5-2011

Determining the Longitudinal Effects of Acculturation Orientation on Elementary-Aged Spanish-Speaking English Language Learner Students' Reading Progress

Courtney M. LeClair

University of Nebraska-Lincoln, leclair.courtney@gmail.com

Follow this and additional works at: https://digitalcommons.unl.edu/cehsdiss

Part of the Educational Psychology Commons

https://digitalcommons.unl.edu/cehsdiss/111

This Article is brought to you for free and open access by the Education and Human Sciences, College of (CEHS) at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Public Access Theses and Dissertations from the College of Education and Human Sciences by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
DETERMINING THE LONGITUDINAL EFFECTS OF
ACCULTURATION ORIENTATION ON
ELEMENTARY-AGED SPANISH-SPEAKING ENGLISH LANGUAGE LEARNER
STUDENTS’ READING PROGRESS

by

Courtney M. LeClair

A DISSERTATION

Presented to the Faculty of
The Graduate College at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Doctor of Philosophy

Major: Psychological Studies in Education

Under the Supervision of Professor Beth Doll

Lincoln, Nebraska

May, 2011
The purpose of this study was to examine whether the reading progress of Spanish-speaking English Language Learner students differed depending on their acculturation orientation. Participants included 85 students in 3rd, 4th, or 5th grade in two school districts in the rural Midwest. All participants were Latino and qualified as “English Language Learner” students. Measures included the Brief Acculturation Rating Scale for Mexican-Americans II (B-ARSMA-II), the easyCBM Passage Reading Fluency (PRF) scale, and an author-created Parent Demographic Form. In addition, the participants’ teacher’s adherence to the core reading program (Reading Mastery) was monitored by staff from the National Institute for Direct Instruction or Educational Resources, Incorporated. Hierarchical linear modeling was used to analyze the impact of acculturation orientation on reading performance across 12 weeks. Results indicated that there was a significant three-way effect, in that the relationship between reading performance and orientation to new culture was affected by orientation to culture of origin, just as the relationship between reading performance and orientation to culture of origin was affected by orientation to new culture. In addition, findings suggest that young
children may not be reliable reporters of their ethnicity, and that participants’
acculturation orientation did not change significantly over time.
Acknowledgements

This dissertation is the result of a cumulative effort among many individuals. First and foremost, I would like to thank my advisor, Dr. Beth Doll. Through her words and actions, she has provided me with an excellent model of how to be an accomplished researcher, academician, clinician, and woman. Dr. Doll’s unending support and encouragement were critical to the development of my confidence and abilities as a psychologist. Throughout this process, I very much appreciated her guidance, which was always calm, encouraging, and thorough. Her “big picture” perspective, along with her eye for detail, helped me to create a document that was logical and coherent. Most importantly, her vocal belief in my ability to achieve any goal helped me to continue on in moments of frustration.

I would also like to thank my mentors Dr. Edward Daly and Dr. Merilee McCurdy. Through my years of working with them, I learned an immense amount regarding response to intervention, reading instruction, and reading assessment. This knowledge, and Dr. Daly and Dr. McCurdy’s feedback and suggestions throughout this process, were incredibly beneficial. I have no doubt that I am a stronger school psychologist because of their influence throughout my graduate education.

Dr. Lesa Hoffman and Dr. Cynthia Willis-Esqueda served on my committee as “Outside Representatives.” I met both women when I ventured outside of the school psychology program to take classes in UNL’s psychology department. Dr. Hoffman is one of the finest educators I have ever had the pleasure of learning from. While statistics has never been my strong suit, Dr. Hoffman’s enthusiasm for the subject and ability to describe conceptually complicated material in a very down-to-earth manner made
learning about hierarchical linear modeling easier than I would have ever dreamed possible. Dr. Hoffman’s input regarding the design and analysis of my study was irreplaceable. Dr. Cynthia Willis-Esqueda is an exceptional instructor with extensive knowledge regarding multicultural issues, particularly related to Latino and Native American populations. Taking class from her filled an important gap in my graduate training, and her expertise in acculturation and Latino perspectives was critical to the development of my research questions and then later, the accurate conceptualization of my findings. I also appreciated the levity she brought to each committee meeting.

While my committee members’ perspectives allowed me to develop sound theory and draw accurate conclusions, many of my colleagues assisted in the day-to-day tasks that are a requisite component of any research study. Many thanks to Allison Osborn, Allison Champion, Kristin Jones, and Sarah Kurien for assisting in the data collection process. Your company on the long drives across the state of Nebraska was also appreciated! In addition, Courtney Wimmer, Brooke Chapla, and Mindy Chadwell contributed their time and energy to complete the important task of checking the integrity with which my study was conducted. I literally could not have conducted this study without the support of these women. In addition, Kevin Kupzyk’s assistance during my data analysis procedures was vital. His patient and thorough instruction allowed me to feel confident about this study’s findings.

Finally, I’d like to thank the many friends and family members who provided me with unending encouragement throughout this process. Your love and support meant more than words can say.
Table of Contents

Abstract .......................................................................................................................... ii
Acknowledgements ........................................................................................................ iv
List of Tables .................................................................................................................... vii
List of Figures ................................................................................................................... ix
Chapter 1: Introduction ................................................................................................. 1
Chapter 2: Literature Review ......................................................................................... 7
  Overview of Previous Research with Latino ELL Students ....................................... 7
  Overview of Learning Progress in Reading and RtI ................................................. 18
  Overview of Treatment Integrity Assessment Procedures ....................................... 27
  Overview of Previous Research of Acculturation ................................................... 32
  Summary of Previous Research ............................................................................... 55
  Purpose of Study ......................................................................................................... 56
Chapter 3: Method ......................................................................................................... 58
  Participants ................................................................................................................ 58
  Measures .................................................................................................................... 65
  Procedures ................................................................................................................ 68
  Analyses ................................................................................................................... 74
Chapter 4: Results ......................................................................................................... 81
  Preliminary Analyses ............................................................................................... 81
  Analysis of Acculturation Orientation Scale ........................................................... 86
  Analysis .................................................................................................................... 91
Chapter 5: Discussion .................................................................................................. 100
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Findings</td>
<td>100</td>
</tr>
<tr>
<td>Explanation for Findings and Integration with Past Research</td>
<td>101</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>107</td>
</tr>
<tr>
<td>Limitations</td>
<td>107</td>
</tr>
<tr>
<td>Future Directions</td>
<td>110</td>
</tr>
<tr>
<td>Conclusion</td>
<td>111</td>
</tr>
<tr>
<td>References</td>
<td>113</td>
</tr>
<tr>
<td>Appendices</td>
<td>147</td>
</tr>
<tr>
<td>Appendix A: Brief Acculturation Rating Scale for Mexican Americans – II.</td>
<td>147</td>
</tr>
<tr>
<td>Appendix B: Recruitment Flyers (English and Spanish)</td>
<td>149</td>
</tr>
<tr>
<td>Appendix C: easyCBM Passage Reading Fluency Scale</td>
<td>152</td>
</tr>
<tr>
<td>Appendix D: Parent/Guardian Demographic Forms (English and Spanish)</td>
<td>154</td>
</tr>
<tr>
<td>Appendix E: NIFDI and ERI Observation Forms</td>
<td>157</td>
</tr>
<tr>
<td>Appendix F: Procedural Checklists</td>
<td>160</td>
</tr>
</tbody>
</table>
List of Tables

Table 1: Participant Self-Report of Ethnicity, By Occasion ........................................ 61
Table 2: Parent Report of Child’s Time Spent in the United States .......................... 62
Table 3: Parent Report of Child’s Country of Birth ..................................................... 62
Table 4: Parent Report of Type of Employment ......................................................... 63
Table 5: Parent Report of Highest Level of Education Completed ......................... 64
Table 6: Categorization of Acculturation Orientation by Scale Scores ................. 67
Table 7: Data Collection Timeline, October 2009-May 2010 .................................... 70
Table 8: Summary of Key Variables ........................................................................... 75
Table 9: Distributional Properties of easyCBM PRF, By Grade and Occasion .......... 82
Table 10: Distributional Properties of Factor 1 of B-ARSMA-II, By Grade and 
        Occasion ............................................................................................................ 82
Table 11: Distributional Properties of Factor 2 of B-ARSMA-II, By Grade and 
        Occasion ............................................................................................................ 83
Table 12: Correlation Matrix of Confirmatory Factor Analysis of B-ARSMA-II, 
        By Item .................................................................................................................. 88
Table 13: Standardized and Unstandardized Factor Loadings of Confirmatory 
        Factor Analysis of B-ARSMA-II ........................................................................ 89
Table 14: Participants’ Acculturation Orientation ....................................................... 90
Table 15: Parameter Estimates and Model Fit Statistics for Participants Reading 
        Progress ................................................................................................................. 92
Table 16: Parameter Estimates and Model Fit Statistics for Final Model ............... 95
List of Figures

Figure 1: Normal Q-Q Plot for PRF Scale (CBM_Median)………………………… 84
Figure 2: Individual Trajectories for PRF Reading Assessment………………… 85
Figure 3: Predicted Median CBM Scores By Orientation to New Culture, Orientation to Culture of Origin, and Session……………………………………… 94
Figure 4: Variability in Median CBM Scores By Grade………………………… 97
Figure 5: Predicted Median CBM Scores By Grade and Session………………… 98
Chapter One: Introduction

Latino youth face more dire educational outcomes than the general population. Studies have shown that Latino students are more likely to have limited English proficiency than any other minority group, and they are also more likely to have parents who have limited English abilities (García & Jensen, 2009). In fact, the vast majority of English Language Learner (ELL) students in the U.S. are of Latino origin (McCardle, Keller-Allen, & Shuy, 2008). Consequently, similarities can be observed in the educational progress of ELL and Latino immigrant students. Latino students at the end of high school have math and reading scores that are comparable to those of European American middle school students (The Education Trust, 2003). Likewise, ELL students are less proficient than their non-ELL peers in the areas of reading and math from Kindergarten through twelfth grade (Braswell, Daane, & Grigg, 2003; García & Jensen, 2009; García, Jensen, Miller & Huerta, 2005). Furthermore, ELL students are recognized as the student group with the highest dropout, mobility, and poverty rates, and the lowest achievement scores (Christian, 2006; U.S. Department of Commerce, 2004; U.S. Department of Education, 2004).

Studies have demonstrated that some of these educational challenges are accounted for by the lower socioeconomic status that some Latino families experience while other factors, such as ethnic background and processes at home and within the school, also play a role in Latino students’ lower academic achievement (García, Jensen, & Cuéllar, 2006; Reardon, 2003; Reardon & Galindo, 2006). Latino youth, as well as ELL students, are typically exposed to many more “risk factors” for academic failure than their non-ELL, European American peers, which increases their likelihood of
academic underachievement (Christian, 2006; Hernández, Denton, & Macartney, 2007). These risk factors include: inadequate parental education; parental difficulty finding full-time, paid employment; overcrowded housing; poor health; low rates of pre-K education; and lack of familial English speaking ability (Christian, 2006). Unfortunately, the poor achievement patterns that tend to result from these risk factors often establish themselves early in children’s schooling and are resistant to change.

These unfortunate circumstances and educational outcomes are not confined to a small subset of the U.S. population. Individuals of Latino background became the biggest minority group in the U.S. in 2004, and they are also the fastest-growing minority group (Hernández & Charney, 1998; García & Jensen, 2009). Latino Americans represent 13% of the total population, and by the year 2050 they are expected to make up one-fourth of the U.S. population (Marotta & García, 2003). While overall population growth rates in the U.S. were in single digits during the 1990’s, Latino population growth rates were 58% (Harwood & Feng, 2006). In addition, almost 40% of Latino individuals in the U.S. are under the age of 20 (Hardwood & Feng, 2006). The population of ELL students is also steadily increasing. During the 2003-2004 school year, 3.8 million students received ELL services in the U.S. (Hoffman & Sable, 2006). Between 1994 and 1996, the ELL growth rate was 1.4%, while the numbers of ELL students increased by 60.8% between 2003 and 2005 (NCELA, 2006). It is estimated that by the year 2030, approximately 40% of students in the U.S. will not speak English as their first language.

This paper will focus on ELL students of Latino background. As the statistics have shown, many Latino ELL students are in desperate need of empirically supported educational practices that close the achievement gap between themselves and their non-
ELL peers. National mandates require that educators help faltering ELL students and other minority populations catch up with their typically performing peers (Individuals with Disabilities Education Act, 2004; No Child Left Behind, 2001). Learning to read has been identified as particularly important to positive academic and behavioral student outcomes (Gunn, Biglan, Smolkowski, & Ary; 2000; Slavin et al., 1996; Torgesen, Rashotte, & Alexander, 2001; Vellutino et al., 1996). The National Research Council (1998) confirmed that “reading is essential to success in our society” (pp. 17). Researchers have demonstrated that if students have below average reading skills by the end of first grade they very rarely acquire average or above-average reading skills by the time they finish elementary school (Francis, Shaywitz, Steubing, Shaywitz, & Fletcher, 1996; Juel, 1988). Thus, it is critically important that ELL students learn to read at age-and grade-appropriate levels. However, while much is known about ameliorating the reading problems experienced by struggling monolingual English speakers, less is known about how to help ELL students catch up to their peers in reading skills (August & Hakuta, 1997; Ball & Blachman, 1991; Foorman & Torgesen, 2001; O’Connor, 2000; Snow, Burns, & Griffin, 1998; Shanahan & August, 2006; Swanson, Hoskyn, & Lee; 1999; Torgesen, 2000; Vellutino et al., 1996).

One educational innovation that has been shown to improve educational outcomes for monolingual English speakers is Response to Intervention (RtI; Fuchs, Fuchs & Zumeta, 2008). RtI is a multi-tiered framework through which academic and behavioral services are rendered to students in a proactive, directed and dynamic manner. RtI encompasses all levels of educational practices and procedures, including core instruction, small group interventions, and individualized, intensive services. RtI
practices have been shown to benefit non-ELL students, and research is beginning to accumulate regarding the validity and effectiveness of RtI procedures for ELL students (McCardle, Keller-Allen, & Shuy, 2008). Considering their greater risk for academic failure ELL students are among those who stand to benefit most from the robust educational practices inherent in an RtI model.

RtI necessitates the use of frequent progress monitoring to verify students’ academic progress. Curriculum-based measurement (CBM) is commonly used within RtI frameworks to directly assess academic skills. CBM has been in use since the 1970’s, and regular monitoring of progress with CBM has been shown to lead to better student outcomes (Fuchs, 1989; Fuchs, Deno, & Mirkin, 1984; Fuchs, Fuchs, Hamlett, & Ferguson, 1992). Researchers have recently begun to examine the appropriateness of CBM for ELL students and four independent research studies have concluded that CBM is sensitive to reading growth in ELL and non-ELL students (Baker & Good, 1995; Dominguez de Ramírez & Shapiro, 2006; Leafstedt, Richards, & Gerber, 2004; Wiley & Deno, 2005). In addition, the U.S. Department of Education has recommended the use of CBM to monitor the reading progress of ELL students over time (Gersten et al., 2007).

It is not clear how factors that are part of the ELL experience may affect these students’ experience of and success in an RtI instructional program. Acculturation orientation is one such factor that has not yet been explored in this context. Acculturation is a psychological phenomenon that results from continuous contact with a culture different than one’s own, and which leads to changes to the culture of one or both groups in contact (Redfield, Linton, & Herskovits, 1936). Berry and colleagues (Berry & Sam, 1997; Berry, Kim, Power, Young, & Bujaki, 1989; Berry, Trimble & Olmedo, 1986)
conceptualized acculturation orientation as developing based on an individual’s connection with their culture of origin and new culture. Those with a strong connection to both cultures are said to possess an integration orientation; a link with the new culture but not the culture of origin is conceptualized as an assimilation orientation; a connection to the culture of origin but not the new culture is considered to be a separation orientation; and finally, a lack of association with either culture leads to a marginalization orientation. Acculturation orientation has been shown to influence mental health status, self-esteem, risk-taking behaviors, physical health, sociopolitical leanings, and academic performance (Arénds-Tóth & van de Vijver, 2006). An integration orientation is most often associated with the best psychological adaptation (Berry, 2006). However, there are many varied explanations of the acculturative process, which has lead to conflicting research findings and an equally diverse number of tools for measuring acculturation. Much of the acculturation literature has taken a deficit perspective (Harwood & Feng, 2006) while viewing the acculturative experience as unidimensional (Cortes, Rogler, & Malgady, 1994; Rogler, Cortes, and Malgady, 1991), but more recent literature has sometimes adopted Berry et al.’s dynamic, multidimensional and interactional concept of acculturation orientation (Berry, 2006; Cuéllar, Arnold, & Maldonado, 1995).

Although acculturation researchers have completed many studies involving adolescent immigrant students, few have focused their attention on the experiences of elementary-aged Latino ELL students (Griffin, 2009). In addition, acculturation researchers have not substantively collaborated with reading researchers to examine how Latino ELL students’ growth in the area of reading skills may be related to acculturation
orientation, even though various studies have suggested that acculturation orientation may play a role in students’ academic performance as assessed by standardized achievement tests (Baldauf and Ayabe, 1977; Riggs & Greenberg, 2004).

As the number of Latino students continues to rise and the achievement gap between ELL and non-ELL students continues to widen, it is critically important that researchers and educators take notice of the factors that have the potential to impact Latino ELL students’ academic success, such as acculturation orientation (Harwood and Feng, 2006). Thus, the purpose of the current study is to examine whether the reading progress of elementary-aged, Spanish-speaking ELL students differs depending on their acculturation orientation. The hypothesis is that students with an integration orientation will make the most reading progress, when compared to students having orientations of assimilation, separation and marginalization. In addition, it is hypothesized that students with a marginalization orientation will demonstrate the poorest reading progress.
Chapter Two: Literature Review

The purpose of the current study is to determine whether elementary-aged Latino English Language Learner (ELL) students’ learning rates differ depending on their acculturation orientation. This chapter will first review various characteristics of Latino and ELL students, including the reading achievement gap between ELL students and non-ELL students, as well as the characteristics of high quality reading instruction for ELL students. Next, indices of reading achievement will be reviewed, including a rationale for the selection of curriculum-based measurement (CBM) for the present investigation. Third, the Response to Intervention (RtI) framework will be explained, including the strategies used to describe learning progress in reading. Then, the construct of acculturation will be discussed, along with prior studies that have examined relations between acculturation and academic achievement. Throughout each section, potential measures will be described including the measures selected for this study.

Overview of Previous Research with Latino ELL Students

Demographic description of ELL students. ELL students are an eclectic and noteworthy group of learners in the United States. The U.S. Department of Education defines ELL students as individuals who “were not born in the United States or whose native language is a language other than English” or students who “come from environments where a language other than English is dominant” (National Center for Education Statistics, 2006a, p. A-27). The definition goes on to state that, because of their background, ELL students must “have sufficient difficulty speaking, reading, writing, or understanding the English language to deny such individuals the opportunity to learn successfully in classrooms where the language of instruction is English or to participate
fully in U.S. society” (National Center for Education Statistics, 2006a, p. A-27). Thus, ELL students are those who did not grow up in a primarily English-speaking setting and lack the skills necessary to learn in an English-only environment.

There are multiple terms used to describe students with these characteristics such as: non-native English speaker, language minority student, English as a Second Language (ESL) student, Limited English Proficient (LEP), and English Language Learner (ELL). The term “LEP” is typically used by federal government policies and proceedings (Christian, 2006). In this paper, the term ‘ELL’ will be used to describe the set of students who meet the above criteria, for two reasons. First, the term ‘ELL’ is more descriptive, in that it acknowledges that students may speak more than one language prior to learning English or may be learning English simultaneously with another language. In addition, the term ‘ELL’ focuses on accomplishments that students are achieving, without using pejorative terms such as “limited” or inferring minority status of the individual.

During the 2003-2004 school year, 3.8 million students received ELL services in the U.S. (Hoffman & Sable, 2006). These numbers are expected to rise as ELL student growth rates are increasing rapidly; between 1994 and 1996, the growth rate was 1.4%, while the numbers of ELL students increased by 60.8% between 2003 and 2005 (NCELA, 2006). It is estimated that by the year 2030, approximately 40% of students in the U.S. will not speak English as their first language. Interestingly, 76% of all ELL students in the U.S. were born in the U.S., although 80% of the parents of ELL students were born outside of the country (Capps et al., 2005). In addition, 67% of ELL students are elementary-aged (Kindler, 2002). ELL students are a diverse group, in terms of their educational background, country and language of origin, socioeconomic status,
educational expectations, and age of arrival in the U.S. (Christian, 2006). Accordingly, public schools in the U.S. have the difficult task of educating a diverse and significant proportion of the student body whose English skills may render typical instructional methods inappropriate or insufficient.

**Latino ELL students.** Latino students represent an assorted group of students who differ in their country of origin, language proficiency, socioeconomic status, and country of birth. Some Latino students are ELL students as well. Although ELL students in the U.S. speak over 460 languages (Baker & Baker, 2008), approximately 80% speak Spanish as their first language (Goldenberg, 2008; Zehler et al., 2003). Thus, while only about half of Spanish-speakers in U.S. elementary schools are classified as ELL students, the majority of ELL students are of Latino origin (Baker & Baker, 2008). In total, Spanish-speaking ELL students represent close to 10% of the elementary school population in the U.S. today (Baker & Baker, 2008). Spanish-speaking Latino students represent the fastest-growing segment of the school-age population (U.S. Department of Education National Center for Education Statistics, 1995). Moreover, one out of every two people added to the U.S. population since 2000 has been Latino in ethnicity (Huntington, 2004).

**Educational outcomes for ELL and Latino students.** School dropout and graduation completion rates of Latino and ELL students indicate that these students are not learning or succeeding in American schools at a rate commensurate with their peers, and that current instructional practices may not be encouraging their academic success. Collapsed dropout rates indicated that 9.4% of the total population did not finish school in the 2005-2006 school year (National Center for Education Statistics, 2007). The Latino
student dropout rate in 2005 was a concerning 22.4% (National Center for Education Statistics, 2007). During the same school year, only 6.0% of European American students and 10.4% of African American students dropped out of school (National Center for Education Statistics, 2007). In addition, fewer Latino people (33%) reported completing ‘some college’ in 2005, compared to their European American (64%) or African American (49%) peers (National Center for Education Statistics, 2006b).

Latino students’ low scores on national indicators of academic progress are further indication of the gap between Latino students and their peers, and the failure of U.S. schools to provide these students with the support they need to succeed. By the time they finish high school, Latino students’ math and reading scores are on par with European American students’ scores in middle school (The Education Trust, 2003). In addition, in 2005 60% of Latino twelfth grade students earned failing math scores, compared to 30% of European American twelfth grade students (National Center for Education Statistics, 2005b). In the area of reading, 40% of Latino twelfth grade students earned failing scores, compared to 21% of European American twelfth grade students (National Center for Education Statistics, 2005a). When Latino students receive special education, it is most often because of their reading ability (U.S. Department of Education, 2003). Finally, Latino students are more likely than their peers to be retained in grade level (Shepherd, 2000).

As previously stated, most ELL students have a Latino ethnic background. Consequently, ELL and Latino students have similar academic concerns. ELL students have been recognized as the student group with the highest dropout, mobility, and poverty rates and the lowest achievement scores compared to other student sub-groups
While 10% of non-ELL students fail to complete high school, an astounding 51% of students who speak English with difficulty do not graduate from high school (National Center for Education Statistics, 2004). In addition, just 26% of eighth grade ELL students in the U.S. achieved at least a “basic” level of achievement in the area of reading, compared to 84% of their European American peers (National Center for Education Statistics, 2009). ELL students are disproportionately represented in special education classes; depending on the state and school district, ELL students may be under- or over-represented when compared to their non-ELL peers (Artiles & Trent, 2000; McCardle, Mele-McCarthy, Cutting, Leos, & D’Emilio, 2005; Rueda & Windmueller, 2006; Zehler et al., 2003). This indicates that some ELL students may not be getting the services they need, while some may be receiving unnecessary or inappropriate services outside of the general education classroom. Both Latino and ELL students tend to struggle primarily in the area of reading, which is particularly concerning considering the importance of reading ability for decisions to drop out of school and the association of reading ability with positive life outcomes (Rumberger, 1995; Stanovich, 1986).

**Characteristics of ELL students that affect their learning.** There are various factors that affect ELL students’ learning. First, individuals who possess a strong understanding of their language of origin tend to develop additional languages easier than students without a foundational understanding of any language (August & Shanahan, 2008; Kirk-Senesac, 2002; Lambert & Cabazon, 1994; Lindholm-Leary, 2001). Perhaps relatedly, the age of an individual at the time of their immigration has also been shown to affect their academic achievement. Specifically, students who arrived in the U.S. between
the ages of eight and eleven have been shown to perform better than those who arrived between the ages of five to six and twelve to fifteen (Collier, 1987). One possibility is that students arriving between the ages of eight and eleven have had enough time to develop a strong foundation in their language of origin, and also have time to develop the proficiency in the academic language of the new country. The students’ generation status also appears to impact educational achievement. Interestingly, first-generation immigrants tend to have higher academic achievement when compared to their later generation peers (Kao & Tienda, 1995; Rumbaut & Portes, 2001). Finally, students’ socioeconomic status has also been shown to affect achievement, with students from lower SES families often showing poorer achievement when compared to their peers from higher SES homes (Lindholm-Leary, 2001).

**Typical practices in the identification of ELL students.** The majority of researchers have relied on schools’ identification methods in order to identify ELL students for inclusion in their study (Al Otaiba et al., 2009; Denton, Wexler, Vaughn, & Bryan, 2008; Betts, Bolt, Decker, Muyskens, & Marston, 2009). Typically, the identification process is initiated when parents indicate on school registration paperwork that a language other than English is spoken in the home. Then, students are given a state-approved English proficiency test. If the student qualifies for services (based on state standards), parents are given the option of enrolling their child in the ELL program. Finally, ELL students’ proficiency is re-assessed periodically, and ELL services are changed or terminated as student need indicates.

**ELL students and reading instruction.** Only limited information is available on the prevention of reading failure for ELL students, while much more is known about
literacy for monolingual English speakers. Although there is a relative lack of rigorous and quality research on reading interventions with ELL students (Gersten et al., 2007), some findings can be gleaned. In general, optimal reading instruction for ELL students shares many characteristics with best practices in reading instruction for non-ELL learners, although some differences do exist.

**Similarities in reading instruction for ELL and non-ELL students.** Researchers have determined that many of the early literacy skills that predict fluid and accurate word reading ability in the elementary school years for monolingual English students also are predictive for ELL students (Baker & Baker, 2008; Lesaux & Geva, 2006; Lindsey & Manis, 2005; Geva & Genesee, 2006). These include skills such as phonological awareness, print awareness, and alphabetic knowledge. Indeed, the U.S. Department of Education, through the Institute of Education Sciences’ National Center for Education Evaluation and Regional Assistance (Gersten et al., 2007) and the National Literacy Panel on Language-Minority Children and Youth (August & Shanahan, 2008) has recommended that ELL students with poor English reading skills receive a direct and explicit reading curriculum targeting “Big 5” skills. These skills are comprised of phonemic awareness, phonics, fluency, vocabulary, and comprehension, and were identified by the National Reading Panel (2000) as integral skills for all students learning to read. Gersten et al. (2007) also recommended that school staff be trained to use valid and reliable screening and progress monitoring tools at consistent intervals to assess and monitor the reading performance of ELL students and make instructional decisions, a practice that has also been encouraged for all students (Roehrig, Duggar, Moats, Glover, & Mincey, 2008; Santi & Vaughn, 2007).
In addition, the Center for Research on Education, Diversity and Excellence has underlined the importance of direct and interactive literacy instruction for all students, including ELL students (Genesee, Lindholm-Leary, Saunders, & Christian, 2006). Direct instruction occurs when students are taught discrete subskills in an explicit manner, and it includes an emphasis on the continual assessment of student skills and re-teaching until student mastery is observed. While direct instruction is known to benefit all students (Adams & Carnine, 2003; Borman, Hewes, Overman & Brown, 2003; Crowe, Connor, & Petseher, 2009; National Reading Panel, 2000), especially those who are struggling to learn to read (Houtveen & van de Grift, 2007), it is particularly recommended for ELL students because of their at-risk status for reading failure and their need for explicit instruction in the components of reading and writing (Genesee, Lindholm-Leary, Saunders, & Christian, 2006). One reading curriculum that is based on direct instruction practices is Reading Mastery (2008). Reading Mastery is recognized as a high-quality and research-based curriculum because it is comprised of many of the components that the previously reviewed research summaries indicate are important for ELL students (i.e., August & Shanahan, 2008; Gersten et al., 2007).

With interactive instruction, learning occurs through collaboration, social interactions, and individualized guided interactions with the teacher (Genesee, Lindholm-Leary, Saunders, & Christian, 2006). This approach is thought to benefit ELL students, as well as non-ELL learners, because it allows teachers to target students’ individual needs and also provides students with the opportunity to learn through observation (Genesee, Lindholm-Leary, Saunders, & Christian, 2006).
Goldenberg (2008) examined various research reviews of effective practices for ELL and non-ELL students (Genesee, Lindholm-Leary, Saunders, & Christian, 2006; National Reading Panel, 2000). In addition to the points noted above, Goldenberg posited that ELL and non-ELL students benefit from many of the same instructional practices, including:

- clear goals and learning objectives; meaningful, challenging, and motivating contexts; a curriculum rich with content; well-designed, clearly structured, and appropriately paced instruction; active engagement and participation;
- opportunities to practice, apply, and transfer new learning; feedback on correct and incorrect responses; periodic review and practice; frequent assessments to gauge progress, with reteaching as needed; and opportunities to interact with other students in motivating and appropriately structured contexts (Goldenberg, 2008, pp. 17).

Goldenberg noted that while many of these factors have been studied more extensively with non-ELL than with ELL learners, and while individual differences will exist among all students, these variables should be the foundation for ELL (as well as non-ELL) student instruction.

**Differences in reading instruction for ELL and typical students.** ELL students benefit from some various instructional practices that may not be necessary or appropriate for typical students. For one, ELL students gain from direct instruction on specific vocabulary that enhances their performance within an academic setting (i.e., “academic vocabulary”; Genesee, Lindholm-Leary, Saunders, & Christian, 2006; Gersten et al., 2007). While conversational language knowledge is also important for ELL
students, it is not sufficient to promote ELL students’ academic success. In addition, literature reviews have identified significant benefits of dual-language instruction and bilingual education for ELL students (Genesee, Lindholm-Leary, Saunders, & Christian, 2006; McCardle, Keller-Allen, & Shuy, 2008). Specifically, ELL students who have been provided with some instruction in their language of origin have typically outperformed students who did not receive any instruction in their language of origin; they have also demonstrated better school engagement, as measured by GPA, school completion, attitude toward school, and college readiness (August & Shanahan, 2008; Lindholm-Leary & Borsato, 2006).

Vaughn and colleagues have implemented numerous studies examining the use of the Proactive Reading intervention for Spanish-speaking ELL students (Linan-Thompson, Vaughn, Prater, & Cirino, 2006; Vaughn, Cirino et al., 2006; Vaughn, Linan-Thompson et al., 2006; Vaughn, Mathes et al., 2006). Proactive Reading is a comprehensive reading intervention that provides explicit, quick-paced, and direct instruction in: letter-sound knowledge, phonemic awareness, connected text fluency, word recognition, and comprehension strategies (Mathes, Torgesen, Wahl, Menchetti, & Grek, 1999). Strategies known to assist ELL students, such as visual prompts, gestures, and facial expressions, are incorporated into each lesson. These interventions have also included ELL-specific modifications, such as story retell and increased oral language practice (Vaughn, Linan-Thompson et al., 2006; Vaughn, Mathes et al., 2006). The intervention is typically provided daily for 50 minutes in small groups over approximately eight months by trained instructors. Students who complete the intervention have demonstrated significant growth in the areas of letter-sound knowledge,
phonological awareness, oral reading fluency and spelling (Linan-Thompson, Vaughn, Prater & Cirino, 2006; Vaughn, Cirino et al., 2006; Vaughn, Linan-Thompson et al., 2006; Vaughn, Mathes et al., 2006). ELL students receiving Proactive Reading have demonstrated similar (if not greater) gains in decoding and reading comprehension than their non-ELL peers (Linan-Thompson, Vaughn, Prater, & Cirino, 2006; Vaughn, Cirino et al., 2006). The intervention and assessments have been provided in Spanish and English; students typically show more growth in assessments that coincide with the language of instruction (Linan-Thompson, Vaughn, Prater & Cirino, 2006; Vaughn, Cirino et al., 2006; Vaughn, Linan-Thompson et al., 2006; Vaughn, Mathes et al., 2006).

Goldenberg (2008) also described various instructional modifications that should be used specifically with ELL students. These include reading texts with familiar content; building vocabulary knowledge through explicit instruction, visual explanations, and repetition; providing support in the student’s primary language; and adding time to instruction. However, he noted that pairing ELL and non-ELL students in instructional groups has not been shown to affect achievement.

Finally, the National Literacy Panel on Language-Minority Children and Youth reported that oral English skills must be a significant component of literacy instruction, in addition to reading instruction (August & Shanahan, 2008). Furthermore, and especially relevant to the present study, the panel encouraged researchers to devote more energy to studying the impact of sociocultural variables on ELL students’ literacy performance, including immigration status, interactional patterns, familial influences, community policies, and language status.
Research related to ELL students and appropriate reading instruction is still in early stages. However, it is becoming increasingly clear that many similarities exist between “best practices” for ELL and non-ELL students’ reading instruction. Teaching phonemic awareness, phonics, fluency, vocabulary, and comprehension (the “Big 5”); using a direct instruction curriculum and implementing teaching strategies such as appropriate pacing, engaging practices, repeated practice, immediate feedback, frequent assessment, and reteaching; have all been shown to be effective for both ELL and non-ELL students. However, various practices have been shown to be appropriate for ELL students, but not necessarily appropriate for non-ELL students. For example, ELL students need instruction that emphasizes academic vocabulary and oral English skills. In addition, dual language and bilingual education programs are particularly helpful for ELL students. Also, ELL students benefit from certain instructional modifications, such as visual explanations, exaggerated facial expressions, familiar content areas, and additional time. Finally, researchers have recognized the importance of increased attention to the sociocultural variables that may affect ELL students’ academic performance.

**Overview of Learning Progress in Reading and RtI**

**Indices of learning progress in reading.** Researchers most often assess reading progress in one of three ways: grades and grade point averages from year to year or semester to semester; change in performance over time on norm-referenced, standardized tests; and CBM scores across days, weeks, or months. The use of grades and grade point averages is most common but often presents internal validity problems (Carver, 1974; Tindal, 1985). For example, teachers may unintentionally inflate or deflate a student’s grade based on factors other than a student’s reading progress, such as their behavior or
home situation. In addition, grades and grade point averages represent a summative perspective of students’ progress, as they are only collected two to four times a year. Norm-referenced tests also have drawbacks in that there is often little overlap between the test and students’ curriculum, they are not sensitive to small changes in student behavior, they are typically lengthy to administer, and they are not meant to be re-administered to describe rates of progress (Shapiro, 2004).

CBM is a type of curriculum-based assessment that directly assesses academic skills, is designed to be repeatable, and is sensitive to small changes in student performance (Shapiro, 2004). CBM is frequently used to monitor the reading progress of monolingual students (Baker & Baker, 2008). CBM has been in use since the 1970’s, and regular monitoring of academic progress with CBM has been shown to lead to better student outcomes (Fuchs, 1989; Fuchs, Deno, & Mirkin, 1984; Fuchs, Fuchs, Hamlett, & Ferguson, 1992). CBM tools have been developed to assess a variety of reading skills, including phonological awareness, alphabetic principles, phonics, reading fluency and accuracy, reading comprehension, vocabulary, writing, and oral language use. Students are assessed with CBM scales appropriate to their reading level; for example, Kindergarten students typically learn alphabetic principle and phonological awareness skills, and thus are assessed using CBM scales evaluating those specific skills. In the upper grades, students’ progress is usually assessed with oral reading fluency and reading comprehension scales, as they are assumed to be proficient in the earlier skills and are not yet expected to be fast and accurate readers who understand the content of the story. In this study, CBM will be used to assess oral reading fluency and accuracy rates. Oral reading fluency (ORF) will be discussed in greater detail below.
Researchers have recently begun to examine the appropriateness of CBM for ELL students (Baker & Good, 1995; Dominguez de Ramírez & Shapiro, 2006; Leafstedt, Richards, & Gerber, 2004; Wiley & Deno, 2005). Most have used ORF tests as an overall gauge of students’ reading health. Researchers have tentatively concluded that CBM measures of ORF are a sensitive measure of reading growth for both ELL and non-ELL students (Baker & Baker, 2008). Due to this research support, the U.S. Department of Education has also endorsed the use of CBM to monitor the reading progress of ELLs over time (Gersten et al., 2007). Thus, a CBM ORF scale will be used to assess ELL students’ reading progress in the current study.

**Introduction to RtI.** RtI is a framework that ensures the provision of appropriate instruction to students. It is the practice of providing high-quality research-based instruction and intervention matched to student need, monitoring student progress frequently to make decisions about change in instruction and student goals, systematically monitoring the integrity with which instruction is implemented, and applying child response data to important educational decisions (NASDSE & CASE, 2006; National Research Center on Learning Disabilities, 2002). As student progress is continually monitored, adjustments can quickly be made in the intervention until adequate student response is observed. Adequate student response is determined by comparing the level and slope of a student’s change on CBM scales to the level and slope of change observed among a sample of national or local same-age peers. If a student’s slope and level of improvement is lower than that of their peers, they are determined to have made an inadequate response to instruction. Additionally, if many students within a
classroom are demonstrating inadequate response to instruction, the instruction is analyzed and strengthened, as it (and not the students) may be the source of concern.

RtI represents a tiered approach to service delivery; as the tiers increase the services become more intensive and individualized while targeting students who fail to make adequate progress at previous tiers. Tier 1 provides universal and research-supported instruction to all students with the expectation that most students (80-85%) will show appropriate rates of learning when experiencing this level of instruction. When students fail to show adequate progress at Tier 1, they receive additional support at Tier 2; these services are typically provided for 10-15% of students. Tier 2 is typically comprised of a small group research-based intervention implemented by a professional teacher or trained paraprofessional. Finally, students who do not respond to either Tiers 1 or 2 receive the intensive and individualized Tier 3 services. Tier 3 may or may not be associated with special education services, but should always involve a low teacher to student ratio (1:2 or 1:1) and intensive services targeted at the student’s needs. Less than 5% of students typically require services at the Tier 3 level.

Some researchers believe that RtI models are superior at identifying learning disabilities in students when compared to traditional discrepancy models (see Gresham, 2009 for a summary). Discrepancy models are those in which students are identified as having a learning disability if their intellectual ability is in the average or above average range while their academic achievement is significantly lower. For RtI models to be successful, students must be provided with targeted and intensive research-supported instruction before a downward trajectory of academic performance is established (Foorman & Torgesen, 2001; National Institute of Child Health and Human
Development, 2003). Recent federal legislation has given school districts the option of using RtI models when determining special education eligibility (i.e., Individuals with Disabilities Education Act; IDEA, 2004). In sum, RtI establishes the need for high-quality and flexible instruction, extensive professional development, efficient use of teacher and building resources, frequent monitoring of student progress, and data-based decision making about students’ instructional needs. RtI frameworks are most often implemented in conjunction with reading instruction, but have also been used to address mathematics, behavior, and social-emotional needs.

**RtI and ELLs.** An RtI framework may be particularly important for ELL students, as they represent the students who are most in need of research-based practices and individualized, need-based instruction (Baker & Baker, 2008; Brown & Doolittle, 2008; Xu & Drame, 2008). Various papers have been written that explain specifically how an RtI framework should be applied to ELL students (i.e., Brown & Doolittle, 2008).Researchers have examined the utility and validity of an RtI model for ELL students for the purposes of learning disability verification and the provision of appropriate services (Al Otaiba et al., 2009; Baker & Baker, 2008; Denton, Wexler, Vaughn, & Bryan, 2008; Lovett et al., 2008; Xu & Drame, 2008).

There are many ways in which ELL students could benefit from appropriate RtI-supported instruction within schools. As previously noted, ELL students are disproportionately represented in special education, and researchers have speculated that the traditional IQ-achievement discrepancy model for special education verification may be contributing to the disproportionate identification of learning disabilities in ELL students (Donovan & Cross, 2002). RtI could increase the accuracy with which ELL
students (and other minority populations) are identified for special education services because it focuses on prevention and early intervention, uses assessment tools with strong technical adequacy, and attempts to prevent the school context from encouraging student failures (Harris-Murri, King, & Rostenberg, 2006; Xu & Drame, 2008).

An RtI framework focuses on data-based decision making and rapid response to student outcomes. ELL students, in addition to other students who are underperforming academically, are likely to benefit from an increased focus on their academic progress (Xu & Drame, 2008). In addition, for RtI to be implemented successfully, professionals within the school setting must communicate and collaborate frequently. This emphasis on communication by teachers from general education, special education, and ELL classrooms, as well as administrators and other educators, increases the likelihood that accurate decisions will be made.

There are, however, a few questions that have been asked about the use of RtI with ELL students. One question is whether existing assessment tools are reliable and valid for the purposes of screening and monitoring learning progress of ELL students (Xu & Drame, 2008). Some researchers have demonstrated that certain curriculum-based measures are technically adequate when used with ELL students for the purposes of screening (Haager, 2007; Windmueller, 2004) and monitoring student progress (Graves, Plasencia-Peinado, Deno, & Johnson, 2005; Wiley & Deno, 2005).

An additional issue that has been raised is that when working with ELL students RtI models must be implemented with the knowledge that students’ sociocultural context affects their academic progress and schooling experience, particularly when ELL students are concerned (Xu & Drame, 2008). Factors such as the home culture, language use and
preference, differing home and school behavioral expectations, and student acculturation orientation are likely to influence students’ reading performance (Betts, Bolt, Decker, Muyskens, & Marston, 2009; Trueba, 1988; Xu & Drame, 2008). Thus, schools must become aware of these sociocultural factors and provide RtI services with a clear understanding of the student’s context (Artiles, 2002). Unfortunately, little research exists regarding the impact of sociocultural factors on ELL students’ reading progress within an RtI model.

Assessment of reading performance. Literacy skills and progress can be assessed in a variety of ways (e.g., outcome, diagnostic, screening and progress monitoring tools) and at varying levels (e.g., national, state, district, and classroom tests). The type of assessment should be aligned with the purpose of the assessment. This study needed an assessment scale that would measure ELL students’ reading rates over time in a valid and reliable manner. It was also important that the scale be sensitive to small changes in student performance, and technically adequate for Spanish-speaking ELL students. Finally, it was critical that the scale be easy to administer correctly and time-efficient.

Baker and Baker (2008) summarized the research that has been conducted to date to monitor the reading progress of ELL students over time. They suggested that CBM reading scales are the most reliable and accurate measures of overall reading performance, and identified four studies that had used CBM scales to monitor ELL students’ progress in reading (Baker & Good, 1995; Dominguez de Ramirez & Shapiro, 2006; Leafstetd, Richards, and Gerber, 2004; Wiley & Deno, 2005). Of these studies, three examined ORF with ELL students, including 2nd grade students (Baker & Good,
25

1995), 1st though 5th grade Spanish speakers (Dominguez de Ramírez & Shapiro, 2006), and 3rd-5th grade Hmong speakers (Wiley & Deno, 2005). The last study examined phonological awareness with Kindergarten students, and used CBM scales that assessed phonemic segmentation fluency and nonsense word fluency (Leafstedt, Richards, and Gerber, 2004). Baker and Good found that the slope of change of an ORF measure was reliable across 10 weeks for ELL students (1995). Dominguez de Ramírez and Shapiro (2006) determined that the ORF measure could reliably assess Spanish and English language skills across grades 1-5. Finally, Wiley and Deno (2005) found that the ORF measure was a better overall measure of reading performance than a maze comprehension task. Due to the age and presumed reading skill of the current study’s participants, as well as the example set by prior research, ORF was targeted for inclusion in the current study.

The assessment scale that was most appropriate for the current study’s purposes, due to its technical adequacy, was the Passage Reading Fluency (PRF) test (Alonzo & Tindal, 2007) from the easyCBM Assessment System (Alonzo, Tindal, Ulmer, & Glasgow, 2006). The PRF test assesses students’ ORF. ORF assesses a student’s ability to decode text with accuracy, speed, and ease (Roehrig, Petscher, Nettles, Hudson & Torgesen, 2008). ORF has demonstrated a strong relationship to overall reading ability (Tindal & Marston, 1996) and has been used to reliably measure the reading performance of ELL students (Haagar & Windmueller, 2001). ORF is also a strong predictor of reading outcomes for elementary aged ELL students (Windmueller, 2004). Importantly, ORF correlates with reading comprehension, which is considered by many to be the most advanced reading skill (e.g., Breznitz, 1987, 1991; Chard, Vaughn, & Tyler, 2002; Deno, Marston, Shinn, & Tindal, 1983; Dowhower, 1987; Fuchs, Fuchs, & Maxwell, 1988;
Rasinski, 1990; Tenenbaum & Wolking, 1989). For these reasons, ORF is often considered to be a gauge of overall student reading health.

The easyCBM PRF scale test is a short, 1-minute CBM ORF scale that examines student accuracy and fluency in grade-level self-contained texts. Students are asked to “cold-read” (i.e., read for the first time) a passage while trained examiners record the number of correctly read words and incorrectly read words. Examiners also prompt students to go on if they hesitate for more than 3 seconds. Incorrectly read words are words that are omitted, substituted, or hesitated on for more than three seconds. Incorrect words are not counted towards the students’ final ORF score. The number of correctly read words per minute is considered the ORF rate (Al Otaiba et al., 2009). The median score of three readings is used as the ORF score for that assessment. ORF represents a student’s ability to decode text with accuracy, speed, and ease (Roehrig, Petscher, Nettles, Hudson & Torgesen, 2008).

The easyCBM PRF scale was developed with two goals in mind. First, 20 alternate PRF forms were created per grade to be of comparable difficulty level; thus, the change in performance over time could be attributed to student learning, and not to variations in passage difficulty. In addition, the PRF scales were developed to be sensitive to changes over short periods of time, such as 1-2 weeks. Alonzo and Tindal (2007) developed the passages for first through fourth grades in 2007 and the fifth grade passages in 2008. The PRF scales were written specifically for use in the easyCBM assessment system.

The readability of each passage was initially checked using the Flesch-Kinkaid readability index feature of a computer-based word processing program, in order to
ensure that each passage’s readability fell between .4 and .6 of its grade level (e.g., the first grade passages all fell between 1.4 and 1.6). The passages were then analyzed using Rasch analysis techniques, which produced item level difficulty estimations and a standard error of measure for each estimation, as well as the mean square outfit of each item. Next, a repeated measures analysis was used to analyze the correlations and mean differences between the alternate forms of the measures. Using these results, adjustments were made to the passages to create 20 comparable forms across the grade levels.

Alternate form reliability (.87 to .96) and test-retest reliability (.91 to .94) for the PRF have been shown to be strong (Alonzo & Tindal, 2007). The PRF has also been shown to have adequate criterion validity, as it is highly correlated with the Oregon statewide reading assessment (Tindal, Nese & Alonzo, 2009).

**Overview of Treatment Integrity Assessment Procedures**

To examine the variation in reading progress among Spanish-speaking ELL students, it is important to ensure that all students are receiving reading instruction that is of equivalent quality. The high quality reading curriculum must be delivered within the context of an RtI framework and the integrity or fidelity of the reading instruction must be controlled. The terms “treatment integrity” and “fidelity of treatment” are often used interchangeably, and refer to the same concept (Moncher & Prinz, 1991). For this study, the term “treatment integrity” will be used. Treatment integrity has been defined as the degree to which instruction or intervention is implemented as planned (Gresham, 1989). Treatment integrity data were collected in order to increase scientific confidence that changes observed in the dependent or outcome variable are due to the independent variable, or treatment (Borrelli et al., 2005; Odom et al., 2010). Higher treatment integrity
is achieved when the treatment is delivered more consistently with the established plan. Treatment integrity has been shown to correlate with the effectiveness of the treatment or intervention (Power et al., 2005).

Treatment integrity is a difficult construct to assess, but it has been widely cited as an essential component of outcome research (Gresham, 1989; Noell et al., 2005; Shadish, Cook, & Campbell, 2002). Perhaps because of the difficulty associated with its assessment, treatment integrity has been ignored in most treatment outcome research (Gresham, Gansle, Noell, Cohen, & Rosenblum, 1993; Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000). Nevertheless, there are at least three ways in which treatment integrity data can be collected, including self-report, direct observation, and rating of permanent products (Noell, 2008; Odom et al., 2010; Wilkinson, 2006).

Teacher self-report tends to be the most common way that researchers assess treatment integrity (Witt, Gresham, & Noell, 1996) and has various advantages and disadvantages. Some have stated that self-report may not be highly valid, particularly when methodological rigor or the length of the treatment increases (Wickstrom, Jones, LaFleur, & Witt, 1998). Also, Noell (2008) observed no relationship between teachers’ self report of the degree to which the instruction matched the treatment plan, and treatment integrity data collected from more direct methods such as observation. However, others have found that teacher self report increases treatment integrity, particularly when a structured planning protocol is used (Hagermoser Sanetti & Kratochwill, 2009).

Direct observation is another method used to collect treatment integrity data. Widely used by school psychologists, direct observational techniques include
naturalistic/descriptive procedures and systematic direct observation (Hintze & Matthews, 2004). Some researchers have stated that direct observational techniques are typically an effective way of collecting treatment integrity data, especially for school-wide programs (Noell, 2008). However, others have questioned its use because of the high likelihood of measurement reactivity, particularly when the observations are completed by an “outside” or unfamiliar observer (Haynes, 1978; Kazdin, 1982; Mizes, Hill, Boone & Lohr, 1983; Weinrott, Garrett, & Todd, 1978). Some researchers have also suggested that it is very difficult to achieve adequate levels of reliability without repeated observations over a lengthy period of time (Hintze & Matthews, 2004). In order to limit the effects of reactivity and increase reliability, tape and audio recording have also been used to collect treatment integrity data (i.e., Hagermoser Sanetti & Kratochwill, 2009). Recording all sessions and then coding a percentage of randomly selected sessions can make the process more efficient and the data more representative.

Finally, permanent products assessment involves the use of physical products that result from a behavior or action and is not subject to observer reactivity effects or self-report biases (Noell, 2008). However, not all interventions or programs produce a physical product, thus limiting the usefulness of permanent product assessment in some instances (Noell, 2008).

Researchers have recently begun to expand the construct of treatment integrity. Specifically, Power et al. (2005) summarized research (Dane & Schneider, 1998; Gresham et al., 1993) that identified the various dimensions of treatment integrity, including: adherence, exposure, and program differentiation (i.e., whether the content was implemented as planned); and quality of delivery and participant responsiveness (i.e.,
whether the process unfolded as planned). Power et al. (2005) also differentiated between hierarchical and partnership approaches to the collection of treatment integrity data. While the hierarchical method represents a more traditional approach, in that a research team monitors an evidence-based intervention by observing specific steps of the content of the intervention, the partnership model incorporates the needs and preferences of the stakeholder in the development and data collection of treatment integrity procedures (Power et al., 2005). In the present study, treatment integrity of the teachers’ ability to effectively implement the reading curriculum, *Reading Mastery Signature Edition* (2008) will be assessed by staff from the National Institute for Direct Instruction (NIFDI) and Educational Resources, Incorporated (ERI). NIFDI and ERI staff assess treatment integrity through a combination of the hierarchical and partnership models, in that the stakeholders are included in the process while still emphasizing evidence-based practices. NIFDI and ERI staff use direct observation, self-report, and permanent product data collection techniques.

NIFDI is a non-profit corporation that provides school districts with support for three years as they begin to implement Direct Instruction (DI) in their classrooms. NIFDI was founded by the originators of Direct Instruction. NIFDI consultants work with district teaching and administrative staff throughout the implementation process, and rely on student reading performance data to demonstrate a successful transition to DI practices. NIFDI consultants directly train, coach, and monitor school staff as they implement the DI curriculum, examine student progress, and engage in collaborative problem-solving. Most often, *Reading Mastery* is the Direct Instruction program that schools deliver while receiving consultation from NIFDI staff.
ERI is a professional staff development company that specializes in supporting schools as they implement DI in their school. The company was founded by educational professionals, including one who trained under Sigfried Englemann, the “Father of Direct Instruction.” ERI offers a wide range of services to administrators, teachers, and staff, including assistance with program implementation, staff development, behavior management training, administrative leadership training, and coaching in literacy. ERI emphasizes the use of research-based practices, strategies, and programs, and similar to NIFDI, typically encourages the implementation of Reading Mastery to schools receiving their consultative services.

Within the schools participating in the current study, NIFDI and ERI staff supported the degree to which the schools maintained high fidelity of the core reading program (i.e., Reading Mastery) through intensive staff training, classroom observation, and supportive feedback with the teachers and administrators at each school. NIFDI and ERI staff members provided the schools with worksheets to track students’ progress and yearly trainings for literacy coaches, administrators and teachers on the correct implementation of Reading Mastery. In addition, NIFDI and ERI staff observed each teacher implementing Reading Mastery in their classroom approximately once per month, and provided immediate error correction, feedback, and homework regarding the teacher’s efficacy in implementing the core program. School administrators faxed staff data weekly regarding each students progress, and then NIFDI or ERI staff provided recommendations shortly thereafter regarding the appropriate course of action. In addition, NIFDI and ERI staff were available at any time by phone to answer questions from school personnel. In summary, NIFDI and ERI staff provided continual and
intensive support to ensure that the core curriculum was administered appropriately. NIFDI and ERI staff reserved the right to discontinue working with the schools if they were not thoroughly following their recommendations, but they continued working with the schools throughout the length of the study.

**Overview of Previous Research on Acculturation**

**Definitions of and associated with acculturation.** Acculturation research rests on the understanding of multiple key concepts. Culture must first be understood, as it is culture that undergoes alterations in the acculturation process. Culture is defined as a “shared concept of reality or patterns of interaction, communication, and socialization” (pp. 354) that a specific group of people have in common (Collier, Brice & Oades-Sese, 2007). It is the knowledge, experiences, and beliefs that any given member of a particular group must understand in order to function effectively within that group (Collier, Brice & Oades-Sese, 2007). Enculturation is another key concept, and it is the process by which a person learns about and understands their specific cultural background (Collier, Brice & Oades-Sese, 2007). Enculturation typically occurs in childhood, and is passed down from parents to children (Redfield, Linton, & Herskovits, 1936).

Researchers and practitioners disagree about the correct terminology to use when describing the two cultures of importance during the process of acculturation. The culture of origin has also been referred to as the ‘home’ culture, ‘heritage’ culture, or ‘ethnic’ culture (Matsudaira, 2006); in order to remain sensitive to the fact that immigrants may develop new or have multiple homes or ethnic identities, the term “culture of origin” will be used throughout this paper. In addition, the new culture has often been referred to as the ‘host’ culture, ‘mainstream’ culture, or ‘dominant’ culture (Matsudaira, 2006); again,
so as not to infer that immigrants are simply guests in the new culture or part of an inferior culture, the term “new culture” will be employed.

Acculturation is a complex psychological phenomenon with a definition that has undergone multiple revisions since its inception in the early 1900’s (Padilla, 1980). American sociologists and anthropologists were the first to coin the term, in reaction to the changes that Native Americans experienced when exposed to the European way of life (Siatkowski, 2007). They identified acculturation as an experience that occurred when individuals of varying cultural backgrounds came into continuous contact with each other, resulting in modifications to either or both cultures (Redfield, Linton, & Herskovits, 1935). The definition of acculturation has evolved throughout the years, and the current definition of acculturation is considered to be comprised of two primary events: contact with another culture and the subsequent learning, behavior, and value changes that accompany this contact (Siatkowski, 2007; Szapocznik, Scopetta, Kurtines, & Aranalde, 1978). Acculturation has been demonstrated to influence individuals’ behavior, affect, and cognitions (Cuéllar, Arnold & Maldonado, 1995). In addition, acculturation is thought to be a long-term process, often taking years or even generations from commencement to completion (Berry, 2006).

Recent research has expanded this definition, noting that the two cultural groups are typically not of equal status or power, with the new culture often holding more power than the culture of origin, particularly in Western countries (van de Vijver & Phalet, 2004). In addition, researchers have noted that acculturation can occur at the group or individual level (Berry, Trimble, & Olmedo, 1986; Cabassa, 2003). Group or culture-level acculturation refers to a culture’s collective change in its “social structure, social
climate, economic base, and political organization” (pp. 462; Matsudaira, 2006; Berry, Poortinga, Segall, & Dasen, 1992). Cultural changes typically occur more frequently or to a greater extent in the culture of origin than in the new culture (Redfield, Linton, and Herskovits, 1936). Individual acculturation refers to changes in cultural make-up, including behaviors, values, identities and attitudes that occur when an individual is part of a cultural group undergoing acculturation and that alters the cultural lens through which one views the world (Berry, 1980; Berry, 1999; Graves, 1967). Interestingly, there is much variation from one individual to the next in how one chooses to acculturate and how quickly a satisfactory and stable acculturative orientation is achieved (Berry, 2006). The construct of interest in this study will be individual acculturation, from the culture of origin group’s perspective.

Acculturation leads to two types of changes. The first is overt or external changes in behavior and attitude. Overt acculturation encapsulates change in preferences related to clothing, media, friendships, and the language used regularly, preferentially, and proficiently (Matsudaira, 2006). The second type of change that acculturation leads to is internal, or covert, change. This variant of acculturation is associated with changes in one’s values, beliefs, affiliations, identity and attachment to a given culture (Matsudaira, 2006) and is more difficult to observe. Both external and internal manifestations of acculturation are important components of the acculturation process.

The process of acculturation often leads to some amount of stress for the acculturating individual. Various factors have been shown to moderate the amount of stress that one experiences. For instance, Berry (1976) found that stress levels increase as the culture of origin and new culture become more distinct. In addition, individuals from
cultures of origin that have experienced more contact with other cultural groups tend to experience less stress when exposed to a new culture (Collier, Brice, & Oades-Sese, 2007). Other researchers have noted that those who voluntarily choose to relocate to a new culture experience less stress than those whose relocation has been coerced (Ogbu & Simmons, 1998).

**Models of cultural adaptation.** Various models and corresponding assessment tools have been proposed to explain and assess the acculturation process. These models fall under two broad categories: unidimensional and multidimensional models. The earliest and most prevalent models of acculturation were unidimensional (Gordon, 1964; Oetting & Beauvais, 1991). These models assumed that overt and covert changes in an individual always occurred as a rejection of the culture of origin and towards acceptance of the new culture (van de Vijver & Phalet, 2004). Thus, the outcome involved an inevitable weakening of ties to the culture of origin and total adaptation to the new culture, at a pace that differed among individuals and situations (Gordon, 1964; van de Vijver & Phalet, 2004). These models unabashedly implied that the goal of acculturation was complete identification with the new culture (Dona & Berry, 1994). In addition, the unidimensional models proposed that acculturation functions in a linear fashion, with individuals falling somewhere on a continuum between completely not acculturated to the new culture and fully acculturated to the new culture (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005).

The unidimensional models of acculturation became less ethnocentric as they evolved. The earliest inception of unidimensional models reflected a *dominant majority* perspective, and depicted the process of acculturation as movement from the old and
supposedly “bad” culture of origin to the new and “good” culture (Oetting & Beauvais, 1991). The dominant majority theory of acculturation impacted the U.S. government’s decision to remove Native American children from their homes and place them in European American boarding schools in the late 1800’s (Oetting & Beauvais, 1991). Gradually, the dominant majority model shifted to the transitional model of acculturation (Madsen, 1964; Oetting & Beauvais, 1991; Stonequist, 1964). Unlike the earlier model, the transitional model validated the importance of the culture of origin, while still assuming that the new culture’s practices would prevail. This model also assumed that the movement towards the majority culture would be a stressful process. The most recent unidimensional model was termed alienation, and its proponents asserted that some individuals would find the shift towards the new culture stressful, while others would not (Graves, 1967; Oetting & Beauvais, 1991). The key factor determining the amount of stress an individual would experience was whether the individual had the ability to achieve the goals that members of the new culture valued. The alienation model provided additional options for individuals undergoing the acculturation process, but still assumed that movement would fall somewhere along a linear continuum from “not at all acculturated to the new culture” to “fully acculturated to the new culture.”

Multidimensional models of acculturation reflect a movement away from viewing the process of acculturation as falling along a single linear continuum with one culture at each end. Instead, multidimensional models depict acculturation as a process that involves movement away from or towards at least two cultures, both of which hold importance. One variation of this model is the bidimensional (also known as bicultural or transcultural) perspective of acculturation. This model indicated that an individual need
not lose contact with their culture of origin in order to accept aspects of the new culture (Oetting & Beauvais, 1991; Ramirez, 1984). Instead, they could maintain a connection with the culture of origin while also accepting aspects of the new culture. However, the model did not allow for a person to experience low identification with either the culture of origin or the new culture. Another variant of the multidimensional model is the *multiple domain* perspective. This perspective recognized that movement between cultures involves various facets of one’s life, such as language/communication preferences, customs, self-identification, attitudes, and values (Felix-Ortiz, Newcomb, & Myers, 1994; Oetting & Beauvais, 1991; Olmedo, Martinez, & Martinez, 1978; Olmedo & Padilla, 1978). In this perspective, it was assumed that someone could prefer their culture of origin in some aspects of their life, while valuing aspects of the new culture in other facets of their life. The fundamental premise of this model, that multiple facets of one’s life may be affected by acculturation, is also a premise of the most recent model of acculturation.

The most recent variant of the multidimensional models of acculturation is the *orthogonal identification* perspective. This theory was the first to recognize that the culture of origin and the new culture are not mutually exclusive, in that individuals are assumed to independently select elements of each culture to retain or reject (Cuéllar, Arnold, & Maldonado, 1995). The orthogonal identification perspective states that one’s culture of origin can be maintained even when the new culture is acculturated to (Matsudaira, 2006). Thus, identification with any culture is independent from identification with any other culture (Oetting & Beauvais, 1991). Similar to the multiple domain perspective, this theory maintains that individuals will experience differing levels
of acculturation in different life domains. In addition, the orthogonal identification model assumes that any pattern or combination of cultural identification is possible, and that any kind of movement or change in acculturative orientation is also possible (Oetting & Beauvais, 1991). In this model, acculturation is considered a fluid process and people are thought to move between various patterns of cultural identification (Siatkowski, 2007). The orthogonal identification model is the model adopted for use in the current study because it most comprehensively assesses both identification with the culture of origin as well as the new culture and has extensive research support (Berry, 1999; Berry, Phinney, Sam, & Vedder, 2006; Berry & Sam, 2003; Bourhis, Moise, Perreault & Senécal, 1997; Ryder, Alden, & Paulhus, 2000; Zhou, 1997).

**Acculturation orientations associated with the orthogonal identification model.** Berry and colleagues defined the orthogonal identification model using the Acculturation Matrix (Berry, Kim, Power, Young, & Bujaki, 1989; Berry & Sam, 1997; Berry, Trimble & Olmedo, 1986). Those experiencing a cultural change were thought to either explicitly or implicitly answer two questions: Do I want to establish a good relationship with the new culture? and Do I want to maintain good relations with my culture of origin? An individual’s response to those questions determines which of four adaptive orientations to the acculturative process an individual would likely experience: integration, assimilation, separation, or marginalization. Each orientation carries with it a variety of potential expectations, experiences, and outcomes. Individuals may move among these orientations before settling on one that is most satisfying (Kim, 1988). There is no set sequence in which individuals move among orientations, nor is there a preference for one orientation over the others for any age group (Ho, 1995).
Individuals who would prefer to establish or maintain a connection with both the new culture and their culture of origin are described as having an *integration* orientation. This indicates that they respect and retain the values, behaviors and customs of both the new culture and culture of origin. This orientation has also been referred to as “biculturalism” (van de Vijver & Phalet, 2004). Integration is a positive adaptive response (van de Vijver & Phalet, 2004) and individuals undergoing acculturation typically favor this orientation (Berry, 1999). Integration can only be successful when the culture of origin is open to cultural diversity; both cultures must sustain an attitude of “mutual accommodation”, in which the peoples of both cultures believe it is a basic human right to allow people to live out their lives as they wish (Berry, 2001). Thus, members of the culture of origin must be willing to accept some basic values of the new culture, and members of the new culture must be willing to adapt national institutions to meet the needs of individuals from varying cultures (Berry, 2006). When the integration orientation is accommodated by the new culture, this approach to acculturation is the least stressful for acculturating individuals (Berry, 2006; Berry & Kim, 1988) and also leads to the most psychologically well-adapted individuals (Berry, 2006).

Those who would prefer to cut ties with the culture of origin and embrace the new culture are described as undergoing *assimilation*, during which critical aspects of the culture of origin are replaced by those of the new culture. Individuals with this orientation tend to view the new culture positively and experience low identification with the culture of origin (van de Vijver, Helms-Lorenz, & Feltzer, 1999). People of the opposite response, those who reject the new culture but maintain connections with the culture of origin are said to be experiencing *separation* from the new culture, while still
maintaining positive regard for the culture of origin. These individuals may wish to avoid interacting with members of the new culture, and tend to place more value on their culture of origin (Berry, 1999). The assimilation and separation orientations have been shown to lead to moderately successful adaptation (Berry, 2006), with assimilation appearing to be slightly more advantageous.

Finally, individuals who reject both the culture of origin and new culture are said to be experiencing *marginalization* (also known as deculturalization). This indicates that the individual has lost an ability to connect with either the culture of origin or the new culture. This type of response is often related to forced loss of the culture of origin, or exclusion or discrimination in the new culture (Berry, 2006). Marginalization can have serious long-term consequences for individuals (Collier, Brice & Oades-Sese, 2007). A number of dysfunctional and deviant behaviors, such as delinquency, substance abuse, and familial abuse have been associated with marginalization (Berry, 1980; 1990; 1997). In addition, marginalization is the most stressful acculturation orientation (Berry, 2006) and also leads to poor psychological adaptation (Berry, 1997; Berry, 2006; Ward, 1996).

A number of group and individual characteristics influence whether a person uses an integration, assimilation, separation or marginalization orientation to adapt to consistent contact with a new culture (Berry, 1999). Integration, as noted above, is most often associated with successful personal and psychological adjustment (Berry, Kim, Minde, & Mok, 1987; Berry, 1997; Collier, Brice, & Oades-Sese, 2007) as well as better school adjustment (Berry, 1997; Oetting & Beauvais, 1990) while a marginalization orientation has consistently been shown to lead to the worst psychological and school adjustment (Berry, 1997). Oetting and Beauvais (1990) demonstrated that high
identification with either the culture of origin or the new culture is related to higher self esteem, better grades in school, and greater perceived caring by family members. When individuals voluntarily decide to enter into contact with the new culture, assimilation or integration strategies are most common (Berry, 1999). Individuals whose physical appearance is very different than people in the new culture tend to choose (or be forced into) any orientation but assimilation (Kim & Berry, 1986). Other empirical investigations have found that living close to large numbers of people from one’s culture of origin more often leads to integration or separation strategies (Berry, 1999). In addition, the policies and customs of the new culture’s government may encourage certain orientations (Berry, 1999). Finally, an individual’s chosen ethnic identity has also been shown to correspond to their cultural adaptation orientation, such that individuals with an integration orientation tend to report identities such as “Vietnamese-American” (Moise & Bourhis, 1997), rather than simply “Vietnamese” or “American.”

**Moderating factors associated with acculturation.** The successful adaptation of an individual to a new culture is affected by a variety of factors, including those that occur prior to and during acculturation. Moderating factors that occur prior to acculturation include: age, gender, education level, status, migration motivation, and cultural distance (Berry, 1997). A successful adaptation occurs more often when acculturation begins prior to entering elementary school (Beiser et al., 1988), while acculturation that occurs during adolescence or post-retirement is often much more stressful (Aronowitz, 1992; Beiser et al., 1988; Carlin, 1990; Ebrahim, 1992; Ghuman, 1991; Sam & Berry, 1995). In addition, males tend to have an easier time achieving successful acculturation than females, especially when the culture of origin and new
culture have different cultural gender rules (Beiser et al., 1988; Carballo, 1994; Naidoo, 1992; Naidoo & Davis, 1988). Education also has an effect, in that successful adaptation increases as an individual’s education level rises, which is likely due to the fact that education provides personal resources and opens individuals to a variety of protective factors (Beiser et al., 1988; Jayasuriya, Sang, & Fielding, 1992). Similarly, high status in one’s culture of origin is a protective factor, even though immigrants often experience a marked decline in status upon moving to a new culture (Aycan & Berry, 1996). In addition, the reason for the cultural relocation is related to one’s ability to successfully adapt to a new culture. Involuntary or forced migration has been associated with poor outcomes, while voluntary migration has been associated with much better acculturative outcomes (Richmond, 1993). In addition, when one’s culture of origin and new culture are very different culturally, successful acculturation becomes more difficult (Berry, 1976).

Moderating factors that occur during acculturation and influence the orientation of choice and the amount of stress experienced include: length of time in the culture of origin, coping strategies and resources, social support, and societal attitudes. The length of time one spends in the culture of origin affects successful acculturation, although the nature of the relationship is unclear. Some have posited that the amount of stress an acculturating individual experiences is best represented by a U-shaped curve, with just a few problems at first, then many, and then finally few to none at all (Berry, 1997). However, support for the U-shaped curve hypothesis is weak (Church, 1982), and researchers now acknowledge that stress will vary depending on the individual and the problems or supports they encounter (Berry, 1997; Ho, 1995). Coping strategies
associated with an integration acculturation orientation, such as assuming a task orientation, are associated with better acculturation (Berry & Sam, 1997; Schmitz, 1992). In addition, having supportive relationships with members of both the culture of origin and the new culture leads to the best adaptation (Berry, Kim, Minde, & Mok, 1987; Collier, 1989; Juffer, 1983; Kealey, 1989). Not surprisingly, the amount of prejudice and racism that individuals face from the new culture impacts successful acculturation, with more discrimination resulting in less successful acculturation (Berry, 1997; Fenton, 1989; Beiser et al., 1988). Finally, language proficiency in the languages of the new culture and culture of origin (Juffer, 1983; Cummins, 1984; Knoff, 1983; Szapocznik & Kurtines, 1980) positively impacts successful acculturation, as does the availability of bilingual or English as a Second Language classes (Collier, 1989).

**Acculturation and school success.** Of particular interest to the current study is the relation between acculturation and academic success. Acculturation orientation has been shown to co-vary with performance on both intelligence tests (particularly measures of verbal IQ) and achievement tests. In general, research indicates that identification with the new culture is linked to higher intellectual and academic performance. However, the results of many of the applicable research studies may be questioned because most employed unidimensional acculturation scales (thus making an integration orientation impossible to detect) and weak experimental designs.

Some of the first researchers to examine the link between acculturation and intellectual abilities were Gonzales and Roll (1985). In a study of 4th, 5th, 8th, and 12th grade European American and Mexican American students in New Mexico, they found that increased identification with the new culture was associated with stronger verbal
ability skills. Identification with the new culture was measured using the Multidimensional Scale of Cultural Difference (Olmedo, Martinez, & Martinez, 1976), while verbal skills were measured using the Vocabulary Subtest of the Wechsler Intelligence Scale for Children (WISC; Wechsler, 1944). There are many limitations to the study, including the use of outdated measures of acculturation and verbal ability, and the inappropriate use of a culturally-grounded scale (the WISC) in the assessment of immigrant students. The study also reveals a common definitional problem of acculturation research conducted with unidimensional theories and scales: often, the term “acculturation” is used when the term instead indicates identification with the new culture (i.e., “assimilation”).

García-Vázquez and Ehly (1994) found similar results when they administered the Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974) to Midwestern Mexican Americans students in Grades 6 through 9. They found that greater identification with the new culture, particularly in the students’ language skills, was associated with increased Verbal IQ scores. In addition to the confound that verbal IQ scores are highly correlated with language, this study is limited by its small sample size (23 students), use of a unidimensional acculturation scale, and biased testing assumptions.

When an orthogonal identification scale was used to assess acculturation by van de Vijver, Helms-Lorenz, & Feltzer (1999), results favored the orientation of integration over assimilation. Seven- to twelve-year-old first- and second-generation immigrant children in the Netherlands were assessed using an acculturation scale based on Berry’s Acculturation Matrix and the Snijders-Oomen Nonverbal Intelligence Test (Laros &
Tellegen, 1991). The researchers reported that among first generation immigrants, older children as well as those who possessed an integration orientation demonstrated higher intellectual test scores. The pattern did not hold for second generation students, indicating that these students’ chosen acculturation orientation may not have impacted their academic performance. This study represents an important departure from prior studies, in two respects: acculturation orientation was assessed in a multidimensional fashion; and an integration orientation was found to be more beneficial than an assimilation orientation for first generation students.

Similarly mixed results have been found for the relation between acculturation orientation and achievement tests, depending upon the type of acculturation scale used and the rigor of the study. The majority of studies with unidimensional acculturation scales have shown that higher academic achievement is correlated with increased identification with the new culture. For example, Baldauf and Ayabe (1977) found that for 12th grade American Samoan students, overt and covert identification with the new culture [as assessed with proxy demographic variables, the Ways to Live Scales (Morris, 1956), and the Inventory of Cultural Values (Ryan, 1973)], was related to higher achievement on two standardized achievement scales (subtests of the Science Research Associates Achievement Tests and the Michigan Test of English Language Proficiency). Riggs and Greenberg (2004) found similar results using the unidimensional Short Acculturation Scale for Hispanics – Youth Version (Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1987) and the Wide Range Achievement Test-Revised (Jastak & Wilkinson, 1984). Latino students in Grades 1 through 6 were assessed; in the area of spelling, greater identification with the new culture was associated with higher scores for
students of all grade levels. With respect to reading performance, only students younger than age nine demonstrated greater gains in reading as identification with the new culture increased. Math scores were not impacted by acculturation orientation. Methodological weaknesses of these two studies included the inability of the scales to assess the impact of an integration orientation, because the acculturation scales used were unidimensional in nature and only assessed the degree to which the students identified with the new culture.

Trickett and Birman (2005) assessed acculturation using an orthogonal identification approach. The Language, Identity, and Behavioral Acculturation scale (Birman & Trickett, 2001) was used with 110 first-generation Soviet refugee high school students. School performance was assessed using a variety of indices, including grade point average. Results indicated that a strong connection to the new culture was related to higher grades, while a strong connection to the culture of origin was statistically unrelated to the students’ grade point average. In contrast, the use of an orthogonal identification approach has demonstrated a link between higher academic achievement and an integration orientation. López, Ehly, and García-Vázquez (2002) reported that an integration acculturative orientation was associated with higher academic achievement for Mexican American high school students in the Southwest when compared to the achievement of students with other acculturative orientations. The Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuéllar, Arnold, & Maldonado, 1995) was used to assess acculturation; the ARSMA-II is unique in that it allows for acculturation to be assessed unidimensionally or orthogonally. Grade point average was used to assess
academic achievement. Highly integrated students were found to have higher grade point averages when compared to students having other acculturative orientations.

Other researchers have found similar results when using an orthogonal approach to assess acculturation. Lee (2002) examined the acculturation strategies of high school Chinese and Korean American students in California using an author-created acculturation questionnaire. Academic success was assessed using student grade point averages. Results indicated that students who were more “bicultural” had significantly higher grade point averages than those with less interest in bilingualism and biculturalism.

Some researchers have used proxy measures to examine the impact of acculturation on achievement. Time spent in the new country is often used as a proxy variable for adaptation to a new culture. In one study, the amount of time an ELL student’s family had lived in the United States was found to be significantly correlated to reading achievement, as assessed by CBM and a statewide test (Betts, Bolt, Decker, Muyskens, & Marston, 2009). The researchers used multiple-group latent growth curve analyses to investigate the relation between time and reading achievement.

**Domains of acculturation.** Various acculturation researchers have examined diverse “domains” of acculturation, such as values, ethnic self-identity, behaviors, cognitions, or language (Matsudaira, 2006). While some have argued that the best acculturation scales should tap all domains of acculturation (Matsudaira, 2006), others have stated that the domain of the assessment tool should correspond to the context of the study (Chun, 2006; van de Vijver & Phalet, 2004). In addition, various researchers have shown that language preference and usage accounts for the most variance in
multidimensional acculturation scales and is the most sensitive domain by which to measure acculturation (Barona & Miller, 1994; Bosher, 1998; Marin et al., 1987; Serrano & Anderson, 2003). The language domain of acculturation will be the focus of the current study, as it is highly related to literacy and so best taps the context of interest (i.e., the relation between reading performance and acculturation).

**ELL students and acculturation strategies.** Relatively little research has been conducted specifically with ELL students to describe whether or how the use of differing acculturation orientations affects their academic performance. One study examined the predictive power of language acculturation on academic performance for students who did not speak English as their first language (Salamonson, Everett, Koch, Andrew & Davidson, 2008). The researchers hypothesized that English-language acculturation would be related to the participants’ academic performance. The language use subscale of the Short Acculturation Scale for Hispanics (Marin et al., 1987) assessed acculturation orientation, and items included “In what language do you usually think?” and “What language do you usually speak at home?” The five response options ranged from “Only non-English languages” to “Both non-English and English equally” to “Only English.” The participants’ grades in four collegiate-level nursing courses (i.e., Behavioral science in nursing, Theoretical frameworks in nursing, Nursing practice, and Bioscience in nursing) represented the academic performance variable. A linear multiple regression analysis determined that students having greater identification with the new culture’s language earned better grades in all courses examined (p = .001). However, the study has limited generalizability to this dissertation because it was conducted in Australia with 273 collegiate-level nursing students, whose age ranged from 16 to 56. In addition,
acculturation was assessed with a unidimensional scale. More research is needed to
determine the impact of orthogonally identified acculturation strategies on elementary-
aged Latino ELL students living in the U.S.

**Assessment of acculturation orientation.** The assessment of acculturation is a
complicated process that has taken many distinct forms as the understanding of
acculturation has evolved. Countless scales now exist to measure acculturation, and each
comes with its own theoretical and conceptual basis. Of the many ways in which these
scales differ, key issues for the assessment of acculturation orientation in this study
include: use of direct or proxy assessment, the nature of the scale (i.e., unidimensional vs.
multidimensional), the population on which the scale has been validated, the respondent,
and the dimension of the scale (e.g., language, identity, values). For this study, these five
characteristics were considered in the selection of the acculturation assessment scale.

Some scales measure acculturation directly, while others assess acculturation
through the use of proxy variables, or variables that are hypothesized to correlate with
acculturative processes. Examples of these proxy variables are time spent in the new
country, age at immigration, preferred language, and generational status. Research
suggests that these proxy variables do not adequately capture the intricacies of the
psychological acculturation experience (Aréndts-Tóth & van de Vijver, 2006; Cabassa,
2003; Jain & Belsky, 1997; Matsudaira, 2006; Negy & Woods, 1992; Tropp, Erkut, Coll,
Alacon, & García, 1999). Thus, only direct measures of acculturation were considered for
the present study.

Just as the acculturation field has gradually moved from assessing acculturation in
a unidimensional manner towards a multidimensional interpretation, so too have the
assessment tools evolved from unidimensional to multidimensional measures. While unidimensional scales only request information about an individual’s rejection of their culture of origin and acceptance of new culture, multidimensional scales assume that aspects of the culture of origin and new culture can be maintained or rejected independently. There are now several acculturation scales that measure acculturation using a two- (or more) dimensional model of acculturation. Multidimensional scales are more flexible than linear scales, because they have the capacity to capture multiple combinations of respondents’ connections to both the culture of origin and the new culture (Ryder, Alden, & Paulhus, 2000). For this study, only multidimensional acculturation scales were considered.

Acculturation scales have been developed for a wide range of populations, and cut across ethnic groups, language preferences, ages, and locations. For a measurement tool to be deemed appropriate, it must have been validated with the population of interest. For the current study, a scale was sought that had been validated for Spanish-speaking elementary-aged individuals residing in the United States.

Various respondents have been used when assessing the acculturation of youth, including parents and other family members, ELL and general education teachers, as well as the youth themselves. Because families and the individuals within those families often experience different acculturative orientations, it is important to assess each separately (Takushi & Uomoto, 2001). As the current variable of interest is student acculturation orientation, and because the student was the individual whose reading performance was assessed, child-as-respondent measures were considered.
A final key factor that was considered when determining an appropriate acculturation assessment tool was the dimension of the measure. Support for the use of a language domain tool is provided on pages 47-48 of this dissertation. In this study, an acculturation scale was sought that focused on the dimension of language, both due to its sensitivity and because the specific context of interest was student performance in reading – a language skill (Salamonson, Everett, Koch, Andrew & Davidson, 2008).

Many scales were reviewed for inclusion in the study but were eliminated because they did not meet all of the above criteria. Scales such as the Acculturation Quick Screen (Collier, 2000), Brief Acculturation Scale for Hispanics (Norris, Ford, & Bova, 1996), Children’s Acculturation Scale (Franco, 1983), Children’s Hispanic Background Scale (Martinez, Norman, & Delany, 1984), LAECA Acculturation Scale (Burnam, Telles, Karno, Hough, & Escobar, 1987), Latino Youth Acculturation Scale (Pillen & Hoewing-Roberson, 1992), and Short Acculturation Scale for Hispanic Youth (Barona & Miller, 1994) were eliminated because they were unidimensional in nature or did not specify how acculturation orientation was defined. In addition, the Behavioral Acculturation Scale (Szapocznik, Scopetta, Kurtines, & Aranlde, 1978), Bicultural Acculturation Scale (Cortés, Rogler, & Malgady, 1994), Bidimensional Acculturation Scale for Hispanics (Marín & Gamba, 1996), Latino/a Adolescent Acculturation Scale (Felíx-Ortiz, Newcomb, & Myers, 1994), and Mexican American Acculturation Scale (Montgomery, 1992) were eliminated from consideration because they had not been validated for use with Spanish-speaking elementary-aged students. These scales tended to focus on adolescents or did not specify the population on which the scale had been validated.

Three measures came closest to meeting all five requirements for the current study
(direct, multidimensional, accurate population, child-as-respondent, and language domain) and so were seriously considered for use: the Acculturation Attitudes Scale for Children (AASC; van de Vijver, Helms-Lorenz, & Feltzer, 1999); the Orthogonal Cultural Identification Scale (OCIS; Oetting & Beauvais, 1991); and the Brief Acculturation Rating Scale for Mexican Americans-II (Brief ARSMA-II; Cuéllar, 2004 as cited in Baumann, 2005). These scales met more of the previously discussed search criteria than the others that were reviewed.

The Acculturation Attitudes Scale for Children is a bi-dimensional scale that describes children’s acculturation orientation (integration, separation, assimilation, or marginalization) in ten acculturative domains, including: books, learning more about a country, ethnicity of friends, importance of speaking a language, affinity to a language, place to live, ethnicity of teacher, place to work later in life, food, and games. For each of the domains, there are four questions, each one corresponding to one of the orientations. For example, the integration item related to the domain of books is “I like to read books in Dutch and I like to read books in my other language”; the assimilation item is “I like to read books in Dutch but I do not like to read books in my other language”; the separation item is “I like to read books in my other language but I do not like to read books in Dutch”; and the marginalization item is “I do not like to read books in my other language and I do not like to read books in Dutch.” In total, the scale is comprised of 40 items. The child is the respondent, and the scale has been validated for minority students (primarily Moroccan, Turkish, and Surinamian in origin) aged 7-12 in the Netherlands (van de Vijver, Helms-Lorenz, & Feltzer, 1999).
Cronbach’s alphas for each of the orientation subscales ranged from .76 to .85, and 82% of the items have been shown to load on the appropriate factor. Four, two, and one factor solutions were examined, with the one factor solution showing the best fit. The factor was bipolar, with the integration orientation on one end and the three other acculturation orientations on the other end. In addition, participants’ orientations were shown to be highly consistent across the various domains. Unfortunately, no studies were identified that validated the survey for use with Spanish-speaking students in the U.S. In addition, the length of the AASC made in prohibitive for use with students in schools over time. Finally, the AASC does not focus on the language domain of acculturation. Thus, the AASC was not chosen for the present study.

The Orthogonal Cultural Identification Scale is a 6-item bi-dimensional scale that assesses acculturation by asking participants how they and their families define themselves, find success, and participate in traditions. The OCIS has been used with Asian American, European American, African American, Latino American and Native American populations, as well as Mexican American and Native American adolescents (Oetting & Beauvais, 1991; Oetting, Swaim, & Chiarella, 1998).

Cronbach’s alphas for the scale have ranged from .80 to .89 (Oetting & Beauvais, 1991). Concurrent validity has been assessed as well, and has indicated strong correlations between the OCIS’s items and other culture-related items for Native American youth (.39-.74; Oetting & Beauvais, 1991). Confirmatory factor analyses have also been conducted, and the best fit was found for a higher order model that assumed a high correlation between family and individual cultural identification, and also included the correlated but independent measures of traditions, success, and lifestyle (comparative
fit indices ranged from .96 to .99; Oetting, Swaim, & Chiarella, 1998). However, the OCIS has not been used with elementary-aged populations, and some of the questions are conceptually advanced for younger participants (e.g., “When you are an adult, will you be a success in a White American way of life and/or a Mexican American way of life?”). In addition, the domain of the scale is not oriented towards the domain of language. Thus, the OCIS was not selected for use in the current study.

Lastly, the Brief Acculturation Rating Scale for Mexican-Americans-II (B-ARSMA-II) is a 12-item scale that has been adapted for use with adolescents and children from the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II). The ARSMA-II is a refinement of the original Acculturation Rating Scale for Mexican Americans (ARSMA; Cuéllar, Arnold, & Maldonado, 1995). While the ARSMA and ARSMA-II were normed on adults and adolescents (Cuéllar, Arnold, & Maldonado, 1995), the Brief ARMSA-II has been validated and used with both adolescents and children (Bauman, 2005). Individuals must rate each item on the scale from 1 (not at all/nada) to 5 (almost always/muchísimo, casi todo el tiempo). The scale can be scored in multiple ways, including orthogonally. In addition, the scale is written in Spanish and English, so that individuals with varying degrees of English dexterity can complete the survey. Also, the scale is of an appropriate length to allow for quick and repeated administrations within a school setting. The B-ARSMA-II was selected to assess acculturation orientation in the present study, and is included in Appendix A.

The scale has two subscales – an Anglo Orientation Scale (AOS) and a Mexican/Latino Orientation Scale (MOS). When used with children, the alpha coefficient of the MOS has ranged from .84 to .93, while the alpha for the AOS has ranged from .69
to .79 (Bauman, 2005); others have reported an overall stratified alpha of .74 to .75 (López, 2009). Split-half coefficients have also been shown to range from .81 to .91 for the MOS scale, and .79 to .81 for the AOS scale (Bauman, 2005). These results indicate that the Brief ARSMA-II has adequate reliability for use with children. Using factor analytic techniques, researchers have identified two primary factors that account for almost 60% of the total variance (Bauman, 2005). A three-factor solution incorporating the MOS scale, English media use, and American social connections was also identified, which accounted for 69% of the total variance.

Lopez (2009) argued that the Brief ARSMA-II is not an appropriate acculturation tool for children because it focuses on the domain of language and omits the domain of cultural preferences. However, other researchers have shown that the domain of language is highly related to overall acculturation (Barona & Miller, 1994; Bosher, 1998; Marin et al., 1987; Serrano & Anderson, 2003). In addition, the Brief ARSMA-II has high concurrent validity (r = .89) with the original ARSMA, which assessed language use and cultural identity (Bauman, 2005). Also, the Brief ARSMA-II is correlated highly with a traditional proxy measure of acculturation, generation status (r = .61; Bauman, 2005). Construct validity for the scale has been found by correlating the type of orientation with chosen language preference (r = -.38 to -.29, p <.01; Bauman, 2005).

**Summary of Previous Research**

All students should be provided with a high quality education, but current reports indicate that Latino ELL students are receiving inadequate services (Christian, 2006). Multiple studies indicate that acculturation orientation is a salient feature that could be significantly related to academic performance (Betts, Bolt, Decker, Muyskens, &
Marston, 2009; Lopez, Ehly, & García-Vázquez, 2002; Salamonson, Everett, Koch, Andrew & Davidson, 2008; Trickett & Birman, 2005). However, few researchers have used acculturation assessment tools that study orientation to the new culture and culture of origin independently, even though current evidence clearly favors the use of bidimensional or orthogonal scales over unidimensional or proxy tools (Ryder, Alden, & Paulhus, 2000; Schwartz, Zamboanga, Rodríguez, & Wang, 2007). In addition, very little research tracks academic progress in a manner that has been shown to be valid and reliable for students who speak a language other than English as their first language.

The current study will assess acculturation from an orthogonal perspective using the B-ARSMA-II and will focus on a critically important group of learners who have received little attention in the acculturation literature: elementary-aged, Spanish-speaking ELL students. Additionally, the current study will focus on and will follow the reading progress of ELL students with a technically adequate CBM instrument, the easyCBM PRF scale. A hierarchical linear modeling approach will be used to examine differences in elementary-aged Spanish-speaking ELL students’ reading progress depending on their acculturation orientation. The study will be conducted over the course of twelve weeks in two schools implementing Reading Mastery within an RtI framework in the U.S. educational system. This study will determine whether Spanish-speaking ELL students’ acculturative orientation should be considered by school leadership when instructional planning and implementation occurs within classrooms, schools, and districts.

**Purpose of Study**

The research question of the current study is: Does the reading progress of 3rd-5th grade Spanish-speaking ELL students vary depending on the student’s acculturation
orientation? It is hypothesized that 3rd-5th grade Spanish-speaking ELL students with an integration orientation of acculturation will demonstrate more progress in reading while receiving instruction in *Reading Mastery* than 3rd-5th grade Spanish-speaking ELL students with other acculturation orientations (assimilation, separation, or marginalization). It is also hypothesized that 3rd-5th grade Spanish-speaking ELL students with a marginalization orientation of acculturation will demonstrate less progress in reading while receiving instruction in *Reading Mastery* than 3rd-5th grade Spanish-speaking ELL students with other acculturation orientations (integration, assimilation, or separation).
Chapter 3: Method

Participants

One hundred and twenty-five Latino ELL students who were receiving reading instruction in Nebraska schools implementing the Reading Mastery curriculum within an RtI framework were recruited to participate in the study. Schools were included in the study if they were able to demonstrate that they had: (a) a substantial Spanish-speaking community; (b) a strong core reading program in which ELL students participate fully; and c) a reliable method to effectively oversee the implementation fidelity of the core reading program. Participants included male and female students in the 3rd-5th grades at two rural school districts in the Midwest that met the above criteria. Both school districts were located in small towns that have experienced an influx of Spanish-speaking families, primarily due to the availability of work opportunities nearby.

Students who met the following criteria qualified for participation in the study: (a) they were in the 3rd, 4th, or 5th grade; (b) they qualified as an “English Language Learner” student; (c) they spoke Spanish as their language of origin; (d) and parental consent and student assent was obtained. Students in the 3rd-5th grade were identified using school records. Next, students who qualified for ELL services were identified. In the current study, participants were identified as “ELL” based on their previously established ELL status in the school.

A student’s ELL status at the participating schools was identified using the following procedures. During initial school registration, students were referred for assessment to the school district’s ELL coordinator if enrollment information indicated that their primary language was not English or they were enrolled in ELL programming
at their prior school. The assessment was conducted within the first 15 days of the student’s enrollment. As part of this assessment, the coordinator gathered educational and language history information from the students’ families and assessed the students’ speaking, writing, and reading abilities using the Language Assessment System (grades 4-5; CTB/McGraw-Hill, 2008) or the Woodcock-Muñoz Language Survey-Revised (grade 3; Woodcock, Muñoz-Sandoval, Ruef, & Alvarado, 2005). Using the two assessments, students were categorized into one of five “levels” of English proficiency. Students in Level 1 needed extensive support from their teacher in order to complete simple tasks, and were categorized as “beginning to understand” the dominant culture’s norms and standards. In contrast, students in Levels 4 or 5 were able to complete complex tasks independently, and converse with others at “near-native” levels. Students in levels 4 and 5 did not actually receive additional ELL services, but rather their progress in the general education curriculum was closely monitored. These procedures are consistent with the guidelines developed by the U.S. Department of Education’s Office of Civil Rights (OCR; 1999), which requires that school districts create a detailed plan describing how ELL students within their district are identified for services. OCR specifies that the plan be comprehensive and detailed, with descriptions of the individuals responsible for initiating identification procedures, the steps taken to determine eligibility, the amount of time over which the assessment will take place, and the criteria that will be used to determine ELL status.

Finally, those students who were in the 3rd-5th grades and also qualified for ELL services were reviewed with the assistance of school administrative records to determine which students spoke Spanish as their language of origin. All students in the participating
schools who met eligibility criteria were invited to participate in the study. Parental consent forms and the parent demographic forms were sent home with students from their school, using the participating schools’ common information disbursement strategies (e.g., Friday folder). Recruitment flyers, written in Spanish and English, were distributed in local stores, restaurants, and churches (see Appendix B). Students earned a small reward by returning the completed parental consent and demographic forms. Consent and demographic forms were available in Spanish and English. Parents completed the consent form and demographic form in their homes. Teacher consent was solicited at school from the reading teachers of the participating students. Students completed the student assent form, reading assessment scale, and acculturation survey at school.

Of the 125 students who were recruited, 85 total students (68%) completed the consent forms and participated in the study. Participants attended three schools: an elementary school in district A, an elementary school in district B, and a middle school in district B. Of the 85 participants, 23 attended the elementary school in district A, while 20 attended the elementary school in district B, and 42 attended the middle school in district B. Forty-four of the participants were male, while 41 were female. Twenty-five of the students were in third grade, 32 were in fourth grade, and 28 were in fifth grade.

The participants’ ethnicity was assessed at time point 1 and time point 5. The students were asked to identify their ethnicity from the following options: Hispanic/Latino, White, African American, Asian, Native American, and Other. If participants chose “Other” they were asked to specify their identification. The participants predominantly self-identified as either “Hispanic/Latino” or “Mexican.” Interestingly, Cohen’s kappa coefficient indicated that participants’ self-identification
changed significantly from Occasion 1 to Occasion 5 (p < .01). In addition, the younger the participants were, the more likely they were to report their ethnicity inconsistently.

Eighty-four percent of third grade students reported their ethnicity inconsistently from time point 1 to time point 5, while 28% of fourth grade students and 29% of fifth grade students were inconsistent reporters of ethnicity across the two time points. See Table 1 for a complete description of students’ self-identification.

Table 1

*Participant Self Report of Ethnicity, by Occasion*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Occasion 1</th>
<th></th>
<th>Occasion 5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (Percentage)</td>
<td></td>
<td>N (Percentage)</td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>37 (45.1%)</td>
<td></td>
<td>40 (48.8%)</td>
<td></td>
</tr>
<tr>
<td>Mexican</td>
<td>16 (19.5%)</td>
<td></td>
<td>12 (14.6%)</td>
<td></td>
</tr>
<tr>
<td>American</td>
<td>8 (9.8%)</td>
<td></td>
<td>2 (2.4%)</td>
<td></td>
</tr>
<tr>
<td>Don’t Know</td>
<td>6 (7.3%)</td>
<td></td>
<td>1 (1.2%)</td>
<td></td>
</tr>
<tr>
<td>Guatemalan</td>
<td>6 (7.3%)</td>
<td></td>
<td>8 (9.8%)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>5 (6.1%)</td>
<td></td>
<td>2 (2.4%)</td>
<td></td>
</tr>
<tr>
<td>Mexican American</td>
<td>2 (2.4%)</td>
<td></td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>2 (2.4%)</td>
<td></td>
<td>8 (9.8%)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2 (2.4%)</td>
<td></td>
<td>3 (3.7%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (1.2%)</td>
<td></td>
<td>6 (7.3%)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0 (0.0%)</td>
<td></td>
<td>0 (0.0%)</td>
<td></td>
</tr>
</tbody>
</table>

The participants’ cumulative files were examined for information about the students’ country of birth, time spent in the U.S, and school absences. The students’ country of birth and time spent in the U.S. was obtained from a demographic form that school administrators asked parents to complete when their child enrolled in school. Data gathered from file review indicated that most of the participants (76.5%) were born in the United States, while 22.4% were born outside of the United States. For one of the participants, time spent in the U.S. was unknown. Three of the students’ countries of
birth were unknown. The participants’ time spent in the United States is summarized in Table 2, while their country of birth is summarized in Table 3.

Table 2

*Parent Report of Child’s Time Spent in the United States*

<table>
<thead>
<tr>
<th>Year of Arrival in United States</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born in the U.S.</td>
<td>65</td>
<td>76.5%</td>
</tr>
<tr>
<td>2000</td>
<td>3</td>
<td>3.5%</td>
</tr>
<tr>
<td>2001</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>1.2%</td>
</tr>
<tr>
<td>2003</td>
<td>3</td>
<td>3.5%</td>
</tr>
<tr>
<td>2004</td>
<td>4</td>
<td>4.7%</td>
</tr>
<tr>
<td>2005</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td>2006</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Table 3

*Parent Report of Child’s Country of Birth*

<table>
<thead>
<tr>
<th>Country of Birth</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>65</td>
<td>76.5%</td>
</tr>
<tr>
<td>Mexico</td>
<td>12</td>
<td>14.1%</td>
</tr>
<tr>
<td>Guatemala</td>
<td>3</td>
<td>3.5%</td>
</tr>
<tr>
<td>Honduras</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Student absence data were also gathered from school records. Specifically, the number of days that students missed school during the course of the study (i.e., February 23, 2010 to May 17, 2010) was gathered from school attendance records. Students missed an average of 2.6 days, with a standard deviation of 2.3. Absences ranged from 0 to 9 days.
The number of minutes per day that students received reading instruction was gathered from reading teachers and specialists within each school. Students received an average of 140 minutes of reading each day, with a standard deviation of 14.1. Reading instruction ranged from 135 to 195 minutes. These totals included time spent in general reading instruction and additional reading interventions.

Information was also collected from the Parent Demographic Form. Specifically, the parents of the participants were asked to identify the mother’s and father’s type of employment, their highest level of completed education, the number of times they visited their child’s school in the current school year, the frequency with which they discussed school with their child, how often Spanish was spoken during family dinners, and the parents’ Spanish and English preferences. Employment in a food processing plant was the most common type of employment cited by mothers (46.6%) and fathers (51.1%). Type of employment was not reported or was unclear for 10 of the participants’ mothers and 23 of the participants’ fathers. See Table 4 for a further description of the parents’ self-reported employment.

Table 4

<table>
<thead>
<tr>
<th>Type of Employment</th>
<th>Mother N (Percentage)</th>
<th>Father N (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Processing Industry/Labor/Farming</td>
<td>41 (46.6%)</td>
<td>45 (51.1%)</td>
</tr>
<tr>
<td>Unemployed/Homemaker</td>
<td>32 (36.4%)</td>
<td>11 (12.5%)</td>
</tr>
<tr>
<td>Construction</td>
<td>0 (0.0%)</td>
<td>5 (5.7%)</td>
</tr>
<tr>
<td>Sanitation Services</td>
<td>0 (0.0%)</td>
<td>2 (2.3%)</td>
</tr>
<tr>
<td>Sales Associate</td>
<td>2 (2.3%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Child Care</td>
<td>2 (2.3%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Food Services</td>
<td>1 (1.1%)</td>
<td>1 (1.1%)</td>
</tr>
<tr>
<td>Mechanic</td>
<td>0 (0.0%)</td>
<td>1 (1.1%)</td>
</tr>
</tbody>
</table>
The parents’ highest level of education was also reported. The majority of parents earned less than a twelfth grade education. No data were missing regarding the mothers’ educational level, but nine of the fathers’ educational level went unreported. See Table 5 for a further description of these results.

Table 5

*Parent Report of Highest Level of Education Completed*

<table>
<thead>
<tr>
<th>Highest Level of Education Completed</th>
<th>Mother N (Percentage)</th>
<th>Father N (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Formal Schooling</td>
<td>12 (14.1%)</td>
<td>6 (7.1%)</td>
</tr>
<tr>
<td>Less than 8th Grade</td>
<td>36 (42.4%)</td>
<td>41 (48.2%)</td>
</tr>
<tr>
<td>9th to 12th Grade</td>
<td>27 (31.8%)</td>
<td>19 (22.4%)</td>
</tr>
<tr>
<td>High School Degree/GED</td>
<td>8 (9.4%)</td>
<td>9 (10.6%)</td>
</tr>
<tr>
<td>1 to 2 Years of College/Vocational</td>
<td>1 (1.2%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>4 Year College Degree</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>1 (1.2%)</td>
<td>1 (1.2%)</td>
</tr>
</tbody>
</table>

The majority of the parents visited their child’s school two or fewer times during the school year (48.2%). Twenty-one percent visited their child’s school between three and five times, while 8.3% visited more than six times. Nineteen of the parents did not report this information. Parents were also asked to report how often they speak with their child about his/her education and things that are happening at school. Most parents reported “Almost Always” (42.4%), followed by “Sometimes” (31.8%), “Often” (22.4%), and “Never” (1.2%). Two of the parents did not provide this information.

To assess the predominant language spoken in the home between parents and their children, parents were asked to report how frequently Spanish is spoken during family meals. Most parents stated “Almost Always” (65.9%), followed by “Often” (16.5%), “Sometimes” (14.1%), and “Never” (1.2%). Two of the parents did not provide this
information. Parents were also asked how frequently they read, write, and speak English and Spanish. Parents indicated they read, write, and speak English “Sometimes” (40%), followed by “Never” (34.1%), “Almost Always” (10.6%), and “Often” (9.4%). Five parents did not provide this information. In addition, parents indicated they read, write, and speak Spanish “Almost Always” (69.4%), “Often” (17.6%), “Sometimes” (9.4%) and “Never” (2.4%). One parent did not provide this information.

**Measures**

*EasyCBM PRF (Alonzo & Tindal, 2007).* Reading performance was assessed using the PRF scale, which is part of the easyCBM Assessment System and is a measure of ORF. Empirical evidence has indicated that ORF scales demonstrate good reliability and validity when used with ELL students to measure change in reading performance over time (Baker & Good, 1995; Dominguez de Ramírez & Shapiro, 2006; Wiley & Deno, 2005). The easyCBM PRF scale is a discrete scale that assesses the number of words students read correctly within one minute. Each student read three passages, and the median score of the three scores was the final score entered in the data file. For more information about the PRF see pages 25-27 of this dissertation. An example of the PRF is included in Appendix C.

*Brief Acculturation Rating Scale for Mexican Americans – II (B-ARSMA-II; Cuéllar, 2004 as cited in Bauman, 2005).* Students’ acculturation orientation was assessed using the Brief Acculturation Rating Scale for Mexican Americans – II. The B-ARSMA-II is an interval scale which identified students’ connection to their culture of origin and new culture independently. Students responded to each question on a one to five scale, and students’ subscale scores on the two subscales were entered into the data
Students were first asked to identify their name, age, grade, date of birth, gender, and ethnicity. Students were asked to choose their ethnicity from the following options: Hispanic/Latino; White; African American; Asian; Native American; and Other. When students chose “Other” they were asked to specify what “Other” meant for them. Next, participants’ acculturation orientation was assessed using the 12-item self report scale. The scale is written in Spanish and English, so as to be accessible to ELL students with varying levels of English and Spanish speaking abilities. There are two subscales: the Anglo Orientation Scale (AOS) and the Mexican Orientation Scale (MOS). The AOS assesses the degree to which students connect to the European American U.S. culture. It includes items such as, “I enjoy English language movies” and “My thinking is done in the English language.” The MOS identifies the degree to which individuals connect to their Spanish-speaking country of origin. The MOS includes items such as “I enjoy speaking Spanish” and “I enjoy Spanish language TV.” Students responded using a 5-point likert-type scale ranging from “not at all/nada” to “almost always/muchisimo, casi todo el tiempo.” Participants were directed to choose one response for each question, answer honestly and to remember that there are no “right” or “wrong” answers to the survey. The B-ARSMA-II is included in Appendix A.

The B-ARSMA-II can be interpreted linearly and orthogonally. The orthogonal interpretation was modified for use in the present study. Namely, the MOS and AOS scale means were computed by totaling the score from the items of each scale and dividing each sum by 6. The scores were considered continuous variables, and were identified as “high” or “low” depending on the scores of other students. This method was used rather than the traditional “cut point” technique in order to decrease measurement
error and acknowledge that students who are slightly low on the MOS and very low on
the MOS may be quite different from each other, even if their AOS scores are the same.
Students with high MOS and AOS scale sums were considered to possess an integration
orientation; high MOS and low AOS was categorized as separation; low MOS and high
AOS was categorized as an assimilation orientation; and students with low MOS and
AOS scale sums were categorized as having a marginalization orientation. The scale
scores and the corresponding acculturation orientation can be found in Table 6. The B-
ARSMA-II has good technical adequacy, with an overall stratified alpha of .74 to .75
(López, 2009), and 60% of the total variance accounted for by two primary factors
(Bauman, 2005).

Table 6

*Categorization of Acculturation Orientation by Scale Scores* (Bauman, 2005)

<table>
<thead>
<tr>
<th>Acculturation Orientation</th>
<th>AOS Scale Score</th>
<th>MOS Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Separation</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Assimilation</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Marginalization</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Parent/Guardian demographic form.** The parents or legal guardians of the
participants were asked to complete a short survey to obtain demographic information
about the parents and family of the participant. Specifically, parents were asked to
identify the mother’s and father’s type of employment, their highest level of completed
education, the number of times they visited their child’s school in the current school year,
the frequency with which they discussed school with their child, how often Spanish is
spoken during family dinners, and the parents’ Spanish and English preferences. Spanish
and English versions of the survey were provided. This information was collected to determine whether these variables impact the participants’ progress in reading. Both the English and Spanish versions of the Parent/Guardian Demographic Form are included in Appendix D.

**Procedures**

Before beginning the study, approval was obtained from the University of Nebraska-Lincoln’s Institutional Review Board. Once approval was granted, consent forms were distributed to the parents and/or guardians of the potential student participants. The parent demographic form was also provided to parents when they received the consent forms. Consent forms and demographic forms were distributed within students’ ELL or general education classrooms, using the schools’ information disbursement procedures (e.g., Friday folder, newsletter).

Once consent and demographic forms were collected and an adequate number of participants were obtained, student assent was solicited. All students with parental consent and student assent were included in the study. Data collection procedures began with the gathering of reading performance and acculturation orientation data. Each student was given three grade-level PRF passages; the median score was recorded. At the same time, students completed the B-ARSMA-II. Students completed the assessments individually in the presence of a trained research assistant.

Graduate and undergraduate research assistants were trained by the primary researcher in the correct implementation of the PRF scale. Assistants were trained until they passed the “Overview of Individual Administration” and “Passage Reading Fluency” modules in the online easyCBM multimedia PRF training program. In addition, all
assessment sessions were audio taped, and 25% were randomly selected to verify the integrity of the assessment sessions. During each assessment period, participants read three grade-level PRF progress monitoring passages; the median score was considered the PRF score for that assessment period. In addition, the B-ARSMA-II was administered by undergraduate and graduate research assistants who were familiar with testing procedures.

Three weeks later, students completed three more PRF passages; the pattern was repeated until five occasions of data collection occurred. When the fifth and final set of PRF passages were administered, participants again completed the B-ARSMA-II. Each occasion of data collection took 5-10 minutes per student, with the first and last data collection occasion taking approximately 5 minutes longer. In addition, treatment integrity information, in the form of direct observation data, was collected at the conclusion of the reading and acculturation data collection procedures. Finally, information was gathered from the student participants’ cumulative files, including the amount of time students spent out of class due to absences, the amount of time students spent receiving additional reading instruction, the students’ country of birth, and the number of years that the students had lived in the United States. The number of school absences and time spent in reading instruction was monitored and recorded by school administrators and teachers. The students’ country of birth and amount of time spent in the U.S. was noted on a demographic form that students’ parents completed at the time of their child’s enrollment at the school. A timeline of the study is included in Table 7.
Table 7

Data Collection Timeline, October 2009-May 2010

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>October-January</td>
<td>Identified participating schools</td>
</tr>
<tr>
<td></td>
<td>Trained research assistants</td>
</tr>
<tr>
<td>Early February</td>
<td>Obtained IRB approval</td>
</tr>
<tr>
<td></td>
<td>Identified qualified participants</td>
</tr>
<tr>
<td></td>
<td>Sent first round of consents and parent demographic forms</td>
</tr>
<tr>
<td></td>
<td>Obtained teacher consent</td>
</tr>
<tr>
<td>Mid February</td>
<td>Sent second round of consents and parent demographic forms</td>
</tr>
<tr>
<td>February 22nd-26th</td>
<td>Obtained student assent</td>
</tr>
<tr>
<td></td>
<td>Collected easyCBM PRF scale</td>
</tr>
<tr>
<td>March 15th-19th</td>
<td>Collected easyCBM PRF scale</td>
</tr>
<tr>
<td>April 5th-9th</td>
<td>Collected easyCBM PRF scale</td>
</tr>
<tr>
<td>April 26th-31st</td>
<td>Collected easyCBM PRF scale</td>
</tr>
<tr>
<td>May 17th-21st</td>
<td>Collected easyCBM PRF scale and B-ARSMA-II</td>
</tr>
<tr>
<td>Late May</td>
<td>Collected treatment integrity data</td>
</tr>
<tr>
<td></td>
<td>Collected student file data, time in reading instruction, and attendance data</td>
</tr>
</tbody>
</table>

Core reading instruction. The participants in the study received literacy instruction from their reading teachers who implemented the Reading Mastery (RM) Signature Edition curriculum (2008). Originally developed by Dr. Engelmann under the title of DISTAR Reading, RM is a comprehensive reading-language program that uses direct instruction principles, including explicit and systematic instruction, ability-based grouping, frequent progress monitoring, and multiple opportunities for student response. RM has been designated as a “potentially positive” curriculum for ELL students by the What Works Clearinghouse (WWC; Institute of Education Sciences, 2006). However, a critique of the WWC review of RM indicates that the WWC may be greatly downplaying the effectiveness of RM (Stockard, 2008). In addition, a great many other researchers and
institutes have conducted meta-analyses and have found overwhelming support for the use of Direct Instruction/Reading Mastery over other reading instruction techniques (i.e., Adams & Carnine, 2003; Borman, Hewes, Overman & Brown, 2003; National Reading Panel, 2000). A recently published peer-reviewed article indicated that enrollment in *Reading Mastery* leads to greater PRF growth for 1st-3rd grade students than five other commonly used literacy curricula (Crowe, Connor, & Petseher, 2009).

Implementation of the RM curriculum was monitored by staff from NIFDI, the National Institute for Direct Instruction, and ERI, Educational Resources Incorporated, as well as the NIFDI- and ERI-trained school personnel. In two of the schools in this study, teacher adherence to the reading curriculum was assessed with the NIFDI-developed five-minute observation form. NIFDI staff train personnel (such as literacy coaches or reading coordinators) at each school in its proper use. Staff observed teachers once or twice a month using the observation form. The 13 items on the form pertain to: the grouping and physical arrangement of students; the attentiveness of students; teacher adherence to the curriculum; teacher use of error correction and praise; and the accuracy of the students’ independent work. Observers placed a check mark next to each item if it was observed. Teachers were considered to be implementing the curriculum correctly if 80% of the items on the observation form were checked each time (i.e., at least 11 out of 13 items). A copy of the five-minute observation form is included in Appendix E.

In the third school, teacher adherence to the reading curriculum was assessed using the ERI-developed Technical Assistance Form (TAF). ERI consultants observed teachers once per month using the TAF as a structure to provide the teachers with feedback on their adherence to the reading curriculum and their facility in the classroom.
The seven main categories on the TAF refer to the teacher’s: preparation and readiness; adherence to instruction script; correct use of signals; error correction; ability to teach to mastery; pacing; and behavior management. Teachers were considered to be implementing the curriculum correctly if 80% of the items on the TAF were checked each time (i.e., at least 6 out of 7 items). A copy of the TAF is included in Appendix E.

**Procedural integrity.** Procedural integrity was examined to ensure that data collection procedures were completed as intended. The researcher audio-recorded all sessions and 25% of the sessions were randomly selected to be scored for procedural integrity by trained graduate students who were blind to the study’s hypotheses. Separate procedural checklists were created for Session 1, Sessions 2-4, and Session 5 of data collection. These procedural checklists can be found in Appendix F. The trained graduate students listened to the selected sessions and recorded whether or not each item on the procedural checklist was present in the session. It was determined that the level of procedural integrity with the intervention steps was 96.97% across all sessions.

**Interrater agreement.** The consistency between the ratings of two independent observers is considered interobserver agreement (Watkins & Pacheco, 2000). Likewise, the consistency between the ratings of two independent raters is considered interrater agreement. This measure of consistency was used in the current investigation to ensure the reliability of the reading performance measure included in the study. Specifically, three graduate students who were blind to the study’s hypotheses were trained to score the easyCBM PRF scale. The graduate students read the instructions for scoring the PRF and co-scored several PRF examples. The raters demonstrated 95% interrater reliability with the researcher during training before scoring the participants’ PRF’s.
The raters scored 25% of all reading assessments (which equaled 104 sessions) for Correct Words Per Minute (CWPM). Correct Words Per Minute is calculated by subtracting the number of errors from the total words read. Interrater agreement was calculated by dividing the lower of the two scores by the higher of the two scores and multiplying the result by 100 to obtain a percentage. An interrater agreement of 98.07% was obtained for CWPM across the randomly selected sessions.

**Treatment integrity.** Treatment integrity was assessed in school district A through the use of the ERI-developed Technical Assistance Form. ERI consultants observed teachers for approximately 20 minutes and checked for successful implementation of these various reading instruction components: set up, format, signals, corrections, firm up (i.e., coming back to address information not mastered), pacing, and behavior management. Specific behaviors to look for within each category were identified. Occasionally, certain behaviors were not observed because of the type of lesson taught. The number of components observed were divided by the total number of possible components. Results indicated that teachers in school district A displayed mastery of the components 77.6% of the time while they were observed.

Treatment integrity was assessed in school district B through the use of the NIFDI-developed Five-Minute Observation Form. NIFDI consultants and school administrators observed teachers for approximately five minutes and checked whether the following skills were observed: the correct subject and lesson was being taught, the number of students in a group was appropriate, the physical arrangement allowed students and teachers to see and hear all parts of the lesson, students receiving group instruction were attentive and engaged, the teachers followed the script as written, errors
were heard and correction procedures were immediately implemented, the teacher relied on positive techniques to manage behavior, students doing independent work were on-task, independent work was corrected, student work was neat and well-organized, and teacher and student materials were organized and accessible. The last two items on the Five-Minute Observation Form, which reference having written records of student performance posted and thermometer charts posted, were not promoted or used by the school district, and thus are not included in the analysis. The number of checked items were divided by the number of total possible items for all of the teachers observed in school district B. Results indicated that teachers in school district B displayed the behaviors listed above 90.29% of the time when they were observed, indicating a high fidelity to instruction. In total, school districts A and B adhered to the reading curriculum 83.9% of the time, indicating adequate adherence to instruction.

Analyses

Data description. Reading performance was assessed using the easyCBM PRF scale, which is a discrete scale that assesses the number of words students read correctly within one minute. Each student read three passages, and the median score was the final score entered in the data file. Acculturation orientation was assessed using an interval scale which identified students’ connection to their culture of origin and new culture independently. Students responded to each question on a one to five scale, and students’ subscale scores on the two subscales were entered into the data file. Finally, the rating of each classroom teacher’s fidelity to the core reading program was recorded at the end of the study. A summary of the variables of interest in the present study are summarized in Table 8.
Table 8  
*Summary of Key Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Respondent</th>
<th>Nature of Data</th>
<th>Range of Score</th>
<th>Score Entered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Performance</td>
<td><em>easyCBM</em> PRF, Grades 3-5</td>
<td>Student</td>
<td>Discrete</td>
<td>0–number of words on each passage</td>
<td>Median number of correctly read words at each of the five assessment occasions</td>
</tr>
<tr>
<td>Orientation to Culture of Origin</td>
<td>MOS Subscale of Brief Acculturation Rating Scale for Mexican Americans – II (6 items)</td>
<td>Student</td>
<td>Continuous</td>
<td>0-6</td>
<td>MOS scale sum at each of the two assessment occasions</td>
</tr>
<tr>
<td>Orientation to New Culture</td>
<td>AOS Subscale of Brief Acculturation Rating Scale for Mexican Americans – II (6 items)</td>
<td>Student</td>
<td>Continuous</td>
<td>0-6</td>
<td>AOS scale sum at each of the two assessment occasions</td>
</tr>
</tbody>
</table>
Considerations related to power analyses. Power analyses for hierarchical linear models are complicated and an under-researched area in educational psychology (Reise & Duan, 2003). Power is related to a variety of factors, including sample size, effect size, number of time points, homogeneity of the population, and within-person variance (Raudenbush & Liu, 2000; Snijders & Bosker, 1999). In addition, in the case of HLM studies, there are multiple types of power, including moderator or mediator effects, variance components, and individual- or group-level covariates (Reise & Duan, 2003). Power is also complicated due to clustering effects (i.e., kids within schools; Reise & Duan, 2003). When existing populations are the subject of study, there may in fact be a limited number of available participants. Additionally, cost and time expenses may prohibit the inclusion of a high number of participants (Snijders & Bosker, 1999). Thus, it may be more practical in certain instances to temper the type of inferences made about the population to which a study’s results extend (Snijders & Bosker, 1999). In this study, due to the complicated nature of HLM power analyses and the lack of available schools within 400 miles, power analyses were not conducted and instead the results are discussed with attention paid to external validity.

Hierarchical Linear Modeling. In the current study, HLM procedures were used to analyze the impact of acculturation orientation on reading performance in 3rd-5th grade participants over twelve weeks. HLM procedures were selected for multiple reasons: (1) more information can be salvaged when some data are missing; and (2) the data need not be balanced or maintain equal intervals. In addition, the nested nature of the data (i.e., time within participant) is better accommodated by HLM techniques.
**Missing data.** It is important to note that in hierarchical linear modeling, all available data is included in the analysis through REML, making ad hoc procedures such as multiple imputation unnecessary. Additionally, researchers have noted that missing data is likely to be inconsequential if it represents less than 5% of the total collected data (Roth, 1994). Thus, the percentage of missing data was calculated to determine whether additional missing data procedures will be necessary. The percentage of missing data totaled 3.53% at session 1, 2.35% at session 2, 2.35% at session 3, 3.53% at session 4, 3.53% at session 5, and 3.06% overall. This is an inconsequential amount of missing data (Roth, 1994) and thus ad hoc missing data procedures (such as multiple imputation) were determined to be unnecessary.

**Preliminary data analyses.** Preliminary data analysis included an examination of the distributional properties (including mean, standard deviation, kurtosis and skewness) of the easyCBM PRF scale and the B-ARSMA-II scale. The number of students assessed with each scale at each assessment occasion were also identified. Results were examined across the five data collection occasions for the PRF and the two data collection occasions for the B-ARSMA-II, and the number of participants missing data at each occasion were noted. In addition, growth plots for each variable were examined. The outcome variable (PRF scale) was inspected to determine whether the variable could be considered “normal” (i.e., the residuals at each level are normally distributed, uncorrelated at each level and across levels, and equally distributed across the independent variable at each level and across levels).

Next, the correct metric of time was determined. The possibilities for time metric included “occasion of study”, “age” or “distance to/from an event.” Age to/from a certain
event was used as the metric of time, for numerous reasons. Age-as-time was not appropriate, as the participants were different ages and were different in many other ways, besides their age. Occasion of study was also not applicable, as the intervals between data collection sessions were not exactly equal across all participants. Representing time as time from session 1 (i.e., baseline) means that the variability in the amount of time that passed between sessions across participants was accounted for.

The outcome variable was modeled as a within-person change model. The outcome variable, the students’ score on the PRF reading assessment, was expected to change in a systematic way over time and not simply vary across people. It was hypothesized that the strong core reading program in conjunction with the students’ acculturation orientation would create systematic change over time across the participants, although the change might differ depending upon the orientation. A plot of the individual trajectories of the participants’ PRF scores was plotted across the data collection waves, in order to provide further evidence of the within-person change.

Consequently, a polynomial model was explored in order to answer the research questions. A polynomial model was used rather than a piecewise model, as there were no common points in the students’ trajectories where the slope quickly shifted. Rather, students were exposed to the reading curriculum throughout the data collection period, and their acculturation orientations were not likely to shift dramatically within a few months’ time. Unconditional models were modeled prior to including predictors so that the correct model for time was identified, thus enabling the accurate prediction of individual differences and time-specific deviations.
Finally, the intraclass correlation (ICC) for the unconditional means model was calculated to determine the percent of variance in PRF scores across occasions that occurred between and within persons. The ICC was calculated by dividing the between person variance by the between-person variance plus the within person variance. Large ICC’s indicate that most of the variance is due to between-person variance, while small ICC’s indicate that the majority of the variance is due to within-person variance. Calculating the ICC assisted in determining the type of variance that existed within the data.

**Data analysis strategies.** Hierarchical Linear modeling (HLM) procedures were used to determine the overall pattern of change and individual differences in PRF scores, taking into account participants’ acculturation orientation, over twelve weeks across all participants. The restricted maximum likelihood (REML) was used to report model parameters. Time was centered at the first occasion, so that the intercept represents the beginning status in all models.

The unconditional model for time was tested. First, the polynomial model was specified as random intercept only. The random intercept only model served as a “baseline” for all future models. Then, fixed linear, random intercept, random linear, and fixed quadratic models were tested. The linear and random effects were kept in the model if they were found to be significant. Testing for these effects helped to ensure that the correct model for time was identified.

Then, conditional models were tested. The predictors in this study included students’ orientation to their culture of origin and students’ orientation to their new culture. In order to account for the nested effect of students within schools, the school
and grade level of each participant was entered as a fixed effect. The type of statistical inference one wishes to make, the nature and sample size of the groups, and the population distribution of the groups all determine whether to use a fixed or random interpretation (Snijders & Bosker, 1999). In this study, school and grade level were entered as covariates (i.e., fixed effect) because of the small number of groups (3), and so that each school and grade could be considered unique entities and conclusions could be drawn for each.

The covariates of beginning acculturation orientation were added to the polynomial model with the previously identified significant linear and random effects to determine whether students from different schools or acculturation orientations at baseline displayed significantly different PRF scores and PRF changes in scores over time. The interaction effects and main effects of each significant variable combination were tested for significance. Variables that contributed significantly to the model were retained.
Chapter 4: Results

Preliminary Analyses

The study took place over 12 weeks (February 23, 2010 to May 17, 2010), during the participants’ 3rd, 4th, and 5th grades in school. The acculturation measure was collected once in February and once in May, while the reading measure was collected every three weeks for a total of five times between February and May.

The distributional properties (including mean, standard deviation, kurtosis and skewness) of the easyCBM PRF scale and the B-ARSMa-II scale were examined. The distributional properties of the easyCBM PRF scale are summarized in Table 9. Results show that the PRF scale is suitable for use in this study. The distributional properties of each of the two factors of the B-ARSMa-II scale are summarized in Tables 10 and 11. Table 10 summarizes the factor representing orientation to the culture of origin, while Table 11 summarizes the factor representing orientation to the new culture. Results of these tables demonstrate the appropriateness of the scale for use in the current study.
### Table 9

*Distributional Properties of easyCBM PRF, By Grade and Occasion*

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Occasion</th>
<th>N (Missing)</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness Statistic</th>
<th>Kurtosis Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3</td>
<td>1</td>
<td>24 (1)</td>
<td>108.88</td>
<td>34.19</td>
<td>-0.29</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>24 (1)</td>
<td>108.17</td>
<td>34.59</td>
<td>0.07</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>24 (1)</td>
<td>102.46</td>
<td>32.25</td>
<td>0.44</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>24 (1)</td>
<td>103.54</td>
<td>36.73</td>
<td>0.54</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>24 (1)</td>
<td>108.83</td>
<td>38.41</td>
<td>0.49</td>
<td>0.16</td>
</tr>
<tr>
<td>Grade 4</td>
<td>1</td>
<td>30 (2)</td>
<td>113.33</td>
<td>23.32</td>
<td>0.10</td>
<td>-1.08</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>31 (1)</td>
<td>115.06</td>
<td>22.87</td>
<td>-0.06</td>
<td>-0.65</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>31 (1)</td>
<td>108.54</td>
<td>25.56</td>
<td>0.02</td>
<td>-0.88</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>31 (1)</td>
<td>119.90</td>
<td>25.38</td>
<td>-0.12</td>
<td>-0.89</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>31 (1)</td>
<td>123.32</td>
<td>23.07</td>
<td>0.27</td>
<td>-0.78</td>
</tr>
<tr>
<td>Grade 5</td>
<td>1</td>
<td>28 (0)</td>
<td>127.04</td>
<td>35.71</td>
<td>-0.92</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>28 (0)</td>
<td>134.75</td>
<td>35.64</td>
<td>-0.60</td>
<td>-0.10</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>28 (0)</td>
<td>135.93</td>
<td>36.77</td>
<td>-0.61</td>
<td>-0.18</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>27 (1)</td>
<td>136.00</td>
<td>36.35</td>
<td>-0.45</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>27 (1)</td>
<td>130.89</td>
<td>37.91</td>
<td>-0.59</td>
<td>-0.30</td>
</tr>
</tbody>
</table>

### Table 10

*Distributional Properties of Factor 1 of B-ARSMA-II, By Grade and Occasion*

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Occasion</th>
<th>N (Missing)</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness Statistic</th>
<th>Kurtosis Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3</td>
<td>1</td>
<td>25 (0)</td>
<td>2.85</td>
<td>0.83</td>
<td>0.09</td>
<td>-1.07</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>24 (1)</td>
<td>2.78</td>
<td>0.73</td>
<td>0.34</td>
<td>-0.90</td>
</tr>
<tr>
<td>Grade 4</td>
<td>1</td>
<td>32 (0)</td>
<td>2.97</td>
<td>0.29</td>
<td>-0.31</td>
<td>-0.70</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>31 (1)</td>
<td>2.97</td>
<td>0.79</td>
<td>0.09</td>
<td>-0.14</td>
</tr>
<tr>
<td>Grade 5</td>
<td>1</td>
<td>28 (0)</td>
<td>2.97</td>
<td>1.00</td>
<td>0.08</td>
<td>-0.68</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>27 (1)</td>
<td>2.94</td>
<td>0.94</td>
<td>-0.29</td>
<td>-0.28</td>
</tr>
</tbody>
</table>
Table 11

**Distributional Properties of Factor 2 of B-ARSMA-II, By Grade and Occasion**

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Occasion</th>
<th>N (Missing)</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness Statistic</th>
<th>Kurtosis Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3</td>
<td>1</td>
<td>25 (0)</td>
<td>3.62</td>
<td>0.71</td>
<td>-0.85</td>
<td>1.15</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>24 (1)</td>
<td>3.85</td>
<td>0.80</td>
<td>-0.71</td>
<td>-0.18</td>
</tr>
<tr>
<td>Grade 4</td>
<td>1</td>
<td>32 (0)</td>
<td>4.02</td>
<td>0.71</td>
<td>-0.59</td>
<td>-0.37</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>31 (1)</td>
<td>3.83</td>
<td>0.81</td>
<td>-0.71</td>
<td>-0.21</td>
</tr>
<tr>
<td>Grade 5</td>
<td>1</td>
<td>28 (0)</td>
<td>4.02</td>
<td>0.64</td>
<td>-0.70</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>27 (1)</td>
<td>3.88</td>
<td>0.66</td>
<td>-0.47</td>
<td>0.22</td>
</tr>
</tbody>
</table>

The B-ARSMA-II was administered to students at occasions one and five; however, three students who were not present at occasion one were administered the B-ARSMA-II at occasion two. Three students were not present at occasion five and were not administered the B-ARSMA-II for a second time. The *easyCBM* PRF scale was administered at occasions one, two, three, four, and five. Three students were not present at occasion one and were not administered passages 1-3 of the PRF. Two students were not present at occasion two and were not administered passages 4-6. Two students were not present at occasion three and were not administered passages 7-9. Two students were not present at occasion four and were not administered passages 10-12. In addition, three students were not present at occasion five and were not administered passages 13-15.

The growth plot for the outcome variable (Median score on the PRF scale) was examined and found to be normally distributed. Furthermore, as expected, the residuals at each level were examined and were found to be normally distributed (i.e., the residuals at each level are uncorrelated at each level and across levels, and equally distributed across the independent variable at each level and across levels). The Shapiro-Wilk test of normality was not found to be significant ($F = .155$), indicating that the variable can be considered normal. This is important because it indicates that the PRF scale is an
appropriate outcome variable for use within an HLM design. See Figure 1 for the Normal Q-Q Plot.

Figure 1

*Normal Q-Q Plot for PRF Scale (CBM_Median)*

The amount of time since baseline was used as the metric of time, so that the variability in the amount of time that passed between sessions across participants was accounted for. Because the target interval between sessions was three weeks, time was calculated by dividing the number of days between sessions by 21 (i.e., three weeks).
Thus the change parameter can be interpreted as the amount of increase or decrease in a three week interval.

The outcome variable, the students’ score on the PRF reading assessment, was modeled as a within-person change variable. This is because the participants’ reading scores tended to change in systematic way over time and not simply vary across people. Over time, people’s scores tended to change systematically, typically increasing or decreasing slightly over time. See Figure 2 for a plot of the individual trajectories of a randomly selected 10% of the participants’ reading scores plotted across the data collection waves, in order to provide further evidence of the within-person change.

Figure 2

*Individual Trajectories for PRF Reading Assessment*
The restricted maximum likelihood (REML) was used to estimate model parameters and standard errors. The Satterthwaite method was used to estimate degrees of freedom. The models were analyzed for the overall pattern of change and individual differences in reading performance (*easyCBM* PRF mean score) over 12 weeks across participants. The intraclass correlation for the unconditional means model (i.e., empty model; intercept only) was calculated at 0.93, indicating that approximately 93% of the variance in PRF across sessions occurred between persons. Consequently, person-level predictors were used to reduce the between-person variance. Wald tests, which compare the ratio of the parameter estimate to its standard error, were used to test for significant fixed effects. Deviance tests, which compare the minus two log likelihood fit statistic between the model of interest and the model without that random effect, were used to test for significant random effects. Session was centered at the first occasion for each individual, so that the intercept represented the beginning status in all models.

**Analysis of Acculturation Orientation Scale**

**Confirmatory factor analysis.** A confirmatory factor analysis (CFA) was conducted to determine if the factor structure of the B-ARSMA-II met a priori assumptions. Data from the baseline measurement of acculturation orientation were used to conduct the CFA. Using Hu and Bentler’s recommended criteria (Hu & Bentler, 1999), results of the CFA demonstrated that the acculturation behaviors did not fit the assumed two factors, AOS and MOS (Comparative Fit Index = .841; Root Mean Square Error of Approximation = .078; Chi-Square Test of Model Fit, p-value = .009). This was an unexpected finding, as prior studies have revealed two factors – orientation to the culture of origin, and orientation to the new culture. Bauman (2005) proposed a three factor
model with constructs corresponding to Orientation to Culture of Origin, Orientation to New Culture, and Association with Non-Ethnic Minority Peers. This model was tested and also did not fit the data well (Comparative Fit Index = .911; Root Mean Square Error of Approximation = .059; Chi-Square Test of Model Fit, p-value = .0753). In addition, when the two lowest loading items were removed (items 8 and 12, which had non-significant loadings), the model fit did not improve (Comparative Fit Index = .835; Root Mean Square Error of Approximation = .097; Chi-Square Test of Model Fit, p-value = .0028).

For multiple reasons, the two factor model was retained. First, neither the three factor nor the two factor model demonstrated acceptable fit statistics. However, the three factor model included one factor, Association with Non-Ethnic Minority Peers, which was comprised of only two items. This is not a recommended practice (Velicer & Fava, 1998). Additionally, the two item factor was found to have poor reliability (Cronbach’s alpha = .343); when those two items were combined with Orientation to New Culture items, as is found in the two factor model, reliability increased (Cronbach’s alpha = .620). In addition, the two factor model is more theoretically sound, as association with non-ethnic minority peers is typically part of orientation to the new culture. Finally, since removing lower loading items did not result in improved model fit, the original two factor model was retained. See Table 12 for the correlation matrix detailing the intercorrelations among the items on the scale. Table 13 summarizes the factor loadings, i.e., standardized and unstandardized regression coefficients, of the retained two factor model.
Table 12

*Correlation Matrix of Confirmatory Factor Analysis of B-ARSMA-II, By Item*

<table>
<thead>
<tr>
<th></th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>Item 4</th>
<th>Item 5</th>
<th>Item 6</th>
<th>Item 7</th>
<th>Item 8</th>
<th>Item 9</th>
<th>Item 10</th>
<th>Item 11</th>
<th>Item 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 2</td>
<td>0.01</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 3</td>
<td>0.33</td>
<td>-0.11</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 4</td>
<td>0.11</td>
<td>0.31</td>
<td>0.30</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 5</td>
<td>0.15</td>
<td>0.20</td>
<td>0.21</td>
<td>0.11</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 6</td>
<td>0.20</td>
<td>0.09</td>
<td>0.30</td>
<td>0.39</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 7</td>
<td>0.19</td>
<td>-0.09</td>
<td>0.40</td>
<td>0.34</td>
<td>0.02</td>
<td>0.69</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 8</td>
<td>0.26</td>
<td>-0.09</td>
<td>0.26</td>
<td>-0.01</td>
<td>-0.08</td>
<td>0.19</td>
<td>0.18</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 9</td>
<td>0.13</td>
<td>0.29</td>
<td>0.07</td>
<td>0.08</td>
<td>0.23</td>
<td>0.16</td>
<td>-0.02</td>
<td>-0.09</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 10</td>
<td>0.07</td>
<td>0.45</td>
<td>0.12</td>
<td>0.31</td>
<td>0.47</td>
<td>0.17</td>
<td>0.02</td>
<td>-0.02</td>
<td>0.30</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 11</td>
<td>0.26</td>
<td>-0.11</td>
<td>0.31</td>
<td>0.07</td>
<td>0.03</td>
<td>0.29</td>
<td>0.40</td>
<td>0.28</td>
<td>-0.15</td>
<td>-0.18</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Item 12</td>
<td>0.19</td>
<td>0.05</td>
<td>0.17</td>
<td>0.21</td>
<td>0.16</td>
<td>0.06</td>
<td>0.01</td>
<td>0.00</td>
<td>0.08</td>
<td>0.17</td>
<td>0.01</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Table 13

Standardized and Unstandardized Factor Loadings of Confirmatory Factor Analysis of B-ARSMA-II

<table>
<thead>
<tr>
<th>Items</th>
<th>Standardized Loadings</th>
<th>Unstandardized Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation to Culture of Origin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I speak Spanish.</td>
<td>0.29</td>
<td>1.00</td>
</tr>
<tr>
<td>I enjoy speaking Spanish.</td>
<td>0.48</td>
<td>1.70</td>
</tr>
<tr>
<td>I enjoy Spanish language TV.</td>
<td>0.77</td>
<td>3.23</td>
</tr>
<tr>
<td>I enjoy Spanish language movies.</td>
<td>0.86</td>
<td>3.21</td>
</tr>
<tr>
<td>I enjoy reading books in Spanish.</td>
<td>0.27</td>
<td>0.87</td>
</tr>
<tr>
<td>My thinking is done in the Spanish language.</td>
<td>0.46</td>
<td>1.78</td>
</tr>
<tr>
<td>Orientation to New Culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I speak English.</td>
<td>0.54</td>
<td>1.00</td>
</tr>
<tr>
<td>I associate with Anglos.</td>
<td>0.39</td>
<td>1.12</td>
</tr>
<tr>
<td>I enjoy English language movies.</td>
<td>0.52</td>
<td>1.24</td>
</tr>
<tr>
<td>I write letters in English.</td>
<td>0.38</td>
<td>0.74</td>
</tr>
<tr>
<td>My thinking is done in the English language.</td>
<td>0.84</td>
<td>2.17</td>
</tr>
<tr>
<td>My friends are of Anglo origin.</td>
<td>0.22</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Change in acculturation orientation. The participants’ acculturation orientation was assessed at session 1 and session 5 using the B-ARSMA-II. A literature review indicated that no prior studies have assessed for change in acculturation orientation across a three month time period. However, researchers have hypothesized that acculturation orientation changes across time (i.e., Siatkowski, 2007). Thus, participants’ change in acculturation orientation from session 1 to session 5 was tested for significance using a t-test. Results indicated that there was not a significant change in acculturation orientation from session 1 to session 5 in either Orientation to Culture of Origin (p = .821) or Orientation to New Culture (p = .746). Consequently, change in orientation status was not included as a predictor in the final model.
**Acculturation orientation of participants.** For descriptive purposes only, the acculturation orientation of the participants was determined by using the orthogonal scoring procedures outlined in Bauman (2005). Specifically, cutting scores (based on standard deviation units from mean scores obtained in the standardization sample of the B-ARSMA) were applied to the participants’ AOS and MOS subscale scores from their session 1 acculturation orientation assessment. These were used to identify four acculturation orientations: Integration, Marginalization, Separation, and Assimilation. The cut points were as follows: Integration (MOS > 3.59; AOS > 3.7); Marginalization (MOS < 3.59; AOS < 3.7); Separation (MOS ≥ 3.7; AOS ≤ 3.24); and Assimilation (MOS≤ 2.44; AOS≥ 4.11). Students were considered “unclassified” if they did not fall into any of the four orientations. See Table 14 for the percentage of participants identified by each of the categories. Although the percentage of “unclassified” participants seems high, it is consistent with past research conducted using the B-ASRMA-II with youth, which found that unclassified individuals accounted for 31% of the sample (Bauman, 2005). For the subsequent analyses, acculturation orientation was represented as a continuous variable, and participants were identified as “high” or “low” depending on the scores of other students. See pages 66-67 for further explanation of this procedure.

Table 14

<table>
<thead>
<tr>
<th>Acculturation Orientation</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration</td>
<td>17</td>
<td>20.0%</td>
</tr>
<tr>
<td>Marginalization</td>
<td>28</td>
<td>32.9%</td>
</tr>
<tr>
<td>Separation</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td>Assimilation</td>
<td>8</td>
<td>9.4%</td>
</tr>
<tr>
<td>Unclassified</td>
<td>30</td>
<td>35.3%</td>
</tr>
</tbody>
</table>
Analysis

Unconditional models. Hierarchical Linear Modeling procedures were used to estimate the unconditional model for time. The polynomial model was specified with a random intercept only first. Then, a model with a random linear effect was tested. A fixed linear effect of session was found to be significant \((p < .01)\), indicating that the median reading scores changed significantly across the five time points. The results indicated that on average, participants’ reading scores increased by 1.4 units every three weeks. The addition of a random linear slope resulted in a significantly improved model fit \(\chi^2 (2) = 7.2, p = .007\), as indicated by a deviance difference test (i.e., the chi square test of the difference in minus two log likelihood values). This indicated a wide range of slope values. A 95% random effect confidence interval for slopes was calculated; the boundaries were -2.10 and 4.81, which signified that some participants’ reading scores increased, while others’ decreased. The addition of a fixed quadratic effect of session was not found to significantly improve model fit \(p = .054\). This indicated that there was not a significant acceleration or deceleration in the linear rate of change of the students’ reading scores over time. In addition, the intercept-slope covariance was not found to be significant. The nonsignificance of the covariance indicates that the change in participants’ reading scores was not correlated with their reading scores at session 1. The estimate, standard error, and p-value of these fixed effects and variance components can be observed in Table 15.
Table 15

*Parameter Estimates and Model Fit Statistics for Participants’ Reading Progress*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Polynomial Model</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>SE</td>
<td>p-value</td>
</tr>
<tr>
<td>Fixed Effects:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>115.76</td>
<td>3.49</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Linear</td>
<td>1.44</td>
<td>0.35</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Variance Components:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Variance</td>
<td>67.35</td>
<td>6.10</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Intercept Variance</td>
<td>995.73</td>
<td>160.11</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Linear Variance</td>
<td>3.10</td>
<td>1.76</td>
<td>0.04</td>
</tr>
<tr>
<td>Intercept-Slope Covariance</td>
<td>14.74</td>
<td>11.47</td>
<td>0.20</td>
</tr>
</tbody>
</table>

*Conditional models.* The predictors in this study included the participants’ orientation to their culture of origin and their orientation to their new culture. Session was centered at session 1, while fifth grade and the middle school at district B were used as the comparison groups for the grade and school variables. Grand-mean centering of acculturation was used, which allows for a more meaningful interpretation of the intercept.

First, students’ orientation to their culture of origin and students’ orientation to their new culture were entered into the random linear model to determine how students’ connection to the culture of origin or new culture affected reading performance scores over time. Neither the students’ connection to their culture of origin nor the students’ connection to their new culture were found to be significant at any level (main effect or linear interaction effect). This indicates that students’ orientation to their new culture and
students’ connection to the culture of origin did not affect students’ reading performance at session 1 or across time.

Interactions between the two acculturation subscales were also examined. First, the interaction effect of students’ orientation to culture of origin and their orientation to new culture was examined and was not found to be significant. Next, a three-way interaction effect of orientation to the new culture, orientation to the culture of origin, and session was examined and was found to be significant, indicating that the relationship between growth in reading and orientation to one culture was moderated by the relationship one had with the other culture. Individuals were considered to have a strong (i.e., “high”) connection to a culture if their score was one standard deviation above the mean; similarly, they were considered to have a weak (i.e., “low”) connection to a culture if their score was one standard deviation below the mean. This interaction effect is depicted in Figure 3. Parameters and fit statistics for this model are given in Table 16.
Figure 3

*Predicted Median CBM Scores By Orientation to New Culture, Orientation to Culture of Origin and Session*
Table 16  
*Parameter Estimates and Model Fit Statistics for Final Model*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Model</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>SE</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td>Fixed Effects:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>126.60</td>
<td>6.18</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Linear (Session)</td>
<td>1.44</td>
<td>0.61</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Main Effect of Grade, 5 vs. 3</td>
<td>-27.64</td>
<td>16.08</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>Main Effect of Grade, 5 vs. 4</td>
<td>-23.67</td>
<td>8.13</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Main Effect of School, 3 vs. 31</td>
<td>5.06</td>
<td>17.61</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Main Effect of School, 3 vs. 2</td>
<td>15.57</td>
<td>8.70</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Main Effect of Orientation to Culture of Origin</td>
<td>-2.50</td>
<td>3.74</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Main Effect of Orientation to New Culture</td>
<td>5.16</td>
<td>5.08</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>Session * Grade, 5 vs. 3</td>
<td>1.22</td>
<td>1.55</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>Session * Grade, 5 vs. 4</td>
<td>1.43</td>
<td>0.80</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Session * School, 3 vs. 1</td>
<td>-3.10</td>
<td>1.71</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Session * School, 3 vs. 2</td>
<td>-1.28</td>
<td>0.86</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>Session * Orientation to Culture of Origin Interaction</td>
<td>0.47</td>
<td>0.37</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Session * Orientation to New Culture Interaction</td>
<td>-0.39</td>
<td>0.50</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>Orientation to New * Orientation to Origin</td>
<td>5.99</td>
<td>6.19</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Orientation to New * Orientation to Origin * Session</td>
<td>1.54</td>
<td>0.61</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Variance Components:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Variance</td>
<td>67.58</td>
<td>6.14</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Intercept Variance</td>
<td>875.46</td>
<td>147.77</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>
The intercept of 126.60 represented the expected value on the *easyCBM* PRF scale for a fifth grade student at school 3 at session 1 of the data collection period \((p < .01)\). The linear effect of time was 1.44 and represented the increase in *easyCBM* PRF score per session for fifth grade students at school 3 assuming average acculturation levels; it was significant \((p = 0.02)\). The main effects of orientation to culture of origin and orientation to new culture were non-significant. The linear interaction effects of session by orientation to culture of origin and session by orientation to new culture were also non-significant.

School was entered into the model to determine the impact of school at baseline on reading performance. The main effect of school was not found to be significant. This indicated that at session 1, the participants’ school did not significantly impact reading performance scores. The linear interaction effect of school was also found to be non-significant, indicating that the participants’ school did not significantly impact reading scores over time.

The covariate of grade was calculated to determine the impact of grade at baseline on reading performance and the change in reading performance over time. The main effect of grade was found to be significant, indicating that fourth grade students’ reading scores were significantly lower at session 1 than fifth grade students’ scores. Third grade students’ scores were not significantly different than fifth grade students’ scores. This may be related to the increased variability in 3rd and 5th grade students’ reading scores, in comparison to the 4th grade students’ scores (see Figure 4). The interaction of linear
session by grade was not found to be significant, indicating that grade did not significantly impact a students’ progress in reading over time. See Figure 5 for a depiction of the effect of grade.

Figure 4

*Variability in Median CBM Scores By Grade*
The interaction effects of session by orientation to new culture ($p = 0.43$), as well as session by orientation to culture of origin ($p = 0.21$), were tested and were found to be non-significant. This indicated that the effect of acculturation on reading performance change across time did not vary by participants’ orientation to new culture and culture of origin. The three-way interaction effect of session by orientation to new culture by orientation to culture of origin was tested and was found to be significant ($p = .01$). This indicated that the main effect of session is being moderated by the two-way interaction of orientation to new culture and orientation to culture of origin. Specifically, participants with a strong orientation to their culture of origin and new culture (i.e., an integration orientation) began the study with higher PRF reading scores than other participants and demonstrated steep growth over time. Participants with a strong orientation to the new
culture and a weak orientation to their culture of origin (assimilation orientation) started at a reading level slightly below the previous student group, but demonstrated no growth over time. Students with a weak orientation to the new culture and a strong orientation to the culture of origin (separation orientation) started the study with poorer reading scores than any other student group, and demonstrated modest growth over time. Finally, students with a weak orientation to both cultures (marginalization orientation) started at the same level as participants with an assimilation orientation and demonstrated steep growth over time.

Additional variables were tested to determine whether they impacted reading performance over time. Specifically, the amount of reading instruction students received, the number of student absences during the course of the study, the number of years students spent in the U.S. prior to the study, the birth country of the students, the highest level of education completed by the student’s parents, the number of times parents visited their child’s school, the frequency with which parents and students spoke about school, the frequency with which Spanish was spoken at family meals, and parents’ Spanish and English capabilities were entered as covariates. None of these variables were found to have a significant impact on participants’ reading performance at session 1 or across time.
Chapter 5: Discussion

Summary of Findings

The purpose of the current investigation was to determine whether acculturation orientation impacts Spanish-speaking ELL students’ progress in reading. The study took place over the course of three months in early 2010. Participants were third, fourth, and fifth grade students in three rural Midwestern schools. Reading progress was assessed through the use of the easyCBM PRF scale, which is a CBM scale that assesses ORF. Students’ acculturation orientation was assessed through the use of the B-ASRMA-II, which is based on the orthogonal identification model of acculturation. The B-ASRMA-II categorizes student responses into two subscale scores which assess students’ orientation to their culture of origin and orientation to their new culture.

Results of the study indicated that participants’ reading performance changed systematically over time. On average, students’ ORF scores increased by 1.44 words every three weeks, although there was significant variability in the amount of growth students demonstrated over time. Some students’ reading scores increased, while other students’ reading scores decreased.

It was hypothesized that students with an integration orientation would demonstrate the greatest growth in reading over time, while students with a marginalization orientation would demonstrate the least growth in reading over time. These hypotheses were partially confirmed by the current study. Participants with an integration orientation began the study with higher reading scores than other groups, and demonstrated more growth over time than students with other acculturation orientations. However, the hypotheses related to marginalization were not confirmed. Participants with
a marginalization orientation began the study with mid-range reading scores, but demonstrated steady growth over time. Participants with a separation orientation began the study with the poorest reading scores and demonstrated modest growth over time. Finally, participants with an assimilation orientation began the study with reading scores similar to marginalization orientation students’, but demonstrated no growth over time.

Other important findings can be gleaned from this study. First, findings suggest that young children, particularly those in third grade or below, may not be reliable reporters of their ethnicity. Eighty-six percent of third grade students reported their ethnicity inconsistently from time point 1 to time point 5, while 28% of fourth grade students and 29% of fifth grade students were inconsistent reporters of ethnicity. Interestingly, students’ acculturation orientation did not change significantly over time. In addition, it was found that a proxy variable of acculturation orientation, participants’ time spent in the U.S., and various parent variables, such as parents’ educational attainment and involvement in their child’s education, did not impact participants’ reading performance over time.

**Explanation for Findings and Integration with Past Research**

There are multiple explanations for the partially confirmed hypotheses. As stated above, students with an integration orientation demonstrated the highest beginning reading scores and the most growth in reading over time. Past research has indicated that an integration orientation is associated with improved psychological health (Berry, 2006), lower levels of stress (Berry, 2006; Berry & Kim, 1988), and better school adjustment (Berry, 1997; Oetting & Beauvais, 1990) compared to other acculturation orientations. In addition, previous studies have found that an integration orientation is associated with a
higher IQ score for first generation immigrants (van de Vijver, Helms-Lorenz, & Feltzer, 1999) as well as higher grade point averages (Lee, 2002; López, Ehly, and García-Vázquez, 2002) compared to students with other acculturation orientations. However, no other studies had examined the relationship between acculturation orientation and progress in reading using CBM scales and a multi-dimensional scale. Thus, this study extends the literature indicating the superiority of an integration orientation for ELL students in the area of reading performance.

The findings associated with the three other acculturation orientations were less expected. It was hypothesized that participants with a marginalization orientation would demonstrate the least growth in reading over time; however, results indicated that participants with a marginalization orientation demonstrated more growth than students with assimilation and separation orientations. This is inconsistent with research indicating that marginalization is associated with the worst psychological and school adjustment (Berry, 1997) compared to other orientations. No other studies were found in which students with a marginalization orientation demonstrated stronger academic performance than students with separation or assimilation orientations. However, this may be due to the paucity of extant research utilizing multi-dimensional scales. More research is needed to determine whether these findings are replicable with different samples.

Various interesting patterns emerged regarding the starting points and growth rates of participants based on their acculturation orientation. Participants with a strong connection to one culture and a weak connection to the other culture demonstrated modest or poor reading growth rates over time. Interestingly, participants with a weak connection to both their culture of origin and the new culture demonstrated better reading
growth over time than those participants with a strong connection to one culture. It is possible that the participants with a weak connection to both cultures were newer immigrants and were receiving additional ELL services or increased teacher attention. More research is needed to understand the mechanism behind these findings.

In addition, it is possible that the acculturation scale used, the B-ASRMA-II, did not adequately measure the construct of acculturation in the current study’s sample. Its factor structure was not confirmed in the current study, although a prior study had shown it to be a valid and reliable indicator of acculturation orientation for 3rd through 5th grade students (Bauman, 2005). However, participants in the Bauman (2005) study lived in the southwestern part of the United States, perhaps impacting their acculturative experience. It is possible that participants in the current study were distinct enough from the Bauman (2005) sample that the B-ARMSA-II was not an appropriate measure of acculturation.

An additional factor that may have influenced these findings regards the impact of students’ language fluency and/or reading proficiency on their ability to accurately report their acculturation orientation on the B-ARMSA-II. While this is not often considered in the acculturation literature, it is difficult to determine whether students’ language ability is inadvertently being assessed by acculturation surveys. In the current study students were presented with the B-ARMSA-II in Spanish and English, and could choose to read it themselves or have a research assistant read it to them. Even though they were given this assortment of options by which to understand the material, it is possible that the participants’ oral and written Spanish and English language abilities prohibited them from fully understanding the material and/or responding in an accurate manner.
It is also possible that the reading program implemented in the present study, *Reading Mastery*, attenuated the impact of acculturation orientation on reading performance. One way to examine this hypothesis would be to compare the reading progress of students in schools with varying reading programs. Unfortunately, no comparison schools that were implementing a different reading program were included in the current study. An additional way to examine this possibility would be to compare the reading growth of the current study’s participants with the reading growth obtained by similar participants in other studies. One study found that third grade Spanish speaking ELL students gained an average of 1.27 words per minute per week (Betts, Bolt, Decker, Muyskens, & Marston, 2009). This is consistent with growth expectations for non-ELL students, which is an increase of 1 word per minute per week (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993). Participants in the current study gained an average of 1.44 words per minute every three weeks, which is equivalent to a gain of approximately 0.48 words per minute per week. In addition, normative information obtained from the PRF subtest of the *easyCBM* Assessment System indicated that a third grade student at the 50th percentile in winter should obtain a PRF score of 114, while fourth grade students should achieve a score of 132, and fifth grade students should reach 153 words per minute. In comparison, the mean PRF score obtained by third grade students in the current study in the first assessment session (February) was 99, while the mean fourth and fifth grade PRF scores at the same time point was 103 and 127, respectively. In sum, the participants in the current study demonstrated weaker growth and lower beginning reading scores than have been demonstrated in similar populations and normally developing populations, thus casting doubt on the hypothesis that the reading program in the current study attenuated
the impact of acculturation orientation on ELL students’ reading progress. Had the current study’s participants demonstrated average or above average growth compared to national samples, there would have been more support for the attenuating effects of the reading program.

Multiple proxy measures of acculturation, such as participants’ country of birth and time spent in the U.S., were not found to have an effect on reading progress. This could be considered inconsistent with the confirmed hypothesis that an integration orientation was associated with improved reading performance. However, certain proxy variables become problematic when ELL participants or their parents are undocumented immigrants. These participants may not be able to give frank answers to questions such as time spent in the United States or country of birth if they believe that honest answers will place them at risk of deportation. As the current study’s sample was comprised of Spanish-speaking families whose immigrant status was unknown and because country of birth and time spent in the U.S. was reported by participants’ parents, it is possible that the participants’ country of birth and time spent in the United States was reported inaccurately. Thus, the nonsignificant impact of proxy variables on reading progress may not be incongruous with the finding that acculturation orientation impacts reading progress, due to the potential bias in the proxy variable data.

Students’ inconsistent report of their ethnicity was also an important finding. Some researchers have stated that it is acceptable to ask young recent immigrants to self-report their ethnicity (Entwisle & Astone, 1994). However, research examining the development of young people’s racial and ethnic identity has found that late adolescence is the most critical period of development (Cross & Fhagen-Smith, 2001; Yip, Seaton, &
Sellers, 2006). In addition, others have found that experiences of discrimination lead to increases in ethnic identity exploration (Pahl & Way, 2006). It seems feasible that participants in the current study were too young to have begun examining their ethnic identity. It is also possible that living in predominantly Latino, Spanish-speaking communities led to infrequent discrimination and thus ethnic identity was not an important feature of these participants’ lives. The fact that ethnicity was not reported consistently by this study’s participants provides support for the idea that ethnicity was not a salient construct for the participants.

It was informative to find that students’ acculturation orientation did not change significantly over time. One prior study found that the acculturation orientation for adolescent Mexican-American juvenile offenders was relatively stable over a period of 7 years (Knight, et al., 2009). However, no other studies were found which had examined change in acculturation orientation over a relatively brief period of time for elementary-aged individuals, even though acculturation orientation has been conceptualized as a dynamic variable (Kim, 1988). Consequently, this study’s findings contribute new information to the research literature.

As previously mentioned, the educational attainment of the participants’ parents and their involvement in their child’s education did not significantly impact the reading performance of the current study’s participants. Most parents reported attaining less than a high school education, and moderate involvement in their child’s education. Previous research has indicated that strong parent-school relationships are correlated with high academic performance (Doll, Spies, LeClair, Kurien, & Foley, 2010) and that increased parental education is associated with improved child academic performance (Davis-Kean
& Sexton, 2009). In fact, parental educational attainment has been shown to be predictive of parental involvement in education (Davis-Kean & Sexton, 2009). However, these relations are less clear for ethnic minority families and more research is needed in this area (Davis-Kean & Sexton, 2009). In the current study, this question is further complicated by the small sample size and lack of variability in parents’ responses to the questions assessing these variables.

**Implications for Practice**

Practitioners in the schools can benefit from the information obtained in the current study. The findings indicate that acculturation orientation does not need to be assessed more than once or twice a year, as no significant differences were obtained over the course of three months. For practitioners interested in monitoring this dynamic variable, this knowledge could represent significant savings of time and energy.

In addition, the results of the current study suggest that acculturation orientation may be important for ELL students’ response to Reading Mastery instruction. Practitioners implementing the Reading Mastery reading curriculum with a similar population as the current sample (rural Midwestern location, predominantly Spanish-speaking community) can have more confidence in the applicability of this study’s results to their own population. Practitioners may find it useful to assess students’ acculturation orientation and provide additional reading instruction and intervention to students with assimilation, separation, and marginalization orientations. However, more research is needed on the relationship between acculturation orientation and reading performance before this should become a recommended practice.

**Limitations**
Although the current study’s research design was generally sound, it is important to consider the findings in light of the limitations. One limitation is that the reading teacher of each participant was not included in the model, and thus the impact of reading teacher on students’ reading performance was not controlled for. Reading teacher was not included in the final model because students were placed with their reading teacher depending on their reading ability. Thus, strong readers were automatically placed with one teacher, while all weaker readers were automatically placed with another teacher. This was due to instructional grouping practices that were part of the participating school districts’ usual reading instruction practices. Consequently, reading teacher and student reading performance were confounded. Research has shown that teachers vary considerably in their effectiveness, and that these differences impact student achievement (Phillips, 2010). Thus, it is recommended that future research in this area controls for the impact of teacher on student reading performance.

An additional limitation of the current study is the relatively small sample size. While 125 participants were recruited, only 85 students participated in the study. This may be related to the population being studied, as participants’ legal status was unknown and may have increased recruited participants’ feelings of vulnerability. The small sample size likely contributed to the complicated CFA results. It is possible that the findings would have changed had additional individuals participated in the current study. Researchers planning to work with similar populations should take care to allay participants’ fears about the purpose of the study and the manner in which the information they share will be unidentified before being disseminated. In addition, the current study’s sample is drawn from two small rural towns in the Midwest with
predominantly Spanish-speaking residents. One should take care to avoid extending the results of this study to other populations, in particular those from more urban and diverse cities in other regions of the United States.

Additional limitations relate to measurement concerns. One issue that has previously been discussed is the unknown accuracy with which participants’ country of birth and length of time spent in the U.S. were reported. As long as self-report strategies are utilized to obtain this information, research with similar samples will be subject to the same limitations. In addition, the factor structure of the acculturation measure was not upheld by the CFA. However, based on the small sample size of the current study, the theoretical basis for the two factor model, and the poor reliability of the three factor model, the original two factor model was retained. Future researchers should continue verifying the factor structure, validity, and reliability of the B-ARSMA-II with additional participants. A final measurement issue relates to the manner by which teacher adherence to the reading curriculum was confirmed. While all participating teachers’ adherence to the reading curriculum was continuously monitored by qualified employees from NIFDI or ERI, it was difficult to operationalize this process. The strategy used in the current study incorporated data collected by NIFDI, ERI, and school employees from NIFDI- and ERI-developed observational forms to assess the degree to which teachers adhered to the curriculum. However, this strategy may have been an oversimplification of the numerous and extensive procedures utilized by NIFDI and ERI to encourage teacher adherence to the reading instruction strategies. More research is needed to identify cost-effective yet valid mechanisms by which complex behaviors (such as teaching reading) can be monitored.
Future Directions

The area of acculturation orientation and its impact on students’ reading performance is an under-researched area with much potential to positively impact ELL students’ school experiences. While the current study found that students’ orientation to their culture of origin and their orientation to their new culture did significantly impact reading progress, more research is needed to better understand these relations. One suggestion that future researchers may consider is to control for the impact of participants’ ELL level in the analysis. In the current study’s sample, ELL students were categorized by their schools into one of five levels, based on their English speaking skills and need for ELL services. Thus, ELL Level 1 students represented those students with the poorest English skills and who were receiving the most ELL assistance, while ELL Level 5 students were those with well-developed English skills and little or no ELL assistance. Although this information was not able to be obtained in the current study, future researchers may consider controlling for ELL level, as lower level ELL students’ acculturation orientation may have a greater impact on their reading performance when compared to higher level ELL students.

The current study sought to identify the impact of acculturation orientation on students’ academic performance. Future researchers may wish to consider the possibility that reading facility contributes or has the potential to alter students’ acculturation status. Students who are able to read fluently in the language of their culture of origin and their new culture may be more apt to express an integration orientation, while students who struggle to learn to read in the new culture’s language may feel more strongly connected to their culture of origin and identify as having a separation orientation. The directionality
of the relationship between one’s acculturation orientation and academic performance has yet to be determined, and future researchers may wish to design studies that aid in this examination.

Future researchers may also find it useful to include non-ELL participants in the study. The inclusion of non-ELL participants would enable researchers to compare the reading progress of non-ELL and ELL students, and determine whether acculturation orientation impacts ELL students’ reading performance above and beyond their ELL status. Similarly, it would be interesting for future researchers to include schools that are implementing varying reading programs. By doing so, one could examine whether acculturation orientation impacts reading progress differentially depending on the relative strength or weakness of the reading program.

**Conclusion**

Overall, the results of this study indicate that acculturation orientation may differentially impact elementary-aged Spanish-speaking ELL students’ reading progress across a three month time span. More research is needed to verify this finding, as many variables seem to impact this relationship, including the type of reading instruction, the generation status of the participants, and the community within which participants live. In addition, results of this study indicated that acculturation orientation did not change significantly over the course of three months, although more research is needed to verify the validity and reliability of the B-ARSMA-II with young participants in the Midwest, as the factor structure was not confirmed in this study. Finally, results revealed that young participants are not reliable reporters of their ethnicity, particularly for youth in 3rd
grade. This may be related to the developmental trajectory of ethnic identity, as well as the potential lack of discrimination experienced by the participants.

Spanish-speaking ELL students represent 10% of the elementary school population in the United States (Baker & Baker, 2008) and they represent the fastest growing segment of the school-age population (U.S. Department of Education National Center for Education Statistics, 1995). Tragically, half of all ELL students drop out of school before graduation, and 70% do not achieve “basic”, “proficient”, or “advanced” level scores on national indicators of reading performance (National Center for Education Statistics, 2007; National Center for Education Statistics, 2009). It is critical that factors which may impact Latino ELL students’ academic achievement are explored, and acculturation orientation may be an influential sociocultural variable. The research literature is mixed on the impact of acculturation orientation, and the current study contributes to the current understanding of the complex relation between acculturation orientation and reading performance. More research is needed in order to alter the academic trajectory of ELL students and enable schools to meet these students’ multifaceted needs.
References


Childhood Education for Hispanics. Available online at


_Educating English Language Learners: A synthesis of research evidence._ New
York: Cambridge University Press.

Gersten, R., Baker, S.K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R.
(2007). *Effective Literacy and English Language Instruction for English Learners
DC: National Center for Education Evaluation and Regional Assistance, Institute
of Education Sciences, U.S. Department of Education. Retrieved from

literacy. In D. August and T. Shanahan, (Eds.), *Developing literacy in second-
language learners: Report of the national literacy panel on language-minority

_Educational Research, 33_, 121-130.

Goldenberg, C. (2008). Teaching English Language Learners: What the research does –
and does not – say. *American Educator, 32_, 8-44.


Harris-Murri, N., King, K., & Rostenberg, D. (2006). Reducing disproportionate minority representation in special education programs for students with emotional
disturbances: Toward a culturally responsive response to intervention model. 

*Education and Treatment of Children, 29, 779-799.*


*Personnel Psychology, 47*, 537-560.


multicultural assessment: Clinical, psychological, and educational applications


Appendix A
The Brief Acculturation Rating Scale for Mexican-Americans – II
(B-ARSMA-II)

Name: Date: 
Grade: Age: 
Birthday (Day/Month/Year): 
Gender (circle one): BOY GIRL 
Ethnicity (circle at least one): HISPANIC/LATINO WHITE 
AFRICAN AMERICAN ASIAN 
NATIVE AMERICAN OTHER: 

Teacher: ELL Teacher: 

Please read each question below and check one of the boxes following each question. 
Please answer honestly, but remember that there are no “right” answers. Thank you!

<table>
<thead>
<tr>
<th>Number</th>
<th>Questions</th>
<th>Not at All/Nada</th>
<th>Very Little/Un Poquito o a Veces</th>
<th>Moderately/Moderado</th>
<th>Very Often/Mucho or Muy Frente</th>
<th>Almost Always, Muchismo, Caso Todo el</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I speak Spanish. Yo hablo Español.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I speak English. Yo hablo Inglés.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I enjoy speaking Spanish. Me gusta hablar Español.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I associate with Anglos. Me asocio con Anglos.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I enjoy English language movies. Me gusta ver peliculas en Inglés.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I enjoy Spanish language TV. Me gusta ver programas en la television que sean en Español.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I enjoy Spanish language movies. Me gusta ver películas en Español.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I enjoy reading books in Spanish. Me gusta leer en Español.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I write letters in English. Escribo (como cartas) en Inglés.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>My thinking is done in the English language. Mis pensamientos ocurren en el idioma Inglés.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>My thinking is done in the Spanish language. Mis pensamientos ocurren en el idioma Español.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>My friends are of Anglo origin. Mis amigos recientes son Anglo Americano.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B
Acculturation and Reading Study

Be part of an important study that aims to enhance your child’s education.

- Do you speak Spanish?
- Do you have a child in elementary school?

If you answered YES to these questions, you and your child may be eligible to participate in a research study at Madison Public Schools.

The purpose of this research study is to study the relationship between elementary-aged Spanish-speaking students’ connection to their culture and their reading performance. This study will increase Madison Public School’s understanding of students’ cultural experiences. Student participants will receive a small reward.

Spanish-speaking students in grades 3-5 and their parents are eligible to participate.

This study is being conducted at Madison Elementary School by researchers from the University of Nebraska-Lincoln.

If you have any questions, please call Courtney LeClair at 402-310-6393, and watch for more details from Madison Elementary School.

Thank you for your interest!
Estudio de Aculturación y Lectura

Sea parte de un importante estudio que tiene por objeto mejorar la educación de su hijo(a).

- ¿Habla usted español?
- ¿Tiene usted un niño(a) en la escuela primaria?

Si usted contestó SÍ a estas preguntas, usted y su niño pueden ser elegible para participar en un estudio de investigación en las Escuelas Públicas de Madison.

El objetivo de este estudio de investigación es estudiar la relación de la conexión entre la cultura y el desempeño en la lectura de los estudiantes de edades primaria que hablan español. Este estudio aumentará la comprensión de las Escuelas Públicas de Madison de las experiencias culturales de los estudiantes. Los estudiantes participantes recibirán un pequeño premio.

Los estudiantes de habla español en los grados 3-5 y sus padres son elegibles para participar. Este estudio se lleva a cabo en Madison Elementary School por investigadores de la Universidad de Nebraska-Lincoln.

Si usted tiene alguna pregunta, por favor llame al 402-310-6393 Courtney LeClair, y vele por más detalles de Madison Elementary School.

¡Gracias por su interés!
Appendix C
### Assessor Copy

**Student Name:** ______________________  **Date:** ____________

1. Place the Student Copy in front of the student. Point to the names on the Student Copy as you read them:

   "This is a story about **Victor**, **Joe**, **Jim** and **Tom**. I want you to read this story to me. You’ll have 1 minute to read as much as you can. When I say "begin," start reading aloud at the top of the page. Do your best reading. If you have trouble with a word, I’ll tell it to you. Do you have any questions? Begin."

2. Start the timer.
3. While the student is reading, mark errors with a slash (/).
4. At 1 minute, mark the last word read with a bracket (\). 
5. When the student gets to a logical stopping place, say "Stop."

<table>
<thead>
<tr>
<th>Victor was nine years old when he visited his very first amusement park. He went with his friends <strong>Joe</strong>, <strong>Jim</strong>, and <strong>Tom</strong>. Joe's parents drove them to the park early in the day. The boys were excited and wanted to make the most of the experience. They wanted to have plenty of time to ride each ride. They had a great idea of how they could do this. They had decided to start at one end of the park and ride each ride, one after the other, until they had worked their way across the entire amusement park. This way they would not miss anything! The boys rode every one of the roller coasters. They held their hands up high in the air as the roller coaster climbed up the tracks. Then they screamed, keeping their hands raised, as the roller coaster sped down the hill and whipped around the steep curves. The boys enjoyed each ride! They also rode the bumper cars and loved crashing into one another while rapidly racing around the track. It was exciting, jolting and loud - all at the same time. The haunted house was Tom's favorite ride! Every few seconds, something would jump out of the darkness and scare the boys. They screamed until their throats were sore. Before realizing it, two hours had passed and the boys had to rush to meet Joe's parents. They did not want to be late. They were already planning to ask if they could return next weekend.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>54</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>86</td>
</tr>
<tr>
<td>98</td>
</tr>
<tr>
<td>105</td>
</tr>
<tr>
<td>117</td>
</tr>
<tr>
<td>132</td>
</tr>
<tr>
<td>144</td>
</tr>
<tr>
<td>157</td>
</tr>
<tr>
<td>170</td>
</tr>
<tr>
<td>184</td>
</tr>
<tr>
<td>196</td>
</tr>
<tr>
<td>208</td>
</tr>
<tr>
<td>220</td>
</tr>
<tr>
<td>235</td>
</tr>
<tr>
<td>249</td>
</tr>
<tr>
<td>250</td>
</tr>
</tbody>
</table>

**Total Words Read:** ____  -  **# of Errors:** ____  -  **CWPM:** ____

© 2006 University of Oregon
Appendix D
Parent/Guardian Demographic Form

***Please note that all information will be kept confidential.

Name: __________________________________________________________________

The following questions ask about your employment, education, involvement in your child’s education, and language preferences. Please answer in the way that best describes you and your spouse (if applicable).

What is the mother’s job? ______________________________________________________________________

What is the father’s job? ______________________________________________________________________

What is the highest level of education the mother has completed? (Please check one)

- No formal schooling
- Less than 8th grade
- 9-12th grade
- High school diploma/GED
- 1-2 years of College/Vocational training
- 4 year College degree
- Graduate degree

What is the highest level of education the father has completed? (Please check one)

- No formal schooling
- Less than 8th grade
- 9-12th grade
- High school diploma/GED
- 1-2 years of College/Vocational training
- 4 year College degree
- Graduate degree

How many times have you and/or your spouse been in your child’s school this year?

My child and I talk about his/her education and things that are happening at school:

Never  Sometimes  Often  Almost Always

Spanish is spoken when talking with family members during meals:

Never  Sometimes  Often  Almost Always

I read, write and speak in English:

Never  Sometimes  Often  Almost Always

I read, write, and speak in Spanish:

Never  Sometimes  Often  Almost Always

Thank you for your assistance! Please mail this form and the consent form in the enclosed envelope at your earliest convenience.
Formulario Demográfico de Padres/Tutor Legal

***Tenga en cuenta que toda la información se mantendrá confidencial.

Nombre: ________________________________________________________________

Las siguientes preguntas son acerca de su empleo, educación, participación en la educación de su hijo(a), y las preferencias de idioma. Por favor, responda de la manera que mejor lo describe a usted y su cónyuge (si aplica).

¿Qué es el trabajo de la madre? __________________________________________

¿Qué es el trabajo del padre? ____________________________________________

¿Cuál es el nivel más alto de educación que la madre ha completado? (Por favor marque uno)

   ______ Ninguna educación formal
   ______ Menos de 8º grado
   ______ 9-12º grado
   ______ Diploma de escuela superior/GED
   ______ 1-2 años de Colegio/Entrenamiento Vocacional
   ______ 4 años graduado de la universidad
   ______ Postgrado

¿Cuál es el nivel más alto de educación que el padre ha completado? (Por favor marque uno)

   ______ Ninguna educación formal
   ______ Menos de 8º grado
   ______ 9-12º grado
   ______ Diploma de escuela superior/GED
   ______ 1-2 años de Colegio/Entrenamiento Vocacional
   ______ 4 años graduado de la universidad
   ______ Postgrado

¿Cuántas veces usted y / o su cónyuge ha estado en la escuela de su hijo(a) este año?

   ______

Mi hijo(a) y yo hablamos de su educación y de las cosas que están sucediendo en la escuela:

   Nunca  A Veces  A Menudo  Casi Siempre

Se habla español cuando hablando con los miembros de la familia durante las comidas:

   Nunca  A Veces  A Menudo  Casi Siempre

Yo leo, escribo y hablo en inglés:

   Nunca  A Veces  A Menudo  Casi Siempre

Gracias por su ayuda! Por favor, envíe este formulario y el formulario de consentimiento en el sobre adjunto a la mayor brevedad posible.
Five-Minute Observation

Name:
Room Number:
Date:
Start Time:
End Time:
Program and Level:
Group Number and Performance Level:

During a five-minute observation, watch for the following:

____ The subject and lesson you were expecting to see is being taught.
____ Number of students in group is appropriate.
____ Physical arrangement allows students and teachers to see and hear all parts of the lesson.
____ Students receiving group instruction are attentive and engaged.
____ Teacher is relying on positive techniques to manage student behavior.
____ Students doing independent work are on-task.
____ Independent work is corrected and students have done fix-ups.
____ Student work is neat and well organized.
____ Teacher and student materials are organized and accessible.
____ Written records of student performance are posted or accessible.
____ Thermometer charts are posted.

Time and date of Follow-up from last visit:
Conference:

Date and procedure for Specific structural or training solutions:
Follow-up:

Signature:

© National Institute for Direct Instruction (NIFDI)
NIFDI gives permission for this form to be copied for school use only.
**TECHNICAL ASSISTANCE FORM (TAF)**

<table>
<thead>
<tr>
<th>Campus:</th>
<th>Consultant:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher:</td>
<td>Grade: Date:</td>
</tr>
<tr>
<td>DI Program:</td>
<td>No./Group: Lesson No.:</td>
</tr>
</tbody>
</table>

These checked items were implemented successfully during the lesson:

<table>
<thead>
<tr>
<th>Set Up:</th>
<th>□ Schedule Followed</th>
<th>□ Seating Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Materials Ready</td>
<td>□ Rules Followed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formats:</th>
<th>□ Carefully Followed</th>
<th>□ Emphasized Key Words in Script</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Confirmed Responses</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signals:</th>
<th>□ Clear and Consistent</th>
<th>□ Appropriate Audio/Visual Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Used Think Time Effectively</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrections:</th>
<th>□ Specific Correction for Task</th>
<th>□ Group/Group and Individual/Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Posted Clearly</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Firm Up:</th>
<th>□ Review List Used Well</th>
<th>□ Started Over After Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Fluency Addressed Smartly</td>
<td>□ MT/CO Recorded</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pacing:</th>
<th>□ Pacing Appropriate for Task/Group</th>
<th>□ Transitions Handled Well Engagement High</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Management:</th>
<th>□ Praise Specific</th>
<th>□ Student/Teacher Game Used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Good Behavior Reinforced</td>
<td></td>
</tr>
</tbody>
</table>

**Grows:**
<table>
<thead>
<tr>
<th>Brief ARSMA-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Name or ID recorded</td>
</tr>
<tr>
<td>Date recorded</td>
</tr>
<tr>
<td>Asked student for Grade and recorded if provided</td>
</tr>
<tr>
<td>Asked student for Age and recorded if provided</td>
</tr>
<tr>
<td>Asked student for Birthday and recorded if provided</td>
</tr>
<tr>
<td>Gender recorded</td>
</tr>
<tr>
<td>Asked student for Ethnicity and recorded if provided</td>
</tr>
<tr>
<td>Asked student to check a box following each question</td>
</tr>
<tr>
<td>Reminded student there are no “right” answers</td>
</tr>
<tr>
<td>Read questions to student or allowed student to read the questions to him/her self</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Easy CBM, Probe 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read name(s) of characters in story to student</td>
</tr>
<tr>
<td>Indicated that story should be read aloud to assessor</td>
</tr>
<tr>
<td>Indicated that student has one minute to read as much as they can</td>
</tr>
<tr>
<td>Indicated that when assessor says “begin,” student should start reading aloud at the top of the page</td>
</tr>
<tr>
<td>Asked student to do their best reading</td>
</tr>
<tr>
<td>Told student that if they have trouble with a word, assessor will tell it to them</td>
</tr>
<tr>
<td>Asked student if they have any questions or are ready</td>
</tr>
<tr>
<td>Told student to begin reading</td>
</tr>
<tr>
<td>(INTERATER RELIABILITY ) TWW = Errors =</td>
</tr>
<tr>
<td>CWPM =</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Easy CBM, Probe 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read name(s) of characters in story to student</td>
</tr>
<tr>
<td>Asked student if they have any questions or are ready</td>
</tr>
<tr>
<td>Told student to begin reading</td>
</tr>
<tr>
<td>(INTERATER RELIABILITY ) TWW = Errors =</td>
</tr>
<tr>
<td>CWPM =</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Easy CBM, Probe 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read name(s) of characters in story to student</td>
</tr>
<tr>
<td>Asked student if they have any questions or are ready</td>
</tr>
<tr>
<td>Told student to begin reading</td>
</tr>
<tr>
<td>(INTERATER RELIABILITY ) TWW = Errors =</td>
</tr>
<tr>
<td>CWPM =</td>
</tr>
<tr>
<td>Easy CBM, Probe 1</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Read name(s) of characters in story to student</td>
</tr>
<tr>
<td>Indicated that story should be read aloud to assessor</td>
</tr>
<tr>
<td>Indicated that student has one minute to read as much as they can</td>
</tr>
<tr>
<td>Indicated that when assessor says “begin,” student should start reading aloud at the top of the page</td>
</tr>
<tr>
<td>Asked student to do their best reading</td>
</tr>
<tr>
<td>Told student that if they have trouble with a word, assessor will tell it to them</td>
</tr>
<tr>
<td>Asked student if they have any questions or are ready</td>
</tr>
<tr>
<td>Told student to begin reading</td>
</tr>
</tbody>
</table>

(INTERATER RELIABILITY )
TWW = Errors =
CWPM =

<table>
<thead>
<tr>
<th>Easy CBM, Probe 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read name(s) of characters in story to student</td>
</tr>
<tr>
<td>Asked student if they have any questions or are ready</td>
</tr>
<tr>
<td>Told student to begin reading</td>
</tr>
</tbody>
</table>

(INTERATER RELIABILITY )
TWW = Errors =
CWPM =

<table>
<thead>
<tr>
<th>Easy CBM, Probe 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read name(s) of characters in story to student</td>
</tr>
<tr>
<td>Asked student if they have any questions or are ready</td>
</tr>
<tr>
<td>Told student to begin reading</td>
</tr>
</tbody>
</table>

(INTERATER RELIABILITY )
TWW = Errors =
CWPM =
Procedural Checklist for Data Collection Session 5

Rater’s Name:  
File Name: 

<table>
<thead>
<tr>
<th>Brief ARSMA-II</th>
</tr>
</thead>
</table>
| Student Name or ID recorded  
| Date recorded  
| Asked student for Ethnicity and recorded if provided  
| Asked student to check a box following each question  
| Reminded student there are no “right” answers  
| Read questions to student or allowed student to read the questions to him/her self  

<table>
<thead>
<tr>
<th>Easy CBM, Probe 1</th>
</tr>
</thead>
</table>
| Read name(s) of characters in story to student  
| Indicated that story should be read aloud to assessor  
| Indicated that student has one minute to read as much as they can  
| Indicated that when assessor says “begin,” student should start reading aloud at the top of the page  
| Asked student to do their best reading  
| Told student that if they have trouble with a word, assessor will tell it to them  
| Asked student if they have any questions or are ready  
| Told student to begin reading  
| (INTERATER RELIABILITY ) TWW = Errors = CWPM =  

<table>
<thead>
<tr>
<th>Easy CBM, Probe 2</th>
</tr>
</thead>
</table>
| Read name(s) of characters in story to student  
| Asked student if they have any questions or are ready  
| Told student to begin reading  
| (INTERATER RELIABILITY ) TWW = Errors = CWPM =  

<table>
<thead>
<tr>
<th>Easy CBM, Probe 3</th>
</tr>
</thead>
</table>
| Read name(s) of characters in story to student  
| Asked student if they have any questions or are ready  
| Told student to begin reading  
| (INTERATER RELIABILITY ) TWW = Errors = CWPM =  