM and GOM with monolingual English-
speaking and linguistically diverse students, and (f) measurement considerations for second language research.

Language Considerations

Diversity in U.S. Schools

The U.S. Census Bureau reported 38.5 million people or 12.5% of the total United States population as foreign born in 2009 (Grieco & Trevelyan, 2010). Foreign born refers to individuals who were not U. S. citizens at birth and includes individuals who have become U.S. citizens through the naturalization process (Grieco & Trevelyan). Native born refers to a person who was born in the United States (i.e., mainland or U.S. territories such as Puerto Rico) or who was born abroad with at least one parent being a U.S. citizen (Grieco & Trevelyan). Among the foreign born population in 2009, individuals born in Latin America represented the largest percentage (53.3%) followed by Asia (27.7%), Europe (12.7%), Africa (3.9%), and other areas (2.7%; Grieco & Trevelyan). The U.S. school-age population reflects these distributions. Specifically, in 2008, 21% of children aged 5- to 17-years-old spoke a language other than English in their homes (Aud et al., 2010). Languages included Spanish (75%); Sino-Tibetan, Austroasiatic, or Austronesian (12%); Indo-European (e.g., French; 10%), and other languages (3%; Aud et al.). Approximately 10.7% of students enrolled in pre-kindergarten through 12th grade in U.S. public schools were identified as English [Language] Learners (National Clearinghouse for English Language Acquisition, 2010).

Terms to Describe Linguistically Diverse Individuals

Prior to the examination of the literature describing linguistically diverse students, it is important to review the various terms used to disseminate information about these
students. The terms, *societal*, *national*, and *official*, are used to refer to the language or languages used in a country (August & Shanahan, 2006). In the United States, English is not the official language because that requires an action by governing officials; nonetheless, it is generally accepted as the societal language (August & Shanahan). A *language minority student* refers to a student who lives in a home where a language other than the societal language (i.e., English) is actively used (August & Shanahan). These students have some level of proficiency in the non-English language, and they may be categorized as limited English proficient, bilingual, or mostly monolingual in English (August & Hakuta, 1997). The term, *second-language learner*, applies to students who have yet to acquire proficiency in the second language needed to profit from education that is delivered in the second language (August & Shanahan). The NRC Committee chose to adopt LaCelle-Peterson and Rivera’s (1994) term, *English-language learner* (ELL) throughout their report because it carried a more positive connotation.

The former term, *Limited English Proficient* (LEP), referred to students who were from language backgrounds that were not English and who were learning to speak English but did not hold an English proficiency level that would allow them to profit from English-only instruction (August & Hakuta, 1997). The NRC Committee as well as the National Literacy Panel on Language-Minority Children and Youth, agreed that LEP implied a negative, deficit-oriented meaning, and therefore, only used LEP in its report when citing an outside source (August & Hakuta, 1997; August & Shanahan, 2006). To be consistent with the decisions made by national organizations, ELL will be used in this document unless reporting results from prior research and theory.
First and Second Language Acquisition

Linguistic theories provide insight into the processes of first and second language acquisition. Three primary schools of thought exist regarding first language acquisition: (a) linguistic nativism, (b) cognitive view, and (c) social view.

Linguistic nativism is the approach that supports the innate capability of people to learn language (August & Hakuta, 1997). Chomsky (1965) believed that all people have a Language Acquisition Device (LAD) that is specific to the task of language development. The LAD is an area within the human brain that contains the basic structure for any human language (Freeman & Freeman, 2004). That is, an individual is not born with a capacity for a specific language, but rather, the person has the capacity for common components of all human languages (Freeman & Freeman). It is after exposure to the specific language environment that a child learns how to use each component. Three observations support this theory: (a) first language is acquired relatively quickly and without formal instruction; (b) first language is acquired with minimal input; and (c) first language is acquired with minimal explicit error correction (Freeman & Freeman).

Next, the cognitive view expanded the definition of language to include vocabulary and other communicative skills (August & Hakuta, 1997). August and Hakuta explained that formal linguistics (e.g., linguistic nativism) would not consider use of language as part of the overall definition. Supporters of the cognitive view have attempted to understand language acquisition within a learning paradigm (Bialystok, 1991).

A final theoretical view of language acquisition is the social view. This view stresses the importance of social and interpersonal aspects of language (August &
Hakuta, 1997). Proponents of this view examine environmental contexts to explain language acquisition. For example, social theorists would oppose the isolation of various language components stating that language can only be explained holistically within one moment and can not be replicated at another time.

A brief overview of first language acquisition theories provides insight into second language acquisition theories because researchers have relied upon theories of first language acquisition to examine second language acquisition. Two theories of second language acquisition are relevant to the current study: interdependence theory (Cummins, 1984), and communicative competence (Canale & Swain, 1980).

Cummins’ (1984) interdependence theory has been widely accepted among educational practitioners (Ochoa, 2005). Cummins proposed that individuals learning a second language within an immersion context use their first language to help make sense of the language they are acquiring. Specifically, Cummins (1991) referred to the use of contextualized and decontextualized language. These terms refer to the degree that the meaning being communicated depends largely on contextualized cues (e.g., face to face interactions, gestures) or linguistic cues (e.g., language found in curriculum texts or language used in a lecture; Cummins, 1991). The terms contextualized and decontextualized have been renamed as basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP), respectively (Cummins, 1991). Crawford (2004) clarified that BICS and CALP are not representative of a dichotomy of language proficiency, but rather, a continuum. Research evidence has supported that students acquire BICS in approximately 2 to 3 years while CALP is acquired within 5 to 7 years (Cummins, 1984). More recently, Cummins (2000) has suggested that children
may need to reach a certain level of CALP in their first language to successfully develop academic language proficiency in their second language. Several educators have recognized that in order for ELLs to be successful in U.S. schools, they must achieve CALP in English (Ochoa, 2005).

Canale and Swain (1980) proposed a theoretical framework for communicative competence. This framework consisted of three competencies: grammatical, sociolinguistic, and strategic. Grammatical competence is the correct use of lexical components of language such as morphology, semantics, and syntax. Next, sociolinguistic competence refers to rules that a language learner must follow as part of the broad cultural domain or to rules within specific conversation. Finally, strategic competence includes both verbal and nonverbal language use and refers to a language learner’s ability to navigate through linguistically demanding situations when he or she is unable to produce the demands of the other two competencies (i.e., appropriate grammar and cultural execution of the language; Canale & Swain).

In general, first language acquisition theories are divided into three perspectives: linguistic nativism, cognitive view, and social view. Second language acquisition theorists have extended and applied first language theories. Both interdependence theory (Cummins, 1984) and communicative competence theory (Canale & Swain, 1980) have been used to explain student second language acquisition and are used in academic settings.

**Language Proficiency: Considerations and Measurement**

Researchers have been unable to agree upon an operational definition of language proficiency (Del Vecchio & Guerrero, 1995). Cummins (1984) stated that some
researchers have purported that language proficiency consists of 64 separate components while others claim that language proficiency is one global factor. Oller and Damico (1991) concluded that the nature of language proficiency, including both its components and existence have not been determined. While researchers and practitioners have been unable to reach a consensus on the nature of language proficiency (Del Vecchio & Guerrero), government education staff and academicians agree on two principles of language proficiency definitions. First, definitions acknowledge four domains of language: speaking, listening, reading, and writing. Second, current educational definitions contextualize language within a school setting. Given the complexity and ambiguity surrounding the definition of language proficiency, constructs frequently used in educational literature will be discussed in the following sections.

**Bilingualism.** Although professionals have not reached a consensus regarding what it truly means to be bilingual, Gorman and Gillam (2003) explained that all children who enter the U.S. school system with a first language other than English are often referred to as bilingual. Furthermore, individuals who speak two languages typically identify with one or more of four categories. First, sequential bilingualism refers to an individual who has developed one language during the initial language development process and at some point, has begun to learn an additional language (Gorman & Gillam; Valdés & Figueroa, 1994). For example, when a child comes from a non-English speaking home and enters the U.S. public school system, he or she is considered a sequential bilingual (Ochoa, 2005). Next, simultaneous bilingualism occurs when a child is raised in a home environment where two languages are used interchangeably (Gorman & Gillam; Valdés & Figueroa). Two additional types of bilingualism were offered by
Valdés and Figueroa. Circumstantial bilingualism refers to the process of learning another language because it is necessary to survive in a community. For example, sequential bilinguals who have recently immigrated to the U.S. and who have entered the school system may consider themselves circumstantial bilinguals. Elective bilingualism is used to refer to students who are learning an additional language by choice.

**Degrees of proficiency.** Language proficiency of bilingual individuals can be described in terms of a continuum (Valdés & Figueroa, 1994). Terms used to describe levels of language proficiency in the first and second language include *nonbalanced*, *mixed*, and *balanced*. An individual’s language proficiency is described as nonbalanced if an ELL is stronger across all domains in his or her first language as compared to the second language (Hamayan & Damico, 1991). If an ELL’s language proficiency is characterized as stronger in one domain of the first language and stronger in another domain in the second language, then the individual is a mixed bilingual (Hamayan & Damico). Finally, an ELL who demonstrates equal ability in both languages is considered a balanced bilingual (Hamayan & Damico). It is important to consider varying degrees of bilingualism because when and how children are exposed to each language have been shown to have significant implications on assessment (Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000). For example, a bilingual child may demonstrate functional language in the “home language” (e.g., names of relatives, explanations of routines) but may produce other information in the language he or she is acquiring (e.g., numbers, letters, colors). Moreover, as a child navigates between two languages, proficiency in one or the other may shift prior to stabilizing. This flexibility should be
considered when selecting tests to measure language proficiency (Gutiérrez-Clellen et al.).

**Measuring language proficiency.** Language researchers have been unable to agree upon an operational definition of language proficiency (Del Vecchio & Guerrero, 1995). As a result, various tests have emerged; all of them purporting to measure language proficiency.

Oller and Damico (1991) explained that language proficiency tests are derived from three views of language proficiency. First, the discrete point characterizes language as distinct components (e.g., morphology, phonology, and syntax). Therefore, test developers guided by the discrete point approach define language proficiency as the sum of performance on each component. Formal language proficiency measures are developed using the discrete point approach (Ochoa & Ortiz, 2005). Typically, formal language tests contain items that ask the examinee to manipulate phonemes within words or to demonstrate familiarity with vocabulary (Ochoa & Ortiz; Oller & Damico). Several limitations are associated with these tests: (a) examining language skills in isolation (e.g., reading or writing), (b) testing linguistic domains independent of other domains (e.g., vocabulary or phonology), and (c) measuring language use without authentic contexts (e.g., conversation; Oller & Damico).

Oller and Damico (1991) explained that the second view of language proficiency, the integrative or holistic approach, attempts to address the limitations in the discrete point approach. Supporters of the integrative approach believe that examination of language proficiency in all domains should occur within authentic social contexts (Oller & Damico). Moreover, components of language (e.g., grammar, vocabulary) cannot be
assessed without demonstrating skill (e.g., speaking, writing). School psychologists employ the holistic approach when they utilize informal measures of language proficiency, such as observation of a student’s language use in the classroom or on the playground (Ochoa & Ortiz, 2005). A limitation of the holistic approach is the lack of a standard by which to measure and evaluate student performance. For example, a student may be able to communicate to his peers on the playground but be unable to apply English language knowledge to tasks expected in the classroom.

Finally, the pragmatic approach requires an examinee to engage in conversation within simulated “real-life” settings (Oller & Damico, 1991). For example, an examinee may be asked to listen to a story delivered orally by an examiner using naturally-occurring gestures. The story activity is not timed and an examinee is given the opportunity to view the printed story and illustrations and to ask questions (Del Vecchio & Guerrero, 1995). If the examiner’s intent is to measure a student’s proficiency in grammar, vocabulary, and pronunciation, the pragmatic approach offers the best measure of proficiency when compared with the discrete point approach (Del Vecchio & Guerrero).

Language researchers do not agree on the definition of language, and as a result, measurement of language proficiency varies. Three leading views of language proficiency measurement have been provided in this section. Tests developed using the discrete point approach measure the learner’s proficiency in separate components of language; the sum of each part equals the learner’s proficiency (Oller & Damico, 1991; Ochoa & Ortiz, 2005). Norm-referenced tests of language proficiency are typically developed using the discrete point approach. Integrative and holistic approaches measure
a learner’s language proficiency within naturally-occurring contexts (Oller & Damico).

For example, an examiner may ask the student to listen to an audiotaped story and then provide an oral or written summary of it. Pragmatic approaches attempt to capture a learner’s proficiency in grammar, pronunciation, and vocabulary within a simulated natural activity (Oller & Damico). Using the pragmatic approach, an examiner may verbally read a story to the student while modeling natural conversation cues (e.g., expression, gestures). Then the examiner would ask the student to retell the story without a time limit.

**Academic Achievement Considerations**

**Reading Theory**

Current theories suggest that successful reading acquisition occurs with the development of phonological awareness (Chall, 1996; Ehri, 1995). However, these theories describe reading acquisition within the context of first language. Chiappe, Siegel, and Wade-Woolley (2002) explained that, collectively, research results have not supported the extension of reading acquisition theories in a first language to reading acquisition in a second language. Chiappe et al. outlined a few factors that may differentiate reading acquisition in first and second languages: (a) phonological structure between the two languages, (b) syntactic structure, and (c) varying degrees of print exposure within cultures. Moreover, researchers have suggested that phonological awareness is comprised of three components, IQ, verbal short-term memory, and speech perception (McBride-Chang, 1995). Further examination of speech perception has suggested that processes used to produce speech are not the same in second language
learners and first language speakers; in fact, there may be an influence between the two languages contributing to the different perceptions (Chiappe et al).

One reading acquisition model that considers first and second language influences on reading acquisition is the competition model (Bates & MacWhinney, 1989). The competition model outlines the development of phonological awareness in terms of linguistic cues that are competing and influencing the language process. The cues are different among languages (Bates & MacWhinney). For example, a child in a Spanish-speaking environment will be more influenced by the most salient Spanish linguistic cues while a child immersed in an English-speaking environment will be more influenced by the most salient English linguistic cues (Gorman & Gillam, 2003). Consistent with the competition model, researchers have found that the rate and pattern of development of phonological awareness and literacy in a given language reflects the linguistic structure, phonological system, and orthographic nature of that language.

Differences in the linguistic cues present in Spanish and English languages may provide some insight into the patterns of basic reading indicators when learning to read in each language. First, Spanish syllabic cues are more consistent (e.g., equal duration all syllables) and clearly defined (e.g., open consonant-vowel) compared to the English language (Gorman & Gillam, 2003). Treiman and Weatherston (1992) found that syllable-stress influenced participant’s ability to identify initial phonemes in English but not in Spanish (Jiménez & Garcia, 1995). The intra-syllabic onset rime unit (e.g., b-book) is a significant processing unit for English speakers (Kessler & Treiman, 1997; Treiman, 1991). Onset rime tests are often used as an indicator of phonological awareness in English; however, it is not an indicator of phonological awareness in Spanish (Jiménez,
Therefore, if students have received phonological awareness instruction in Spanish, then students may demonstrate a different pattern in the acquisition of onset rime tasks when compared to their English-only speaking peers.

Also, Spanish and English languages have approximately the same consonants yet the consonants have different points of articulation and voice-onset times (Gorman & Gillam, 2003). These differences have led to Spanish-speaking children’s ease in isolating the initial continuant consonants (e.g., /s, m, r, f/) compared to stop consonants (e.g., /b, p, d, g/); English-speaking children had inverse results (Treiman & Weatherston, 1992).

The competition model can be used to describe the development of phonological awareness in bilingual children. Specifically, students who have learned phonological awareness in their first language may apply the same principles to reading in the second language using a process called forward transfer (Gorman & Gillam, 2003). The authors explained that a Spanish-speaking child who has learned the Spanish noun-adjective combination for cold water (agua fria), may engage in forward transfer to produce “water cold” until he or she learns the appropriate cue in English. Consistent with this concept, researchers have found that students often transfer their phonological awareness skills from their first language to their second language (Gottardo, 2002; Quiroga, Lemos-Britton, Mostafapour, Abbott, & Berninger, 2002). Furthermore, Durgunoglu, Nagy, and Hancin-Bhatt (1993) found that the best predictor for successful reading in both Spanish and English for Spanish-speaking students is the development of phonological awareness.
Current theories suggest that the development of phonological awareness is essential to successful reading acquisition (Chall, 1996; Ehri, 1995). Yet, these theories have not accounted for the influence of first language phonological awareness skills on the development of second language phonological awareness skills. The competition model outlines the development of phonological awareness in terms of linguistic cues that are competing and influencing the language process (Bates & MacWhinney, 1989). Moreover, the competition model has been useful in providing information about both the sequence of phonological awareness skills in Spanish-speaking children learning English and the type of tasks that will be most beneficial for these children (e.g., limitations of onset-rime).

**Cognitive Ability and Reading Outcomes**

Geva and Siegel (2000) examined variables associated with central processing hypothesis (cognitive ability) and script dependent hypothesis (orthographic transparency) as they contribute to reading outcomes. The central processing hypothesis attributes reading development to the function of short-term verbal memory, efficient serial naming, and phonological skills. On the other hand, the script dependent hypothesis refers to the orthographic depth hypothesis (Katz & Frost, 1992), which purports that the alphabetical units of languages contain systematic spelling and pronunciations that correspond to one another. As such, a simpler process is involved when orthography is shallow (i.e., one-to-one correspondence between letters and sounds is straightforward) when compared to deeper orthography, which invokes a more complex process (i.e., letter-to-sound correspondence is not straightforward). Geva and Siegel proposed that by studying the concurrent development of reading in a student’s first language (L1) and
second language (L2), the contributions of variables relative to each hypothesis could be measured and compared.

Geva and Siegel (2000) measured the reading outcomes of 245 children in Grades 1 through 5 attending an elementary school located in a metropolitan area of Canada. English was the primary language in most homes. Academic instruction was provided in both English and Hebrew.

Geva and Siegel (2000) administered cognitive ability measures (nonverbal and short-term memory) and reading measures in Hebrew and English languages to all participants. Hebrew oral language proficiency was gathered through teacher completion of a questionnaire for each participant. Data collection occurred over three sessions during the spring semester of the school year.

Next, Geva and Siegel (2000) presented the results of two hierarchical multiple regressions; age (in months) had been covaried with all of the scores entered into the analysis. Overall, three general observations were found: (a) L1 and L2 working memory scores were significant predictors of L1 and L2 reading outcomes (6–11% variance), and once working memory scores had been accounted for, nonverbal cognitive ability scores did not contribute significantly to reading outcomes, (b) age shared more variance with L1 reading outcomes (12-13%) than L2 reading outcomes (3-5%) suggesting a difference in the developmental nature of L1 and L2 reading acquisition, and (c) L2 oral proficiency scores accounted for an additional 6% of the variance in L2 reading outcome scores (Geva & Siegel, 2000). The authors concluded that the first generalization supported the central processing hypothesis while the second and third generalizations supported the script dependent hypothesis.
Research results supported that cognitive variables hold predictive value for reading outcomes (Geva & Siegel, 2000). While various limitations existed in regard to the psychometric limitations in the selected measures, the authors’ findings provided information about the interplay of both cognitive (innate) and reading instruction (environmental) on reading performance. The authors suggested understanding the contribution of cognitive ability such as working memory allows one to account for another variable and measure the impact that deficits or well-developed areas of cognitive ability can have on reading (and academic outcomes).

**Reading Instruction**

Few studies have explored the effect of reading instruction on English language proficiency. Giambo and McKinney (2004) investigated the effects of two reading interventions (phonological awareness and story-reading) on change in oral English language proficiency. Also, they investigated how change in phonological awareness predicted change in oral English language proficiency. Participants were 80 Kindergarten students who identified as Hispanic and attended a single elementary school. All students spoke Spanish at home, and 95% of the students had been identified as LEP by the school district (Giambo & McKinney).

The participant recruitment process involved three steps. First, all potential participants were randomly assigned to one of the reading intervention conditions. Second, students (with parent consent) were administered the oral English language proficiency measure. Third, student oral English language proficiency scores were rank ordered, and the students with the highest scores on the oral English language proficiency pretest (5 per reading intervention group; 10 students per participating Kindergarten
class) were selected for the final sample. Each reading intervention group was composed of 40 participants.

All participants were administered several pre- and posttest measures. The participants were administered the IPT-I Oral, Grades K-6, English, Form C (Ballard et al., 1991 as cited in Giambo & McKinney, 2004). The IPT-I Oral measured oral English language proficiency “in the areas of syntax, morphological structure, lexicon, phonological structure, comprehension, and oral expression” (Giambo & McKinney, p. 102). Also, participants were administered subtests from the Comprehensive Test of Phonological Processes (CTOPP; Torgesen & Wagner, 1997) measuring sound deletion, phoneme blending, and word segmenting. Participants were administered the Peabody Picture Vocabulary Test-Third Edition (Dunn & Dunn, 1997) to obtain a measure of English receptive vocabulary. In addition to these measures, participants were administered two subtests from the CTOPP at pretest only: Sound Matching and Memory for Digits.

Participants received either the phonological awareness intervention or story-reading intervention for approximately 20-25 minutes three times per week for 19 weeks (Giambo & McKinney, 2004). The phonological awareness program was a systematic skill based program teaching rhyming, sound blending, letter-sound correspondence, and sound manipulation. The story-reading program was comprised of an adult-read story and subsequent story-related activities; the story-reading instruction aligned with the school district Language Arts curriculum (Giambo & McKinney).

Results indicated that participants in both reading intervention groups demonstrated a significant increase in oral English proficiency raw score means between
pretest and posttest scores. Effect size was large for story-reading ($\eta^2 = .22$; Cohen, 1988) and phonological awareness ($\eta^2 = .46$) intervention groups. On measures of English receptive vocabulary, participants in both intervention groups demonstrated a significant increase in scores from pretest to posttest. Further analyses revealed a greater effect size for participants in the phonological awareness group ($\eta^2 = .46$; story-reading $\eta^2 = .44$).

Giambo and McKinney conducted additional analyses in which the pretest oral English language proficiency scores were covaried in an analysis of English oral language proficiency posttest scores. The participants in the phonological awareness group demonstrated a significant increase in oral English language proficiency scores at posttest when compared to participants’ scores in the story-reading group.

Giambo and McKinney (2004) conducted multiple regression analyses to investigate the predictive ability of change in phonological awareness on change in oral English language proficiency. Residual change scores were calculated for oral English language proficiency, elision, blending, and segmenting using simple regression analyses (Giambo & McKinney). The resulting change scores controlled for the individual differences in pretest scores (Giambo & McKinney). A simultaneous regression analysis was conducted with six independent variables: elision, blending, segmenting, sound-matching, English receptive vocabulary, and memory for digits. The overall model accounted for 18% of the variance in change in oral English language proficiency. Blending, segmenting, and elision residual scores accounted for the most variance.

Subsequent step-wise (backward elimination) regression analyses were conducted which included the three phonological awareness variables as well as memory for digits pretest scores and English vocabulary residual scores. Results further indicated that the three
phonological awareness variables were significant predictors of change in oral English language proficiency.

Giambo and McKinney (2004) concluded the phonological awareness reading intervention contributed to a greater increase in oral English language proficiency scores when compared to a story-reading intervention. In terms of predictive information, it is important to note that the regression model accounted for a limited amount of the variance in change in oral English language proficiency scores. Giambo and McKinney suggested the inclusion of other predictor variables such as “phonological structure, morphological structure, grammar, listening comprehension, and oral expression” in order to determine what, if any, aspects of English oral language proficiency is most effected by change in phonological awareness skills (p. 111). Similarly, they suggested future researchers include a measure of English oral language proficiency that separates the various aspects into purposeful sections (e.g., subtest format) as opposed to a measure that inter-mingles items (e.g., IPT-I). Finally, Giambo and McKinney suggested increasing the variation in socio-demographic variables to support or challenge the generalizability of results.

Language Education Programs

Bilingual education. Bilingual education programs offer instruction in first and second languages. Three approaches to bilingual education are reviewed in this section, including all of the potential names used to label each approach. First, Transitional/Early Exit program classrooms generally include students with similar language backgrounds (e.g., Spanish). Students remain in this program for approximately 2 to 4 years before transitioning into classrooms where the instruction is offered only in English (Ochoa,
2005). Transitional/Early Exit programs are designed to instruct the student in his or her first language with the final objective being proficiency in all domains of English. These programs are considered subtractive because instruction in the student’s first language is only offered for a short period of time and it is replaced or neglected given that the main focus is on the development of English language proficiency (Ochoa). Transitional/Early Exit Bilingual Programs are the most commonly offered bilingual programs in schools.

Another form of bilingual education is Maintenance/Late Exit/Developmental Bilingual Education program. Students enrolled in this type of program typically have the same language background and remain in the classroom for 4 to 6 years before transitioning to the mainstream classroom in which English is the only language used for instruction (Ochoa, 2005). This type of program is considered additive because the final objective is to maintain oral language levels in the first language while teaching English. Finally, Two-way/Dual-language Bilingual Education Programs are designed to deliver instruction in English as well as in the language spoken by the majority of ELL students in the classroom. Student language composition is a mixture of English-only speakers and ELLs. These programs are provided for 4 to 6 years. This program is additive and ELLs are not segregated from their English-only speaking peers.

Three bilingual education programs may be offered in U.S. public schools: (a) Transitional/Early Exit, (b) Maintenance/Late-Exit/Developmental, and (c) Two-Way Dual Language. These programs vary in several areas including length of time students receive the program, language background of students, and program goal (i.e., strengthen first language or second language).
**ESL instruction.** The first ESL programs focused on teaching students the grammatical structure and the utility of the English language in situations that did not provide a context (i.e., group learning methods, simulated environments to encourage practical application of English vocabulary). Then ESL programs adopted a conversational approach to instructional methods (McLaughlin, 1985). Finally, ESL programs began to combine instructional methods with academic subjects such as reading, writing, and mathematics. The connection of English language instruction to the content areas of mathematics, science, and social studies, has begun to shape how educators introduce English to students (Chamot & O'Malley, 1989). One major point of contention for the direction of ESL programs is the debate regarding the appropriate time to introduce students to intensive English-language academic instruction (Crawford, 1989).

Ochoa (2005) described two approaches to ESL program instruction: Content-based ESL/Sheltered English and Pull-out ESL. English is the language used for instruction in both ESL program approaches. Students receiving instruction in a Content-Based ESL/Sheltered English program may speak the same language or different languages. Regardless of the languages spoken in the classroom, instruction is given in English using the total physical response (TPR) method (Ochoa, 2005). Total response method uses a combination of physical gestures and visual cues to help ELLs understand the curriculum context. Students enrolled in this type of ESL program may be in this classroom 50-100% of the school day (Thomas & Collier, 1997). Pull-out ESL is similar to Content-Based/Sheltered English, however, the focus of instruction, teacher professional certification, and length of time differs (Thomas & Collier). In Pull-out ESL,
the focus of instruction is developing a student’s English language skill rather than teaching academic material. Also, teachers are expected to be certified in ESL instruction. Finally, students generally spend less than half of a school day in this type of program.

English as a second language instruction differs from bilingual instruction in that students receive instruction only in English and teachers focus on the development of English language skills rather than teaching academic material. Out of all language programs offered in U.S. public schools (i.e., bilingual and ESL), ESL programs are the most commonly used (Ochoa, 2005).

**Bilingual education versus immersion.** Wong-Fillmore and Valadez (1986) argued that students needed to have a strong foundation in their first language before they can think critically in English. For example, students could learn decoding skills in English relatively easy, but the students did not know what the words meant. In other words, comprehension of the text was not occurring. Gersten and Woodward (1995) reported that teachers in their study failed to use strategies that modified the material for ELLs to comprehend the material, which led to a wider gap between basic and critical understanding of the material. For these reasons, instructors in transitional bilingual (TBE) programs teach their students academic material in the primary language until the students demonstrate an adequate grasp of English and exhibit competence in academic areas using their native language (Gersten & Woodward).

In contrast to the bilingual programs such as TBE, immersion programs (e.g., ESL) support early entrance into the English academic curriculum using a simplified approach to teaching concepts. Immersion programs developed as a result of “the large
influx of Southeast Asian students speaking many different languages—Lao, Cambodian, Vietnamese” (Gersten & Woodward, 1995, p. 226). Pragmatically, school districts could no longer meet the needs of these students due to a shortage of teachers who spoke the same language. The belief that systematic exposure to English at school would result in students’ spontaneous use of the language in social and academic situations reaped positive results in elementary programs (Gersten, 1985). However, this approach alarmed many bilingual educators because the instruction included no exposure to first language instruction for very young students.

Gersten and Woodward (1995) conducted a longitudinal study that examined the effects of these two methods (i.e., TBE and bilingual immersion) within a school district in El Paso, Texas. Participants were students enrolled in a bilingual immersion program \((n = 111)\) and TBE program \((n = 117)\). The bilingual immersion program described in this district closely resembled ESL instruction. Students received instruction in Spanish for 90 minutes per day during first grade; this time was gradually reduced to 30 minutes of Spanish instruction by fourth grade. Therefore, the majority of instruction occurred in English for the duration of the student’s involvement in the bilingual immersion program. The schools were comparable in resources, length of the school year, and class size. The researchers compared the effects of TBE and bilingual immersion instruction on the academic achievement for students in Grades 4 through 7 \((N = 228)\). The students included in the sample had their English language proficiency assessed using a district-developed oral-language assessment, and their scores indicated that they had little knowledge of the English language at first grade entry. The students participated for 4 years in one of the district’s TBE or bilingual immersion educational programs and then
took the Iowa Tests of Basic Skills (ITBS) in the areas of language, reading, mathematics, and vocabulary; however, mathematics and vocabulary scores were not included in the analyses. The researchers used normal curve equivalent (NCE) on the ITBS for the analyses of covariance (Gersten & Woodward). Language and reading scores indicated significant differences for students in the fourth through sixth grades in favor of the bilingual immersion approach. However, the difference in seventh grade was not significant.

Gersten and Woodward (1995) also found that significant growth in reading and language scores measured by the ITBS occurred between Grades 4 and 6 for students involved in the TBE program but not for the bilingual immersion students. The authors noted the importance of the results was that the students enrolled in the TBE programs did not begin instruction in English until Grade 5 or 6 so to observe significant growth provides more support for the belief that instruction in the first language until mastery promotes success in the English instructed curriculum after transition. Gersten and Woodward concluded with a consistent pattern: “in the fourth grade, bilingual immersion students demonstrated superior academic performance in all areas assessed” but “over time the differences between the two groups decreased” (p. 232). To conclude, Gersten and Woodward explained that comparisons of seventh grade achievement data revealed that TBE and bilingual immersion programs were both viable options. However, the researchers also concluded that both programs failed many students in the areas of reading comprehension (i.e., student ITBS scores in the seventh grade fell at the 24 percentile [bilingual immersion] and 21 percentile [TBE]). Notably, both programs
offered some instruction in the student’s first language, albeit minimal in the bilingual immersion program.

Thomas and Collier (1997) conducted a national study of long-term reading achievement of ELLs who had entered U.S. schools in kindergarten and received one of the six language programs previously described. The authors selected student records that included information from ELLs who had remained in one of the five school districts included in the study from kindergarten through 12th grade (N = 42,317). All students entered U.S. schools in kindergarten, had no proficiency in English, and were identified as low socioeconomic status (i.e., received free or reduced lunch program). Students had been tested with standardized reading measures from 1982-1996. Reading scores were converted into NCE scores for five cohorts to examine change in achievement over several years, compare achievement outcomes to monolingual peers, and evaluate the effectiveness of different language programs.

Results indicated that by 11th grade, students who had been enrolled in a language program that provided instruction in their first language performed at or above (52 to 61 NCE) English-only speaking peers who had received instruction in English (50 NCE). These findings support the effectiveness of instruction provided in a child’s first language. However, results should be interpreted cautiously because Russell (2000) explained that using NCE can be “misleading because it implies that the same amount of change represents the same amount of growth at all points on the percentile scale” (p. 3). It will take greater change in standard scores in the extremes of the distribution to demonstrate change as compared to less change in standard scores at the middle of the distribution to show greater change. To summarize, it is difficult to interpret the
difference in student performance as measured by NCE scores on standardized tests and to draw conclusions about the effectiveness of various language programs.

Several language programs are offered to ELLs. Overall, evidence comparing academic outcomes of students enrolled in either bilingual or immersion programs have supported the effectiveness of bilingual instruction (Gersten & Woodward, 1995; Thomas & Collier, 1997). However, effectiveness of bilingual programs is dependent on factors such as student grade level, ratio of language instruction provided in student first and second languages, and quality of the bilingual program. Furthermore, methodological limitations prevent clear interpretation of study results.

**Migrant Education**

Migrant support services were established through federal policy in the 1960s (Branz-Spall & Wright, 2004; Pappamihiel, 2004). Health concerns emerged as a top priority due to high rates of tuberculosis, diabetes, and illness caused by agricultural chemicals (Branz-Spall & Wright). In response to these urgent health concerns, in 1961, the U.S. Congress passed legislation for the operation of migrant health care centers (Branz-Spall & Wright). An amendment to the Elementary and Secondary Education Act of 1965 (ESEA) established the Migrant Education Program (MEP) component under ESEA Title 1 (Branz-Spall & Wright). Over time, MEP regulations have changed to meet the needs of the migrant child experience (Pappamihiel, 2004).

A migrant child is defined as a child 3- to 21-years-old who moves to another school district with a parent or guardian as a result of temporary migratory agricultural or fishing employment within a 3-year time period (The Pennsylvania Department of Education; PDE, 2008). High mobility is a defining characteristic of the migrant
population (Branz-Spall & Wright, 2004). This characteristic in conjunction with limited English language proficiency contributes to high rates of poverty, interruptions in formal schooling, and limited access to health care (Pappamihiel, 2004; PDE, 2008; Salinas & Reyes, 2004). The Office of Migrant Education (OME) has identified seven areas of concern for migrant children: “educational continuity, instructional time, school engagement, English language development, educational support in the home, health, and access to services” (p. 12, PDE, 2008).

Recognizing the obstacles related to high mobility, federal and state agencies have focused on the development and maintenance of information tracking systems (Branz-Spall & Wright; Pappamihiel, 2004; PDE, 2008). Specifically, the OME has identified the timely identification and recruitment of a migrant child as a primary goal of MEP (PDE, 2008). Children need an established record of eligibility to receive MEP services, and educationally, the MEP works with state and local education agencies to enroll students in school in an effort to assist with the continuity of formal education (PDE, 2008). State MEPs partner with school districts and other child-focused community organizations to provide a range of services including after school and summer educational programs, health and social services, advocacy, and parental involvement (PDE, 2008).

The majority of research examining the needs of migrant families and MEP outcomes has been conducted by individual state agencies. A research base also exists through academic researcher endeavors. Two studies were reviewed. One study presented broad needs for a state migrant education program (PDE, 2008), and the other study
identified specific skills of professionals working with migrant students (Salinas & Reyes, 2004).

The Pennsylvania Department of Education Migrant Education Program (PA-MEP) conducted a Comprehensive Needs Assessment (CNA; PDE, 2008). At the time of the needs assessment (2006), the PA-MEP served migrant students \( (N = 11,896) \) identifying with diverse ethnic backgrounds. The majority of migrant students (88%) spoke Spanish as their first language, and students were identified to have little or no English language proficiency (72%; PDE, 2008). Limited information is available about data collection and analysis procedures; however, a Needs Assessment Committee (NAC) was appointed to oversee the analysis of quantitative and qualitative data. Likewise, the NAC was charged with the creation of an action plan to address the needs identified by the CNA (PDE, 2008).

The NAC reported four major findings (PDE, 2008). First, the NAC examined migrant ELL and non-migrant ELL scores from the Pennsylvania System of School Assessment (PSSA). Results revealed ELL migrant students (Grades 3 through 8 and Grade 11) had the lowest rate of academic proficiency as measured by the PSSA. Specifically, the median gap in mathematic and reading achievement scores for migrant ELLs was 12.3% and 5.7% lower when compared to scores for non-migrant ELL students (PDE, 2008). The NAC recommended the provision of additional supplemental reading support (PDE). Second, the NAC noted limitations in the recordkeeping system. To address these limitations, the NAC recommended alignment between the PA-MEP definition of an ELL and the state definition. Also, they recommended the implementation of a data tracking system to alert the MEP professional when a student’s
academic PSSA scores fall below proficiency. This would allow for targeted MEP supplemental service provision (PDE).

The third finding revealed a need for PA-MEP to assist families with preparing their preschool children with kindergarten school readiness skills. Therefore, the NAC recommended PA-MEP integrate findings from early childhood research into the state’s early learning standards to improve service provision to families and preschool children (PDE). The fourth major finding identified a need to support families and students in the completion of high school and the transition to postsecondary training (PDE, 2008). Migrant high school graduation rates (66%) fell below the state average (88%; PDE). Results indicated the need for increasing migrant student engagement in academic instruction, particularly in content areas such as social studies and science. The NAC recommended increased support services to increase parent knowledge about high school graduation requirements and postsecondary options (PDE).

Salinas and Reyes (2004) investigated the challenges encountered by Chicana/o high school migrant students and the approaches used by MEP professionals to help students overcome the challenges. Participants were women \( (n = 6) \) and men \( (n = 4) \) who worked for the Texas MEP as counselors or administrators. All of the participants identified as Chicanas/os, and they had worked with migrant students and families for over 20 years (Salinas & Reyes). The participants worked in schools along the Texas-Mexico border in rural agricultural communities. Salinas and Reyes (2004) noted that participants were employed for some of the largest MEPs in the state. The participants

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\[1\] The authors selected this term for use in their study. They explained, “…it is associated with a political position and activism taken by people of Mexican-origin” (Salinas & Reyes, 2004, p. 64).
were asked to facilitate small group discussions and activities during a full-day workshop (Salinas & Reyes). Data collection procedures included document analysis of materials developed for the workshop, interviews conducted with participants on the day of the workshop, and review of materials generated during the small group activities (Salinas & Reyes).

Results supported the difficult and complex nature of service delivery to migrant students. Migrant counselors and administrators emerged as change agents that worked with school staff to develop instructional and curricular strategies targeting the barrier created by high mobility (Salinas & Reyes, 2004). In addition to these broad findings, three themes emerged from the data analysis. First, the participants reported engagement in the change process (in schools and community agencies) to be an essential component to providing MEP support services. Second, in order to assist migrant high school students, participants developed strategies that addressed several areas: (a) continuation in the curriculum, (b) efficient transfer of academic and health records, (c) accurate representation of educational credits earned, and (d) coordination of support services (Salinas & Reyes). Third, participants noted the importance in establishing relationships between families, districts, and community organizations.

Migrant Education Programs provide a range of services to address several areas of concern related to the high mobility of migrant students and families. Migrant children demonstrate lower academic outcomes as compared to non-migrant children and have lower graduation rates when compared to the state average. Migrant education professionals work with school districts and community organizations to provide educational continuity, supplemental academic support, and human resources.
Interpersonal relationships between MEP and stakeholders are a key aspect of efficient and continued service provision to migrant children and families.

**Assessment and Accountability**

Assessment moved to the national forefront when NCLB (2001) was passed into federal law. The NCLB is guided by principles that promote accountability for student achievement (U.S. Department of Education, 2005). Furthermore, schools are expected to show Adequate Yearly Progress (AYP) which is “an individual state’s measure [of] progress toward the goal of 100 percent of students achieving to state academic standards in at least reading/language arts and math” (U.S. Department of Education, 2005, “Adequate Yearly Progress,” para. 1).

States are required to administer achievement tests to all students, including ELLs and migrant students, in Grades 3 through 8 to ensure they are meeting academic standards (Pappamihiel, 2004; Solórzano, 2008). Educators and researchers cautioned against the administration of these assessments to linguistically diverse students because results may not be measuring academic proficiency (Solórzano, 2008; Valdés & Figueroa, 1994). For example, the norms used to interpret bilingual student performance may not be representative of language development and educational experiences in both languages (Valdés & Figueroa, 1994). Furthermore, translating tests into a student’s first language (Lennon & Markatos, 2002) may not be representative of the student’s language and instructional experience in her first and second languages (Valdés & Figueroa, 1994). The interpretation of migrant student scores is even more complex as developing English language proficiency in conjunction with high mobility may interfere with accurate and timely assessment of achievement (Lennon & Markatos, 2002). Assessment time frames
are not consistent among states so a migrant student may take multiple statewide assessments (Lennon & Markatos, 2002; Pappamihiel, 2004). Also, a migrant student may be assessed based upon material aligned with state standards that differ from the sending state (Lennon & Markatos, 2002).

Annual statewide assessment fulfills the federal charge for accountability; however, student performance is measured throughout the year. Teachers have traditionally monitored student progress, but the emphasis on assessment and accountability, have modified the way school psychologists conduct assessments. Specifically, school psychologists must not only determine academic deficiencies but also provide assessment results that can be used to guide instructional programs. One way to link assessment to direct instruction is by monitoring student progress in the curriculum. Below, three methods used to monitor student progress are outlined.

Curriculum based assessment (CBA) is a process used to gather information about student progress within a curriculum. The results can be used to guide instruction to determine how and what to teach (Gravois & Gickling, 2002). CBA is guided by two purposes: “(a) to create optimal learning conditions for teaching and learning and (b) to provide corrective feedback during the teaching/learning process” (Gravois & Gickling, p. 886). Curriculum Based Assessment is similar to a second approach to monitoring student progress, Curriculum Based Measurement (CBM). Although CBA and CBM are sometimes used interchangeably in practice and literature, these methods are different in several ways. First, CBA is a broad term that describes any assessment of student performance within a curriculum while CBM is a type of CBA (Shinn, 2002). Moreover, whereas CBM has been used to determine the effectiveness of interventions or comparing
students’ long-term instructional outcomes, CBA has focused on the accomplishment of short-term goals to inform teaching practices and to provide immediate feedback. Fuchs and Fuchs (1992) explained that with CBA the difficulty of the tests change as a student gains mastery while with CBM, test format remains the same over the year, and materials are representative of the overall curriculum (Fuchs & Fuchs). Finally, CBM has documented reliability and validity evidence; CBA relies on teacher-made measures with unknown reliability and validity (Fuchs & Fuchs).

Curriculum based measurement is a way to monitor student progress in academic content areas by administering numerous short duration tests and using a standardized procedure (Fuchs & Fuchs, 1992; Shinn, 2002). Standardization includes specification of directions, scoring, testing material, and interpretation. Shinn explained that CBM can be understood as a set of dynamic indicators of basic skills (DIBS). Curriculum based measurement can be considered dynamic because measures are developed in order to detect change within a short period of time (e.g., 4-6 week intervention). Scores derived from CBM serve as indicators of student overall performance on a task (e.g., reading). Specifically, measures used to collect scores have demonstrated significant relationships to behaviors that lead to successful acquisition of a task. Finally, CBM has been developed to quantify student performance in basic skill areas (reading, mathematics, spelling, and written expression). Therefore, CBM should not be used to generalize student performance in specific content areas such as health or science (Shinn).

Research studies have provided reliability and validity evidence for use of CBM measures to assess reading outcomes. Although different CBM reading measures have been examined as a way to monitor student progress within the curriculum, oral reading
fluency (ORF) has the most evidence regarding its technical adequacy (Fuchs & Fuchs, 1992). Oral reading fluency requires a student to read a passage aloud for one minute. The evaluator uses a standardized procedure to calculate the number of words correct per minute. Fuchs, Deno, and Marston (1983) reported reliability coefficients ranging from .94 to .99 for CBM-ORF scores. Shinn and Good (1992) examined construct validity of ORF scores, specifically, whether they contributed to a separate reading construct or a component of existing theoretical reading models. Confirmatory factor analysis results supported that ORF scores were a measure of reading proficiency and comprehension (i.e., reading theory).

An additional CBM task supported by research evidence to inform reading outcomes, specifically comprehension, is maze. Maze procedures are timed and require students to read a passage; the first sentence is complete, but every sentence thereafter has every \( n \)th (typically the 7th) word deleted. In the place of the deletion, three choices are provided. The student must select the appropriate choice that will complete the sentence in a semantically meaningful way (Fuchs & Fuchs, 1992). Maze procedures require the student to utilize many reading skills, namely, decoding, fluency, and comprehension. Criterion validity has been found for maze procedures. Espin, Deno, Maruyama, and Cohen (1989) examined ORF and maze scores collected from third through sixth grade students (\( n = 163 \)). The correlation (\( r = .86 \)) between ORF scores and maze scores was high (Espin, et al.). Fuchs and Fuchs (1992) examined the reliability of the maze task presented in a computerized format and found that the standard error of the estimate between each data point (\( SEE = 10.02 \)) was comparable to the reliability of ORF (\( SEE = 13.03 \)).
Research studies provide evidence that CBM-ORF and maze scores are valid and reliable for monitoring student progress. Yet, practitioners utilizing CBM-ORF and maze also want to know how much growth to expect in student scores CBM-ORF scores over time. Fuchs and Fuchs (1993) used a variation of CBM-ORF and maze, General Outcome Measurement (GOM), to report growth expectations.

Fuchs and Deno (1991) introduced the concept of GOM, which is distinguished by two distinct features: prescriptive procedures and long-range consistency. Moreover, Fuchs and Deno explained that CBM was an example of GOM. Because GOM and CBM are similar in regards to standardization procedures and psychometric properties, authors often use these terms interchangeably. However, unlike CBM, GOM achievement probes (e.g., reading, math) do not use material selected from the school curriculum. Throughout the remainder of this literature review, CBM-ORF will be used to identify oral reading fluency scores yielded from probes using curriculum materials and GOM-ORF will be used to identify oral reading fluency scores gathered from probes comparable to curriculum materials.

Fuchs and Fuchs (1993) examined expected growth in CBM-ORF and maze scores. They conducted a 2-year longitudinal study with students in Grades 1 through 6 who attended five school districts in the Midwest. Participants were enrolled in mainstream education and language status was not reported. Year 1 participants (n = 1117) were asked to read aloud generic grade-level passages for one minute; data were collected once per week. Passages were administered and scored by a teacher, aide, or volunteer, and the score used was words read correct per minute (WRCM). Year 2 participants (n = 257) completed a computerized maze task based on a 400-word grade-
level passage at least once per month. Participants were given 2.5 minutes to complete the maze task. Maze scores equaled the number of correct replacements.

Slope was calculated using least-squares regression analysis for CBM-ORF and maze scores for each student between scores and calendar days (Fuchs & Fuchs, 1993). Next, weekly slope was calculated by multiplying the slope calculation by seven (i.e., days). Fuchs and Fuchs used this estimate to represent weekly increase in a student’s CBM-ORF and maze scores over the school year. A one-way analysis of variance (ANOVA) was conducted on each slope estimate with the student’s grade level to determine the effect of grade level on the slope estimate. Expected weekly growth for CBM-ORF scores varied by grade level. For example, using realistic goals, first graders could expect to improve 2 words per week while third graders could expect an improvement of 1 word per week. In addition to realistic goals, Fuchs and Fuchs suggested ambitious goals. An ambitious goal of 3 words per week could be established to improve student achievement for students with disabilities.

Similarly, Fuchs and Fuchs (1993) calculated estimates to represent weekly slope estimates for maze scores. Growth in maze scores did not vary by grade level. Therefore, for all grade levels, the authors concluded that for maze scores, a realistic goal for weekly improvement was .39 and an ambitious goal would be .84.

Fuchs and Fuchs (1993) concluded that their findings were aligned with expectations of reading theories. First, theory suggests students experience faster growth in words read correctly when they are beginning to read (Chall, 1996). Study results were consistent with this theoretical expectation; that is, first graders demonstrated more growth in CBM-ORF scores when compared to second graders. Early reading skills
necessary for growth in these areas is the mastery of decoding and fluency. Second, maze scores require decoding, fluency, and comprehension. As such, the retrieval and integration of these complex skills should result in steady growth over the years (Fuchs & Fuchs). Again, results of the study were consistent with this expectation in that maze score expectations were similar across grade levels.

Finally, Fuchs and Fuchs (1993) suggested that educators set an ambitious goal of 3 WRCM per week to improve the reading achievement of students with disabilities. Future research is necessary to examine this suggestion in order to determine the appropriateness of this goal. Furthermore, setting ambitious goals could be effective for ELL students who due to their developing oral English language proficiency levels may score below their monolingual peers in terms of English reading proficiency.

**Curriculum Based Measurement and General Outcome Measurement with ELLs**

Baker and Good (1995) examined the reliability, validity, and sensitivity of Curriculum Based Measurement Reading scores, specifically, English CBM-ORF with bilingual students. Participants included 76 second grade students; 50 of the students were bilingual (33 of these students were identified as Limited English Proficient by the school district and were provided with ESL services) and 26 of the students spoke English only (EO; 10 of these students were identified as Hispanic). Data were collected over a 13-week period.

Results indicated that on CBM-ORF, students in EO groups ($M = 86.7$, $SD = 37.1$) and bilingual groups ($M = 68.5$, $SD = 41.7$) did not differ significantly in the number of words read correctly on the initial measure of ORF and throughout the duration of the data collection period (Baker & Good, 1995). However, the large standard
deviations make subsequent interpretation difficult because a variety of factors (e.g., error or variability in English-reading proficiency) may be influencing the observed results.

Also, increase in words read correctly per week for EO students ($M = 0.1$, $SD = 1.5$) was significantly different from the bilingual students [$M = 1.3$, $SD = 1.2$; $t(40.5) = 3.5$]. The bilingual students showed a higher rate of reading progress (i.e., WRCM) on CBM-ORF.

Alternate-form reliability coefficients for CBM-ORF scores exceeded .80 for EO students and bilingual students indicating that results were stable. Reliability of point estimates was higher for bilingual students compared to EO students. Reliability estimates for slopes fell below .50 for both groups. Convergent validity revealed strong correlations between CBM-ORF scores and scores on the Stanford Diagnostic Reading Test (SDRT) pretest and posttest reading comprehension subtest scores (.73 and .76 respectively) for bilingual students. Correlations for EO students were .51 and .56. Stronger correlations for bilingual students may be indicative of minimal variability between scores.

Discriminant construct validity between Language Assessment Scale (LAS) and CBM-ORF scores was .47 for bilingual students.

Baker and Good (1995) concluded that CBM-ORF scores were reliable and valid in measuring the reading progress of bilingual students. This conclusion should be interpreted cautiously due to several limitations noted by the authors: (a) failure to address rationales for growth rates observed among bilingual students (e.g., cognitive benefits of bilingualism), (b) heterogeneity of language proficiency among students within the bilingual group, and (c) selection of instrumentation. These limitations suggest English reading acquisition and achievement may be influenced by the interplay between two languages. Moreover, differences in English reading achievement may be influenced
by variable levels of English language proficiency. Furthermore, CBM-ORF and the LAS, purportedly measuring reading achievement and language proficiency, respectively, may not be measuring separate constructs. Therefore, the results of this study should be cautiously interpreted and future studies are necessary to examine the use of CBM-ORF with students with various levels of English language proficiency.

In a second study, Graves et al. (2005) conducted a study that used two general outcome measures, General Outcome Measurement-Oral Reading Fluency (GOM-ORF) and nonsense word fluency (NWF), to describe reading fluency levels in first grade ELLs. Furthermore, Graves et al. examined GOM-ORF and NWF growth rates in ELLs to determine how they compared to students who only spoke English. Another purpose of the Graves et al. study was to examine the relationship between end of first grade GOM-ORF scores and language proficiency scores.

Participants were students in classrooms from three elementary schools (i.e., nine classrooms) located in an urban school district in Southern California. Students in the participating classrooms spoke many different languages. General outcome measurement oral reading fluency scores from 77 first grade students were used to form three groups, low readers \((n = 27)\), average readers \((n = 23)\), and high readers \((n = 27)\). Data consisting of GOM-ORF and NWF scores was collected over a 6-week period. Student English language proficiency scores were obtained from kindergarten classification on the IDEA Proficiency Test (IPT).

Graves et al. (2005) reported the correlation between GOM-ORF and NWF scores at the end of 6 weeks was strong \((r = .86)\). However, correlation between gain on GOM-ORF and gain on NWF scores were weak \((r = .30)\). Repeated-measures ANOVA results
revealed that over time students in the low achieving group gained more words per minute than the students in the high and middle achieving groups (Graves et al., 2005). A small correlation ($r = .17$) was observed between kindergarten IPT scores and gains in GOM-ORF scores. Graves et al. concluded that language skills measured in kindergarten were not a good predictor of end of first grade reading performance. Although Graves et al. concluded that GOM-ORF and NWF were sensitive enough to reveal growth in ELLs, they also noted the limitation in using outdated language proficiency scores. Graves et al. suggested that future studies may want to include current English language proficiency scores to determine if a stronger correlation exists between English language proficiency and GOM-ORF scores. Graves et al. explained that language proficiency may undergo many changes in one year. An examination of the relationship between English oral language proficiency scores and English literacy scores measured concurrently may address limitations of the Graves et al. study as well as those noted in the Baker and Good (1995) study.

Next, Wiley and Deno (2005) examined the predictive validity of GOM scores for state assessment scores of ELLs and non-ELLs. Specifically, Wiley and Deno were interested in determining the amount of predictive power maze scores contributed to the GOM oral reading measures on the Minnesota Comprehensive Assessment (MCA). Wiley and Deno were also interested in extending the existing research base pertaining to use of GOM with students who receive language services.

Participants were 36 third grade students (non-EL = 21, EL = 15) and 33 fifth grade students (non-EL = 19, EL = 14) who attended an urban elementary school located in St. Paul, Minnesota (Wiley & Deno, 2005). Home languages of third grade EL
students included in the study were 80% Hmong, 13% Somali, and 7% Spanish; however, home language of fifth grade EL students was 100% Hmong. Wiley and Deno did not provide information about the use of students’ home language in classroom instruction or home environments. EL participants in the study had been identified by school personnel and were receiving EL services at the time of the study.

Participants were selected based upon GOM maze scores collected as part of a school-wide assessment program in the Fall of 2001. Specifically, the participants’ scores revealed that they were performing in the lower 50% of their classrooms on the maze task, and as a result, following identification, they were monitored every other week from the beginning of November to mid-May using GOM-ORF measures taken from Standard Reading Passages (Children’s Educational Services, 1987 as cited in Wiley & Deno). Students read three passages each time, and the median words read correct per minute score was used for the data analysis. Maze tasks were completed three times a year during the fall, winter, and spring; maze passages were created by deleting every seventh word from reading passages selected from the Basic Academic Skill Samples (BASS; Deno, Maruyama, Espin, & Cohen, 1990). Finally, the MCA is a standardized state-wide assessment, based on the curriculum which is administered to all third grade and fifth grade students in Minnesota during a week in March. The MCA scores used in this study revealed that 26% of the third graders and 40% of the fifth graders were rated as proficient or higher (Wiley & Deno).

Pearson correlations were calculated between MCA scores and participant GOM–ORF and GOM-maze scores to evaluate the criterion validity of the GOM indicators (Wiley & Deno, 2005). For third grade non-EL students (n = 21), Wiley and Deno
reported a large relationship between MCA scores and both GOM-maze scores \((r = .73)\) and GOM-ORF scores \((r = .71)\). Coefficient of determination revealed that 53% of the variance in the MCA scores was shared with GOM-maze scores, while 50% of the variance of MCA scores was shared with GOM-ORF scores for third grade non-EL students. Likewise, a large relationship was found between MCA scores and GOM-maze scores \((r = .52)\) and between GOM-ORF scores \((r = .61)\) for third grade EL students \((n = 15)\).

Similarly, Wiley and Deno reported a large relationship between MCA scores and GOM-maze scores \((r = .73)\) and GOM-ORF scores \((r = .57)\) for fifth grade non-EL students \((n = 19)\). Coefficient of determination revealed that 53% of the variance in the MCA scores was shared with maze scores while 33% of the variance in the MCA scores was shared with GOM-ORF scores for fifth grade non-EL students. Also, the authors reported a large relationship between MCA scores and GOM-maze scores \((r = .57)\) and between GOM-ORF scores \((r = .69)\) for fifth grade EL students \((n = 14)\). Coefficient of determination revealed between 27% and 32% of the variance of the MCA scores was shared with GOM-maze scores for third and fifth grade EL students, respectively; between 37% and 48% of the variance of the MCA scores was shared with GOM-ORF scores for third and fifth grade EL students, respectively.

In addition to Pearson correlations, Wiley and Deno (2005) conducted two hierarchical multiple regression analyses. When GOM-ORF scores were entered into the regression equation first, results revealed the GOM-maze task scores significantly predicted MCA scores beyond GOM-ORF scores for non-EL students in both third and fifth grades. In the second analysis, GOM-maze scores were entered first, and results
revealed significant contribution of GOM-ORF scores for only non-EL third-grade students.

Pearson correlations between GOM and MCA scores varied according to grade and English language proficiency. For example, for fifth grade non-EL students, GOM-maze scores accounted for more variance in MCA scores when compared to GOM-ORF scores while for third grade, non-EL students, GOM-ORF scores accounted for more variance in MCA scores. Similarly, for fifth-grade EL students, GOM-ORF scores accounted for more variance in MCA scores compared to the variance accounted for by GOM-ORF scores in third grade, EL students. When considering MCA test performance, GOM-ORF scores are more informative for EL students and GOM-maze scores are more informative for non-EL students. In non-EL and EL students, the amount of information provided by GOM measures varies across grades.

To summarize, Wiley and Deno (2005) concluded that GOM-ORF scores can be used to measure reading growth in EL students. Contrary to their expectations, GOM-maze scores did not contribute to MCA test performance for EL students. While not purposefully hypothesized, results indicated GOM-ORF scores did not significantly contribute to MCA test performance for EL students. Despite these conclusions, the authors suggested that teachers use GOM-ORF and GOM-maze measures to monitor student growth. The authors’ rationale for the continued use of GOM-maze was not explicitly defined. They concluded that more research evidence is needed on the use of GOM measures with students identified as ELLs.

Finally, De Ramírez and Shapiro (2006) examined oral reading growth rates in English and Spanish speaking students. The authors were interested in the amount of
reading growth that occurred during an academic year for students receiving reading
instruction in English or Spanish. Participants were 165 students across Grades 1 to 5
receiving both general education (English only) and bilingual education services (De
Ramírez & Shapiro). English language proficiency data were not provided; however the
authors explained that student participation in the bilingual program implied limited
English proficiency. Furthermore, the majority of the bilingual student population
identified with the Mexican American community.

Student scores on the Texas Assessment Academic Skills (TAAS) and the
Developmental Reading Assessment (DRA; Beaver, 1997 as cited in De Ramírez &
Shapiro) were used to organize the students into two groups: (a) students who met the
academic standards for the school district and (b) students who did not meet the standards
for the school district. Using this criterion, students were randomized and stratified to
form two representative samples for the study: English general curriculum and Spanish-
speaking ELLs. It is unclear as to whether the students in the general curriculum had a
Spanish-speaking background; however, it is assumed that regardless of background, all
students in the general curriculum had been identified as proficient in the English
language.

Curriculum Based Measures in Oral Reading Fluency (CBM-ORF) and GOM-
ORF were used in the study. Consistent with previous research CBM-ORF and GOM-
ORF scores were obtained by calculating the number of words read correctly per minute.
Reading passages in English were selected from AIMSweb (i.e., GOM-ORF); these
passages have established alternate form reliability coefficients ranging from .83 to .89
(Howe & Shinn, 2002). Reading passages in Spanish were created from stories taken
from books used in the bilingual curriculum (i.e., CBM-ORF). The Crawford formula (Crawford, 1984) and a Spanish adaptation of the Fry formula (Peña, 1980) were used to calculate readability (De Ramírez & Shapiro). Data were collected across grades during the fall (October), winter (February), and spring (May). The authors referred to the reading scores as CBM measures; therefore, to be consistent with the authors and reduce confusion, all scores will be referred to as CBM-ORF.

Analysis of variance was conducted to answer three questions (De Ramírez & Shapiro, 2006). First, English reading rates were compared between general education and bilingual students. Second, reading rates of bilingual students in English and in Spanish were compared. Finally, rate of growth in English reading (calculated from Ordinary Least Squares regression) was compared between the general and bilingual education students. A significant interaction was found between time and group; this result demonstrated that general education students had greater growth in English reading fluency compared to the bilingual education students.

De Ramírez and Shapiro (2006) concluded that English reading growth rates for English-only and bilingual students may not be equivalent. Furthermore, these results begin to address the concern that CBM-ORF score growth rates proposed by Fuchs and Fuchs (1993) may not be appropriate for bilingual students. Specifically, the authors suggest that bilingual students may be demonstrating growth below their monolingual peers but it may be typical.

While these results provided a preliminary examination of bilingual student CBM-ORF score growth rates over one academic year, limitations need to be addressed in future studies. First, bilingual students included in the study were receiving instruction
as defined by transitional bilingual education programs. Bilingual students receiving
instruction from other language education programs should be included in future studies
to examine whether growth rates on English literacy tasks vary according to type of
language instruction. Consistent with previous studies reviewed in which ELL CBM-
ORF scores were examined, a second limitation of these results is the lack of information
about the students’ English and Spanish language proficiencies. Specifically, in this study
student language proficiency levels could have ranged from negligible to very proficient
in English, Spanish or both languages. Again, measuring English oral language
proficiency scores concurrently with English literacy scores may provide insight about
how (or if) language proficiency and literacy predict each other.

To conclude, the report of the National Literacy Panel on Language-Minority
Children and Youth, offered three recommendations for improving the existing research
base pertaining to language acquisition and literacy assessment (García, Mckoon, &
August, 2006). First, the authors suggested the integration of knowledge from appropriate
disciplines (e.g., education, linguistics, and psychometrics). Second, they encouraged
researchers to provide complete appendices or web resources describing instrumentation
used in their studies. Finally, they stressed the need for research to replicate and expand
previous studies. As such, the measures and procedure selected for the current study
adhered to many of these recommendations.

**Purpose and Rationale**

Research studies examining the use of general outcome measurement of early
literacy skills with ELLs is limited; however, results provide direction for future studies
investigating the use of GOM for students within this population. For example,
researchers who have examined ELL English reading performance using CBM or GOM oral reading fluency (ORF) and nonsense word fluency (NWF) scores have identified limited measures of their participants’ English oral language proficiencies (Baker & Good, 1995; Graves et al., 2005) as a significant limitation. Other studies have not addressed English oral language development when examining the predictive power of ELL English GOM-ORF scores on state academic assessment performance (Wiley & Deno, 2005). Reading theorists have identified foundations in phonological awareness as a significant predictor for successful reading outcomes in Spanish and English languages (Durgunoglu et al., 1993). However, few studies have investigated change in oral English language proficiency and change in phonological awareness skills (Giambo & McKinney, 2004).

The purpose of the current study was to examine the relationship between English oral language proficiency and English early literacy skills. While language and literacy can overlap (Crawford, 2004), these constructs were clearly differentiated in the current study. Specifically, English oral language proficiency represented conversational (e.g., Story Recall) and academic language (e.g., Picture Vocabulary). English early literacy skills represented the alphabetic principle and oral reading fluency. Two questions guided this study. Does English oral language proficiency predict English early literacy skills? Do English early literacy skills predict English oral language proficiency?

Practitioners have limited information about the relationship between English oral language proficiency and English early literacy skills. Therefore, the current study examined the relationship between student English oral language proficiency and English
literacy over time (see Figure 1). Specifically, six hypotheses were tested using a panel design:

**Hypotheses**

**Hypothesis 1.** English oral language proficiency at Time 1 significantly predicts English early literacy skills at Time 2 when controlling for participant age and Time 1 English early literacy skills.

**Hypothesis 2.** English oral language proficiency at Time 2 significantly predicts English early literacy skills at Time 3 when controlling for participant age and Time 2 English early literacy skills.

**Hypothesis 3.** English oral language proficiency at Time 1 significantly predicts English early literacy skills at Time 3 when controlling for participant age and Time 1 English early literacy skills.

**Hypothesis 4.** English early literacy skills at Time 1 significantly predict English oral language proficiency at Time 2 when controlling for participant age and Time 1 English oral language proficiency.

**Hypothesis 5.** English early literacy skills at Time 2 significantly predict English oral language proficiency at Time 3 when controlling for participant age and Time 2 English oral language proficiency.

**Hypothesis 6.** English early literacy skills at Time 1 significantly predict English oral language proficiency at Time 3 when controlling for participant age and Time 1 English oral language proficiency.
Figure 1. English Oral Language Proficiency (EOLP) and English Early Literacy Skills (EELS) Across Time
Method

Setting

The current study was conducted in Southeastern Pennsylvania. Approval to conduct the study was obtained through The Pennsylvania State University Institutional Review Board (see Appendix A). Also, permission and support from the Migrant Education Program (MEP) supervisor was secured (see Appendix B). Finally, cooperation from the MEP after school program service coordinators was obtained.

School districts. Participants in the current study attended schools located in three rural school districts served by the Pennsylvania MEP. The school districts were demographically comparable. While the majority of the residents identified as White, non-Hispanic (57% - 80%), residents identifying as Hispanic (15% - 36%) comprised the second largest race-ethnicity identification category. Based upon information available from the National Center for Education Statistics, Common Core of Data 2008-2009 (U.S. Department of Education), the number of students across all school districts enrolled in Kindergarten through 12th grade ranged from 3,678 to 5,401 students. Likewise, the number of students across all school districts identified as ELL ranged from 309 to 549.

Participants attended one of six elementary schools or an intermediate school (third grade only). One elementary school and the intermediate school were located in School District A, two elementary schools were located in School District B, and three elementary schools were located in School District C. Demographic data for all schools are reported in Table 1.
### Table 1

**School Demographic Data 2008-2009: Common Core of Data**

<table>
<thead>
<tr>
<th>School</th>
<th>Total Students (N)</th>
<th>Free and Reduced-Priced Lunch Eligible (%)</th>
<th>Asian-Pacific Islander (%)</th>
<th>Black (%)</th>
<th>Hispanic (%)</th>
<th>White (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>1,652</td>
<td>16.8</td>
<td>1.6</td>
<td>4.1</td>
<td>15.3</td>
<td>79.1</td>
</tr>
<tr>
<td>A2</td>
<td>1,049</td>
<td>16.8</td>
<td>1.9</td>
<td>2.9</td>
<td>18.9</td>
<td>76.4</td>
</tr>
<tr>
<td>B3</td>
<td>852</td>
<td>33.8</td>
<td>.7</td>
<td>6.0</td>
<td>19.6</td>
<td>73.7</td>
</tr>
<tr>
<td>C5</td>
<td>639</td>
<td>16.1</td>
<td>3.9</td>
<td>1.3</td>
<td>20.2</td>
<td>74.6</td>
</tr>
<tr>
<td>C6</td>
<td>460</td>
<td>61.0</td>
<td>1.1</td>
<td>7.0</td>
<td>73.0</td>
<td>19.1</td>
</tr>
<tr>
<td>C7</td>
<td>780</td>
<td>31.4</td>
<td>4.2</td>
<td>1.5</td>
<td>38.3</td>
<td>55.9</td>
</tr>
</tbody>
</table>

*Note.* The demographic data represent the most recent statistics available. \(^{a}\)A1 and A2 = Individual school buildings in School District A; B3 = Individual school building in School District B; C5, C6, and C7 = Individual school buildings in School District C. \(^{b}\)Only B3 is listed in Table 1. School B4 is not listed because it housed Grades 5 and 6 prior to the 2009-2010 School Year. There are no available statistics for School B4 as a Grade 1 and 2 building. Two first grade participants attended School B4.

**Migrant education program.** Typically, the MEP program occurred at the conclusion of the instructional school day in the student’s home school. The exception occurred in School District B; students from one elementary school were bussed to the other elementary school. The duration and frequency of the program ranged from 1 day per week for 90 minutes to 2 days per week for approximately 67.5 minutes per session. The goal of MEP is to provide supplemental education and to reinforce the academic skills learned in the child’s home school. Five schools employed a game format to reinforce grade-level skills such as grammatical concepts (e.g., antonyms/synonyms) and literacy (e.g., reading readiness skills and oral reading skills). Homework help was provided on an “as needed” basis. Two elementary schools implemented a supplemental science program that involved a review of grade-level concepts paired with experiential
activities. Finally, male students enrolled in each MEP participated in the Cub Scout program one time per week. Cub Scout content involved cooperative play, inculcation of moral tenets and Scout ideals, and participation in hands-on activities.

The MEP afterschool program service coordinators spoke English and Spanish languages, and they identified as female. Race-ethnicity of the service coordinators was not collected as part of the study. Informal observations of MEP supplemental instruction concluded that the MEP service coordinators occasionally used the Spanish language to clarify directions or requests. The English language was used for reinforcement of grade-level skills.

**Participants**

Initially, 40 elementary school students received parental permission to participate in the project. Over the course of the 5-month data collection period, however, one student did not provide assent to participate, one student started receiving special education services, one student moved (location unknown), and two students returned to Mexico. Data were collected at all time points for the remaining 36 elementary school students: 16 first grade students (10 males, 6 females), 12 second grade students (4 males, 8 females), and 8 third grade students (4 males, 4 females). Age of participants ranged from 6-years-old to 9-years-old. All participants spoke Spanish, lived in a home where Spanish was spoken, and identified as Mexican. Although citizenship status was considered to be another demographic variable of interest, due to legal restrictions\(^2\), it

\(^2\) The Pennsylvania Department of Education Basic Education Circular (BEC; 2009) states, “School districts may never ask the family for the child’s or parent’s immigration documents (during enrollment or at any other time).” Information available online: http://www.portal.state.pa.us/portal/server.pt/community/purdon%27s_statutes/7503/enrollment_q_a/610931
was not collected. As mentioned above, to prevent the occurrence of multiple-treatment interference, participants who received special education services were not retained for the study.

**Measures**

**Woodcock-Muñoz Language Survey-Revised-English Form (WMLS-R; Woodcock, Muñoz-Sandoval, Ruef, & Alvarado, 2005).** The Woodcock-Muñoz Language Survey-Revised (WMLS-R) provides information about the four domains of English and Spanish language development based upon the BICS/CALP theory (Alvarado, Ruef, & Schrank, 2005; Cummins, 1984). The WMLS-R was developed to not only evaluate student language development and ability but also to provide researchers with a way to describe and determine the outcomes of language development.

The WMLS-R allows the examiner to assess English and Spanish language development; as such, English and Spanish forms are provided. The English forms were used in the current study. The WMLS-R Picture Vocabulary, Verbal Analogies, Understanding Directions, and Story Recall subtests were administered to all participants to obtain their Oral Language-Total Cluster Score. Picture Vocabulary is mainly a measure of expressive oral language ability. Verbal Analogies provides a measure of an examinee’s lexical knowledge by requiring the individual to provide the appropriate vocabulary word based upon given relationships. Understanding Directions measures an examinee’s listening skills, lexical knowledge, and working memory by presenting the examinee with a series of verbal directions and requiring the examinee to provide the appropriate subsequent action. Finally, Story Recall is a measure of listening skills, meaningful memory, and expressive language by requiring the examinee to listen to a
story and recall details of the story. Overall, the Oral-Language-Total Cluster Score provides information about the student’s broad measure of language competency: listening, speaking, language development, verbal reasoning, and language comprehension.

The WMLS-R offers four levels of score interpretative information. Level 1 provides qualitative information about the student such as language exposure, language use, and test session observations. Level 2 presents the sum of the raw item scores which is then converted to \( W \) scores and can be used to report individual language growth and level of language development. The \( W \) score is a metric of the \( W \) scale, an equal-interval scale, which provides a researcher with a way to describe an individual’s increased probability of success with a task over time (Alvarado et al., 2005). Level 3 provides proficiency information and a measure of the quality of performance on tasks. This information is presented by the use of \( W \) scores, Relative Proficiency Index (RPI), Instructional Zone, and CALP level. Finally, Level 4 provides score interpretation of an individual’s performance in relation to his or her peer group. Scores derived from Level 4 include \( T \) score and percentile rank. Specifically, \( W \) scores were used in the data analysis for the current study\(^3\).

Alvarado et al. (2005) reported reliability data for both WMLS-R test and cluster scores. Internal consistency (split-half) was calculated for WMLS-R test scores while Mosier’s (1943) procedure was used for cluster score reliabilities. First, for the Picture

\(^3\)The \( W \) score was used in the current data analyses for two reasons. First, the \( W \) score is not affected by the use of age-based or grade-based norms. Second, B. Wendling, Education Director, Woodcock-Muñoz Foundation indicated that the \( W \) score would be the best metric for detecting a change in scores at a more frequent interval (personal communication, September 29, 2009).
Vocabulary subtest scores, the internal consistency reliability coefficients for 6- to 9-year-old children ranged from .88 to .90. Next, for Verbal Analogies subtest scores, the internal consistency reliability coefficients for 6- to 9-year old children ranged from .87 to .90. Third, on the Understanding Directions subtest scores, the internal consistency reliability coefficients for children 6-years to 9- years old ranged from .87 to .92. Finally, for the Story Recall subtest scores, the internal consistency reliability coefficients for children 6-years-old to 9-years-old ranged from .65 to .76. The Oral Language-Total Score reliability coefficient for children 6- through 9-years old was .95.

Similarly, validity data for WMLS-R subtests and cluster scores are available (Alvarado, et al., 2005). The correlation between the Oral Language-Total score and Reading Achievement Area (Letter Word Identification, Word Attack, Reading Vocabulary, and Passage Comprehension) score is .56 (Grade 1), .76 (Grade 2), and .75 (Grades 3-4). Intercorrelations between the subtests for children age 6-years through 8-years old range from .44 to .62 and for children age 9-years through 13- years old range from 45 to .60. A review of the literature did not yield peer-reviewed studies examining the construct validity of WMLS subtests and cluster scores.

**Dynamic Indicators of Basic Early Literacy Skills (DIBELS).** Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002) is an example of GOM used to monitor the development of early literacy skills. The DIBELS consists of a standardized benchmark assessment process for screening student performance on tasks measuring early literacy skills. Scores obtained from these tasks have been used to predict successful reading outcomes. DIBELS benchmark assessments are typically administered three times per academic year using grade-level appropriate
materials (Good & Kaminski, 2002). Also, DIBELS can be used with ELLs who are learning to read in English. Previous researchers examining ELL GOM or CBM scores and scores on criterion English reading tests have included measures of GOM-ORF and GOM-NWF (De Ramírez & Shapiro, 2006; Graves et al., 2005; Wiley & Deno, 2005).

Similarly, as part of the current study, DIBELS NWF and ORF were administered to all participants.

The DIBELS NWF task tests application of the alphabetic principle by requiring the student to identify letter-sound correspondences and to blend those sounds together. The examiner shows the student a page that contains “made-up” nonsense words that are in random order. The student is asked to verbally produce the individual sounds of each letter or to verbally produce the entire nonsense word. DIBELS NWF scores are calculated by the number of correct letter-sound correspondences produced in 1 minute. Typically, students enrolled in mid-Kindergarten through beginning of second grade are administered the DIBELS NWF task; however, the task may be administered to older children with below grade level letter-sound correspondence skills in order to monitor their progress (Good & Kaminski, 2002).

Good et al. (2004) reported reliability and validity data for NWF scores. Alternate form reliability coefficients for first grade NWF scores ranged from .67 to .88. Concurrent validity correlations for first grade DIBELS NWF scores with Woodcock-Johnson Psycho-Educational Battery (WJPEB) Readiness Cluster scores ranged from .35 to .59. Predictive validity correlations between first grade DIBELS NWF and first-grade ORF scores ranged from .68 to .82, and second grade ORF scores ranged from .60 to .85.
The correlation coefficients between first grade NWF scores and second grade Total Reading Cluster scores from WJPEB ranged from .52 to .77.

The DIBELS Oral Reading Fluency (ORF) task is a measure of reading accuracy and fluency. The examiner asks the student to read a grade-level passage aloud for 1 minute. The number of words read correctly per minute is the ORF score. When the student reads three passages, the examiner records the median score as the ORF score (Good, Kaminski, & Dill, 2002). In the current study, the average score was used in order to account for the variability of passages and performance across time.

The Dynamic Measurement Group (2008) reported reliability and validity evidence from previous studies using ORF passages. Baker et al. (2008) reported test-retest reliability coefficients for first and second grade DIBELS ORF scores at .94 and .97, respectively. The concurrent validity coefficient between first grade DIBELS ORF scores and Stanford Achievement Test-Tenth Edition (SAT-10) reading scores was .82 (Baker et al.). Similarly, concurrent validity coefficients between DIBELS ORF scores and SAT-10 scores were .80 and .67 for second and third grade, respectively (Baker et al.). Predictive validity correlations between Winter DIBELS ORF scores and Spring SAT-10 scores for students in Grade 1 was .72, Grade 2 was .79, and Grade 3 was .68 (Baker et al.). Roberts, Good, and Corcoran (2005) reported alternate-form reliability coefficient for first grade ORF scores as .96. Concurrent validity coefficients between first grade ORF scores and the Woodcock Diagnostic Reading Battery Broad Reading Cluster ranged from .72 to .75 (Roberts et al.).

Limited construct validity evidence is available for DIBELS data. Burke and Hagan-Burke (2007) examined validity evidence of DIBELS scores collected from 213
first grade students in the middle of the school year. They used principal axis factor analysis to examine the construct validity of DIBELS scores. Scores from the five DIBELS measures administered to participants were analyzed. Results supported the extraction of one factor, which explained 43.9% of the variance (Burke & Hagan-Burke, 2007). The authors reported factor loadings for ORF scores and NWF scores at .86 and .77, respectively.

**Background Information Form.** Parent completion of the Background Information Form (see Appendix D) provided information about several factors: (a) child’s first language, (b) current primary home language, (c) current percentage of Spanish and English language used by the child and other people in the home, and (d) years (and language) of previous schooling. Participants’ language use and educational background are reported in Table E1 in Appendix E.

**Procedure**

**Participant recruitment.** Migrant Education Program service coordinators identified students who met the aforementioned inclusion criteria for participation in the study. They noted that although children eligible for the MEP moved more frequently relative to their non-migratory peers, the majority of their students had been attending the same afterschool program for most of the 2009-2010 academic year. Moreover, they anticipated that approximately 90% of the students would not move out of the current school district prior to the completion of the school year.

Participants were recruited through the dissemination of a recruitment consent packet. The recruitment consent packet was sent home to each prospective participant’s parent/guardian. All documents included in the consent packet were provided in English
and Spanish (see Appendix C). As outlined on the informed consent form, active consent was required for the child’s participation in the study. All questions and concerns about the study were required to be directed to the principal investigator. The principal investigator told the MEP service coordinators to direct all parent inquiries about the study to her.

Participation in the study was voluntary. In addition to obtaining parent active consent, prior to working with a participant, research assistants obtained the child’s assent at the beginning of each data collection session. Participants were asked if they wanted to take part in the activities that the research assistant described. Assent was conducted in English only. Students received small prizes for participating in the study (i.e., stickers and pencils). Families were provided with a chance to receive a Wal-mart Gift Card ($25.00).

Initially, 99 consent packets were sent home to parents. Twenty consent packets were returned following the first week of distribution. Given that a 100% return rate was not achieved, a second distribution of the consent packets was conducted 1 week after the first distribution. Twenty-two consent packets were returned following the second distribution. In all, a 42% return rate was achieved: 42 parental consent forms and 41 completed demographic information forms were returned. Review of the consent materials revealed that one parental consent form was not completed correctly, and follow-up attempts by the principal investigator to confirm consent to participate were unsuccessful. Therefore, that participant was not included in the study.

Following the closure of the recruitment period, conversation between MEP service coordinators and the principal investigator provided some insight regarding the
recruitment process. Some parents called the service coordinators requesting clarification about the study procedures (e.g., location and time of data collection) or explanation about the meaning of items on the Background Information Form (e.g., meaning of IEP). The MEP service coordinators appropriately directed parents to call the principal investigator. While only one parent called the principal investigator, conversation with the service coordinators implied more than one parent had questions. Overall, the principal investigator concluded that limiting the role of the service coordinators in the recruitment process might have resulted in a lower number of participants recruited for the study.

**Training of research assistants.** Research assistants were recruited from The Pennsylvania State University School Psychology Program. The principal investigator also assisted with data collection. Research assistants, including the principal investigator, were 1 male and 3 females. All data collectors had earned a master’s degree in school psychology and worked within a school setting. Research assistants identified as White/Caucasian and spoke primarily English. Two research assistants and the principal investigator had a basic proficiency in the Spanish language. One research assistant did not have any proficiency in the Spanish language.

The research assistants completed a half-day training session, which included an overview of the WMLS-R, administration of selected subtests, and scoring procedures of selected subtests. The training session also provided a review of the administration and scoring procedures for DIBELS ORF and NWF. In addition, the principal investigator reviewed the approved accommodations in the DIBELS Administration and Scoring Guide for students identified as ELLs.
For both the WMLS-R, English Form and DIBELS, research assistants engaged in practice administration of the subtests as part of the training. The principal investigator observed the administration and provided corrective feedback. The research assistants achieved mastery by demonstrating 100% accuracy on administration and scoring. Finally, all research assistants completed the Institutional Review Board’s online training program for the Protection of Human Participants.

Data collection. Data were collected at three time points during the second part of the academic year over a 20-week time period (February/March 2010, April/May 2010, and end of June 2010). At all time points, research assistants administered 1 NWF probe, 3 ORF probes, and four subtests of the WMLS-R to participants. Two versions of the English WMLS-R were administered; Form A was used during the first and third data collection points. Form B was administered during the second data collection point. To minimize practice effects, the administration of the literacy and oral language proficiency tasks was counterbalanced within MEP programs and across each data collection time period. For example, participants in one MEP program were administered ORF probes, the NWF probe, and WMLS-R subtests during the first data collection period, while the participants in the second MEP program were administered the NWF probe, WMLS-R subtests, and ORF probes. The participants in the third MEP program then were administered the WMLS-R subtests, ORF probes, and the NWF probe. The order of

4 Although Ochoa and Ortiz (2005) recommend that measures of oral English language proficiency should be obtained at a minimum, every 6 months to provide an accurate indication of oral language proficiency development, Alvarado et al. (2005) did not provide information about how often the WMLS-R should be given. B. Wendling, Education Director, Woodcock-Muñoz Foundation confirmed the 6 month timeframe (personal communication, September 29, 2009).
administration was rotated by program for subsequent data collection periods, and the principal investigator organized all of the packets for the research assistants before each data collection period. Administration time was approximately 30 minutes per participant (per time point). During all administration times, participants were given an opportunity to take a break. Participants received stickers following the completion of each WMLS-R subtest and a pencil following the completion of the DIBELS tasks.

To maintain scoring fidelity, following research assistant administration of all measures, the principal investigator reviewed approximately 40% of the protocols for each measure (WMLS-R, NWF, and ORF).

**ESL Instruction**

**School district A.** All of the MEP students ($n = 10$ first grade, 4 second grade, and 5 third grade) in School District A received ESL program services. Frequency of services (1.5 hours per day to 1 time per week) depended upon the student’s English language proficiency as measured by the Assessing Comprehension and Communication in English State-to-State for English Language Learners (ACCESS) test. The majority of MEP students received 30 minutes of pull-out ESL instruction each school day during the regular education Language Arts instruction. The ESL teachers used solely the English language for instruction. Spanish was the language background of all of the students enrolled in the ESL program.

Overall, the ESL program instructional materials used at each grade level were the same; there was some variation with the use of supplemental materials. The On Our Way to English Curriculum was used for first through third grade students. Curriculum materials included guided reading resources to build comprehension and fluency,
resources that modeled writing expectations and strategies, and resources for building and reinforcing vocabulary. Also, ESL teachers used materials from the Oxford Picture Dictionary and Content Area Picture Dictionary to facilitate oral language development, build vocabulary and academic language, and support reading and writing skills. Additional reading materials included leveled readers, comprehension checks, and reading fluency passages (A-Z materials and Bonnie Kline Stories). Finally, technology (e.g., Leap pad, computer-based programs) was used to provide additional supplemental reading support. The ESL teachers used a commercial progress monitoring tool to monitor student letter naming and reading fluency.

Third grade ESL instructional materials included Project Read resources such as letter cards, sentence strips, phonology guides, and sight word cards. Also, third grade students had access to a Spanish-English dictionary to assist with district task expectations. Moreover, third grade ESL teachers collaborated with the reading specialist to use intervention materials from the Harcourt reading curriculum (e.g., build grammatical skills, reinforce reading skills and strategies). Finally, third grade students used Pennsylvania System of School Assessment (PSSA) test preparation books to build their test taking skills.

All students enrolled in the ESL program were eligible for ESL program services until they met the exit criteria. These criteria included a score of Basic on the PSSA, final grades of Proficient in core subject areas, and scores on district-wide assessments that were comparable to their Basic performance on the PSSA.

**School district B.** All of the MEP students \( n = 2 \) first grade, \( 1 \) second grade, and \( 1 \) third grade) in School District B received ESL program services. First grade students
received 40 minutes of ESL services on a daily basis or every other day. Again, frequency of ESL services was based upon the student’s level of English language proficiency as measured by the ACCESS. First grade students received 50% pull-out ESL services and 50% push-in ESL services. First grade students with a high level of English language proficiency (i.e., Expanding range on the ACCESS) received pull-out instruction one time per 6-day cycle. The remainder of the time was push-in support. First grade students received 95% of their ESL instruction in English. Students with the lowest level of English language proficiency received occasional clarification in their first language. All first grade students in the ESL program spoke Spanish as their first language. The primary goal of the ESL instruction was to support students in their development of Language Arts skills (i.e., reading skills such as phonological awareness, word reading, reading comprehension, reading fluency, and writing) and to support the development of English vocabulary. The instruction was often cross-curricular in that it incorporated language, which was based on a unit from science, social studies, and mathematics. For example, if the regular education science curriculum involved a unit on the five senses, the ESL teacher would select reading and writing activities based on the five senses.

Second and third grade students enrolled in the ESL program received pull-out or push-in instruction between 45 minutes and 2 hours per day. All of the students enrolled in the ESL program spoke Spanish as their other language. Instruction was provided primarily in English unless the student was not familiar with the English language. When a student was not familiar with the English language, the teacher provided instruction in both English and Spanish. For example, after delivering a direction using English, the
teacher would then provide the direction in Spanish. Written material, however, was only provided in English. Similar to the goals of the first grade ESL program, the goals of the second and third grade ESL program focused on the development of Language Arts skills and content. In addition, the second and third graders received instruction about appropriate social interactions. For example, the students learned how to answer people using a complete sentence, how to shake hands, how to ask for permission to do something, and how to celebrate holidays.

The ESL program exit criteria for School District B followed the Pennsylvania guidelines: Score of Basic and above on the PSSA and a score of 5.0 on Tier C of the ACCESS.

**School district C.** All but one of the MEP students \((n = 3\) first grade, 7 second grade, and 2 third grade) enrolled in School District C received ESL program services. First and second grade students received 1 to 2 hours of pull-out ESL program services per school day. Third grade students received push-in services. Similar to students in School Districts A and B, the amount of daily ESL program services was partially dependent upon level of English language proficiency as measured by the ACCESS. The other qualifying factor for the amount of service the student received was determined by his or her performance on literacy tasks such as the Informal Reading Inventory.

The first aspect of the ESL curriculum was StoryTown by Harcourt School Publishers. StoryTown provided a language arts connection between the ESL and regular education classrooms. Specifically, the ESL teachers used StoryTown materials to review text elements such as plot, setting, and characters with the students. When the students participated in their regular education literature time, they could build upon a
foundational base. The second aspect of the ESL curriculum was Avenues. Avenues is a content-based program, which focuses on “reading to learn” as opposed to “learning to read.” It is a curriculum product published by Hampton-Brown, affiliated with National Geographic School Publishing which includes student books and workbooks. The books contained fiction and nonfiction text, and they provided rich picture support, a picture dictionary, and activities for supporting content. The workbooks provided practice opportunities for previously taught skills. Avenues is directly aligned with classroom science and social studies curricula. Likewise, the Avenues content correlates with Pennsylvania English Language Proficiency Standards which is based on WIDA 2007 standards (National Geographic School Publishing, 2008).

The majority of the students enrolled in the ESL program in School District C were Spanish speakers from Mexico. On occasion, a student with a different language background entered the program (e.g., South Africa, Germany, India, and China). First and second grade students received the majority of their ESL instruction in English (approximately 99%). At times, the teacher used Spanish to introduce herself/himself or to provide an example of cognates (e.g., artist and artista). Students in the third grade ESL program received more instruction in Spanish. Nonetheless, the dominant language of instruction was English. English as a Second Language program exit criteria were based upon Pennsylvania guidelines (ACCESS and PSSA scores).

**Reading Instruction**

Participants attended schools within the Commonwealth of Pennsylvania. As such, the reading instruction was geared toward the attainment of the Pennsylvania Standards. While the Pennsylvania Department of Education puts forth reading standards
that students meet, the agency does not mandate how school districts meet the standards. Consequently, school districts may choose different reading programs and instructional materials to assist students toward meeting the state standards.

**School district A.** All of the MEP students \( n = 10 \) first grade, 4 second grade, and 5 third grade) in School District A participated in the daily 90 minute Language Arts block offered to all students in regular education. First and second grade students received instruction in basic reading skills (e.g., decoding, high frequency word recognition, and blends) through the implementation of Project Read, Making Words, leveled texts, and Interactive/guided reading. Additionally, first and second grade students received explicit instruction in reading comprehension skills (e.g., making predictions while reading, recognizing word errors, and self-correcting) through the use of repeated readings, sustained silent reading, and interactive/guiding reading. Likewise, first and second grade students strengthened reading fluency skills through opportunities to read aloud and sustained silent reading. Student progress on all reading skills was monitored through the use of school-developed progress sheets.

Third grade students received instruction in basic reading skills through the introduction of new vocabulary. For example, students were introduced to unfamiliar words and required to apply decoding strategies and knowledge of affixes to derive definitions. Students were taught reading comprehension strategies through the use of predicting, self-monitoring, and comparing texts. Specifically, students received instruction on the different components of a passage (e.g., main idea, author’s purpose). They practiced the acquired skills through independent reading, partner reading, and teacher modeling. Finally, students received instruction in reading fluency skills through
repeated readings including partner reads and teacher modeling. Teachers monitored student progress through the use of teacher-developed assessments, observation, text assessments (e.g., PSSA study guide and anthology quizzes), and reading logs.

School district B. All of the MEP students \((n = 2\) first grade, 1 second grade, and 1 third grade) in School District B participated in the reading curriculum offered to all students in regular education. Students in all grade levels received instruction from the Houghton-Mifflin Anthology Series. Likewise, all students participated in school-wide reading models designed by the American Reading Company. Within grade levels, teachers used a variety of instructional approaches/materials (e.g., Fundations Wilson Language Basics) to target specific reading skills.

First and second grade students received basic reading skills instruction through a program called Fundations Wilson Language Basics. Students received this instruction for 30 minutes per school day. Fundations instruction included explicit introduction and practice of letter-sound correspondence, sound blends, and encoding. In addition to basic reading skills instruction, first and second grade teachers explicitly instructed students in the area of reading comprehension for 30 minutes. First and second grade students received brief whole group instruction intended to set a focus for students’ independent reading time. Then the students read individually at their independent reading level for the remaining time allotted (i.e., 25 minutes). During the individual reading time, professional staff members met briefly with students to individually review previously identified reading strategies (e.g., decoding). Student reading progress was monitored through the use of DIBELS (Fall, Winter, & Spring benchmarks), Study Island, and PSSA scores.
Third grade students received basic reading skills instruction as part of the Houghton-Mifflin materials for approximately 15 minutes per school day. Rather than the introduction of individual letter-sound correspondence and sound blends, third grade students were presented with patterns of words through the introduction of new vocabulary (e.g., “team” and “bread”). Third grade teachers delivered reading comprehension instruction using the same method as the primary grades; however, third grade students received 45 minutes of reading comprehension instruction. Thus, following the brief whole group instruction, they read independently for 40 minutes. Again, during the individual reading time, professional staff members met briefly with students to individually review previously identified reading strategies (e.g., decoding). Third grade reading progress was monitored through the use of DIBELS (Fall, Winter, & Spring benchmarks), Study Island, and PSSA scores.

**School district C.** All of the MEP students \((n = 4\) first grade, 7 second grade, and 2 third grade) enrolled in School District C participated in the reading curriculum offered to all students in regular education. Overall, first through third grade students received a total of 120 minutes per day of reading instruction. Specifically, within the six-day instructional cycle, students received whole-group direct instruction for the first two days, and small-group instruction during the remaining four days. Within grade levels, teachers used a variety of resources to teach the reading standards including Harcourt Storytown, Harcourt Strategic Intervention materials, Read Naturally, and Project Read. However, all teachers used the Harcourt Anthology series, leveled readers, and read-alouds.
First and second grade reading instruction included direct instruction on concepts of print (e.g., left to right progression, front to back of book), basic reading skills (decoding, letter-sound correspondence), identification of high frequency words, reading fluency, and reading comprehension (e.g., predicting, inferring, visualizing, and making connections). First and second grade student reading progress was monitored through the use of DIBELS, teacher-created assessments, and Project Read.

Third grade students received instruction in basic reading skills as they occurred within the context of more advanced reading skills. Advanced reading skills comprised the foundation of the third grade reading curriculum: multiple meanings, homophones, and synonyms/antonyms. Instruction in the area of reading comprehension skills included drawing conclusions, making generalizations, understanding figurative language, the author’s purpose, text structure, and fact/opinion. Third grade student reading progress was monitored by teacher-created assessments, comprehension tests, and response activities.

Research Design

The current study employed a panel study research design. That is, the same participants were administered the proposed measures at each data collection point (Gall, Borg, & Gall, 1996). Advantages of this design are sensitivity to small changes, ability to identify individual change, and ability to find the origin of the change. Two problems with this design include participant familiarity with the measures and attrition. To address the concern of participant familiarization with the measures, alternate forms of the WMLS-R and varied NWF probes and ORF reading passages were used at each data collection point. Moreover, the measures were counterbalanced within MEP programs.
across data collection periods. Some attrition was unavoidable, as one participant was found eligible for special education services and two participants moved back to Mexico.

**Data Analysis**

**Preliminary data analysis.** Approximately 13% (5 cases) of the sample was missing at least one measure at one of the data collection time points. Because the pattern of missing data can be more important than the amount of missing data, the data were examined for underlying causes (Tabachnick & Fidell, 2007). Data were not collected from three participants at Time 1 due to weather-related school cancellations combined with student absences on the days of original and rescheduled data collection periods. Similarly, due to administration time limitations and unsuccessful follow-up attempts, two participants had missing language proficiency data and reading data, respectively. Data loss can be addressed with several methods; however some approaches are better because data interpretation is minimally impacted (Kline, 2005; Tabachnick & Fidell). Listwise deletion, which involves removing cases with missing scores on any of the variables, was chosen because it was the most conservative approach given the size of the sample and statistical analyses selected (Kline 2005; Tabachnick & Fidell).

Next, data were examined for multivariate normality using several methods (Keith, 2006; Tabachnick & Fidell, 2007). First, the Shapiro-Wilk statistic was examined for significance (Royston, 1995). Second, skew and kurtosis of the scores were assessed by an examination of descriptive values and a visual inspection of graphed data (i.e., histogram, normal probability plots, and detrended normal probability plots; West, Finch, & Curran, 1995). Univariate outliers were detected by inspecting histograms and boxplots. Third, residual scatterplots were inspected for linearity and homoscedasticity.
Multivariate outliers were detected by examining the Mahalanobis Distance statistics (Tabachnick & Fidell, 2007). Autocorrelation was examined through the review of the Durbin-Watson statistic (Tabachnick & Fidell, 2007; Wooldridge, 2003).

Variables were examined for multicollinearity through the use of several methods. First, bivariate correlation coefficients between each independent variable and the dependent variable were examined (Tabachnick & Fidell, 2007). Second, tolerance values ($1 - R^2$) were examined (Keith, 2006). Third, collinearity diagnostics were reviewed for a conditioning index $> 30$ in conjunction with variance proportion scores ($>.50$; Belsely, Kuh, & Welsch, 1980).

**Multiple regression.** Sequential multiple regression analyses were used to investigate the relationship between EOLP and EELS across time (see Figure 1). Sequential regression was employed to examine the unique variance offered by the predictor of interest (i.e., previous EOLP or EELS) to the outcome variable while controlling for the variance accounted for by the other predictors (Keith, 2006). The specific sequence was as follows. First, age was entered into the regression equation; second, the previous measure of the outcome variable was entered into the regression equation. Third, the predictor of interest was entered into the regression equation.

Successive time periods were tested (Time 1 to Time 2 and Time 2 to Time 3). Initially, data were to be collected at 4-month intervals during the academic year. To be more consistent with this proposed timeline and to investigate the relationship over a longer period of time, Time 3 EOLP and EELS were regressed on Time 1 EOLP and EELS.
Initial examination of the results revealed high correlation coefficients between the previous measure of the outcome variable and the outcome variable. Furthermore, the predictor of interest (i.e., EOLP or EELS) added negligible unique variance with no statistical significance when entered after the criterion predictor. However, a relationship between EOLP and EELS had been supported by previous theory and research (Giambo & McKinney, 2004; Graves et al., 2005). Because the purpose of the current study was to examine the reciprocal relationship between English oral language proficiency and English early literacy skills, additional sequential regression analyses were employed to further examine the variance accounted for in the outcome variable by the predictor of interest prior to entering the previous measure of the outcome variable. By entering the predictor of interest before the previous measure of the outcome variable, the shared variance between the predictor of interest and the outcome variable prior to the entrance of the covariate could be examined (Keith, 2006). Therefore, a second model was examined for each hypothesis. First, age was entered into the regression equation; second, the predictor of interest was entered into the regression equation. Third, the previous measure of the outcome variable was entered into the regression equation.
Results

Preliminary Analyses

Data were analyzed using SPSS version 18.0 for Windows/Mac. Several characteristics of the data were evaluated to ensure the appropriateness of the data for multiple regression. Preliminary analyses were conducted in order to detect violations to the assumptions of normality, linearity, homoscedasticity, and autocorrelation. Likewise, data were inspected for univariate and multivariate outliers as well as multicollinearity.

Normality was assessed through an examination of the Shapiro-Wilk statistic and revealed significance ($p < .05$) for ORF (all time points), NWF (Time 3), and Age. Examination of ORF, NWF, and Age skew and kurtosis statistics did not reveal non-normality. However, visual inspection of histograms revealed positive skew for ORF at Time 1 and Time 2. Likewise, visual inspection of normal probability plots and detrended probability plots indicated the presence of non-normality for ORF at all time points. Univariate outliers were detected through a visual inspection of histograms and boxplots. Six variables yielded univariate outliers (EOLP Time 1 = 1, EOLP Time 2 = 2, EOLP Time 3 = 2, ORF Time 1 = 1, ORF Time 2 = 1, and NWF Time 2 = 1). To determine the impact of the univariate outliers on the mean score, the 5% trimmed mean score was examined. The 5% trimmed mean scores were similar to the mean scores indicating minimal influence from outliers. Examination of residual scatterplots revealed heteroscedasticity. Descriptive information and normality statistics for all of the variables in the dataset are provided in Table 2.
Table 2

Descriptive Statistics for Key Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>5% Trimmed Mean</th>
<th>Skew</th>
<th>Kurtosis</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLP1</td>
<td>467.29</td>
<td>17.82</td>
<td>467.77</td>
<td>-.44</td>
<td>.54</td>
<td>.98</td>
</tr>
<tr>
<td>EOLP2</td>
<td>470.06</td>
<td>14.97</td>
<td>470.31</td>
<td>-.31</td>
<td>.05</td>
<td>.98</td>
</tr>
<tr>
<td>EOLP3</td>
<td>474.81</td>
<td>14.11</td>
<td>475.29</td>
<td>-.56</td>
<td>.26</td>
<td>.97</td>
</tr>
<tr>
<td>ORF1</td>
<td>37.69</td>
<td>33.75</td>
<td>34.82</td>
<td>1.09</td>
<td>1.00</td>
<td>.88*</td>
</tr>
<tr>
<td>ORF2</td>
<td>43.77</td>
<td>41.02</td>
<td>40.40</td>
<td>1.07</td>
<td>.56</td>
<td>.88*</td>
</tr>
<tr>
<td>ORF3</td>
<td>44.97</td>
<td>35.03</td>
<td>42.82</td>
<td>.79</td>
<td>.01</td>
<td>.93*</td>
</tr>
<tr>
<td>NWF1</td>
<td>44.58</td>
<td>27.74</td>
<td>43.66</td>
<td>.57</td>
<td>-.59</td>
<td>.94</td>
</tr>
<tr>
<td>NWF2</td>
<td>53.03</td>
<td>34.70</td>
<td>51.15</td>
<td>.69</td>
<td>.01</td>
<td>.94</td>
</tr>
<tr>
<td>NWF3</td>
<td>53.00</td>
<td>32.62</td>
<td>51.33</td>
<td>.85</td>
<td>.09</td>
<td>.93*</td>
</tr>
<tr>
<td>Age</td>
<td>7.19</td>
<td>.95</td>
<td>7.16</td>
<td>.35</td>
<td>-.70</td>
<td>.87*</td>
</tr>
</tbody>
</table>

Note. N = 31.
*p < .05

Data were screened for multivariate outliers through the calculation and examination of Mahalanobis Distance statistics (Tabachnick & Fidell, 2007). The Mahalanobis Distance statistic was checked to ensure that it did not exceed the chi-square critical value for three independent variables ($X^2 = 16.27$, $p < .001$; Tabachnick & Fidell). Multivariate outliers were not found. The absence of multivariate outliers in conjunction with the mean score comparisons described earlier supported minimal impact of univariate outliers (Tabachnick & Fidell).

Review of the Durbin-Watson statistic revealed the probability of autocorrelation for regression models of EOLP3\(^5\) outcomes predicted by ORF1 and NWF1 (Tabachnick & Fidell, 2007; Wooldridge, 2003). Autocorrelation was not indicated for results of remaining regression models. Therefore, regression results for EOLP3 were interpreted with caution.

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\(^5\) Time 1 = 1, Time 2 = 2, and Time 3 = 3. Throughout text, the variable and the number may be used to indicate the measurement of that variable at that time point (e.g., ORF Time 2 = ORF2).
Finally, variables were inspected for multicollinearity. Bivariate correlation coefficients, conditioning index (Belsely et al., 1980), and tolerance ($1 - R^2$; Keith, 2006) were examined. Bivariate correlation coefficients between each independent variable and the dependent variable indicated moderate to large relationships ($r = .37$ to $.98$, Cohen, 1988). Most bivariate correlation coefficients between independent variables did not exceed $.7$ (Tabachnick & Fidell, 2007). Bivariate correlation coefficients between Time 1 EOLP and EELS scores (ORF $[r = .77]$ and NWF $[r = .70]$) and Time 2 EOLP and ORF scores ($r = .72$) were observed. Both variables were retained for analyses because they did not pose statistical problems ($r = .90$; Tabachnick & Fidell). Conditioning index scores (> 30) in conjunction with variance proportion scores (> .50) were detected for regression models including ORF Time 1 and EOLP Time 1. Tolerance values were well above 0 (.31 - .79). While one indicator revealed multicollinearity for ORF1 and EOLP1; overall, it was not supported. Thus, all variables were retained for analyses.

Due to violations of the underlying assumptions for multiple regression, square root transformation of non-normal EOLP, EELS, and Age scores was employed (Tabachnick & Fidell, 2007). Following square root transformation, ORF and NWF Shapiro-Wilk statistics no longer indicated statistical significance; however the Shapiro-Wilk statistic for Age remained statistically significant. Inspection of the histograms for EOLP and EELS scores indicated noticeable improvement in normality. Likewise, visual inspection of histograms indicated reduced impact of univariate outliers. Inspection of residual scatterplots revealed a tighter distribution of scores. Again, inspection of the Mahalanobis Distance statistic did not reveal multivariate outliers. Inspection of the Durbin-Watson statistic revealed the probability of autocorrelation for regression models
of ORF2 outcomes. Multicollinearity results were consistent with results prior to data transformation.

While square root transformation provided some improvement to normality assumptions, all violations were not resolved. Furthermore, data transformation did not resolve the presence of autocorrelation. Moreover, an examination of the regression analyses results conducted with data transformation and without data transformation did not differ. Therefore, results are reported for the original (non-transformed) data.

**Power**

Power analyses for linear multiple regression: fixed model, $R^2$ deviation from zero were conducted using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). Effect size ($f^2$; Cohen, 1988) was computed using a predictor correlation matrix (Faul et al.). Specifically, correlation coefficients between predictors and outcome variables from all of the regression analyses were used to produce each predictor correlation matrix. An alpha level (.05) was selected, sample size ($N = 31$) was provided, and number of predictors was entered. Power for all models equaled 1.00.

**Multiple Regression**

Sequential multiple regression analyses were used to investigate the relationship between EOLP and EELS across time. Specifically, sequential regression was employed to examine the unique variance offered by the predictor of interest (i.e., previous EOLP or EELS) to the outcome variable while controlling for the variance accounted for by the other predictors (Keith, 2006). Additional sequential regression analyses were employed to examine the shared variance between the predictor of interest and the outcome variable prior to the entrance of the covariate (Keith).
**Time 1 EOLP and Time 2 EELS.** The first pair of sequential regression analyses investigated the variance accounted for in oral reading fluency Time 2 by English oral language proficiency Time 1. Table 4 shows the correlations for the variables included in the analyses.

Table 3

*Intercorrelations for Oral Reading Fluency Time 2 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORF2</td>
<td>.62*</td>
<td>.97*</td>
<td>.72*</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.60*</td>
<td>.39*</td>
</tr>
<tr>
<td>2. ORF1</td>
<td>.60*</td>
<td>--</td>
<td>.77*</td>
</tr>
<tr>
<td>3. EOLP1</td>
<td>.39*</td>
<td>.77*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.
*p < .05

Oral reading fluency Time 2 was regressed on age, ORF1, and EOLP1. Age accounted for 39% of the variance in ORF2 at a level of statistical significance. Similarly, ORF1 was statistically significant and accounted for 56% of the variance in ORF2. The predictor of interest, EOLP1, did not account for a statistically significant increase in the variance of ORF2.

Next, ORF2 was regressed on age, EOLP1, and ORF1. English oral language proficiency Time 1 accounted for 27% of the variance in ORF2. Oral reading fluency Time 1 was found to account for 29% of the variance in ORF2.

Overall, these results indicate that EOLP1 is a significant predictor for ORF2. However, EOLP1 does not account for a statistically significant amount of the variance in ORF2 outcomes when controlling for the variance accounted for by ORF1 and age.

Results of the analyses are presented in Table 4.
Table 4

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Oral Reading Fluency Time 1 on Oral Reading Fluency Time 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>R²</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.62</td>
<td>4.26</td>
<td>&lt;.001</td>
<td>.39</td>
<td>.39</td>
</tr>
<tr>
<td>2</td>
<td>ORF1</td>
<td>.94</td>
<td>17.37</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.56</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>-.05</td>
<td>-.68</td>
<td>.50</td>
<td>.95</td>
<td>.001</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.62</td>
<td>4.26</td>
<td>&lt;.001</td>
<td>.39</td>
<td>.39</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.57</td>
<td>4.69</td>
<td>&lt;.001</td>
<td>.66</td>
<td>.27</td>
</tr>
<tr>
<td>3</td>
<td>ORF1</td>
<td>.98</td>
<td>12.41</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.29</td>
</tr>
</tbody>
</table>

Note. N = 31.

The second pair of sequential regression analyses investigated the variance accounted for in nonsense word fluency Time 2 by English oral language proficiency Time 1 (see Table 5).

Table 5

Intercorrelations for Nonsense Word Fluency Time 2 and Predictor Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWF2</td>
<td>.60*</td>
<td>.81*</td>
<td>.64*</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.45*</td>
<td>.39*</td>
</tr>
<tr>
<td>2. NWF1</td>
<td>.45*</td>
<td>--</td>
<td>.70*</td>
</tr>
<tr>
<td>3. EOLP1</td>
<td>.39*</td>
<td>.70*</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N = 31.

*p < .05

Nonsense word fluency Time 2 was regressed on age, NWF1, and EOLP1. Age accounted for 36% of the variance in NWF2. Nonsense word fluency Time 1 accounted for 37% of the variance in NWF2. The predictor of interest, EOLP1, did not account for a statistically significant increase in the variance of NWF2.
Next, NWF2 was regressed on age, EOLP1, and NWF1. English oral language proficiency Time 1 accounted for 19% of the variance in NWF2. Nonsense Word Fluency Time 1 accounted for 18% of the variance in NWF2.

These results indicate that EOLP1 is a significant predictor for NWF2. However, EOLP1 does not account for a statistically significant amount of the variance in NWF2 outcomes when controlling for the variance accounted for by NWF1 and age (see Table 6).

Table 6

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Nonsense Word Fluency Time 1 on Nonsense Word Fluency Time 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.60</td>
<td>4.00</td>
<td>&lt;.001</td>
<td>.36</td>
<td>.36</td>
</tr>
<tr>
<td>2</td>
<td>NWF1</td>
<td>.68</td>
<td>6.11</td>
<td>&lt;.001</td>
<td>.72</td>
<td>.37</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>.09</td>
<td>.63</td>
<td>.53</td>
<td>.73</td>
<td>.00</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.60</td>
<td>4.00</td>
<td>&lt;.001</td>
<td>.36</td>
<td>.36</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.48</td>
<td>3.46</td>
<td>.002</td>
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<td>.19</td>
</tr>
<tr>
<td>3</td>
<td>NWF1</td>
<td>.62</td>
<td>4.23</td>
<td>&lt;.001</td>
<td>.73</td>
<td>.18</td>
</tr>
</tbody>
</table>

Note: $N = 31$.

**Time 2 EOLP and Time 3 EELS.** Sequential regression analyses were conducted to investigate the variance accounted for in oral reading fluency Time 3 by English oral language proficiency Time 2 (see Table 7).
Table 7

*Intercorrelations for Oral Reading Fluency Time 3 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORF3</td>
<td>.57*</td>
<td>.98*</td>
<td>.72*</td>
</tr>
<tr>
<td>Predictor Variable</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.62*</td>
<td>.37*</td>
</tr>
<tr>
<td>2. ORF2</td>
<td>.62*</td>
<td>--</td>
<td>.72*</td>
</tr>
<tr>
<td>3. EOLP2</td>
<td>.37*</td>
<td>.72*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.*
*p < .05

Oral reading fluency Time 3 was regressed on age, ORF2, and EOLP2. Age accounted for 32% of the variance in ORF3. Oral reading fluency Time 2 accounted for 64% of the variance in ORF3. The predictor of interest, EOLP2, accounted for a negligible amount of the variance of ORF3.

Next, ORF3 was regressed on age, EOLP2, and ORF2. When controlling for the variance accounted for by age, EOLP2 accounted for 30% of the variance in ORF3. Oral reading fluency Time 2 accounted for 34% of the variance in ORF3.

These results indicate that EOLP2 is a significant predictor for ORF3. However, EOLP2 does not account for a statistically significant amount of the variance in ORF3 outcomes when controlling for the variance accounted for by ORF2 and age (see Table 8).
Table 8

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 2 and Oral Reading Fluency Time 2 on Oral Reading Fluency Time 3

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>Δ$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>.57</td>
<td>3.69</td>
<td>.001</td>
<td>.32</td>
<td>.32</td>
</tr>
<tr>
<td>2</td>
<td>ORF2</td>
<td>1.02</td>
<td>21.70</td>
<td>&lt;.001</td>
<td>.96</td>
<td>.64</td>
</tr>
<tr>
<td>3</td>
<td>EOLP2</td>
<td>.03</td>
<td>.55</td>
<td>.59</td>
<td>.96</td>
<td>.00</td>
</tr>
</tbody>
</table>

Model 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>Δ$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>.57</td>
<td>3.69</td>
<td>.001</td>
<td>.32</td>
<td>.32</td>
</tr>
<tr>
<td>2</td>
<td>EOLP2</td>
<td>.59</td>
<td>4.75</td>
<td>&lt;.001</td>
<td>.62</td>
<td>.30</td>
</tr>
<tr>
<td>3</td>
<td>ORF2</td>
<td>1.00</td>
<td>15.56</td>
<td>&lt;.001</td>
<td>.96</td>
<td>.34</td>
</tr>
</tbody>
</table>

Note. $N = 31$.

Sequential regression analyses were conducted to investigate the variance accounted for in NWF3 by EOLP2 (see Table 9).

Table 9

Intercorrelations for Nonsense Word Fluency Time 3 and Predictor Variables

<table>
<thead>
<tr>
<th>NWF3</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictor Variable</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Age</td>
<td>--</td>
<td>.60*</td>
<td>.37*</td>
</tr>
<tr>
<td>NWF2</td>
<td>.60*</td>
<td>--</td>
<td>.64*</td>
</tr>
<tr>
<td>EOLP2</td>
<td>.37*</td>
<td>.64*</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. $N = 31$.

*p < .05

Nonsense word fluency Time 3 was regressed on age, NWF2, and EOLP2. Age accounted for 30% of the variance in NWF3. Nonsense word fluency Time 2 accounted for 45% of the variance in NWF3. English oral language proficiency Time 2 was not statistically significant.
Nonsense word fluency Time 3 was regressed on age, EOLP2, and NWF2. English oral language proficiency Time 2 accounted for 21% of the variance in NWF3. Nonsense word fluency Time 2 was found to account for 26% of the variance in NWF3. These results continued to show EOLP is a significant predictor for English literacy skills. However, EOLP does not account for a statistically significant amount of the variance in literacy outcomes when controlling for the variance accounted for by previous measures of literacy and age (Table 10).

Table 10

*Results of Sequential Regression Analyses for English Oral Language Proficiency Time 2 and Nonsense Word Fluency Time 2 on Nonsense Word Fluency Time 3*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>∆$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.55</td>
<td>3.51</td>
<td>.001</td>
<td>.30</td>
<td>.30</td>
</tr>
<tr>
<td>2</td>
<td>NWF2</td>
<td>.84</td>
<td>7.13</td>
<td>&lt;.001</td>
<td>.75</td>
<td>.45</td>
</tr>
<tr>
<td>3</td>
<td>EOLP2</td>
<td>.13</td>
<td>1.08</td>
<td>.29</td>
<td>.76</td>
<td>.01</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.55</td>
<td>3.51</td>
<td>.001</td>
<td>.30</td>
<td>.30</td>
</tr>
<tr>
<td>2</td>
<td>EOLP2</td>
<td>.49</td>
<td>3.44</td>
<td>.002</td>
<td>.51</td>
<td>.21</td>
</tr>
<tr>
<td>3</td>
<td>NWF2</td>
<td>.75</td>
<td>5.36</td>
<td>&lt;.001</td>
<td>.76</td>
<td>.26</td>
</tr>
</tbody>
</table>

*Note: N = 31.*

**Time 1 EOLP and Time 3 EELS.** Sequential regression analyses were conducted to investigate the variance accounted for in oral reading fluency Time 3 by English oral language proficiency Time 1 (see Table 11).
Table 11

*Intercorrelations for Oral Reading Fluency Time 3 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORF3</td>
<td>.57*</td>
<td>.95*</td>
<td>.70*</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.60*</td>
<td>.39*</td>
</tr>
<tr>
<td>2. ORF1</td>
<td>.60*</td>
<td>--</td>
<td>.77*</td>
</tr>
<tr>
<td>3. EOLP1</td>
<td>.39*</td>
<td>.77*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.*

*p < .05

Oral reading fluency Time 3 was regressed on age, ORF1, and EOLP1. Age accounted for 32% of the variance in ORF3. Oral reading fluency Time 1 accounted for 58% of the variance in ORF3. The predictor of interest, EOLP1, accounted for a negligible amount of the variance of ORF3.

Next, ORF3 was regressed on age, EOLP1, and ORF1. When controlling for the variance accounted for by age, EOLP1 accounted for 27% of the variance in ORF3. Oral reading fluency Time 1 accounted for 31% of the variance in ORF3.

These results indicate that EOLP1 is a significant predictor for ORF3. However, EOLP1 does not account for a statistically significant amount of the variance in ORF3 outcomes when controlling for the variance accounted for by ORF1 and age (see Table 12).
Table 12

*Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Oral Reading Fluency Time 1 on Oral Reading Fluency Time 3*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>R²</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.57</td>
<td>3.69</td>
<td>.001</td>
<td>.32</td>
<td>.32</td>
</tr>
<tr>
<td>2</td>
<td>ORF1</td>
<td>.95</td>
<td>12.63</td>
<td>&lt;.001</td>
<td>.90</td>
<td>.58</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>-.07</td>
<td>-.71</td>
<td>.48</td>
<td>.90</td>
<td>.00</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.57</td>
<td>3.69</td>
<td>.001</td>
<td>.32</td>
<td>.32</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.56</td>
<td>4.28</td>
<td>&lt;.001</td>
<td>.59</td>
<td>.27</td>
</tr>
<tr>
<td>3</td>
<td>ORF1</td>
<td>1.01</td>
<td>9.19</td>
<td>&lt;.001</td>
<td>.90</td>
<td>.31</td>
</tr>
</tbody>
</table>

*Note. N = 31.*

Sequential regression analyses were conducted to investigate the variance accounted for in NWF3 by EOLP1 (see Table 13).

Table 13

*Intercorrelations for Nonsense Word Fluency Time 3 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWF3</td>
<td>.55*</td>
<td>.76*</td>
<td>.62*</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.45*</td>
<td>.39*</td>
</tr>
<tr>
<td>2. NWF1</td>
<td>.45*</td>
<td>--</td>
<td>.70*</td>
</tr>
<tr>
<td>3. EOLP1</td>
<td>.39*</td>
<td>.70*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.*
*p <.05*

Nonsense word fluency Time 3 was regressed on age, NWF1, and EOLP1. Age accounted for 30% of the variance in NWF3. Nonsense word fluency Time 1 accounted for 34% of the variance in NWF3. English oral language proficiency Time 1 was not statistically significant.
Nonsense word fluency Time 3 was regressed on age, EOLP1, and NWF1.

English oral language proficiency Time 1 accounted for 19% of the variance in NWF3.

Nonsense word fluency Time 1 accounted for 15% of the variance in NWF3.

These results continued to show EOLP is a significant predictor for English literacy skills. However, EOLP does not account for a statistically significant amount of the variance in literacy outcomes when controlling for the variance accounted for by previous measures of literacy and age (Table 14).

Table 14

*Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Nonsense Word Fluency Time 1 on Nonsense Word Fluency Time 3*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td><strong>1</strong></td>
<td>Age</td>
<td>.55</td>
<td>3.51</td>
<td>.001</td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.55</td>
<td>3.51</td>
<td>.001</td>
<td>.30</td>
<td>.30</td>
</tr>
<tr>
<td>2</td>
<td>NWF1</td>
<td>.65</td>
<td>5.10</td>
<td>&lt;.001</td>
<td>.64</td>
<td>.34</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>.12</td>
<td>.73</td>
<td>.47</td>
<td>.64</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td><strong>1</strong></td>
<td>Age</td>
<td>.55</td>
<td>3.51</td>
<td>.001</td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.55</td>
<td>3.51</td>
<td>.001</td>
<td>.30</td>
<td>.30</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.48</td>
<td>3.25</td>
<td>.003</td>
<td>.49</td>
<td>.19</td>
</tr>
<tr>
<td>3</td>
<td>NWF1</td>
<td>.57</td>
<td>3.40</td>
<td>.002</td>
<td>.64</td>
<td>.15</td>
</tr>
</tbody>
</table>

*Note: N = 31.*

**Time 1 EELS and Time 2 EOLP.** The first pair of sequential regression analyses investigated the variance accounted for in English oral language proficiency Time 2 by ORF1 (see Table 15).
Table 15

*Intercorrelations for English Oral Language Proficiency Time 2 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
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<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLP2</td>
<td>.37*</td>
<td>.97*</td>
<td>.78*</td>
</tr>
<tr>
<td>Predictor Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.39*</td>
<td>.60*</td>
</tr>
<tr>
<td>2. EOLP1</td>
<td>.39*</td>
<td>--</td>
<td>.77*</td>
</tr>
<tr>
<td>3. ORF1</td>
<td>.60*</td>
<td>.77*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.*

*p < .05

English oral language proficiency Time 2 was regressed on age, EOLP1, and ORF1. Age accounted for 14% of the variance in EOLP2. English oral language proficiency Time 1 accounted for the largest amount of variance in EOLP2. The predictor of interest, ORF1, was not statistically significant.

Next, EOLP2 was regressed on age, ORF1, and EOLP1. Oral reading fluency Time 1 accounted for 48% of the variance in EOLP2. English oral language proficiency Time 1 accounted for a lower amount of the variance in EOLP2 and was statistically significant.

These results indicate that ORF1 is a significant predictor for EOLP2; however, it is not a significant predictor when accounting for the variance in Age and EOLP1 (see Table 16).
Table 16

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Oral Reading Fluency Time 1 on English Oral Language Proficiency Time 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>R²</th>
<th>∆R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.37</td>
<td>2.17</td>
<td>.04</td>
<td>.14</td>
<td>.14</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.97</td>
<td>19.56</td>
<td>&lt;.001</td>
<td>.94</td>
<td>.80</td>
</tr>
<tr>
<td>3</td>
<td>ORF1</td>
<td>.12</td>
<td>1.43</td>
<td>.16</td>
<td>.95</td>
<td>.00</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.37</td>
<td>2.17</td>
<td>.04</td>
<td>.14</td>
<td>.14</td>
</tr>
<tr>
<td>2</td>
<td>ORF1</td>
<td>.86</td>
<td>5.89</td>
<td>&lt;.001</td>
<td>.62</td>
<td>.48</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>.90</td>
<td>12.78</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.33</td>
</tr>
</tbody>
</table>

Note. N = 31.

Sequential regression analyses were conducted to investigate the variance accounted for in EOLP2 by NWF1 (see Table 17).

Table 17

Intercorrelations for English Oral Language Proficiency Time 2 and Predictor Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLP2</td>
<td>.37*</td>
<td>.97*</td>
<td>.68*</td>
</tr>
</tbody>
</table>

Predictor Variable

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.39*</td>
<td>.45*</td>
</tr>
<tr>
<td>2. EOLP1</td>
<td>.39*</td>
<td>--</td>
<td>.70*</td>
</tr>
<tr>
<td>3. NWF1</td>
<td>.45*</td>
<td>.70*</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N = 31.

*p < .05

English oral language proficiency Time 2 was regressed on age, EOLP1, and NWF1. Again, age accounted for 14% of the variance in EOLP2. English oral language proficiency Time 1 accounted for 80% of the variance in EOLP2. The predictor of interest, NWF1, did not account for a statistically significant amount of variance in EOLP2.
English oral language proficiency Time 2 was regressed on age, NWF1, and EOLP1. Nonsense word fluency Time 1 accounted for 33% of the variance in EOLP2. English oral language proficiency Time 1 accounted for the largest amount of variance in EOLP2.

These results indicate that NWF1 is a significant predictor for EOLP2. However, NWF1 does not account for a statistically significant amount of unique variance (see Table 18).

Table 18

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Nonsense Word Fluency Time 1 on English Oral Language Proficiency Time 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>R²</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>.37</td>
<td>2.17</td>
<td>.04</td>
<td>.14</td>
<td>.14</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.97</td>
<td>19.56</td>
<td>&lt;.001</td>
<td>.94</td>
<td>.80</td>
</tr>
<tr>
<td>3</td>
<td>NWF1</td>
<td>.00</td>
<td>.06</td>
<td>.95</td>
<td>.94</td>
<td>.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>R²</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>.37</td>
<td>2.17</td>
<td>.04</td>
<td>.14</td>
<td>.14</td>
</tr>
<tr>
<td>2</td>
<td>NWF1</td>
<td>.65</td>
<td>4.22</td>
<td>&lt;.001</td>
<td>.47</td>
<td>.33</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>.97</td>
<td>14.67</td>
<td>&lt;.001</td>
<td>.94</td>
<td>.47</td>
</tr>
</tbody>
</table>

Note: N = 31.

**Time 2 EELS and Time 3 EOLP.** The first pair of sequential regression analyses investigated the variance accounted for in EOLP3 by ORF2 (see Table 19).
Table 19

*Intercorrelations for English Oral Language Proficiency Time 3 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLP3</td>
<td>.40*</td>
<td>.97*</td>
<td>.68*</td>
</tr>
<tr>
<td>Predictor Variable</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.37*</td>
<td>.62*</td>
</tr>
<tr>
<td>2. EOLP2</td>
<td>.37*</td>
<td>--</td>
<td>.72*</td>
</tr>
<tr>
<td>3. ORF2</td>
<td>.62*</td>
<td>.72*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.*  
*p < .05

English oral language proficiency Time 3 was regressed on age, EOLP2, and ORF2. Age accounted for 16% of the variance in EOLP3. English oral language proficiency Time 2 accounted for 79% of the variance in EOLP3. The predictor of interest, ORF2, accounted for a negligible amount of variance in EOLP3.

Next, EOLP3 was regressed on age, ORF2, and EOLP2. Oral reading fluency Time 2 accounted for 31% of the variance in EOLP3. English oral language proficiency Time 2 accounted for the largest amount of variance in EOLP3.

These results indicate that ORF2 is a significant predictor for EOLP3, but ORF2 does not account for a significant amount of unique variance (see Table 20).
Table 20

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 2 and Oral Reading Fluency Time 2 on English Oral Language Proficiency Time 3

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>Δ$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
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<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>EOLP2</td>
<td>.96</td>
<td>19.86</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.79</td>
</tr>
<tr>
<td>3</td>
<td>ORF2</td>
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<td>-1.15</td>
<td>.26</td>
<td>.95</td>
<td>.00</td>
</tr>
<tr>
<td>Model 2</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>ORF2</td>
<td>.71</td>
<td>4.02</td>
<td>&lt;.001</td>
<td>.47</td>
<td>.31</td>
</tr>
<tr>
<td>3</td>
<td>EOLP2</td>
<td>1.01</td>
<td>15.62</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.48</td>
</tr>
</tbody>
</table>

Note. $N = 31$.

The second pair of sequential regression analyses was conducted to investigate the variance accounted for in EOLP3 by NWF2 (see Table 21).

Table 21

Intercorrelations for English Oral Language Proficiency Time 3 and Predictor Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLP3</td>
<td>.40*</td>
<td>.97*</td>
<td>.61*</td>
</tr>
<tr>
<td>Predictor Variable</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.37*</td>
<td>.60*</td>
</tr>
<tr>
<td>2. EOLP2</td>
<td>.37*</td>
<td>--</td>
<td>.64*</td>
</tr>
<tr>
<td>3. NWF2</td>
<td>.60*</td>
<td>.64*</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. $N = 31$.

*p <.05

English oral language proficiency Time 3 was regressed on age, EOLP2, and NWF2. Age accounted for 16% of the variance in EOLP3. English oral language proficiency Time 2 accounted for 79% of the variance in EOLP3. The predictor of interest, NWF2, accounted for a negligible amount of variance in EOLP3.
English oral language proficiency Time 3 was regressed on age, NWF2, and EOLP2. Nonsense word fluency Time 2 accounted for 21% of the variance in EOLP3. English oral language proficiency Time 2 accounted for the largest amount of variance in EOLP3.

These results indicate that NWF2 is significant predictor for EOLP3. However, NWF2 does not account for a statistically significant amount of unique variance (see Table 22).

Table 22

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 2 and Nonsense Word Fluency Time 2 on English Oral Language Proficiency Time 3

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>( R^2 )</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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<td><strong>Model 1</strong></td>
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<td></td>
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<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>EOLP2</td>
<td>.96</td>
<td>19.86</td>
<td>&lt;.001</td>
<td>.94</td>
<td>.79</td>
</tr>
<tr>
<td>3</td>
<td>NWF2</td>
<td>-.05</td>
<td>-.76</td>
<td>.46</td>
<td>.95</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>NWF2</td>
<td>.58</td>
<td>3.08</td>
<td>.01</td>
<td>.37</td>
<td>.21</td>
</tr>
<tr>
<td>3</td>
<td>EOLP2</td>
<td>.98</td>
<td>16.84</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.58</td>
</tr>
</tbody>
</table>

Note: \( N = 31 \).

**Time 1 EELS and Time 3 EOLP.** The first pair of sequential regression analyses investigated the variance accounted for in English oral language proficiency Time 3 by ORF1 (see Table 23).
Table 23

*Intercorrelations for English Oral Language Proficiency Time 3 and Predictor Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOLP3</td>
<td>.40*</td>
<td>.96*</td>
<td>.73*</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Age</td>
<td>--</td>
<td>.39*</td>
<td>.60*</td>
</tr>
<tr>
<td>2. EOLP1</td>
<td>.39*</td>
<td>--</td>
<td>.77*</td>
</tr>
<tr>
<td>3. ORF1</td>
<td>.60*</td>
<td>.77*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.  
*p < .05*

English oral language proficiency Time 3 was regressed on age, EOLP1, and ORF1. Age accounted for 16% of the variance in EOLP3. English oral language proficiency Time 1 accounted for the largest amount of variance in EOLP3. The predictor of interest, ORF1, was not statistically significant.

Next, EOLP3 was regressed on age, ORF1, and EOLP1. Oral reading fluency Time 1 accounted for 38% of the variance in EOLP3. English oral language proficiency Time 1 accounted for 39% of the variance in EOLP3 and was statistically significant.

These results indicate that ORF1 is a significant predictor for EOLP3; however, it is not a significant predictor when accounting for the variance in Age and EOLP1 (see Table 24).
Table 24

Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Oral Reading Fluency Time 1 on English Oral Language Proficiency Time 3

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
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</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.95</td>
<td>17.02</td>
<td>&lt;.001</td>
<td>.93</td>
<td>.77</td>
</tr>
<tr>
<td>3</td>
<td>ORF1</td>
<td>-.04</td>
<td>-4.3</td>
<td>.07</td>
<td>.93</td>
<td>.00</td>
</tr>
<tr>
<td>Model 2</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>ORF1</td>
<td>.77</td>
<td>4.79</td>
<td>&lt;.001</td>
<td>.54</td>
<td>.38</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>.98</td>
<td>11.93</td>
<td>&lt;.001</td>
<td>.93</td>
<td>.39</td>
</tr>
</tbody>
</table>

*Note. N = 31.*

Sequential regression analyses were conducted to investigate the variance accounted for in EOLP3 by NWF1 (see Table 25).

Table 25

Intercorrelations for English Oral Language Proficiency Time 3 and Predictor Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
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<td>.67*</td>
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<td>1. Age</td>
<td>--</td>
<td>.39*</td>
<td>.45*</td>
</tr>
<tr>
<td>2. EOLP1</td>
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<td>--</td>
<td>.70*</td>
</tr>
<tr>
<td>3. NWF1</td>
<td>.45*</td>
<td>.70*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. N = 31.*

*p < .05

English oral language proficiency Time 3 was regressed on age, EOLP1, and NWF1. Again, age accounted for 16% of the variance in EOLP3. English oral language proficiency Time 1 accounted for 77% of the variance in EOLP3. The predictor of interest, NWF1, did not account for a statistically significant amount of variance in EOLP3.
English oral language proficiency Time 3 was regressed on age, NWF1, and EOLP1. Nonsense word fluency Time 1 accounted for 30% of the variance in EOLP3. English oral language proficiency Time 1 accounted for the largest amount of variance in EOLP3.

These results indicate that NWF1 is a significant predictor for EOLP3. However, NWF1 does not account for a statistically significant amount of unique variance (see Table 26).

Table 26

*Results of Sequential Regression Analyses for English Oral Language Proficiency Time 1 and Nonsense Word Fluency Time 1 on English Oral Language Proficiency Time 3*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
<th>R²</th>
<th>ΔR²</th>
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</thead>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Model 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>EOLP1</td>
<td>.95</td>
<td>17.02</td>
<td>&lt;.001</td>
<td>.93</td>
<td>.77</td>
</tr>
<tr>
<td>3</td>
<td>NWF1</td>
<td>-.03</td>
<td>-.42</td>
<td>.68</td>
<td>.93</td>
<td>.00</td>
</tr>
<tr>
<td>Model 2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>.40</td>
<td>2.32</td>
<td>.03</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>NWF1</td>
<td>.61</td>
<td>3.93</td>
<td>.001</td>
<td>.46</td>
<td>.30</td>
</tr>
<tr>
<td>3</td>
<td>EOLP1</td>
<td>.97</td>
<td>13.10</td>
<td>&lt;.001</td>
<td>.93</td>
<td>.47</td>
</tr>
</tbody>
</table>

*Note: N = 31.*
Discussion

The purpose of the current study was to examine the relationship between English oral language proficiency and English early literacy skills over time. Measures of English oral language proficiency and English early literacy skills were collected at three time points. Participants were in Grades 1 through 3, identified as Mexican, spoke Spanish as their first language, and lived in a home where Spanish was spoken. All participants attended the MEP afterschool program, and all but one student received ESL services during the school day.

It was hypothesized that English oral language proficiency would be a significant predictor of later English early literacy skills. Likewise, it was hypothesized that English early literacy skills would be significant predictors of later English oral language proficiency. Six hypotheses were tested using a panel design. Two multiple regression models were tested for each hypothesis. Model 1 controlled for age and the previous measure of the outcome variable before entering the predictor of interest. Model 2 controlled for age and the predictor of interest before entering the previous measure of the outcome variable.

English Oral Language Proficiency Predicts English Early Literacy Skills

It was hypothesized that English oral language proficiency would significantly predict later English early literacy skills when controlling for participant age and the previous measure of English early literacy skills. Hypotheses corresponding to the three time periods were tested.
Using sequential regression analyses, ORF and NWF scores were regressed on age, previous measure of EELS, and EOLP. The variables were entered first to last in the following order: age, previous ORF or NWF, and EOLP. Age accounted for a large amount of the variance in ORF and NWF outcomes at Time 2 and Time 3. When controlling for the variance accounted for by age and previous ORF or NWF, EOLP was not a significant predictor of ORF or NWF at Time 2 or Time 3. The previous measure of ORF or NWF accounted for the most variance in later ORF or NWF outcomes.

Few studies have used multiple regression to investigate English oral language proficiency as a significant predictor of later ORF or NWF scores. However, Wiley and Deno (2005) conducted multiple regression analyses to explore the predictive information of ELL and non-ELL GOM-ORF and GOM-maze scores on statewide reading assessment (MCA) scores. For ELLs, when the variance accounted for by GOM-maze was controlled, GOM-ORF scores were not a significant predictor of standardized reading outcomes. Because of these findings, the current study hypothesized that for ELLs, English oral language proficiency may be a significant predictor of later ELL reading performance. While the current study did not include a statewide test score of reading outcomes, results indicated ORF scores were a strong and significant predictor of later literacy outcomes when controlling for the variance accounted for by age and English oral language proficiency. Thus, the hypothesis that English oral language proficiency significantly predicts later English early literacy skills was not supported.

This finding was surprising due to the large bivariate relationships observed between English oral language proficiency and English early literacy skills at each time point. Furthermore, because the purpose of the current study was to examine the
reciprocal relationship between English oral language proficiency and English early literacy skills, additional sequential regression analyses were employed to examine the shared variance between the predictor of interest and the outcome variable prior to the entrance of the covariate (Keith, 2006). Therefore, a second model was examined for each of the three hypotheses. The reverse order model followed the following order of entry age, EOLP, and previous measure of ORF or NWF.

After controlling for the variance accounted for by age, EOLP was a significant predictor of ORF and NWF at Time 2 and Time 3. English oral language proficiency accounted for a large amount of the variance in ORF and NWF. Previous measures of EELS (ORF and NWF) continued to be significant predictors of EEL outcomes, though. Age accounted for the most variance in ORF2, NWF2, and NWF3 outcomes. When controlling for the variance of age and EOLP, previous measures of ORF2 continued to account for the most variance in ORF3 outcomes.

Examination of the results of the reverse order models indicated that EOLP could be a significant predictor of later literacy outcomes. However, consistent with Model 1 results, EOLP did not account consistently for most of the variance in later literacy outcomes in Model 2 results. In fact, Model 1 and Model 2 results were more aligned with previous studies that used Pearson correlation to examine the relationship between EOLP and later literacy outcomes and had found moderate to small correlations (Baker & Good, 1995; Graves et al., 2005).
English Early Literacy Skills Predict English Oral Language Proficiency

It was also hypothesized EELS would be a significant predictor of later EOLP when controlling for participant age and previous measure of EOLP. Hypotheses corresponding to the three time periods were tested.

Using sequential regression analyses, EOLP scores were regressed on age, the previous measure of EOLP, and EELS. The variables were entered first to last in the following order age, previous EOLP, and ORF or NWF. Age accounted for a large amount of the variance in EOLP at Time 2 and Time 3. The previous measure of EOLP accounted for a large amount of the variance in later EOLP outcomes. When controlling for the variance accounted for by age and previous EOLP, ORF and NWF was not a significant predictor of EOLP at Time 2 or Time 3. The previous measure of EOLP accounted for the most variance in later EOLP outcomes. Overall, the hypotheses were not supported.

Few studies have used multiple regression analyses to examine English literacy skills as a significant predictor of English oral language proficiency. Giambo and McKinney (2004), however, conducted an experimental study to investigate change in English oral language proficiency given change in English literacy skills. They conducted a regression model that accounted for 18% of the variance in change in oral English language proficiency; blending, segmenting, and elision residual scores accounted for the most variance. Based on these findings, it was expected that NWF would be a significant predictor of later EOLP. However, the results of the current study did not find NWF to be a significant predictor of later English oral language proficiency.
To further understand the relationship between EELS and EOLP, an additional reverse order multiple regression (Model 2) was conducted controlling for age and EELS (ORF or NWF) before entering the previous measure of EOLP. When controlling for the variance accounted for by age, ORF and NWF were significant predictors of, and accounted for a large amount of the variance in, EOLP at Time 2 and Time 3. Interestingly, ORF1 accounted for more variance in EOLP2 than EOLP1. This was not repeated over time as EOLP2 accounted for the most variance in EOLP3, and EOLP1 accounted for the most variance in EOLP3. Oral reading fluency accounted for more variance in EOLP over time than NWF.

Collectively, results of Model 1 and Model 2 indicated that EELS could be significant predictors of later English oral language proficiency. However, EELS scores do not account for the most variance in later English oral language proficiency outcomes. Moreover, ORF and NWF scores do not account for statistically significant unique variance in later EOLP. Age was found to be a significant predictor of later English oral language proficiency outcomes. Age accounted for large variance in EOLP across time. This suggests that age accounts for a consistent amount of the variance in EOLP for students in all grades.

Potential Explanations for Inconsistency with Past Research

**EOLP predicts EELS.** The first three hypotheses (1 through 3) tested English oral language proficiency as a significant predictor of English early literacy skills over time. Large bivariate relationships were observed between English oral language proficiency and English early literacy skills at each time point. These results differed
from previous studies as researchers had observed moderate and small correlations between these variables (Baker & Good, 1995; Graves et al., 2005).

The previous and current studies, however, used a different test to measure English language proficiency. The WMLS-R was selected for the current study because it produced a broad measure of language competency (listening, speaking, language development, verbal reasoning, and language comprehension) and had strong reliability and validity evidence (Alvarado et al., 2005). Baker and Good (1995) used the LAS, a measure of expressive vocabulary, speaking, and comprehension; no reliability evidence and limited validity evidence was available from the test publishers. The IDEA Proficiency Test (IPT) was administered to participants in the Graves et al. (2005) study. The IPT purportedly measured four areas of oral language proficiency: vocabulary, comprehension, syntax, and verbal expression (Graves et al., 2005). However, the IPT possessed weak reliability evidence and moderate validity evidence. Given the limited reliability and validity evidence of the language proficiency tests administered in previous studies, the lower correlations observed between language proficiency and literacy in previous studies may not accurately represent the relationship between these variables.

Additionally, linguistic characteristics differed between participants included in the current and previous studies that examined the relationship between English oral language proficiency and literacy skills. Individuals use linguistic cues in their first language to make sense of the information presented in their second language (Cummins, 1984). Linguistic cues between languages differ; thus, the language acquisition process may vary depending on first and second languages. To minimize the impact of this
variation on the observed relationship between oral language proficiency and reading skills in a second language, participants who spoke the same first language were selected for the current study. The participants in the Graves et al. (2005) study spoke several different first languages. Because participants had different first language backgrounds, the variation observed in English oral language proficiency may have been due to the interplay between linguistic cues found in each of the first languages and the development of English. Instructionally, students in the current study received the same combination of instruction: regular education (including ESL) and migrant education. Participants in previous studies received instruction from various programs (Baker & Good, 1995). Similar to the confound to interpretation associated with varied language backgrounds, it is difficult to estimate the influence of varied instructional programs on observed relationships.

In the current study, large bivariate relationships were observed between English oral language proficiency and English early literacy skills at each time point. When controlling for the variance accounted for by each predictor variable, however, the observed relationships changed, and results were more consistent with previous research. Moreover, previous studies had examined the relationship between English oral language proficiency and English early literacy skills over a longer period of time (Graves et al., 2005). The shorter length of time between data collection points may have resulted in stronger relationships observed in the current study.

**EELS predicts EOLP.** Three hypotheses (4 through 6) tested English early literacy skills as a significant predictor of English oral language proficiency over time. Results indicated that English early literacy skills were not a significant predictor of
English oral language proficiency at Time 2 or Time 3. While few studies have explored the predictive relationship between EELS and EOLP, Giambo and McKinney (2004) found EELS to be a significant predictor of change in EOLP.

One reason for the difference in outcomes across the current and previous studies may be the literacy measures used in each study. Giambo and McKinney (2004) selected measures that examined specific components of literacy; whereas the literacy measures used in the current study were broader measures of literacy. It is possible that specific components of literacy provide more predictive information about later measures of English oral language proficiency.

Additionally, Giambo and McKinney (2004) used the IPT-I to measure participant English oral language proficiency, and Graves et al. (2005) reported that the IPT has weak reliability evidence and moderate validity evidence. Moreover, Giambo and McKinney (2004) noted that IPT items, which purportedly assess different components of the English language, were presented in a mixed format. Giambo and McKinney suggested that future researchers include a measure of English language proficiency that includes a subtest format to further investigate the affect of change in phonological awareness on change in specific components of oral English language proficiency. The current study used such a measure with a subtest format; however, subtest scores were not examined, as they did not have strong reliability evidence for all age ranges. Current results indicate literacy skills were not significant predictors of later EOLP suggesting results may differ when a different language proficiency measure is used.
Giambo and McKinney (2004) reported that the variance accounted for in English oral language proficiency by phonological awareness skills was limited. Unlike the current study, Giambo and McKinney did not include participants’ previous measure of English oral language proficiency in their regression analyses. The inclusion of previous measures of English language proficiency may be one reason for the differences observed between the current study results and Giambo and McKinney’s results.

Participants in Giambo and McKinney’s (2004) study were in Kindergarten. The participants in the current study were in Grades 1 through 3. When examining the predictive information of English oral language proficiency on later literacy outcomes, current results suggested that the importance of literacy and language variables might change for students in different grades. Similarly, current findings indicated age accounted for moderate variance in language proficiency outcomes. Based upon these results, another reason for the observed difference between current findings and Giambo and McKinney’s results may be the age of the participants.

Supplemental Analyses

English oral language proficiency and English early literacy skills were collected over time. While the purpose of the study was to examine the relationship between these variables, a review of mean scores at each data collection time point revealed differences in how the variables changed over time. The information, though descriptive, may provide additional insight about the development of language and reading skills in a second language.

Change in oral language proficiency and literacy skills was observed over time. English oral language proficiency scores increased at all time points, and English early
literacy skills increased from Time 1 to Time 2. Specifically, ORF scores increased minimally from Time 2 to Time 3 while NWF scores remained the same from Time 2 to Time 3.

One reason for this observed change could be the duration of instruction between time points. Length of time between each data collection time point was comparable (8-10 weeks). During Time 1 and Time 2 data collection, participants were attending school five days per week and receiving supplemental MEP instruction at least 1 day per week. In total, participants received approximately 35 hours of language and literacy instruction each school week. Between Time 2 and Time 3, the school year ended, and participants were out of school for approximately 2 (School District B) to 5 weeks (School District A) before attending the MEP summer program. The MEP summer program met 4 days per week for a total of 14 to 20 hours. Given the change in frequency and type of instruction between Time 2 and Time 3, it is likely that participants experienced limited growth in literacy skills. This observation is consistent with typical learning patterns observed for children during school breaks.

While maintenance of English literacy scores was observed over time, English oral language proficiency scores were observed to improve over time. One reason for this observed improvement may be the difference between processes underlying second language acquisition and reading acquisition. For example, a child can go to a store and hear a word in the second language while seeing a visual representation of the word (e.g., Picture Vocabulary). If the child knows the concept in his or her first language, then using that existing knowledge, he or she can make sense of the concept being introduced in the second language (Cummins, 1984). Similarly, a child may observe interactions
between speakers of the second language and learn the meaning of the words paired with
nonverbal gestures (Canale & Swain, 1980). Then the child has an opportunity to
increase listening skills and lexical knowledge (e.g., Verbal Analogies). These examples
of second language acquisition can occur without formal instruction.

Alternatively, current reading theories suggest that the development of
phonological awareness and exposure to print are important for successful reading
acquisition in first and second languages (Chiappe et al., 2002; Durgunoglu et al., 1993).
During the school year, students consistently had access to printed material in English
and had opportunities to learn or practice phonological awareness skills. It is unknown as
to whether participants had access to print in Spanish or English languages from the time
they exited school to the time they started the summer MEP. If students had limited
exposure to print and reduced opportunities to practice reading skills in either language,
minimal growth may occur in literacy skills.

**Limitations**

Attrition and missing data resulted in a smaller sample size that further impacted
the generalizability of results. Approximately 7% of the sample was lost due to attrition,
and over the course of the 20-week data collection period approximately 13% of the
participants were missing at least one measure at one of the data collection time points.
Two participants were missing data from the first data collection period (late February-
early March), and three participants were missing data from the third data collection
period (late May – June). A review of missing data indicated that participants were absent
on days that research assistants were scheduled to collect data or the research assistants
were unable to complete administration due to time limitations (i.e., end of the MEP day and need to catch the school bus).

Follow-up attempts were made to reschedule data collection with participants according to study protocol (i.e., talking with the MEP program service coordinators). However, participants were absent on the days that were rescheduled or they were attending a short-term afterschool program (i.e., religious instruction). While the reasons for participant absences were considered to be the result of chance or miscommunication, it is possible that participants may have been absent in response to cultural perceptions that were not detected by the researchers (i.e., the researchers identified as White and held limited, if any, Spanish language proficiency).

In order to address cultural differences, to minimize the challenges posed by attrition, and to avoid conflicts with short-term afterschool programs, future studies should include a bilingual community liaison who is a member of the participant community. A partnership between researchers and a cultural insider could cultivate an understanding and awareness of how participants who identify with a different cultural group are experiencing the research practices (Godina & McCoy, 2000). This may, in turn, foster a greater sense of trust between researchers and participants and minimize the likelihood of absences. Also, a liaison could notify the principal investigator when participants move and could inform her of short-term afterschool programs that may impact previously planned data collection.

Another limitation of the current study may be the research design. The current study followed a panel study research design. Participants were not randomly selected, but rather, they represented an accessible population (Gall et al., 1996). Parents provided
consent for their children to participate in the study. Additionally, participants had given their assent to participate in the study at each data collection time point. It is possible that the children who participated in the study possessed different characteristics as compared to the other children attending the MEP; thus, differences could exist that make generalizability of the results challenging (Gall et al.).

Also, the migrant community is multifaceted. To the extent possible, the current study controlled for several demographic factors (e.g., membership within the migrant community, ethnicity, and home language). Nonetheless, participants represent a subset of one migrant community located in one region of the U.S. Future studies should include members of other migrant communities in which members identify as Mexican and live in other regions of the U.S.

As mentioned earlier, assumptions to data analyses were considered. In the current study, nonindependence of errors occurred only for EOLP3 outcomes as predicted by ORF1 and NWF1. This could be due to the limited variability in participant oral language proficiency and oral reading fluency skills at Time 1 (Keith, 2006). Given the presence of autocorrelation, the significant findings associated with variance accounted for in EOLP at Time 3 by ORF1 and NWF1 may be due to the small estimates of error variance (Tabachnick & Fidell, 2007). Interpretation must be made with caution.

Large bivariate correlation coefficients were observed between the previous measure of the outcome variable and the outcome variable at all time points. At times, the observed bivariate correlation approached a perfect correlation. As a result, when the previous measure of the outcome variable was entered into the regression equation a small amount of variance remained (Tabachnick & Fidell, 2007). Therefore, regardless of
the shared variance between the predictor of interest and the outcome variable, the
previous measure of the outcome variable had already accounted for the majority of
variance in the outcome variable.

The current study measured participant oral English language proficiency using
the WMLS-R. This test provides information about four domains of English language
development based upon the BICS/CALP theory (Alvarado et al., 2005; Cummins,
1984). While Cummins’ (1984) interdependence theory, particularly the development of
CALP, has been recognized in U.S. schools as explaining ELL academic success, other
second language acquisition theories exist (Canale & Swain, 1980). Therefore, oral
English language proficiency skills in the current study are representative of one theory
of second language acquisition. It is possible that language proficiency as defined by
another theory could result in different outcomes. Future studies may want to include
other theoretical measures of second language proficiency to examine the predictive
information for English literacy skills.

A final limitation in the current study is the lack of a formal measure of
participants’ oral Spanish language proficiency and Spanish early literacy skills. Thirty-
six percent of the participants in the current study had attended school in a country other
than the U.S. In order to understand the relationship between second language
proficiency and literacy, it is important to know information about an individual’s
development in his or her first language because the person uses this foundation to
develop the same skills in his or her second language (Bates & MacWhinney, 1989;
Chiappe et al., 2002; Cummins, 1984; Gorman & Gillam, 2003). Therefore, future
researchers should include a measure of participants’ first language proficiency to
explore the predictive information for second language literacy. Likewise, first language literacy skills should be measured for predictive information about oral language proficiency in the second language.

**Potential Implications for Practice and Directions for Future Research**

The results of the current study did not support that English oral language proficiency was a significant predictor of later English early literacy skills when accounting for age and previous measures of literacy. Similarly, English early literacy skills were not a significant predictor of later English oral language proficiency when accounting for age and previous measures of English oral language proficiency. Nonetheless, a strong relationship was observed between EOLP and EELS over time. Future studies may want to examine if a longer interval of time is needed before the unique variance accounted for by these predictors is observed in the outcome variables of interest. Given the strong relationship between language proficiency and literacy, educators should use caution when making decisions about instruction (e.g., emphasizing one skill over the other).

Rather, it is suggested, that in addition to developing future research studies that address the limitations outlined, future researchers should consider two additional directions. Future studies should examine the relationship between English oral language proficiency and English literacy skills for students identified as ELLs, students identified as ELLs/MEP, and students who speak only English. Language proficiency and GOM should be measured for all students across time. The relationship between language and literacy variables should be examined in all three groups to compare the similarities and differences among participants with varied language backgrounds.
Also, because teachers and administrators tend to believe that ELLs need special education after a few years of minimal progress within the regular education curriculum, future research should compare the language and literacy progress of ELLs receiving special education, ELLs receiving support through regular education, and monolingual students receiving special education. This research may provide more information about the similarities and differences between limited progress due to second language acquisition and limited progress due to a specific learning disability.

Finally, supplemental analyses provided further implications for practice. The majority of the participants in the current study received ESL instruction and supplemental MEP instruction during the school year. Growth in English oral language proficiency and English literacy was observed. Students identified as ELLs and as migrant children may benefit from this level of support to continue to make gains within the curriculum.

**Conclusion**

Without information regarding the relationship between English oral language proficiency and English early literacy skills, practitioners have limited information about how the two skills relate to one another. Previous research examining the bivariate relationships between English oral language proficiency and English early literacy skills, as measured by general outcome measurement, have used limited information about the participants’ current English language proficiencies or have not accounted for the participants’ English language proficiencies when predicting later literacy outcomes. The current study intended to extend the research regarding the relationship between English oral language proficiency and English early literacy skills. Specifically, the current study
examined the relationship between student English oral language proficiency and English early literacy skills over time.

Large bivariate relationships were observed between English oral language proficiency and English early literacy outcomes. However, when controlling for covariates, these relationships changed. That is, English oral language proficiency was a significant predictor of later literacy outcomes, but it does not account for the most variance. Similarly, English early literacy outcomes were significant predictors of later English oral language proficiency outcomes, however, previous measures of English oral language proficiency accounted for the most variance. The inclusion of age as a covariate in all regression models indicated that it was an important predictor in later language and literacy outcomes. While not specifically hypothesized, additional observations of change in English oral language proficiency and English early literacy suggested that second language acquisition may continue without formal instruction. In sum, these results indicate that stakeholders may want to review information about a child’s previous and current English oral language proficiency and English early literacy skills when making educational decisions.
References


Appendix A
Letter of Approval from Institutional Review Board

From: "Maney, Dee" <dwm3@psu.edu>
Date: February 9, 2010 2:16:53 PM EST
To: "rjm365@psu.edu" <rjm365@psu.edu>
Cc: "jcd12@psu.edu" <jcd12@psu.edu>, "Maney, Dee" <dwm3@psu.edu>

Subject: IRB#32595 Measurement of Oral Language and Literacy Skills in English Language Learners

The Office for Research Protections (ORP) has reviewed the modification request for the research study noted in the subject line of this email. This request does not change the exemption status and this study continues to be exempt from IRB review. You may continue with your research.

MODIFICATION REVIEW CATEGORY:

Category 1: Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. [45 CFR 46.101(b)(1)]

COMMENT: The January 27, 2010 modification request has been reviewed. It has been determined that the changes to your research protocol do not change the determination of exemption. The changes to your research protocol that were reviewed include:

1. Location: Dropping the School District of Philadelphia. Adding the Migrant Education Center of SE PA.
2. Inclusion: Changing from targeting students with Puerto Rican background to students with Mexican backgrounds.
4. **Recruitment:** Minor changes to wording to reflect revisions to inclusion criteria.

5. **ICF:** Minor changes were made to Documents 1001, 1002 and 1003 to reflect minor inclusion criteria and location of data collection.

6. **Other:** PI will obtain and retain with her research records a new letter of agreement for access to students from the new location.

7. **Note:** The teachers at the Migrant Education Center should not collect the signed parent consent forms. Instead, students should return the forms to a box or central location. The PI should arrange to have the signed consent forms sent to her or pick up the signed consent forms as scheduled. If teaching staff collect the signed consent forms they need to be listed on the research personnel of this application and another modification would need to be submitted to add them.

**PLEASE NOTE THE FOLLOWING:**

- Include your IRB number in any correspondence to the ORP.

- The principal investigator is responsible for determining and adhering to additional requirements established by any outside sponsors/funding sources.

- **Record Keeping**

  - The principal investigator is expected to maintain the original signed informed consent forms, if applicable, along with the research records for at least three (3) years after termination of the study.

  - This will be the only correspondence you will receive from our office regarding this modification determination.

  § **MAINTAIN A COPY OF THIS EMAIL FOR YOUR RECORDS.**

- **Consent Document(s)**

  - The exempt consent form(s) will no longer be stamped with the approval/expiration dates.

  - The attached informed consent form(s) and child assent is the one that you are expected to use.

- **Follow-Up**

  - The Office for Research Protections will contact you in three (3) years from the date of original determination to inquire if this study will be on-going.

  - If the study is completed within a three year period from the date of original determination, the principal investigator may complete and submit a **Project Close-Out**
Report. (http://www.research.psu.edu/orp/areas/humans/applications/closeout.rtf)

- Revisions/Modifications

  o Any changes or modifications to the study must be submitted to the Office for Research Protections on the Modification Request Form - Exemption available on our website:

    http://www.research.psu.edu/orp/areas/humans/applications/modrequest.rtf

  o Modifications will not be accepted unless the Modification Request Form is included with the submission.

Please do not hesitate to contact me if you have any questions or concerns.

Thank you,

Dolores "Dee" W. Maney, Ph.D
Research Compliance Coordinator, CIM.
Office for Research Protections
The Pennsylvania State University
The 330 Building, Suite 205
University Park, PA 16802
TELEPHONE: 814-865-8459 OR 814-865-1775
FAX: 814-863-8699
EMAIL: dwm3@psu.edu
WEB: http://www.psu.edu/orp/
Appendix B

MEP Supervisor Letter of Agreement

February 19, 2010

Rebecca J. Kirby, M.S.
4284 State Road
Phoenixville, PA 19460

Dear Rebecca J. Kirby:

The purpose of this letter is to confirm that as Supervisor of Migrant Education Programs for Southeastern Pennsylvania where you intend to conduct the proposed research, I am aware of the scope of the investigation and agree to provide access to our students. I understand the nature of the research, including recruitment, informed consent, and collecting and analyzing data for the project, Measurement of Oral Language and Literacy Skills in English Language Learners IRB#32595. I support this research and will allow access for data collection purposes.

If you have any questions or I may provide additional information, please feel free to contact me.

Sincerely,

Jane Hersherberger, Ed.D.
Supervisor, Migrant Education Programs for Southeastern Pennsylvania
Chester County Intermediate Unit
455 Boot Road
Downingtown, PA 19335
484-237-5052
JaneHer@cciu.org
Appendix C

Letters of Introduction to Potential Participants’ Parents and Informed Consent Forms

(English and Spanish)

Dear Parent:

My name is Rebecca Kirby and I am a school psychologist in Malvern, PA. As a school psychologist, I work with students, families, and teachers to help every student feel good about class work and friendships. I am also a graduate student at Penn State University. I am studying the link between English speaking and listening skills and English reading skills for students who speak English and Spanish.

I am writing to ask permission for your child to be in my research study. If you give permission, your child would do some speaking and listening activities. For example, he or she would look at pictures and tell me the English name for them, or he or she would listen to a story and tell me about it in English. Also, I would ask your child to read short stories written in English.

I have included two forms with this letter. The first, Parental Informed Consent, includes additional information about my study. Please read this form, check if you would (or would not) like your child to be in my study, and have your child return it to his or her Migrant Education teacher. (There is a second copy of this form for you to keep.) Please note, each child that returns a completed consent form, regardless of the option checked, receives a pencil and a writing pad. If you allow your child to be in my study, please complete the second form, Background Information Form, and return it along with the signed copy of the Parental Informed Consent.

If you have any questions before you make a decision, please call me at 814-308-3669. Thank you for taking the time to read and consider my research study.

Sincerely,

Rebecca J. Kirby, M.S.
Certified School Psychologist
Estimados padres:

Mi nombre es Rebecca Kirby y soy psicóloga escolar en Malvern, PA. En mi carácter de psicóloga escolar, trabajo con alumnos, familias y maestros para ayudar a cada alumno a sentirse bien respecto del trabajo en clase y de sus amistades. También soy alumna de posgrado en Penn State University. Estoy estudiando la relación entre las habilidades auditivas y de articulación del habla en inglés y las habilidades de lectura en inglés de los alumnos que hablan tanto en inglés como en español.

Les escribo a fin de solicitarles autorización para que su hijo(a) participe en mi estudio de investigación. Si ustedes prestan su consentimiento, su hijo(a) realizará algunas actividades auditivas y de articulación del habla. Por ejemplo, mirará ilustraciones y me dirá el nombre de las mismas en inglés, o bien escuchará un cuento y hablará sobre el mismo en inglés. Además, yo le pediría a su hijo(a) que lea cuentos cortos escritos en inglés.

He incluido dos formularios junto a esta carta. El primero de ellos, el consentimiento informado para padres, incluye información adicional acerca de mi estudio. Por favor sírvanse leer este formulario, indicar si desean (o no desean) que su hijo(a) participe en mi estudio, y pedir a su hijo(a) que lo entregue a su maestro(a) de educación de trabajadores itinerantes. (Hay una segunda copia de este formulario para que conserven ustedes). Tengan en cuenta que cada niño que entregue un formulario de consentimiento completo recibirá un lápiz y un bloc de notas, no obstante la opción que hayan seleccionado. Si permiten que su hijo(a) participe en mi estudio, por favor completen el segundo formulario, el formulario de antecedentes, y entreguenlo junto con la copia firmada del consentimiento informado para padres.

Si tienen alguna pregunta que quieran hacerme antes de tomar una decisión, por favor llámenme al teléfono 814-308-3669. Gracias por tomarse la molestia de leer y considerar mi estudio de investigación.

Atentamente,

Rebecca J. Kirby, M.S.
Psicóloga Escolar Matriculada
Title of Project: Measurement of Oral Language and Literacy Skills in English Language Learners

Person in Charge: Rebecca J. Kirby, M.S.
Doctoral Candidate School Psychology
4284 State RD
Phoenixville, PA 19460
(814) 308-3669

Advisor: Dr. James C. DiPerna
105 CEDAR BLDG
University Park, PA 16802
(814) 863-2405; jcd12@psu.edu

1. **Purpose of the Study:** The purpose of this research study is to learn about the link between English speaking and listening skills and English reading skills.

2. **Procedures to be followed:** As part of the study, your child will be asked to meet one-on-one to work with a Penn State research assistant to do four English speaking and listening activities, to read three short stories in English, and to read a list of made-up words. Also, when you give permission to let your child be involved in the research study, you will be asked to complete a short form about your child’s language use, culture, and education.

3. **Time Involvement:** Your child will be asked to meet with a Penn State research assistant three times during the school year between January and June, 2010. The Penn State research assistant will meet with your child during Migrant Education, and they will work together for about 30 minutes. It will take about 30 minutes to do the English speaking, listening, and reading activities. The questions that you are asked to answer about your child’s language use, culture, and education on the Background Information Form will take about 5 minutes. You will be asked to answer these questions one time.

4. **Statement of Confidentiality:** All of the information that you provide will be kept private and will only be used for my research reasons. I will make a list of random numbers, and one of those numbers will be assigned to your child so that your child’s name will not be used on any research forms. Only my advisor and me will be able to look at the information that is collected as part of this study. Also, if I write or make a presentation about the study for a journal or give a presentation to the school district or school, no information that could identify your child will be used.

5. **Right to Ask Questions:** Please contact Rebecca Kirby at (814) 308-3669 with questions, complaints or concerns about this research. Questions about the research activities can only be answered by Rebecca Kirby.

6. **Payment for participation:** Each time that your child meets with the Penn State research assistant, your child will be given stickers and a pencil for trying each English speaking, listening, and reading activity. Also, your family will be given a chance to win one of ten $25...
gift cards to Wal-mart for your participation in the project. Participation in the study means allowing your child to participate and completing the Background Information Form.

7. **Benefits to Participants and Society:** Your child will have a chance to show the Penn State research assistant how he or she speaks, listens, and reads using English. Also, there is a large chance that many children are likely to enjoy meeting with the Penn State research assistant in a one-on-one meeting because they will receive attention and verbal compliments for trying and doing each language and reading activity.

This research will provide a better understanding of how children’s speaking and listening skills in English works with their English reading and how children’s English reading works with their speaking and listening skills in English. This information could help teachers and other school professionals focus their classroom teaching to help children learn better in both areas.

8. **Voluntary Participation:** Your decision to have your child participate in this research is your choice. You and your child do not have to answer any questions that you do not want to answer. You or your child can stop being involved in the research study at any time without punishment. If you decide not to have your child be involved in the study, it will not have any effect on your child’s education. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

**PLEASE CHOOSE ONE OPTION:**

1. If you agree to have your child be involved in this research study, please sign your name and write down the date. Return this form in a sealed envelope to your child’s Migrant Education teacher’s classroom. Please keep one copy of this form for your records. Please fill out the Background Information Form.

_____________________________________________  ________________________
Parent/Guardian signature                  Date

_____________________________________________  ________________________
Parent/Guardian name (please print)                  Date

_____________________________________________  ________________________
Child’s name (please print)                  Date

_____________________________________________  ________________________
Person Obtaining Consent                  Date
2. If you do NOT agree to have your child be involved in this research study, then please check “NO” below, please sign your name and write down the date. Return this form in a sealed envelope to your child’s Migrant Education teacher’s classroom. Please keep one copy of this form for your records.

[] NO

______________________________________________  _______________________
Parent/Guardian signature                          Date

______________________________________________  _______________________
Parent/Guardian name (please print)                Date

______________________________________________  _______________________
Child’s name (please print)                        Date

______________________________________________  _______________________
Person Obtaining Consent                           Date
1. **Propósito del estudio:** El propósito de este estudio de investigación es obtener conocimientos acerca de la relación que existe entre las habilidades auditivas y de articulación en inglés y las habilidades de lectura en inglés.

2. **Procedimientos a seguir:** Como parte de este estudio, se pedirá a su hijo(a) que se reúna para trabajar en forma personalizada con ayudante de investigación de Penn State University y realice cuatro actividades de articulación del habla y audición, lea tres cuentos cortos en inglés y lea un listado de palabras inventadas. Asimismo, cuando presten su consentimiento para que su hijo(a) participe en el estudio de investigación, se les pedirá que completen un breve formulario sobre el uso del idioma, la cultura y la educación de su hijo(a).

3. **Duración de la participación:** Se pedirá a su hijo(a) que se reúna con ayudante de investigación de Penn State University tres veces durante el año escolar, entre enero y junio de 2010. El ayudante de investigación de Penn State University se reunirá con su hijo(a) durante educación de trabajadores itinerantes y trabajarán juntos durante alrededor de 30 minutos. Las actividades auditivas, de articulación del habla y de lectura en inglés tomarán alrededor de 30 minutos. Las preguntas sobre el uso del idioma, la cultura y la educación de su hijo(a) que se les pide que respondan en el formulario de antecedentes tomarán alrededor de 5 minutos. Se les pedirá que respondan estas preguntas una sola vez.

4. **Declaración de confidencialidad:** Toda la información que proporcionen se mantendrá en forma privada y solamente se la utilizará para los fines de mi investigación. Prepararé un listado de números al azar, y se asignará a su hijo(a) uno de esos números, de modo que el nombre de su hijo(a) no se utilizará en ninguno de los formularios de la investigación. Sólo mi asesor y yo tendremos acceso a la información que se recopile como parte de este estudio. Asimismo, si llevo a cabo una presentación oral o escrita del estudio para una publicación, o bien realizo una presentación ante el distrito escolar o la escuela, no se utilizará información que pueda identificar a su hijo(a).
5. **Derecho a realizar preguntas:** Si tienen preguntas, quejas o preocupaciones acerca de esta investigación, pueden ponerse en contacto con Rebecca Kirby en el número (814) 308-3669. Solamente Rebecca Kirby puede responder preguntas acerca de las actividades de investigación.

6. **Pago por la participación:** Cada vez que su hijo(a) se reúne con ayudante de investigación de Penn State University, se le obsequiarán etiquetas autoadhesivas y un lápiz por participar en cada actividad auditiva, de articulación del habla y de lectura en inglés. Además, por haber participado en el proyecto, su familia tendrá la oportunidad de ganar una de las diez tarjetas de obsequio de Wal-mart por $25 cada una. La participación en el estudio significa el permitir que su hijo(a) participe y el llenar el Formulario de antecedentes.

7. **Beneficios para los participantes y para la sociedad:** Su hijo(a) tendrá la oportunidad de mostrar al ayudante de investigación de Penn State University cómo habla, escucha y lee en idioma inglés. Asimismo, es muy probable que muchos niños disfruten al reunirse con el ayudante de investigación de Penn State University en una reunión personalizada dado que recibirán atención y felicitaciones verbales por esforzarse y llevar a cabo cada actividad de lenguaje y lectura.

Esta investigación brindará una mejor comprensión de cómo las habilidades auditivas y de articulación del habla en inglés de los niños se relacionan con su lectura en idioma inglés y cómo la lectura en idioma inglés de los niños se relaciona con sus habilidades auditivas y de articulación del habla en inglés. Esta información podría ayudar a los maestros y a otros profesionales de la escuela a centrar su enseñanza en clase para ayudar a los niños a aprender mejor en ambas áreas.

8. **Participación voluntaria:** Ustedes son quienes toman la decisión de que su hijo(a) participe en esta investigación o no. Ustedes y su hijo(a) no tienen que responder ninguna pregunta que no quieran responder. Ustedes o su hijo(a) pueden dejar de participar en el estudio de investigación en cualquier momento, sin penalidad alguna. Si ustedes deciden que su hijo(a) no participe en el estudio, ello no tendrá efectos respecto de la educación de su hijo(a). Negarse a participar en este estudio o abandonar el mismo no genera una penalidad o una pérdida de beneficios que usted recibiría de otro modo.

**POR FAVOR, SELECCIONEN UNA OPCIÓN:**

1. Si están de acuerdo con que su hijo(a) participe en este estudio de investigación, sirvánse firmar e indicar la fecha. Devuelvan este formulario en un sobre cerrado al salón de clases de su hijo(a). Por favor, conserven una copia de este formulario para su información. Asimismo, no olviden completar el formulario de antecedentes.
Firma del padre/ madre/ tutor 
Fecha

Nombre del padre/ madre/ tutor (por favor, en letra de imprenta) 
Fecha

Nombre del niño/ de la niña (por favor, en letra de imprenta) 
Fecha

Persona que obtiene el consentimiento 
Fecha

2. Si NO están de acuerdo con que su hijo(a) participe en este estudio de investigación, sírvanse marcar la casilla “NO” a continuación, firmar e indicar la fecha. Devuelvan este formulario en un sobre cerrado al salón de clases de su hijo(a). Por favor, conserven una copia de este formulario para su información.

[ ] NO

Firma del padre/ madre/ tutor 
Fecha

Nombre del padre/ madre/ tutor (por favor, en letra de imprenta) 
Fecha

Nombre del niño/ de la niña (por favor, en letra de imprenta) 
Fecha

Persona que obtiene el consentimiento 
Fecha
Appendix D

Background Information Form (English and Spanish)

Background Information Form

Thank you for allowing your child to be involved in the study. Please answer the questions below. Your answers will help me describe all of the children who are involved in my research study. Your child’s name will not be used in the study.

1. What was the first language that your child spoke? Please circle one:
   Spanish                        English                        Other (please write):

2. At this time, what is the main language that your child speaks at home? Please circle one: Spanish                        English                        Other (please write):

3. At this time, how much does your child speak Spanish at home? Please circle one:
   Little (0-24%)     Sometimes (25%-49%)     A lot (50%-74%)     Most (75%-100%)

4. At this time, how much does your child speak English at home? Please circle one:
   Little (0-24%)     Sometimes (25%-49%)     A lot (50%-74%)     Most (75%-100%)

5. At this time, what is the main language that other people speak at home? Please circle one: Spanish                        English                        Other (please write):

6. At this time, how much do other people speak Spanish at home? Please circle one:
   Little (0-24%)     Sometimes (25%-49%)     A lot (50%-74%)     Most (75%-100%)

7. At this time, how much do other people speak English at home? Please circle one:
   Little (0-24%)     Sometimes (25%-49%)     A lot (50%-74%)     Most (75%-100%)

8. What ethnicity best describes your child? Please circle one:
   Cuban                        Dominican Republican       Mexican                        Puerto Rican                        Spaniard
   Other (please write):

9. Has your child ever attended school in another country? Please circle one:
   Yes                        No

10. What language was used to teach your child when he or she attended that school? Please write the language:

11. What year(s) did your child attend the school in the other country? Please write the year(s):
12. Does your child currently have special education services (e.g., have an IEP)?

Please circle one: Yes No

Thank you for taking the time to answer these questions.
Formulario de antecedentes

Gracias por permitir que su hijo(a) participe en el estudio. Por favor, sírvanse responder las preguntas que siguen. Sus respuestas me ayudarán a describir a los niños que participan en mi estudio de investigación. El nombre de su hijo(a) no se utilizará en el estudio.

1. ¿Cuál fue el primer idioma en que habló su hijo(a)? Sírvanse marcar la opción que corresponda con un círculo:
   - español
   - inglés
   - otro (indiquen cuál):

2. En este momento, ¿cuál es el idioma principal en que habla su hijo(a) en el hogar? Sírvanse marcar la opción que corresponda con un círculo:
   - español
   - inglés
   - otro (indiquen cuál):

3. En este momento, ¿qué cantidad de tiempo su hijo(a) habla en español en el hogar? Sírvanse marcar la opción que corresponda con un círculo:
   - Poco (0-24%)
   - A veces (25%)
   - Mucho (50%-74%)
   - En su mayoría (75%-100%)

4. En este momento, ¿qué cantidad de tiempo su hijo(a) habla en inglés en el hogar? Sírvanse marcar la opción que corresponda con un círculo:
   - Poco (0-24%)
   - A veces (25%)
   - Mucho (50%-74%)
   - En su mayoría (75%-100%)

5. En este momento, ¿cuál es el idioma principal en que hablan otras personas en el hogar? Sírvanse marcar la opción que corresponda con un círculo:
   - español
   - inglés
   - otro (indiquen cuál):

6. En este momento, ¿qué cantidad de tiempo otras personas hablan en español en el hogar? Sírvanse marcar la opción que corresponda con un círculo:
   - Poco (0-24%)
   - A veces (25%)
   - Mucho (50%-74%)
   - En su mayoría (75%-100%)

7. En este momento, ¿qué cantidad de tiempo otras personas hablan en inglés en el hogar? Sírvanse marcar la opción que corresponda con un círculo:
   - Poco (0-24%)
   - A veces (25%)
   - Mucho (50%-74%)
   - En su mayoría (75%-100%)
8. ¿Qué origen étnico describe mejor a su hijo(a)? Sirvanse marcar la opción que corresponda con un círculo:

cubano  dominicano  mexicano  puertorriqueño  español

Otro (indiquen cuál):

9. ¿Ha asistido su hijo(a) a la escuela en otro país en alguna oportunidad? Sirvanse marcar la opción que corresponda con un círculo:

Sí   No

10. ¿En qué idioma se enseñaba a su hijo(a) cuando asistía a esa escuela? Por favor, indiquen el idioma:

11. ¿En qué año(s) su hijo(a) asistió a la escuela en ese otro país? Por favor indiquen el/los año/s:

12. ¿Recibe su hijo(a) servicios de educación especial actualmente (por ejemplo, cuenta con un IEP)? Sirvanse marcar la opción que corresponda con un círculo:

Sí   No

Muchas gracias por tomarse la molestia de responder estas preguntas.
Appendix E

Participant Language Use and Educational Background

Table E1

*Participant Spanish and English Language Use and Previous Education*

<table>
<thead>
<tr>
<th>Language Variable</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Grade</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Grade</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 15)</td>
<td>(n = 12)</td>
<td>(n = 8)</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>First language child spoke</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>English</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Current primary language child speaks at home&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>100.0</td>
<td>100.0</td>
<td>87.5</td>
</tr>
<tr>
<td>English</td>
<td>0.0</td>
<td>0.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Percentage of Spanish spoken by child at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%-74%</td>
<td>26.7</td>
<td>25.0</td>
<td>12.5</td>
</tr>
<tr>
<td>75%-100%</td>
<td>73.3</td>
<td>75.0</td>
<td>87.5</td>
</tr>
<tr>
<td>Percentage of English spoken by child at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-24%</td>
<td>60.0</td>
<td>58.3</td>
<td>62.5</td>
</tr>
<tr>
<td>25%-49%</td>
<td>33.3</td>
<td>33.3</td>
<td>37.5</td>
</tr>
<tr>
<td>50%-74%</td>
<td>6.7</td>
<td>8.3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Language Variable</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Grade</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Grade</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current primary language others speak at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>93.3</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>English</td>
<td>6.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Percentage of Spanish spoken by others at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-24%</td>
<td>0.0</td>
<td>8.3</td>
<td>0.0</td>
</tr>
<tr>
<td>50%-74%</td>
<td>6.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>75%-100%</td>
<td>93.3</td>
<td>91.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Percentage of English spoken by others at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-24%</td>
<td>64.3</td>
<td>75.0</td>
<td>62.5</td>
</tr>
<tr>
<td>25%-49%</td>
<td>21.4</td>
<td>16.7</td>
<td>37.5</td>
</tr>
<tr>
<td>50%-74%</td>
<td>14.3</td>
<td>8.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Child attended school in a country other than the United States</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>41.7</td>
<td>54.5</td>
<td>28.6</td>
</tr>
<tr>
<td>No</td>
<td>58.3</td>
<td>45.5</td>
<td>71.4</td>
</tr>
<tr>
<td>If yes, what language was used for instruction?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Language Variable</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Grade (n = 15)</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Grade (n = 12)</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Grade (n = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
<td>(%)</td>
</tr>
</tbody>
</table>

What year (s) did your child attend the school in the other country?

<table>
<thead>
<tr>
<th></th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Grade</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Grade</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>100.0</td>
<td>83.3</td>
<td>50.0</td>
</tr>
<tr>
<td>2 years</td>
<td>16.7</td>
<td>50.0</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* One first grade parent did not complete a Background Form.

<sup>a</sup>Calculations represent 14 first grade participants; one parent did not complete a Background Form and one parent circled English and Spanish. <sup>b</sup>Calculations represent 14 first grade participants; one parent did not complete a Background Form and one parent did not provide an answer to this item. <sup>c</sup>Calculations represent 12 first grade participants, 11 second grade participants, and 7 third grade participants; one first grade parent did not complete a Background Information form, and all other parents did not provide an answer for this item.
Curriculum Vita
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Education:
Doctoral Candidate School Psychology - present, anticipated graduation August 2011
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M.S. School Psychology - August 2005
Pennsylvania State University, University Park, PA
B.A. Psychology – May 2000

Professional Certification:
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Employment History:
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Teaching Assistant, Pennsylvania State University (8/2002-8/2006)

Professional Affiliation:
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Publications and Presentations (*Surname Morgan until June 2007):