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Effective Reading Interventions for Spanish-Speaking English Learners with Reading Disabilities, English Learners Who Struggle with Reading, or Both: A Meta-Analysis of Second through Fifth Grades

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EFFECTIVE READING INTERVENTIONS FOR SPANISH-SPEAKING ENGLISH LEARNERS WITH READING DISABILITIES, ENGLISH LEARNERS WHO STRUGGLE WITH READING, OR BOTH: A META-ANALYSIS OF SECOND THROUGH FIFTH GRADES

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ABSTRACT

This meta-analysis synthesized research on effective instructional practices and strategies in second through fifth grade for Spanish-speaking English Learners (ELs) who have reading disabilities and English Learners who struggle with reading. The central research problem is the dearth of research addressing literacy instruction for ELs with reading disabilities, making identification of effective reading interventions difficult. The inclusion criteria for the meta-analysis resulted in 15 quasi-experimental or single-subject empirical research studies that used reading interventions to improve the reading comprehension performance of ELs. The overall average effect size for the meta-analysis, not based on homogenous studies, was 1.15. When outliers were eliminated and based on 12 homogenous studies, the average effect size was .72. Importantly, only one study that met the inclusion criteria directly investigated ELs with reading disabilities. Results from the five studies that used features of culturally responsive pedagogy including the use of Spanish in instruction indicated a positive effect for ELs struggling with reading. Greater numbers of days of instruction were associated with improved reading comprehension. Small-group instruction, professional development aligned with explicit, comprehensive, and intensive instruction focused on the development of oral language skills using culturally responsive pedagogy, all integrated within evidence-based commercial reading programs or regular school-based curricula have the potential to improve the reading comprehension of ELs with reading disabilities and ELs who struggle with reading. The major finding of this meta-analysis is that there is a dearth of research on Spanish-speaking ELs with reading disabilities and ELs who struggle with

reading. The findings support the conclusion that extensive research needs to be conducted on identifying effective reading intervention for ELs with reading disabilities and ELs who struggle with reading.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

David Stephens	May 15, 2014
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Dr. Patricia Busk	May 15, 2014
Chairperson	
Dr. Yvonne Bui	May 15, 2014
Dr. Stephen Cary	May 15, 2014

DEDICATION

To my parents

Refugio Macias Stephens

and

Antonio Stephens

and to my wife

Teresa Walsh

DEDICACIÓN

A mis padres

Refugio Macias Stephens

y

Antonio Stephens

y para mi esposa

Teresa Walsh

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CHAPTER I

RESEARCH PROBLEM

Notwithstanding improvements in the academic achievement of Hispanic American students since 1990, educators face the continuing challenge of addressing the literacy needs of Spanish-speaking English learners (ELs) at-risk for failure in reading. Included in this group are ELs with reading disabilities and ELs who struggle with reading. The highly complex and multidimensional nature of the characteristics and instructional variables of ELs who have reading disabilities and ELs who struggle with reading have made it difficult for researchers and educators to provide instruction and to identify appropriate and effective instructional interventions for this group of culturally and linguistically diverse exceptional learners in second through fifth grade (Linan-Thompson & Hickman-Davis, 2002; Lovett et al., 2008).

Achievement Gap

A wide gap in reading achievement exists between Hispanic American students and European American students. The National Assessment of Educational Progress (NAEP) data for 2011 showed that Hispanic American students in fourth grade trailed their European American counterparts in reading achievement with a 25-point gap (Hispanic American students 206, European American students 231, on a scaled score ranging from 0 to 500; National Center for Education Statistics, 2011). For students identified as ELs with learning disabilities (LD), the achievement gap is even larger. Students identified as having a disability and as English Language Learners (ELL) in the National Assessment of Educational Progress (National Center for Education Statistics,

2011) scored, on average, 75 points lower than students who were not identified as ELs or as students with a disability (ELs with LD 154, students identified as neither students with a disability nor EL 229, on a scaled score ranging from 0 to 500). The achievement gap along with the rapid growth of the Hispanic American student population in the United States has had the effect of making the instructional environment more challenging (Kamps et al., 2007). The inability of many Hispanic American students to read at basic levels necessary for success in school along with high rates of familial poverty may limit their future participation in school, in the workplace, and in society. The daunting problems faced by Hispanic students struggling with reading in school and their deleterious effects on society make it a high priority for educators and researchers to identify effective reading interventions for this rapidly growing segment of the U.S. public. The achievement gap and the academic problems experienced by Hispanic students have implications for identifying the characteristics and reading problems experienced by ELs.

Statement of the Problem

The current emphasis in the field of special education on the use of scientifically based, empirically validated instruction—a result of the reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004) and the No Child Left Behind Act (NCLB, 2001)—has compelled educators and researchers to focus the substance of discourse on issues of content and pedagogy. In terms of the pedagogy of reading for Spanish-speaking ELs with reading disabilities and ELs who struggle with reading, and in view of the importance of reading to academic achievement, it is imperative that researchers

identify the instructional techniques, strategies, and reading interventions that have been shown to be effective. The crucial problem in identifying effective reading interventions is the dearth of research addressing literacy instruction for ELs with reading disabilities (Klingner, Artiles, & Mendez Barletta, 2006; Orosco & O'Connor, 2013). Critically, according to Orosco and O'Connor (2013), there exists limited research investigating the connection between learning to read and culture and teaching. Although progress has been made on researching literacy for ELs, there is much the field of education does not know about reading interventions that work for ELs with reading disabilities. Further research is needed in learning what types of instructional interventions work with ELs with reading disabilities and whether interventions are made effective or improved through the inclusion of culturally responsive literacy instruction.

The selection of research-based, empirically validated reading interventions that are effective for ELs presents a difficult, albeit essential, task (Slavin & Cheung, 2005; Vaughn et al., 2006). ELs struggle with reading due to difficulty with three skills: (a) problems with decoding and word reading skills, (b) weaknesses in phonological processing abilities, leading to problems with decoding, and (c) lack of oral language proficiency in English, including low levels of vocabulary (Klingner, Boardman, Eppolito, & Schonewise, 2012). Problems with decoding, phonological awareness, and oral language proficiency lead to problems with reading comprehension, the primary purpose of reading. These essential skills for reading along with other variables, such as the length of time of instruction, quality of instruction, and issues related to instructional groupings, provide challenges for educators in their pursuit of ways in which to develop

the reading skills of ELs.

Purpose of the Study

The purpose of this study was to conduct a meta-analysis of research into effective instructional practices and strategies in second through fifth grade for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Specific goals were to determine the effects of reading instruction on the reading achievement of ELs, to identify moderator variables and their influence on reading instruction and achievement, and to determine which instructional interventions, techniques, and practices can be considered effective and evidence-based.

Given the importance of reading to academic achievement and to success in life, this study sought to ascertain which instructional interventions, strategies, and techniques have been shown to be effective in raising the reading achievement of elementary-school Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. In order to determine which instructional interventions are effective, the researcher conducted a meta-analysis of primary research studies in the area of reading for the target population. The central aims of the investigation were (a) to provide educators with insight, an improved perspective, and increased knowledge into effective interventions for ELs with reading disabilities and ELs who struggle with reading, (b) to explore the role and effect of moderator variables in reading instruction, and (c) to add to the knowledge base regarding methods of increasing the reading achievement of Spanish-speaking ELs with reading disabilities and ELs who struggle with reading. The study may have implications for how reading instruction provided to ELs struggling with

reading in elementary school.

The meta-analysis synthesized empirical studies that investigated reading instruction for Spanish-speaking ELs in elementary school who have reading disabilities or ELs who struggle with reading. The study included experimental, quasi-experimental, and single-subject studies using established procedures for conducting meta-analyses (Borenstein, Hedges, Higgins, & Rothstein, 2009; Card, 2012; Cooper, 2010; Cooper, Hedges, & Valentine, 2009; Glass, McGaw, & Smith, 1981; Lipsey & Wilson, 2001).

Theoretical Rationale

In development of a theoretical rationale for studying the response to instruction of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading, the sociocultural model (Vygotsky, 1978) provided a useful overall framework. Theoretical frameworks related to the sociocultural model—second-language acquisition (SLA) for Spanish speaking ELs (including the Input-Interaction-Output Model, Gass, 2006, the Output Hypothesis, Swain, 1993, the Comprehensible Input Hypothesis, Krashen, 1985, and the Theory of Common Underlying Proficiency, Cummins, 2000) and culturally responsive pedagogy (CRP) as it pertains to Spanish speaking ELs—provided useful models. The Simple View of Reading (Hoover & Gough, 1990) supplied the connection between oral language proficiency (acquired through social interaction) and decoding (phonological awareness) in the development of reading comprehension. The final section provided a synthesis of the intersection of the theoretical frameworks for the sociocultural model, SLA, the simple view of reading, and for CRP.

Sociocultural Model

The sociocultural model of learning is based on the work of Vygotsky (1978) who posited that in order to understand the nature of learning the study of human culture and history had to be incorporated. Vygotsky (1978) asserted that the social environment not only influenced learning but also was a source for its development. The sociocultural model went beyond traditional theory and its focus on the individual's learning needs and abilities to stress that a complex interaction occurred between the individual and the social environment to promote learning (Swain & Deters, 2007).

The input-interaction-output model, the output hypothesis, the comprehensible input hypothesis, and the theory of common underlying proficiency, all under the umbrella of the sociocultural model are important for this study because they emphasize the role of the classroom environment in supporting second language acquisition and the development of reading. In order for Spanish-speaking ELs to acquire a second language and to learn to read, they must be afforded many opportunities for language interaction. These language interactions are most effective when they happen within the context of the children's culture. Cultural materials—photographs, music, dance, props, and performance, for example—add meaning and emotion and facilitate language acquisition.

Second-Language Acquisition and Reading

Research has suggested the importance of input, interaction, and output in the development of ELs' oral language fluency (Gass, 2006). Without opportunities for engaging in efficient and effective input, interaction, and output, that is, with instruction consisting mainly of grammar, language forms, and written assessments, ELs struggle to

learn to speak English fluently. The next section addressed the ways in which the input-interaction-output model, along with the output hypothesis, and the theory of common underlying proficiency explain and account for second-language acquisition for Spanish-speaking ELs.

Input-Interaction-Output Model. For studying ELs, second-language acquisition theory provides a useful framework. Second-language-acquisition researchers generally agree that input, interaction, and output play a critical role in language learning (Gass & Torres, 2005). The Input-Interaction-Output model (Gass, 2006) suggests that second-language learning is facilitated by receiving comprehensible input, engaging in interaction, negotiating for meaning, and producing output. Although input is considered to be indispensable in language acquisition, the importance assigned to input varies according to theory and approach. Interaction in second-language acquisition is an exchange between a language learner and a fluent speaker in which the learner does not understand entirely some aspect of the discussion. Because both the language learner and the fluent speaker recognize that something in the communication is unclear, they place their attention on the problem area and attempt to negotiate for meaning triggering interactional adjustments (Gass & Torres, 2005). The interaction, therefore, promotes language learning. The present study investigated primary research studies in which the oral language proficiency of ELs is promoted through the use of sociocultural interchange and discussion.

Output Hypothesis. The output hypothesis suggests that comprehensible input is not sufficient for second-language acquisition (Swain, 1993). For language acquisition to

occur, spoken or written language must be produced. The hypothesis proposes four ways in which output may play a role in second-language learning. One process for language acquisition is through the practice of using language, that is, opportunities for spoken language production promote fluency in the second language. A second way in which language production promotes language learning is by forcing learners to go beyond the processing of semantics and comprehension to engaging in mental processes that produce deeper understanding of linguistic gaps, that is, by addressing what they know and do not know, learners engage in the generation of new linguistic knowledge. By providing learners the opportunity to test new means of expression (to see whether they work), output language promotes language learning a third way. A fourth way in which language production serves language acquisition is through the feedback learners receive from speakers of the language. Language learners' responses in turn generate more feedback and enhanced learning occurs. Oral language output that increases ELs' second-language acquisition leads to improved reading comprehension and improved reading skills in English. The connection between oral language abilities and reading comprehension is expanded on in the section on phonological awareness. The present meta-analysis investigated the extent to which oral language skills and second-language acquisition enhance reading instruction for ELs.

Comprehensible Input Hypothesis. Two researchers—basing their work on Chomsky's (1957) *Theory of Generative Grammar*—have developed theories of second-language acquisition (Cummins, 2000; Krashen, 1985). Krashen (1985) made a distinction between language learning and language acquisition. Language learning—

knowledge of grammar and vocabulary—does not guarantee fluency in a second language. For purposes of communication, language proficiency is acquired through understanding and experience in real-world situations. The *comprehensible input hypothesis*, according to Krashen (1985), involves receiving messages in the second language that are comprehensible or that make sense. Under Krashen's theory, language acquisition is driven by comprehensible input, that is, linguistic messages that are slightly beyond the learner's level of competence force the learner to comprehend and acquire language.

Chomsky (1957), in his theory of generative (or universal) grammar, took a different perspective on second-language acquisition. The theory of universal grammar posits that humans have the innate ability to learn and use language. An inference made possible by the theory is that languages cannot be taught directly; only the conditions for learning can be supplied in order for the learner to acquire language. Under universal grammar, input serves as growth material for the internal language structures and systems of the human brain. Classroom instruction that uses comprehensible input, such as culturally responsive pedagogy, serves the purpose of developing second-language acquisition in ELs.

Theory of Common Underlying Proficiency

Cummins' (2000) *Theory of Common Underlying Proficiency* proposes that language skills are interdependent, that is, skills learned in the first language easily transfer to the second language. His hypothesis suggests that the level of ability or competence in the first language is related to the level of acquisition of the second

language. Research by Gottardo and Mueller (2009) has demonstrated that for ELs reading comprehension, undoubtedly the main purpose and ultimate goal of reading, is related to decoding in English and English oral language proficiency. In their model, both decoding and oral language proficiency were necessary predictors of reading comprehension for ELs. Many oral language skills in Spanish transfer to oral language skills in English. Comprehensible input in instruction also leads to development of English oral language skills. Second-language acquisition, therefore, along with decoding or English word reading, is an important factor in the reading development of ELs who have reading disabilities or ELs who struggle with reading. In light of Krashen's (1985) and Cummins' (2000) research, it can be concluded that their theories provide a foundation for understanding how Spanish-speaking ELs learn English and for how instructional programs can be strengthened to provide effective language development.

The Simple View of Reading

Learning to read in a language that is different from one's first or home language presents a challenge (Lindsey et al., 2003). For both Spanish-speaking ELs and monolingual English speakers, learning to read in English, which is essential for academic success, means gaining the ability to obtain meaning from printed words or the comprehension of text. Research has shown that although reading develops similarly among monolingual English speakers and EL second-language learners (August & Shanahan, 2006; Gottardo & Mueller, 2009), ELs trail monolingual English speaking students in reading comprehension (August, Carlo, Dressler, & Snow, 2005; Gottardo &

Mueller, 2009). Gottardo et al. (2008) found that word-level reading in second grade for ELs approached the mean for monolingual English speakers, even though the ELs' word-level reading scores in first grade had been below average. The evidence presented suggests that ELs fall behind monolingual English speakers in reading comprehension due to difficulties with oral language and listening comprehension. The *simple view of reading* (Hoover & Gough, 1990) may provide a rationale for the difficulty experienced by ELs with reading comprehension.

The purpose of reading is the comprehension of text. Therefore, a model of reading that includes reading comprehension is essential. The simple view of reading holds that two components—decoding and linguistic (or listening) comprehension—are necessary for reading comprehension. Researchers have called for the simple view of reading to be augmented with components such as working memory and reading fluency (Geva & Farnia, 2012). In contrast, the complex view of reading holds that reading is an intricate organization of higher order processes such as thinking, evaluating, and reasoning. Hoover and Gough (1990) countered that many of the higher order processes cited could be accomplished by nonreaders given that these processes are used in general language and not restricted to reading. Furthermore, the simple view of reading holds that both components—decoding and listening comprehension—are equal and necessary for reading comprehension. Figure 1 shows the connection between phonological awareness and oral language and reading comprehension as conceptualized by the simple view of reading.

In concert with the simple view of reading is a model of reading for Spanish-

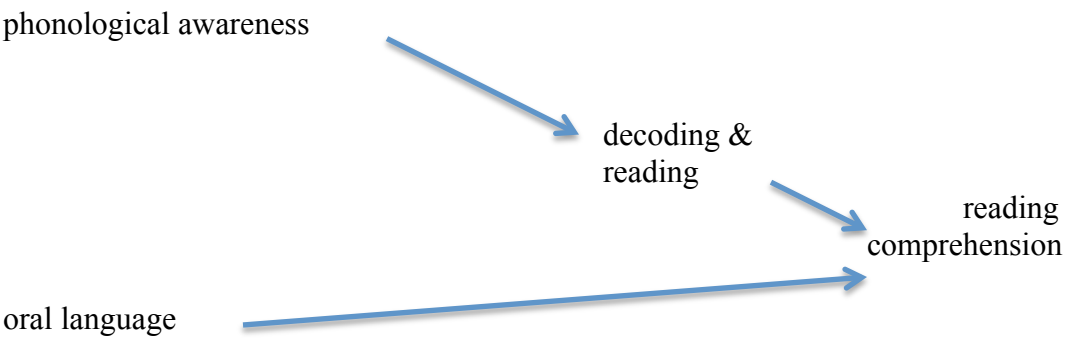

Figure 1. The connection between phonological awareness and oral language and reading comprehension as conceptualized by the simple view of reading (Hoover & Gough, 1990) and by Gottardo et al. (2008).

speaking ELs that highlights the role of phonological awareness in decoding and the role of oral language, listening comprehension, and decoding in reading comprehension. In the present meta-analysis, these variables—phonological awareness, oral language abilities, listening comprehension, and reading comprehension—were investigated as moderator variables for their effect on the reading performance of Spanish-speaking ELs. Durgunoglu, Nagy, and Hancin-Bhatt (1993) stressed that EL oral language proficiency is not a good predictor of reading performance in the second language; however, Nakamoto, Lindsey, and Manis (2008) and Gottardo et al. (2008) held that together phonological awareness, decoding ability, and oral language proficiency are necessary components of reading comprehension. The next section focused on the role of phonological processing in the development of decoding skills.

Phonological Processing, Phonological Awareness, and Struggling Readers Including ELs Struggling with Reading

This section presented the role of phonological processing in the development of ELs' reading. The ability to process phonologically the sounds of spoken language

underlies the ability to develop reading skills. The poor reading skills of some ELs, therefore, may be caused by poor phonological processing abilities.

The theory of *core phonological deficits* posits that students with reading difficulties have deficits in phonological processing (Gottardo, 2002; Leafstedt & Gerber, 2005; Lindsey, Manis, & Bailey, 2003; Manis, Lindsey, & Bailey, 2004; Nakamoto, Lindsey, & Manis, 2007; Wagner & Torgeson, 1987). *Phonological processing* is an auditory processing skill used in detecting and discriminating the sounds of speech. Wagner and Torgesen (1987) discerned three independent but highly related aspects of phonological ability. *Phonological awareness* is the awareness of the sound structure of spoken language, meaning that words are made of smaller sound units. *Phonological recoding in lexical access* is the recoding of written letters into a sound-based reference system to access meaning. *Phonetic recoding in working memory* is the retention in short-term working memory of verbal information. Research suggests a correlation between the phonological abilities and the development of reading skills (Lindsey et al., 2003; Manis et al., 2004; Nakamoto et al., 2007; Scanlon & Vellutino, 1996; Wagner & Torgeson, 1987). Scanlon and Vellutino (1996) found phonological variables to be predictors of word reading skills with phoneme segmentation, $r = .42$ and phonological short-term memory for words, $r = .33$. Phonological processing, therefore, is considered a strong factor in the development of reading skills. Conversely, weaknesses or deficits in phonological skills are most probably the cause of reading-related disabilities (Vellutino, Fletcher, Snowling, & Scanlon, 2004). Manis et al. (2004) noted that although phonological awareness is an important factor in reading development, other

factors should be considered, including letter knowledge, print awareness, and oral language skill. The body of evidence seems to suggest that phonological skills are important in the acquisition of reading.

Manis et al. (2004) explored cross-language relationships between early Spanish-language skills and later reading skills in English. In a study of 251 Spanish-speaking ELs in kindergarten through second grade, Manis et al. (2004) examined a combination of cognitive skills (phonological awareness, rapid automatic naming, and oral language development) to obtain a correlation with reading skills in English. Hierarchical regression analysis found that phonological awareness and rapid automatic naming contributed to the development of English reading skills, verifying cross-language transfer correlations for phonological awareness. Oral language skills were found to have stronger within-language than cross-language correlations with reading. The study findings indicated that certain cognitive skills, particularly phonological awareness and rapid automatic naming, measured in the first language, Spanish, can be used to predict later reading performance in the second language, English. Nakamoto et al. (2007) confirmed that phonological awareness and rapid automatic naming have a strong association with decoding skills.

Phonological awareness has been found to transfer from the first language to the second language (Cisero & Royer, 1995). Weakness in phonological awareness in the first language in first grade has been found to be predictive of poor or below grade-level word reading in the second language in second grade (Gottardo, Collins, Baciu, & Gebotys, 2008). Furthermore, this association between phonological awareness and later

reading has been found to apply to Spanish-speaking ELs (Gottardo et al., 2008; Lindsey et al., 2003; Manis et al., 2004). The next section describes the role of CRP in reading for ELs.

Culturally Responsive Pedagogy (CRP) for Spanish-Speaking ELs

The frameworks of behavioral, cognitive, and social cognitive theory have guided research in the field of special education (Rueda & Windmueller, 2006). In particular, the cognitive theory framework, which aims to analyze the cognitive processes that promote the acquisition of reading (e.g., word identification and decoding), has influenced the approach to interventions for ELs. According to Rueda and Windmueller (2006), this focus on a single-level approach to interventions emphasizing cognitive processes and the individual deficits of students may limit the educational effectiveness of interventions aimed at remediation for ELs at risk for LD. They further asserted that although existing research is valuable, a more comprehensive approach involving multiple levels of inquiry may prove more valuable in addressing the needs of ELs with special needs. A multiple-level approach to instruction that meets the needs of Spanish-speaking ELs would include necessarily instruction that takes into account the cultural strengths that this group of diverse learners brings to the classroom.

Culturally responsive pedagogy (CRP) or culturally responsive teaching has been associated historically with instruction aimed at improving the academic performance and experience in school of African American students. Gay (2000, p. 31) defined culturally responsive teaching as the use of "cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning

encounters more relevant to and effective for them." Examples of culturally responsive teaching practices include general practices such as scaffolding, peer instruction, and collaborative learning, in addition to multicultural practices such as funds of knowledge, connection to real-world activities, cultural accommodations (social organization of classroom, discourse features, content and materials), and multicultural education (Rueda & Windmueller, 2006). These examples of culturally responsive practices, particularly funds of knowledge, connection to real-world activities, and cultural integration of the curriculum, were investigated as moderator variables in the present meta-analysis to assess their effect on instruction and on the reading achievement of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. The concepts and practices of CRP can be extended to students of other cultures and ethnicities (Cartledge & Kourea, 2008). Although there is a dearth of research on the connections between culturally responsive teaching and learning to read, there is evidence that there is merit to using culturally responsive literacy instruction with ELs (Orosco & O'Connor, 2013).

CRP is situated within a social constructivist theoretical framework as proposed by Vygotsky (Evenson, 2007). Vygotsky (1978) emphasized the role of social interaction in learning in contrast to the traditional view of learning as an independent and personal endeavor. Furthermore, Vygotsky (1978) emphasized the importance of language and culture in social interaction and learning. To enable students to thrive in the classroom and to respond academically, teachers must make a concerted effort to engage students through use of the students' language, customs, history, literature, and music (Orosco & Klingner, 2010). For the present study, the conceptual framework for CRP provided a

lens for the investigation of culturally responsive practices as moderator variables mediating the instruction of ELs who have reading disabilities and ELs who struggle with reading. Variables investigated in the present study included the use in instruction of elements of ELs' community life (stories, myths, music, dance, food, sports, and family), first language (cognates and word definitions), cultural objects (e.g., clothing and tools), and cultural beliefs and values. Most important is an instructor's questioning of students to determine their prior knowledge of instructional content (Orosco & Klingner, 2010). For Spanish-speaking ELs, the importance of culture and language as an access point for learning is of prime significance given the proximity of Latin America to the United States.

Theoretical Rationale Synthesis

A synthesis of the theoretical frameworks underlying this study, the sociocultural model, second-language acquisition for Spanish speaking ELs, the simple view of reading including phonological processing and its connection to struggling readers, and culturally responsive pedagogy as it pertains to Spanish speaking ELs necessarily entails identifying the connections between the four perspectives. The sociocultural model can be aligned and focused as a social interaction framework for the reading development of ELs by three conceptual assumptions (Orosco & Klingner, 2010). First, instructional practices in use should be validated with similar populations. Second, teachers of ELs should be knowledgeable of culturally responsive and English language learner pedagogies. Third, teachers should be aware of the importance of the sociocultural viewpoint in understanding how culture and language affect learning.

Instructional interventions for ELs with reading disabilities and ELs who struggle with reading that incorporate these three assumptions should prove to be effective.

Krashen's (1985) comprehensible input hypothesis posits that for messages in a second language to make sense, they must be communicated at a level that the English learner is able to comprehend. Culturally responsive pedagogy provides a resource for the provision of comprehensible input for the EL. Through the use of cultural accommodations and home language resources, teachers can provide scaffolded learning, thereby enhancing their students' ability to acquire English oral language and reading skills.

Cummins' (2000) Theory of Common Underlying Proficiency, which proposes that skills acquired in the first language transfer to the second language, along with Cisero and Royer's (1995) and Gottardo's (2002) findings that phonological awareness skills also transfer from the first language to the second language provide a model—when blended with CRP practices—for the development of English oral language (listening comprehension), decoding (phonological processing), and reading skills. This model predicts that English oral language and listening-comprehension skills plus phonological-processing skills in English mediated by culturally responsive teaching practices lead to improved reading and reading comprehension performance by ELs. This theoretical framework presented in Figure 2 can be conceptualized along two continuums.

The first is a continuum relating to second-language acquisition from the first language to the second language. The second continuum relates to classroom practices ranging from English-only to CRP-embedded instruction. As ELs acquire oral-language

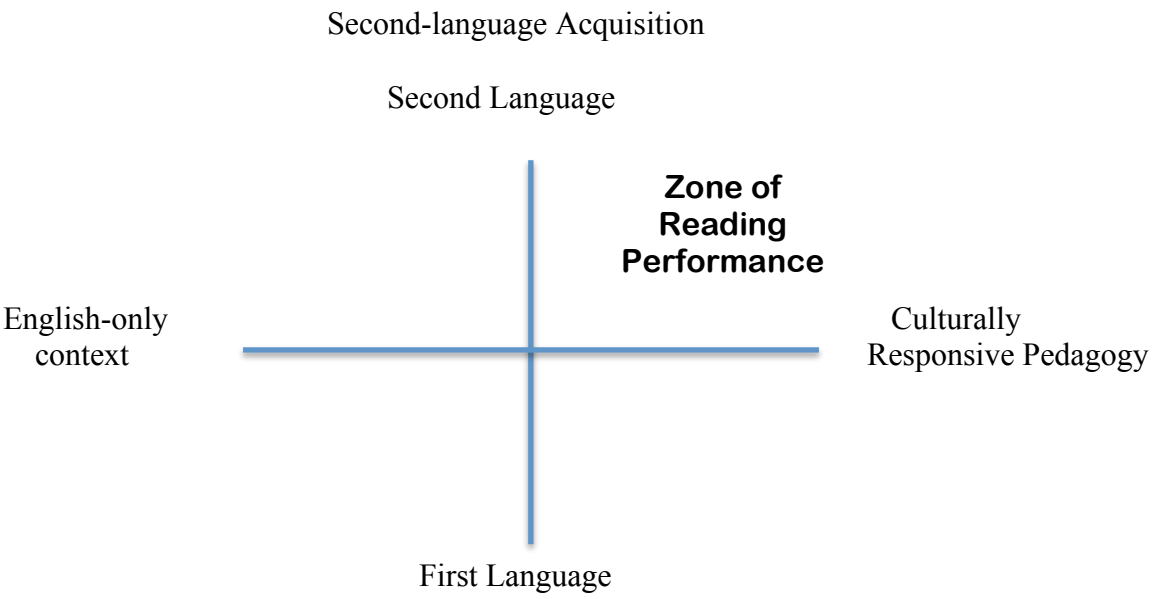

Figure 2. Ranges of second-language acquisition and culturally-responsive practices.

skills in the second language and phonological-processing skills improve and transfer to the second language, both enhanced and accelerated by culturally responsive teaching practices, their reading ability and reading-comprehension performance should improve.

In conclusion, the sociocultural model, along with second language acquisition practices, the simple view of reading, and culturally responsive pedagogy provide a theoretical perspective in which to understand the elements of effective instructional interventions for Spanish speaking ELs with reading disabilities and ELs who struggle with reading.

Background and Need

The background and need section of the study focused on factors affecting the reading instruction of ELs including the essential components of reading instruction and issues regarding the language of instruction. Arguments for the inclusion (within the

present study) of ELs who have reading disabilities and ELs who struggle with reading were presented. The focus on Spanish-speaking ELs with reading disabilities and ELs who struggle with reading was justified by two dynamics. First, the achievement gap in reading between ELs with reading disabilities and students not identified as ELs with reading disabilities is very large. Furthermore, the continuing low socioeconomic status and high dropout rates for ELs presage continued social, economic, and educational problems for this rapidly growing segment of the nation's population. Finally, a meta-analytic study that investigated effective reading programs for Spanish-speaking ELs is reviewed briefly (Cheung & Slavin, 2012).

Notwithstanding the importance of the work being conducted by researchers on effective interventions for ELs with reading disabilities and ELs who struggle with reading, the search for instructional interventions that are effective for these often marginalized groups has been conducted and is occurring within a historical and cultural context of education that, seen through the lens of critical race theory (Ladson-Billings & Tate, 1995), can be described as restrictive, limiting, and working against the interests of these students by failing to mobilize the cultural, social, and linguistic assets of the students' communities in order to bring about positive educational change (Milner IV, 2013; Moll, 2010).

Essential Components of Reading Instruction

Five essential components of effective reading instruction were identified by the National Reading Panel Report (National Institute of Child and Human Development [NICHD], 2000), titled *Teaching Children to Read*. Summarizing several decades of

research, the National Reading Panel (NRP; 2000) identified phonemic awareness, phonics, fluency, vocabulary, and comprehension as essential elements for effective reading instruction. Readers, in order to be successful in reading, must decode words (phonemic awareness and phonics), read with accuracy and expression (fluency), possess adequate word and background knowledge (vocabulary), and blend all these elements in a unified skill to extract meaning from the text they are engaging (comprehension). The five foundational components of the reading process (phonological awareness, phonics, fluency, vocabulary, and comprehension) represent the essential skills learners must master in order to achieve success in reading and in school. Furthermore, the reading panel identified *systematic and explicit instruction* as the most effective instructional approach for teaching the five essential components.

In addition to numerous studies on literacy, the National Reading Panel (2000) and the National Early Literacy Panel (2008) provided extensive research on the essential components of reading and of how children learn to read. There exists, however, much less research on the literacy programs and interventions used by schools and teachers to instruct children in reading. For example, although the NRP report emphasized phonics, phonemic awareness, fluency, comprehension, and vocabulary as the essential components of reading instruction, it is not clear how comprehensively and in what way reading programs utilize the components in their instruction (Slavin & Cheung, 2005). Furthermore, it is not clear how teachers incorporate the five components in their instruction, or how other factors (e.g., quality of instruction, grouping, socioeconomic status) may influence and affect instruction and learning.

Language of Instruction and the Debate Surrounding Bilingual Education and English-Only Instruction

There exists considerable disagreement among researchers, educators, and policymakers on the best instructional approaches for ELs. One of the areas of contention that has garnered researchers' attention has been the language of instruction. The debate surrounding the instruction of Spanish-speaking ELs has centered on whether bilingual education or English immersion offers the best educational setting (Slavin, Madden, Calderon, Chamberlain, & Hennessy, 2011). Since the 1990s, educators and researchers advocating for bilingual education have debated advocates of English-only instruction across the country (Slavin & Cheung, 2005). Advocates supported an increase in bilingual education programs. The Bilingual Education Act of 1968, the first federal recognition of the needs of students with limited ability in English, offered native language assistance in the form of bilingual education for ELs across the nation (*Elementary and Secondary Education Act*, 1968). Since then, bilingual programs have taken many forms: English as a second language, structured English immersion, transitional bilingual education, developmental bilingual education, two-way bilingual immersion, English language development, and specially designed academic instruction in English. The *Lau v. Nichols* (1974) court decision, making school boards responsible for providing native language support for students with limited English proficiency (LEP), accelerated federal support for bilingual education. Thus, school districts that had denied ELs primary language support were now required to provide bilingual education.

In the 1990s, there was a resurgence of the English-only movement, with critics of bilingual education decrying schooling in any language other than English (Slavin et

al., 2011). Critics accused proponents of bilingual education of fostering an atmosphere in which immigrants, rather than intending to assimilate, sought to separate themselves culturally and politically from the mainstream. They portrayed bilingual education as interfering with and delaying the acquisition of English language skills, thereby consigning immigrant children to a second-class status within the school and within society (Slavin et al., 2011). The effect of this backlash over the next 20 years was a shift in public opinion to one that viewed bilingual education as a social problem. The change in the political climate regarding bilingual education resulted in laws restricting native language instruction for ELs (Crawford, 2004).

Research on the effectiveness of bilingual education, although in general finding in favor of bilingual education over English-only instruction, has had mixed results. Slavin and Cheung (2005) in their meta-analysis of the language of reading instruction for ELs found studies with divergent conclusions. Willig (1985), Wong-Fillmore and Valadez (1986), and Greene (1997) concluded that bilingual education produced more effective results than instruction only in English. Rossell and Baker (1996) concluded that English-only programs were as effective as bilingual programs. Finally, August and Hakuta (1997) found that the quality of instruction was more critical than the language of instruction even though they determined that in general bilingual education was a more effective instructional approach. August and Hakuta's (1997) seminal idea that the quality of instruction was more important than the language of instruction pointed research in the direction of investigation of effective interventions for ELs and away from the conflicting and contradictory conclusions regarding bilingual education.

Although there is a political struggle over bilingual education, native-language instruction has been identified as a program that improves learning outcomes for ELs (Rolstad, Mahoney, & Glass, 2008; Tong, Irby, Lara-Alecio, Yoon, & Mathes, 2010). Schools that emphasize their students' native language as a foundation upon which to build skills in English—a practice of bilingual education programs—are effective in helping those students develop linguistic proficiency (Krashen, 1999). Unfortunately, English immersion programs are much more common in schools than are bilingual education programs (Brooks & Karathanos, 2009). Consequently, bilingual education programs and English-as-a-second-language programs are not always available for students. Therefore, of prime importance is the identification of instructional strategies, techniques, and reading interventions that ensure academic achievement and literacy for ELs regardless of language setting.

The present meta-analysis focused on effective reading interventions for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Notwithstanding August and Hakuta's (1997) and other researchers' (Fitzgerald, 1995; Klingner & Vaughn, 2004; Slavin & Cheung, 2005) conclusions that the quality of instruction is more important than the language of instruction and the conflicting positions on the efficacy of bilingual education, the present meta-analysis investigated empirical research studies that include native language instruction.

ELs with Reading Disabilities and ELs Who Struggle with Reading

Meta-analysis as originally conceived by Glass (1976) was a method designed to evaluate the results from a group of independent studies that had investigated similar

phenomena. Although many primary studies have investigated the phenomena of instructional practices for ELs who struggle with reading, and one meta-analysis reviewed the literature for primary studies that investigated instructional practices for ELs, the literature search for the present meta-analysis located no studies that have used meta-analytical techniques to investigate instructional practices that have been shown to be effective with ELs who have reading disabilities or ELs who struggle with reading

The present meta-analytical study investigated both ELs who have reading disabilities and ELs who struggle with reading. A crucial issue is the lack of distinction between students with reading disabilities and students with poor reading skills (i.e., struggling readers; Linan-Thompson, Vaughn, Prater, & Cirino, 2006). Linan-Thompson et al. (2006) defined struggling readers as students who scored more than one standard deviation below the mean in word attack and comprehension measures (*Woodcock Language Proficiency Battery-Revised*, Woodcock, 1991; Woodcock & Munoz-Sandoval, 1995). The problem of distinguishing between students with reading disabilities and students with poor reading skills is further exacerbated by the fact that many reading assessments do not identify the cause of the reading difficulty, only that it exists (Linan-Thompson et al., 2006).

Another problem in distinguishing between ELs with reading disabilities and ELs who struggle with reading is that many schools have relied on the *IQ-achievement discrepancy model* for identifying and for making eligible for special services students with reading disabilities. The IQ-achievement discrepancy model—a severe discrepancy between a student's general ability and her or his achievement—has been used for

decades to diagnose reading disabilities (Reschly & Hosp, 2004). This model appears to be flawed and problematic. According to McCardle, Mele-McCarthy, and Leos (2005), identification of reading disabilities based upon the IQ-achievement discrepancy model appears to have a weak validity. It is not clear that EL students diagnosed as having reading disabilities and receiving special services are properly classified. Also it is possible that some ELs in general education classes are undiagnosed and, therefore, not receiving the services they need (Barrera, 2006). Furthermore, the IQ-achievement discrepancy model has been called the *wait to fail model* because educators have had to wait until students reached third or fourth grade before they were deemed to have exhibited a sufficient discrepancy to warrant assessment for special education services (Reynolds & Shatwitz, 2009). By fourth grade, the focus of reading instruction begins to shift from learning to read to reading to learn, leaving some of these students further behind academically.

Another alternative to the IQ-achievement discrepancy model is the use of the *ability-achievement discrepancy model*. The ability-achievement discrepancy model involves identifying students who do not respond adequately to intervention and, therefore, are deemed to display a severe discrepancy between the expectation that they can be taught to read and their failure to do so. The failure to learn is thus considered to be a result of a reading disability. This type of assessment shifts the focus from the question of the adequacy of instruction to the performance of the student and has been rejected as flawed for the purposes of determining eligibility for special services by researchers and educators in the field (Fletcher, Coulter, Reschly, & Vaughn, 2004).

Given that it is difficult to distinguish between ELs with reading disabilities and ELs who struggle with reading and that two of the main assessment processes used to identify students with disabilities are flawed, it is important to investigate the two groups for the purposes of this meta-analytic study.

Gaps in the Research

Klingner et al. (2006) in their review of empirical research found few research studies on interventions for ELs who have reading disabilities and ELs who struggle with reading. The five studies conducted post-2000 that they reviewed (De la Colina, Parker, Hasbrouck, & Lara-Alecio, 2001; Denton, Anthony, Parker, & Hasbrouck, 2004; Haager & Windmueller, 2001; Linan-Thompson, Vaughn, Hickman-Davis, & Kouzekanani, 2003; Nag-Arulmani, Reddy, & Buckley, 2003) investigated intensive reading interventions for ELs at risk of failure in reading. The studies covered a range of interventions. De la Colina et al. (2001) investigated *Read Naturally*, a reading program that served as an intervention in first- and second-grade Spanish bilingual classrooms. Denton et al. (2004) studied *Read Well* and *Read Naturally* with second- through fifth-grade bilingual classrooms. Haager and Windmueller (2001) examined a professional development program's effect on the reading instruction in first- and second-grade classrooms. Linan-Thompson et al. (2003) studied ESL strategies with second-grade ELs. Of the studies reviewed by Klingner, Artiles, and Barletta, 2006, only the study by Nag-Arulmani et al. (2003) investigated a reading intervention involving a phonological intervention; none of the studies conducted post-2000 investigated fluency, phonics, vocabulary, or comprehension. Klingner et al. (2006) called for further research on the

best approaches for native language instruction, the sociocultural contexts of classroom instruction, and on the classrooms that serve culturally and linguistically diverse exceptional learners.

The gaps in the research base asserted by many of the most prominent researchers in the field of ELs with reading disabilities and ELs who struggle with reading are large. A summary of the research gaps relevant to this study includes the following:

- little evidence of effective instructional interventions for ELs who are struggling to read (Vaughn, Mathes, Linan-Thompson, & Francis, 2005); additionally, Saenz, Fuchs, and Fuchs (2005) stated that little research focusing on effective teaching strategies for ELs with LDs has been conducted. Because of the low educational achievement of ELs, it is important to identify research-based strategies that are effective with ELs;
- a need for research into the long-term effects of instructional interventions (such as phonics, phonological awareness, fluency, vocabulary, and comprehension) on ELs (Linan-Thompson, Cirino, & Vaughn, 2007);
- few research studies focusing on English vocabulary instruction for bilingual children acquiring English (August et al., 2005).
- little research on the phonological awareness characteristics of ELs has been conducted (Leafstedt, Richards, & Gerber, 2004);
- notwithstanding the emerging importance of cross-linguistic transfer, little research has been conducted on the cross-language transfer of phonological processes in reading for ELs (Leafstedt & Gerber, 2005); and
- a lack of research into identifying and understanding which cultural or

instructional variables correlate to positive or negative educational outcomes for ELs (McCardle et al., 2005).

The dearth of research in many of the instructional areas involving Spanish-speaking ELs, the learning problems encountered by ELs who have reading disabilities, and ELs who struggle with reading justified the need for the present meta-analysis. The present study searched for studies that could address some of the gaps in the research base by analyzing existing empirical research studies on interventions for ELs who have reading disabilities and ELs who struggle with reading in the following areas: (a) studies that investigated interventions targeted at Spanish-speaking ELs with reading disabilities and ELs who struggle with reading, (b) studies that examined the effect of sociocultural factors on learning by ELs with reading disabilities and ELs who struggle with reading, and (c) studies that investigated the effects of moderator variables (listed in the research questions) on the reading achievement of ELs with reading disabilities and ELs who struggle with reading.

Research Questions

The meta-analysis addressed the following research questions:

1. What outcomes result from reading interventions in second through fifth grade for Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

2. To what extent are reading comprehension strategies (e.g., listening comprehension, repeated reading, direct instruction, cooperative learning, peer assisted learning, guided reading, meta-cognitive strategies, developing background knowledge,

and second-language acquisition strategies) effective in improving the reading performance in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

3. What is the effect of including culturally responsive pedagogy on the reading comprehension in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

4. To what extent is a reading intervention's effectiveness moderated by the following variables: duration of instruction, frequency of instruction, length of instruction, quality of instruction, instructional groupings (small-group versus whole-class), general education inclusion, resource program pullout or push-in, or special day class instruction?

Significance of the Study

The public educational system in the United States in the 21st century faces the challenge of providing effective instruction for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Students of Hispanic origin constituted 16% of the elementary-school students in the US in 2010 (United States Department of Commerce, 2010; see Definitions of Terms for definitions of the terms Hispanic and English learners). ELs achieve at lower levels in literacy than their English-only peers (National Center for Education Statistics, 2011). As a group ELs, especially ELs with reading disabilities, perform poorly on standardized assessments. With the highest rates of poverty, the highest dropout rates, and the lowest achievement scores, ELs face a difficult task in their struggle to learn (Klingner et al., 2006).

Although reading scores for Hispanic American students have improved since

1990, a wide gap in reading achievement continues to exist between Hispanic American students and European American students (Hemphill, Vanneman, & Rahman, 2011). The achievement gap for Hispanic American students who are identified as ELs with a disability is even larger (National Center for Education Statistics, 2011). The NAEP achievement data indicate that Hispanic American students experience high levels of academic difficulties. Poor reading scores for ELs are linked to grade retention, high dropout rates, low graduation percentages, and persistent poverty (Oesterreich & Knight, 2008). Another reason for concern regarding poor reading achievement for Spanish-speaking ELs is that poor academic progress is the major impetus for referrals for receiving special education services (Ortiz, Wilkinson, Robertson-Courtney, & Kushner, 2006). The immediacy of this group's educational needs has prompted educators to seek effective instructional interventions with the goal of raising the academic achievement of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Research on effective reading interventions for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading will help to meet the numerous educational and social needs of this underserved group of students.

Definition of Terms

Due to the broad range of research involving ELs, struggling readers, students with reading disabilities, and the instructional interventions for these groups, there is no common agreement among researchers and educators regarding definitions of many key terms in the field of education. There may exist other definitions of the terms that appear in this study. The terms and definitions used here are the ones that apply to this study.

At risk in this study refers to the idea that certain students face an increased possibility of academic failure due to identifiable cognitive difficulties. Swanson, Orosco, and Lussier (2011) identified factors that distinguished ELs at risk for reading disabilities. Factors cited included problems in English phonological processing and naming speed and problems with working memory, short-term memory, and classroom attention.

Culturally Responsive Pedagogy is a set of teaching practices and attitudes utilizing the cultures and experiences of diverse ethnic groups as filters for teaching academic content and knowledge.

> Culturally responsive teaching consists of many domains. The major domains include multicultural content; pluralistic classroom climates and learning environments; teacher attitudes and expectations toward diversity; building community among diverse learners; caring across cultures; use of multiple teaching techniques that are congruent with the cultural backgrounds, values, experiences, and orientations of different ethnic groups; developing personal efficacy and an ethos of success among diverse students; and using culturally informed assessment procedures to determine learning needs, knowledge acquisition, and skill proficiencies. (Gay, 2004, p. 212)

Culturally Responsive Pedagogy practices or methods are operationalized in the Coding Protocol S6. These practices and methods were based on recommendations set forth by Cartledge and Kourea (2008), Chun and Dickson (2011), and Orosco and O'Connor (2013).

Culture, according to Klingner and Soltero-Gonzalez (2009), is a complex, dynamic, nonunitary, and nonstatic construct. Culture is human beliefs, human values, the ways in which people relate to others, and how people learn. In their view, each ethnic group has multiple cultures and each ethnic culture exhibits within-group variability.

Duration of instruction, for the purposes of this meta-analysis, is defined as the number of

minutes per day allotted to the instructional intervention during a study.

English learner (EL) describes students who are in the process of obtaining proficiency in English. English learners, often referred to as *English language learners*, is a term that has gained favor over the original term found in state and federal law and in court decisions: limited-English proficient. EL is preferred by many in the field of education because it does not define a student through a deficiency; but it too has its critics because it focuses on the acquisition of English to the exclusion of a student's other pedagogical needs (Crawford, 2004).

Evidence-based instruction refers to an instructional strategy or intervention that has resulted in consistent positive results when experimentally tested (Mesibov & Shea, 2010).

Evidence-based practices are defined, for the purposes of this study, as a decision making process in education that integrates (a) the best available evidence, (b) professional judgment, and (c) school and student values and context. The word *practice* refers to a specific method or technique used by a teacher. Within education, the term evidence-based practice is most often used to refer to a program or intervention that has been found to have strong research support (Spencer, Detrich, & Slocum, 2012).

Frequency of instruction, for the purposes of this meta-analysis, is defined as the number of days per week the instructional intervention was implemented during a study.

Hispanic or Latino is a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race (Kena et al., 2014).

Instructional Groupings refers to the different classroom configurations used for

instruction. These configurations include whole-class instruction, small-group instruction, and one-to-one instruction.

Intervention refers to a teacher's modification of instruction in order to better accommodate a student or a group of students who are in need of more intensive instruction (Fuchs, Mock, Morgan, & Young, 2003). The largest number of interventions has occurred in the area of reading (Wanzek & Cavanaugh, 2012). Swanson, Wanzek, Haring, Ciullo, and McCulley (2013), in a report on intervention type, reported that out of 76 studies investigating the effectiveness of interventions, 55 studies investigated reading interventions.

Length of instruction, for the purposes of this meta-analysis, is defined as the total number of days the instructional intervention was implemented during a study.

Linguistic comprehension is defined as being able to use words and grammatical information to comprehend printed material that has been decoded. It encompasses vocabulary knowledge, grammatical knowledge, memory and even background knowledge.

One-to-one instruction is defined as a student working individually with another person: a peer, a teacher, or a teacher's aide. Individualized instruction refers to students working by themselves (Brooks & Thurston, 2010).

Oral language is defined as the ability to produce or comprehend spoken language, including grammar and vocabulary (Kieffer, 2012). Oral language ability was identified as one of the five important early or precursor literacy skills with a strong correlation with later reading abilities by the National Early Literacy Panel (2008).

Phonemic awareness is the ability to perceive, identify, and manipulate phonemes in spoken language (National Reading Panel, 2000). Phonemic awareness refers to the understanding that speech is made of phonemes, the smallest units of sound (Brice & Brice, 2009).

Phonological awareness is defined "as the ability to perceive spoken words as a sequence of sounds" (Carnine, Silbert, & Kameenui, 1997, p. 62). Phonological awareness is a set of auditory skills necessary for the acquisition of reading. Brice and Brice (2009) defined phonological awareness as the general appreciation of the sounds of speech separate from their meaning. Phonological awareness is the appreciation of the units of sound that are larger than phonemes: syllables, onsets, and rimes (Brice & Brice, 2009).

Quality of instruction, for the purposes of this meta-analysis, is aligned with the concept of fidelity of instruction (i.e., the consistency and reliability with which teachers adhere to an instructional program's requirements for instruction.) Echevarria, Short, and Vogt (2008) asserted a direct connection between fidelity of instruction and high quality professional development. Cheung and Slavin's (2012) synthesis of research on reading programs for English language learners established a link between effective interventions and their use of extensive professional development and coaching.

Reading achievement is defined by The National Assessment of Educational Progress (NAEP; Kena et al., 2014) as what students should know and be able to do: *Basic* indicates partial mastery of fundamental skills, *Proficient* indicates demonstrated competency over challenging subject matter, and *Advanced* signifies superior performance, on a scale of scores ranging from 0 to 500. The percentage of 4th-grade

students performing at or above the *Basic* achievement level in 2013 was 68 percent. Thirty-five percent of 4th-grade students performed at or above the *Proficient* achievement level in 2013. The average reading score for 4th-grade students in 2013 was 222. For the purposes of the present meta-analysis, reading achievement is operationalized using student achievement on the research study assessments.

Reading comprehension is defined as integrating background knowledge and contextual information with basic procedural word-reading skills to make sense of text (Reardon, Valentino, & Shores, 2012). Reading comprehension requires a set of knowledge-based competencies in addition to adequate word-reading skills. Comprehension skills allow readers to draw inferences and conclusion from texts, to compare and evaluate the effectiveness of texts, and to interpret and integrate ideas and information. First language (L1) and second language (L2) cognitive and linguistic skills such as working memory, L1 short-term memory, L2 oral language—composed of listening comprehension and vocabulary—and L2 work reading contribute to L2 reading comprehension (Kim, 2012). Reading comprehension is one of a set of skills that increases access to age-appropriate literature (Hudson & Test, 2011). For the purposes of the present meta-analysis, reading comprehension is operationalized using student achievement on the reading assessments used in the meta-analytic studies, for example, *California Results Reading Comprehension Assessment* (California Reading and Literature Project, 1999), *Woodcock Reading Mastery Test—Revised/Normative Update* (Woodcock, 1998), and *Woodcock Language Proficiency Battery-Revised* (Woodcock, 1991).

Reading disability is defined as a deficit in reading comprehension. The definition used

can influence the conclusions reached in the study (Siegel, 2003). The traditional definition of a person with a reading disability, usually referred to as the discrepancy definition, is one whose reading score is significantly lower than would be predicted from his or her IQ. For example, a person with a low reading score (standard scores < 90) and significantly (one standard deviation) below their IQ score would qualify as a person with a reading disability (Siegel, 2003). Persons identified with dyslexia are defined through the discrepancy model. Several researchers have discredited the discrepancy model as a method for identifying children with a reading disability (Fletcher et al., 1994; Francis et al., 2005). Furthermore, it has been argued that IQ scores are irrelevant to the identification of children with disabilities and that setting reading achievement cut points is sufficient based on the findings that low IQ-discrepant and low-achieving students overlap and are difficult to distinguish characteristically and behaviorally (Siegel, 2003).

Reading instruction and reading interventions are instruction intended to meet the unique needs of ELs who struggle with reading. The interventions are evidence-based practices where instructional decisions are based on empirical findings demonstrating that the actions produce beneficial and efficacious results (Odom et al., 2005).

Repeated reading is defined as an instructional practice that requires students to read connected-text passages more than once (Castillo, 2011).

Simple view of reading is a theoretical framework of reading that consists of two components, decoding and linguistic comprehension, both of which are considered to be necessary for reading (Hoover & Gough, 1990). The framework implies that variables associated with decoding (i.e., word-level reading) and oral language comprehension (i.e.,

vocabulary, syntax, and listening comprehension) are the two main components undergirding reading comprehension (Geva & Farnia, 2012).

Small-group instruction refers to an instructional grouping larger than individual instruction and smaller than whole-class instruction. Small-group instruction can occur when the group is working with or independent of a teacher or instructional aide (Brooks & Thurston, 2010).

Struggling readers are defined as students who scored more than one standard deviation below the mean in word attack and comprehension measures (Linan-Thompson et al., 2006; *Woodcock Language Proficiency Battery-Revised*; Woodcock, 1991; Woodcock & Munoz-Sandoval, 1995). Researchers often refer to students as "struggling readers" or as "students at-risk" without defining the terms (Gunn, Biglan, Smolkowski, & Ary, 2000).

Whole-group instruction refers to instruction occurring with the whole class (Brooks & Thurston, 2010).

Summary

As the population of Spanish-speaking ELs continues to increase in US schools, researchers and educators have struggled to identify and provide appropriate and effective instructional interventions for this group of culturally and linguistically diverse exceptional learners at-risk for failure in reading in second through fifth grade. This meta-analysis examined primary research into effective instructional interventions for ELs who have reading disabilities and ELs who struggle with reading. The meta-analytic study investigated experimental, quasi-experimental, and single-subject studies involving reading interventions designed to improve the reading fluency, vocabulary, and reading

comprehension of ELs who have reading disabilities and ELs who struggle with reading. Additionally, the meta-analysis sought to determine the effects of culturally responsive pedagogy practices and strategies in enhancing instructional interventions. Furthermore, the meta-analysis identified the effects of second-language acquisition strategies and instruction in phonological awareness on reading instruction. Comparing effect sizes from the studies allowed a determination of the extent to which the interventions are moderated by contextual variables such as duration and frequency of instruction and instructional groupings. The results of this study, within the limitations presented, served to inform educators and researchers about the effectiveness of instructional interventions on the reading performance of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading.

Study Organization

Chapter I presented the research problem, purpose of the study, the theoretical rationale, background and need, and the research questions for the investigation of effective reading interventions for ELs who have reading disabilities and ELs who struggle with reading. Chapter II contains the review of the literature that focuses on the moderator and contextual variables, including cultural responsive pedagogy and reading comprehension strategies, which may have an influence on the effectiveness of the instructional interventions.

Chapter III focuses on the methodology for the study. Detailed procedures for conducting the meta-analysis are presented including the research design, data sources and search strategies, inclusion and exclusion criteria, coding protocols, and data analysis.

In accordance with accepted meta-analytic procedures, chapter IV is the results of the meta-analysis including descriptive information, central tendencies and heterogeneity, moderator analyses, and diagnostic analyses. Quantitative results of the findings by research question are provided in chapter IV. Chapter V consists of a discussion of the results including an overall review of key findings, limitations of the study, and implications for practice. Chapter V closes with a statement of conclusions reached in the meta-analysis including recommendations for future research.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this meta-analysis was to investigate research on effective instructional practices and strategies for Spanish-speaking English learners in second through fifth grade who have reading disabilities and English learners who struggle with reading. The problem of the dearth of research on literacy instruction for ELs with reading disabilities and the consequent difficulty in identifying effective instructional interventions were presented in chapter I. The achievement gap and the importance of implementing effective interventions in reading for ELs who struggle with reading were addressed. The five components of effective reading instruction identified by the National Reading Panel were provided. The role of moderator variables in instruction was introduced. The theoretical frameworks for the sociocultural model, for second-language acquisition for Spanish-speaking ELs, for the role of phonological processing for ELs with reading disabilities and ELs who struggle with reading, and for the importance of culturally responsive pedagogy in the education of ELs were presented.

The review of the literature expanded on the issues and concepts presented in chapter I. The first part of chapter II concentrated on moderator variables, including culturally responsive pedagogy, and their effect on instruction for ELs with reading disabilities and ELs who struggle with reading. Titled *Moderator Variables in Instruction,* the section helped to define the range of elements and practices that affect instruction for ELs. The first subsection titled *Culturally Responsive Pedagogy* (CRP) developed the argument presented in chapter I in favor of CRP as a positive set of

instructional practices that promotes improved reading achievement for ELs. The first subsection of CRP is titled *Domains of CRP and Conceptual Frameworks*. The following subsection titled *Strategies of Instruction* addressed elements that improve instruction, including *Prior Knowledge* and *Culture as a Bridge.* The next subsection titled *Elements of Instruction* addressed the influence of the following topics on reading instruction for students at risk of failure in reading: *Length and Intensity of Instruction, Frequency of Instruction, and Quality of Instruction.* Next, the subsection titled *Instructional Groupings* addressed the effects of *Small Group Instruction* and *Individual Instruction*.

Following Moderator Variables is the section titled *Reading Comprehension Strategies,* which explored the different forms of instruction that address reading comprehension. The subsections included *Listening Comprehension, Repeated Reading,* and *Peer Assisted Learning Strategies.* The final section titled *Review of Cheung and Slavin's (2012) Effective Reading Programs for Spanish-Dominant English Language Learners (ELLs) in the Elementary Grades: A Synthesis of Research* provided a review of a study similar to the present meta-analysis. Chapter II concluded with a summary of the variables providing a moderating influence on instruction and of the important components of instruction for ELs who have reading disabilities and ELs who struggle with reading.

Moderator Variables in Instruction

Moderator variables are important in understanding the relationship between variables. Farmer (2012), in a review of the literature regarding moderators and

mediators in intellectual and developmental disabilities, defined moderator variables as "third variables" related to independent and dependent variables. In other words, the moderated relationship describes an interaction between two variables. Furthermore, the moderator variable is a substantial moderator if the interaction between the independent variable and the moderator variable statistically significantly predicts (i.e., regression coefficient) the dependent variable. The present meta-analysis investigated moderator variables that may have an important effect on the reading performance of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Among the variables investigated were culturally responsive pedagogy, elements of instruction, instructional groupings, and instruction related to core phonological deficit.

Culturally Responsive Pedagogy

Culturally responsive pedagogy and culturally responsive teaching are a set of teaching practices and attitudes with the potential to affect positively the reading performance of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. The cultures and experiences of diverse ethnic groups form the foundation for teaching academic content and knowledge in culturally responsive pedagogy.

Domains of CRP and Conceptual Frameworks

Many domains encompass culturally responsive teaching, including multicultural content; diverse classroom environments; teacher attitudes and expectations toward diversity; use of a variety of teaching techniques that are attuned to the cultural backgrounds, values, and experiences of diverse ethnic groups; and use of culturally

appropriate assessments to determine learning needs, knowledge acquisition, and skill proficiencies (Gay, 2004; Santamaria, 2009). Culturally responsive teaching practices that are consistent with the cultural and linguistic background and experiences of students may help to improve these students' academic achievement and sense of success in school (Gay, 2000). Although educators have taken positive strides in implementing culturally responsive teaching practices, empirical research on the effectiveness of culturally responsive teaching in improving the academic achievement of students of color, in particular the academic achievement of Spanish-speaking ELs, needs to be conducted. The following sections focused on conceptual frameworks for CRP, the diversity of students and cultures that can be addressed through CRP, and the dearth of research regarding CRP and literacy for ELs. The research studies cited in the section on culturally responsive pedagogy do not examine specifically and quantitatively the effect of CRP on the reading performance of elementary-school ELs. The studies do, however, provide supporting arguments in favor of investigating the role of CRP in improving the reading performance of Spanish-speaking ELs.

The conceptual framework for culturally responsive pedagogy is based within a social constructivist theoretical framework as developed by Vygotsky. Vygotsky (1978) held that learning occurs within a social context. In the context of the school setting, the nature and quality of the relationships between students and teachers and between students and peers play an important role in the students' academic performance and social integration. Teachers who make the effort to incorporate students' home language and cultural norms within the curriculum advance the students' academic engagement

and promote a sense of belonging that is associated with academic motivation (Chun & Dickson, 2011).

Using Wiley's (1996) framework, Klingner and Edwards (2006) conceptualized responsive literacy instruction for ELs. Wiley's (1996) framework suggested ways in which to work with students and included accommodation, incorporation, and adaptation. According to Klingner and Edwards (2006), accommodation involves teachers promoting literacy through having an understanding of the communication styles and literacy customs of their students, including the understanding that literacy originates in the home and should be the basis for the acquisition of literacy in English. Incorporation involves teachers gaining knowledge of the cultural practices of the community and incorporating them into the curriculum (Orosco & O'Connor, 2013). This practice means the acknowledgement that communities have much to offer to schools and that learning is a two-way process. Finally, adaptation involves students and parents acknowledging that they too must make an effort to adjust to the norms and expectations of the school. It is the school's responsibility to help students and parents with this adaptation in order to ensure the children's academic success and social integration. The three activities provide a framework for the provision of culturally responsive teaching for ELs (Klingner & Edwards, 2006).

Much of the research and writing about culturally responsive pedagogy has been focused on African American students and culture with researchers and activists such as Banks and Banks (2004), Gay (2000), Hollie (2001), and Ladson-Billings (2006) in the forefront. Spanish-speaking ELs face many of the same academic problems that African

American students contend with in schools. Furthermore, ELs must cope with a language barrier. For them, Spanish language ability is tied deeply with their culture, and, as such, is a source of knowledge.

ELs come from diverse cultural backgrounds including from other countries (e.g., Mexico, Central America, the Caribbean) and from different regions within the US. The cultural and linguistic diversity is often viewed within schools as a liability and something to be overcome through education (Artiles & Klingner, 2006; Escamilla, 2006). This *cultural deficit* perspective is sometimes presented as a reason for the academic problems experienced by ELs (de Schonewise & Klingner, 2012; Gutierrez, Morales, & Martinez, 2009; Klingner & Soltero-Gonzalez, 2009). The cultural deficit perspective works against efforts to view ELs as having a rich background of experiences and knowledge that educators can use as a foundation for building literacy skills.

There is a dearth of research on the connection between culture and learning to read and literacy instruction for ELs (Gay, 2000; Klingner & Edwards, 2006; Klingner & Soltero-Gonzalez, 2009; Orosco & O'Connor, 2013). In order for children to receive appropriate, quality, evidence-based, and culturally responsive instruction, the instruction must be conducted with and be validated with ELs. Because of the academic and social problems Spanish-speaking ELs face in school, it is imperative that research be conducted on the effects of culturally responsive practices on the instruction provided to ELs (Orosco & O'Connor, 2013). The following section provided details of strategies and types of instruction for ELs within the framework of CRP.

Strategies of Instruction

Culturally responsive classrooms embody a sense of urgency regarding instruction, according to Cartledge and Kourea (2008). As has been noted in chapter I of the present study, there is an achievement gap in elementary school between Hispanic American students and European American students. The sense of urgency is a response not only to the deleterious effect of the achievement gap but also to the knowledge that the detrimental effects increase with time as the gap tends to widen as students progress into middle school and high school. As a remedy, Cartledge and Kourea (2008) recommended the use of direct instruction that encompasses important principles of effective instruction. The principles include early assessment and early intervention, provision of clear and complete learning objectives, monitoring closely students' academic progress, and providing structure in the classroom that promotes students involvement in learning, encourages a quick pace for instruction, and provides positive and immediate corrective feedback. Principles of effective instruction for ELs included within the construct of culturally responsive pedagogy may provide methods that could have a positive effect on reading instruction for ELs with reading disabilities and ELs struggling with reading.

One type of instruction that works well within the culturally responsive pedagogy model is interactive teaching (Orosco & O'Connor, 2013). Interactive teaching uses instructional techniques that are student-centered and involve interactions between the students and the teacher (Gersten, Baker, Haager, & Graves, 2005). Gersten, Baker, et al. (2005), in their study of instructional practices for teaching academic content to 229 ELs

in 20 first-grade classrooms, found a moderate correlation (r = .57) between interactive teaching and growth in reading scores. The *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS; Kaminski & Good, 1996) was used to assess students on phonemic awareness, reading fluency, and alphabetic understanding. Additionally, the *California Results Reading Comprehension Assessment* (California Reading and Literature Project, 1999) was used to assess reading. Gersten, Baker, et al. (2005) outlined some of the features of interactive teaching. In interactive teaching, students are encouraged and expected to participate, resulting in increased "on-task" behavior. Teachers do not rely on questions that solicit yes-or-no answers, rather they ask questions that stimulate discussion and provide students with the opportunity to practice their critical-thinking and oral-language skills. Interactive teaching incorporates students' ideas and responses into the lesson. Students' attention is acquired and maintained during lessons through interactive teaching. Importantly for ELs, interactive teaching grants students wait time to respond to questions, allowing them the benefit of time to craft a response in their second language. The community experiences of the students are valued and validated through their incorporation in the learning experience resulting in authentic learning. In Gersten, Baker, et al.'s (2005) study, interactive teaching was investigated as part of the development and validation of an observation measure for the classroom. Assessment of the quality of reading instruction for first-grade ELs was the goal of the measure. Another instructional strategy incorporating the community experiences of ELs is the elicitation of prior knowledge.

Prior knowledge. Klingner and Soltero-Gonzalez (2009), in their review of

research on culturally and linguistically responsive literacy instruction for ELs with LD, emphasized a number of instructional practices that they considered to be effective: incorporate the student's home language in lessons by accessing prior knowledge and by using cognates to develop vocabulary skills, use Spanish-language literacy instruction (decoding, fluency, and comprehension) to promote transfer to English, ensure that students engage in frequent and meaningful discussion to develop oral language and comprehension skills, use authentic activities to instruct students in phonological awareness and phonics instruction, and incorporate collaborative learning and peer tutoring activities in the classroom.

In an article designed to contribute to basic cultural and linguistic agreements regarding research-based teaching practices for ELs, de Schonewise and Klingner (2012) asserted that reading instruction that incorporates the cultural knowledge and language development of ELs is effective instruction. Culturally responsive teaching that draws from relevant schemas, prior knowledge, and the Spanish language abilities of ELs can have a positive effect on the students' acquisition of reading skills was stated by Orosco and O'Connor (2013) in their case study of a special education teacher incorporating culturally responsive teaching practices in an urban elementary school. Results of the case study indicated that success with elementary-school ELs receiving special education services may depend on the efficacy with which the special education teacher combines culturally responsive teaching with the cultural and linguistic needs of ELs. In order for teachers to make connections with their students who are Spanish-speaking ELs, the teachers do not have to be immersed in the culture of their students, rather they need to

have an understanding of the historical and cultural contexts that influence the students' behavior and learning as asserted by Klingner and Edwards (2006) in a position paper on cultural considerations with response to intervention models. Ladson-Billings (2006) challenged prospective teachers in her teacher preparation classes "to recognize themselves as cultural beings" if they endeavor to use the power of culture to shape the learning experiences of their students (Ladson-Billings, 2006, p. 109).

Culture as a bridge. The field of education has proceeded traditionally from the assumption that issues of race, class, ethnicity, culture, and language do not influence decisions regarding evaluation, placement, and instruction of students of color (Blanchett, Klingner, & Harry, 2009). The assumption that educational decisions involving students from culturally and linguistically diverse backgrounds are made from a standpoint that is race, language, and culture neutral is the result of the failure to consider language and culture as fundamental to education (Klingner, Blanchett, & Harry, 2007). Although ELs come to school with an abundance of cultural and linguistic knowledge, that knowledge is often discounted in the learning process (Chun & Dickson, 2011). ELs can experience a form of cognitive dissonance between their home and the culture of the school resulting in a separation from their beliefs and understandings (Chun & Dickson, 2011). Such a situation can affect negatively learning and the acquisition of literacy. Many ELs come from homes and a culture that values sharing, collaboration, teamwork, and interdependence. These values can collide with and be in conflict with the prevailing values of the educational system that encourages independence, competition, and individualism (Orosco & O'Connor, 2013). The conflict between the cultures of home

and school and the consequent poor academic performance of many ELs necessitates the provision of culturally responsive teaching approaches that enhance their abilities and promote their academic success.

High student engagement and active responding is a feature of culturally responsive classrooms. Research has demonstrated that students who are perceived by their teachers as less capable are called on less often in class than students deemed more capable (Good & Nichols, 2001). The effect of such disparate treatment may be that students who are viewed as less capable increasingly may become reticent in engaging in classroom discussions or in asking questions of the teacher. For Spanish-speaking ELs and their teachers, the situation may be more complex. A characteristic of beginning ELs is their need for adequate wait time when questioned by teachers in order to formulate a response (unspoken) in Spanish and then to translate that response into English using a limited vocabulary. Teachers unaware of the need for wait time might misinterpret the initial silence by ELs as student inability or a refusal to cooperate. In order to avoid relegating ELs within the classroom to the category of "less capable," teachers need to become more self-aware of the effects of their beliefs on the performance of their students (Gay, 2000). Another culturally based characteristic displayed by some ELs is the tendency to not make eye contact with teachers. In some Hispanic cultures, children are taught that looking directly at adults is disrespectful. Teachers unaware of such a characteristic may mistake such behavior as disrespectful (Cartledge & Kourea, 2008). Culturally aware teachers can use occurrences such as these to encourage their students to engage positively in classroom discussions and communications. Rather than be the

source of conflict or misunderstanding, the use of culture in instruction as a bridge between home and school may have the effect of improving the academic performance of Spanish-speaking ELs. Research into the effects of the use of culture on the reading instruction for ELs may demonstrate the utility of such an approach.

In summary, a review of the literature indicated that culturally responsive pedagogy may provide an instructional framework that can be used to improve the academic achievement of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Interactive teaching techniques, incorporating home language and culture in lessons, and valuing students' prior knowledge were presented as approaches that benefit ELs and may increase their academic achievement. Several research studies were referenced in this section that focused on aspects of CRP practices and strategies. There were limitations to these studies that weakened their strength in forming arguments for the use of CRP in instruction. The main weakness of these studies was that they did not provide empirical evidence on the effectiveness of CRP in the classroom. Because several of the studies focused on CRP within the context of education for African American students, their applicability to the instruction of Spanish-speaking ELs is limited. Future empirical research on the effects of CRP on instruction for ELs may help to improve the reading performance of ELs with reading disabilities and ELs who struggle with reading. The present meta-analysis searched for empirical evidence on the use of CRP with ELs with reading disabilities and ELs who struggle with reading.

Elements of Instruction

Economically disadvantaged and culturally diverse youth, such as Spanish-speaking ELs who struggle with reading, often have not been provided with challenging curriculum or the instructional resources needed to prevent their falling behind academically (Aguirre-Munoz & Boscardin, 2008). The imposition of standardized testing and more demanding academic standards will not in themselves provide this diverse group of students with the means to close or narrow the achievement gap (Aguirre-Munoz & Boscardin, 2008). These students require, rather, enhanced opportunities to learn. Length of instruction, frequency of instruction, and the quality of instruction received by Spanish-speaking ELs may prove to be factors in improving their reading performance. The present meta-analysis investigated the role of these elements of instruction in the reading achievement of ELs.

Length and Intensity of Instruction

This section contains details of the role of length of instructional time and intensity of instruction on the reading performance of ELs. Increased time spent on learning or an increase in the opportunity to learn may be an important factor in improving the reading skills of students who struggle with reading or who may have reading disabilities (Cawthon, Beretvas, Kaye, & Lockhart, 2012). One of the definitions of opportunity to learn adopted by Wang (1998) was time allowed for and devoted to instruction.

Research has shown that ELs may require more time to process language and information (August & Shanahan, 2006; Echevarria, Short, & Powers, 2006). For

example, a key strategy promoted by Echevarria, Vogt, and Short (2012) in their Sheltered Instruction Observation Protocol, an empirically-validated approach to teaching ELs, is the concept of *wait time* in which teachers allow sufficient time for ELs to respond to questions. The added wait time allows for ELs to process information and language and to translate that information between their two languages. In a similar manner, ELs may require more time in instruction to acquire language and content. In a study on the opportunity to learn (OTL), a concept with the underlying premise that there exists a relationship between the intensity and quality of classroom instruction and student's academic performance, Cawthon, Beretvas, Kaye, and Lockhart (2012) investigated the effect of OTL on students with (i.e., with Individualized Education Plans; IEPs) and without disabilities using National Assessment of Educational Progress teacher and student variables. The researchers found, in reference to students with disabilities, that classroom activities that required more concrete, less generalized ideas about reading generated improved outcomes. The academic activities that generated improved outcomes for students with IEPs required large amounts of instructional time and critical thinking. Opportunities to learn that emphasize increased instructional time and increased intensity of instruction, thus, may lead to differences in outcomes for Spanish-speaking ELs with reading disabilities and ELs who struggle with reading.

Another approach to the concept of time allotted for instruction is Foorman and Torgesen's (2001) notion of instructional intensity. The authors posited that children at risk for failure in reading require more explicit, more comprehensive, and more intensive instruction than do average readers. Instructional intensity can be manifested through the

addition of time to regular classroom instruction (i.e., doubling reading instruction within the classroom schedule) or through the provision of small group or individualized instruction. The added instructional time afforded struggling students in the small-group or individualized format may meet their needs for accelerated progress.

The educational environment in which ELs learn to read is varied and includes many variables. Included in the environment are the instructional materials, the curriculum, and the availability of supplemental instruction. One important aspect of the educational environment is the amount of time available for instruction. Student response to instruction is influenced by how much time they spend being instructed. In a follow-up study of a phonics intervention for ELs and native language speakers in kindergarten, Vadasy and Sanders (2012) found that greater time in first-grade word-study instruction and second-grade meaning instruction resulted in higher reading scores for the ELs at the end of second grade. In their original study of 84 kindergarten ELs with low skills and 64 native English speakers in 10 urban public schools, Vadasy and Sanders (2010) investigated the effectiveness of a supplemental code-oriented instructional intervention. The intervention was provided by paraeducators who were trained to provide the 18 weeks of supplemental instruction. The schools carried the designation of Title I with an average of 85% minority students and 75% of students eligible for free-or-reduced lunch. Sixty percent of the ELs were Spanish speaking with the balance consisting mainly of speakers of Asian languages (e.g., Vietnamese, Cambodian, Chinese, and Tagalog). Students were screened on measures of alphabetic knowledge and phonological awareness. Students scoring in the lower half of their

classrooms were assigned randomly to treatment or to comparison (regular classroom instruction) groups. The researchers hypothesized that students' reading and spelling skills would interact with time spent on phonics and word-study instruction. Treatment students received a mean of 27.68 hours of tutoring (SD = 2.74 hr). On posttest measures of word reading, alphabetic knowledge, spelling, reading fluency, and reading comprehension, both ELs and non-ELs in the treatment group outperformed comparison students, notwithstanding EL status. The measure of alphabetic knowledge was researcher developed but was similar to the letter name fluency subtest of the Dynamic Indicators of Basic Early Literacy Skills (Good & Kaminski, 2002; Vadasy & Sanders, 2010). Phonological awareness was measured with a composite score of three subtests of the Comprehensive Test of Phonological Processing (Wagner, Torgesen, & Rashotte, 1999; Vadasy & Sanders, 2010). The Word Attack and Work Identification subtests of the Woodcock Reading Mastery Test—Revised/Normative Update (WRMT—R/NU; Woodcock, 1998; Vadasy & Sanders, 2010) were used to measure word reading. Spelling was assessed with the Wide Range Achievement Test—Revised (WRAT—R; Jastak & Wilkinson, 1984). The *Primary Phonics* series was used to measure passage reading fluency (Makar, 1996; Vadasy & Sanders, 2010). Finally, comprehension was assessed with the WRMT—R/NU Passage Comprehension subtest (Vadasy & Sanders, 2010). The average treatment size (d = .83) was large (Cohen, 1992). Overall, the effects of classroom phonics instruction time were positive for posttest phonological awareness and comprehension. Results indicated that increased classroom phonics time benefitted spelling and the addition of supplemental instruction in phonics through

tutoring benefitted comprehension. These studies suggest that increased instructional time for ELs on phonics, word study, and comprehension can result in improved reading performance.

Learning to read in a second language and second-language acquisition asserted Lewis-Moreno (2007, p.2) in a commentary on achieving success with ELs, is a "complex, recursive process" that takes much time to master. Thomas and Collier (2002), in their seminal national research study on school effectiveness for language-minority students' long-term academic achievement, found that students in bilingual immersion programs (i.e., English and Spanish one-way and two-way developmental bilingual programs; see Definitions of Terms in Appendix B for a fuller explanation) were the only EL students to reach the 50th percentile in both first language and second language in all subjects with maintenance of that high level of achievement throughout their time in school. The findings and implications of this study are that ELs that receive at least 5 to 6 years of dual-language instruction attain high levels of academic achievement. In other words, it takes 4 to 7 years of second-language instruction to acquire the academic English necessary for high academic achievement.

Frequency of Instruction

Instructional time in elementary school is limited and the urgency for preventing students at risk for reading failure from falling further behind their classmates demands that instruction time be planned carefully. One classroom strategy that may be beneficial for struggling readers is to increase the frequency of instruction (Vadasy, Nelson, & Sanders, 2013).

There is no universally agreed upon appropriate length or frequency of a lesson. Many factors can come into play in making the decision on the frequency of lessons, including the results of formal and informal assessments, the difficulty level of the instructional material, and the ability level of the students (Ankrum & Bean, 2007). The decision, however, most likely and appropriately will be based on the needs of the students. Struggling students may need more frequent instruction in order to benefit from lessons. ELs struggling with reading may require more time to process language and information (Ankrum & Bean, 2007). Carroll's (1989) seminal guide to research on teaching and learning, the Model of School Learning, proposed time-related variables that would account for differences in academic achievement. *Opportunity to learn* was defined as the amount of time allowed for learning. Two other related variables were proposed. The time needed for learning increases in inverse proportion to the *quality of instruction*, that is, inadequate instruction necessitates more time for learning. A correlate to the quality of instruction variable is the *ability to understand instruction*. In other words, time needed for instruction increases inversely to the student's ability to understand the instruction. Carroll's (1989) model of learning has implications for the instruction of ELs. ELs may struggle with reading and language acquisition because of low oral-language proficiency. To the extent that they fail to receive high quality instruction and to the extent that they struggle to understand the instruction they receive, they may require more time for learning, which translates to more frequent and more intense instruction. The present meta-analysis investigated the frequency and length of instruction as moderator variables that may have a large effect on the reading

performance of Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading.

Quality of Instruction

Another important element of instruction that has a moderating effect on student achievement is the quality of the instruction received. Quality of instruction is one of the dimensions of opportunity to learn examined by Wang (1998). The other dimensions of opportunity to learn investigated by Wang (1998) were content coverage, content exposure, and content emphasis. In a study investigating the relationship between eighth-grade students' opportunity to learn and their achievement in science, Wang (1998) found quality of instructional delivery to be a strong predictor of test scores. Six-hundred-twenty-three eighth-grade students in five public schools in Los Angeles were included in the study. Six science teachers provided the instruction. Forty-five percent of the students were European American, 39% were Hispanic American, 10% were African American, and 5% were Asian American. The sample was comprised of 314 females and 309 males. Student scores on two types of science assessments were analyzed: scores on a written test and scores on a hands-on test. Different effects were obtained depending on the measure of opportunity to learn. Content exposure was the most important predictor of written test scores, with quality of instruction being the most important predictor of the hands-on test scores. Wang (1998) used hierarchical linear modeling to analyze opportunity to learn variables at the classroom level and the student level. Quality of instructional delivery variables included the presentation of lessons. Based on the work of Brophy and Good (1986) and Stevenson and Stigler (1992), instructional practices

affecting presentation of lessons included whether the teacher stated explicitly the reading objective for the lesson, whether the teacher introduced organized activities to ensure the lesson's objectives were met, whether the teacher was effective in presenting the lesson materials, error correction during the lesson, the pace of instruction, the quality of instructional materials, the quality of the interactions between the teachers and the students, and the extent of teacher preparation (Brophy & Good, 1984). Researchers have raised issues involving quality of instruction that go beyond content-related practices. Wang (1998) concluded that opportunity to learn variables had a large influence on students' achievement in science.

In an analysis of the literature regarding what preservice teachers need to know in order to teach their linguistically diverse students effectively, Jimenez and Rose (2010) raised the issue of the effect of building meaningful relationships with students of color on the quality of instruction. They asserted that in order to improve academic achievement, teachers must build meaningful relationships with ELs. Jimenez and Rose (2010) stressed that marginalized students often enter classroom where no cognitive challenges are presented and where instruction consists of routines separated from the mainstream curriculum. Further, they asserted that the lack of meaningful relationships and the lack of an academically challenging curriculum are linked and work against the development of quality in instruction. In response, students accurately intuit that the absence of a meaningful instructional program means a lack of concern and respect for their welfare. An effort by teachers to learn more about the lives, communities, and cultures of ELs is a step toward the development of a more meaningful and improved

quality of instruction. The implementation of culturally relevant instruction can have the dual effect of building meaningful relationships in the classroom while improving the quality of instruction.

In their review of the research on the components of effective classroom and small-group reading instruction, Foorman and Torgesen (2001) emphasized the importance of the quality of instruction. The researchers investigated the research base on large-scale studies of reading methods, effective schools, best practices, evidence-based instruction, and instruction for children at risk for reading failure including characteristics of children at risk for reading failure and critical features of instruction for children at risk for reading difficulties. Positing that the components of effective reading instruction are the same whether the purpose is prevention or intervention (i.e., phonemic awareness and decoding skills, fluency, comprehension, vocabulary, spelling, and writing), they asserted that evidence-based research demonstrated that explicit instruction by teachers of these components greatly reduces the incidences of reading failure. In order to meet the learning needs of children at risk of failure in reading, the instructional components need not be changed. Rather, the components need to be made more explicit, more comprehensive, more intensive, and more supportive. Additionally, these more intensive efforts must be conducted in a small-group or one-on-one format. Adding support to the idea that children at risk for reading failure must be provided with quality instruction, Jitendra et al. (2004) affirmed that struggling readers benefit from instruction that is more explicit, intensive, supportive, and comprehensive (Foorman & Torgesen, 2001). An additional aspect of group instruction, along with length, frequency, intensity,

and quality of instruction is the size of instructional groups. The following section concerned the influence of instructional groupings on instructional effectiveness.

This section summarized the role of elements of instruction in instruction for Spanish-speaking ELs. The achievement gap in reading for ELs is well established in the research literature (National Center for Education Statistics, 2011). Elements of instruction such as length, frequency, and quality of instruction may play a role mitigating that gap. Research articles were evaluated in this section that provided evidence for the positive effects of increased opportunity to learn on the academic performance of ELs. Increased instructional time, increased intensity of instruction, increased frequency of instruction, and the provision of quality instruction provide benefits for ELs who struggle with reading. There were several limitations to these studies that restrict their generalizability to larger populations, including small sample sizes. Due to several factors, samples of students with individualized education plans (IEP) in the National Assessment of Educational Progress (NAEP) data sets may not be representative of all students with an IEP. In some studies, language status was based on parent self-report of student language proficiency rather than on formally assessed proficiency in English. Information on whether students had received instruction in their native language before becoming ELs often was not available, thus hampering researchers' ability to account for differences in English reading development. Importantly, the diversity of EL students in terms of initial levels of language proficiency, types of instruction received, types of services received, language instructional setting, and rural to urban settings makes generalizing results to larger populations problematic.

Instructional Groupings: Small-Group Instruction

How best to group students is an essential component of classroom instruction. One way to increase the intensity of instruction for struggling readers is to provide instruction individually or in small groups (Foorman & Torgesen, 2001). The difficulty in providing these types of instructional groupings arises when attempting to balance the instructional needs of struggling readers with the availability of resources. The provision of small-group instruction with its increased instructional time and curricular resources requires a consideration of the cost and benefits obtained for students at risk (Vaughn et al., 2010). Furthermore, the features that make small-group instruction effective are not always clear. For example, students may benefit from smaller groupings because of increased time on task, improved feedback, individual attention, augmented interaction with teachers, or increased progress monitoring and assessment. The following sections provide details regarding the effects of instructional groupings on academic performance.

Group size is a feature of instruction that has been shown to have an effect on reading outcomes (Vaughn et al., 2003). Small-group activities that are explicit and directed toward reading subskills provide benefits for ELs (Gunn, Biglan, Smolkowski, & Ary, 2000; Haager & Windmueller, 2001; Linan-Thompson et al., 2003). Response to intervention models endorse the value of small-group instruction by providing struggling readers with increasingly intensive tiers of intervention culminating in explicit, small-group instruction for children suspected of having reading disabilities (Fuchs & Fuchs, 2006). With small-group instruction, compared with broad whole-class instruction, teachers may be able to offer more directed and nuanced instructional objectives based on

individual and small-group needs (Saleh, Lazonder, & De Jong, 2005). In particular, small-group size increases the amount of interaction between students and peers and students and teachers. Interaction is a critical feature of instruction for ELs in that it facilitates oral language production and consequently may improve second-language acquisition and the acquisition of reading (Gass & Mackey, 2006).

In a study on the effects of three grouping formats on the reading performance of struggling readers in second grade, Vaughn et al. (2003) found that small-group instruction had a positive effect on the acquisition of literacy. Vaughn et al. (2003) investigated the effects of three grouping formats on the reading performance of struggling readers in second grade. The formats studied were one teacher with one student, one teacher with three students, and one teacher with 10 students. Ten Title I urban elementary schools in the Southwest participated in the study. Seventy-seven students identified as struggling readers at risk for failure in reading or at risk for referral for special education services were selected for participation. Seventy percent of the students qualified for free-or-reduced-fare lunch. The students were assigned to two groups, one consisting of monolingual English speakers and the other consisting of ELs. Hispanic American students constituted 74% of the students in the study. Students were assigned to one of three grouping formats and received the same instruction in 30-minute sessions, five times per week, for 13 weeks. The intervention consisted of instruction in fluency, phonological awareness, vocabulary, word analysis, and reading comprehension. Students were assessed through weekly progress monitoring on four subtests of the DIBELS (Good & Kaminski, 2002): Letter Naming, Phoneme Segmentation, Nonsense

Words, and Connected Text. *Read Naturally* (Inhot, 1991) passages were used to assess progress in oral reading fluency. The Word Attack and Passage Comprehension subtests of the Woodcock Reading Mastery Test-Revised (WRM; Woodcock, 1987) were used as pre- and posttest and follow-up measures. The Test of Reading Fluency (TORF; Children's Educational Services, 1987) was used to measure oral reading fluency. Statistically significant gains were made in all groups in phoneme segmentation, fluency, and comprehension with gains maintained after 4 or 5 weeks.

Implementation of instruction in small-groups has been shown to be an effective instructional setting for ELs who struggle with reading. The present meta-analysis investigated interventions that used small groups for instruction. The next sections review the literature on strategies for developing reading comprehension.

Reading-Comprehension Strategies

Reading comprehension is a complex process that requires the reader to construct a coherent understanding of text through rapid recognition of written words, storage of text in short-term memory, retrieval of background knowledge, and the retrieval of semantic relations between networks of words necessary for the construction of meaning. Several skills are invoked in reading comprehension: decoding skills, knowledge of vocabulary, knowledge of linguistic structure, cognitive processing abilities including memory for text, retrieving background knowledge, and drawing inferences (August, Francis, Hsu, & Snow, 2006). The balancing of the skills in processing and knowledge required for comprehension in reading can result in poor comprehension if the input from any of the components of reading comprehension falters (August et al., 2006). In other

words, success in comprehension is vulnerable to failure because a breakdown in even one skill can result in a failure to comprehend. Although some readers comprehend poorly due to low skills in decoding (Gottardo et al., 2008), ELs, in particular, struggle with reading comprehension because of poor oral language proficiency and limited vocabulary knowledge (Hutchinson, Whiteley, Smith, & Connors, 2003). Instructional strategies designed to improve reading comprehension were reviewed in the next section.

Listening Comprehension

The simple view of reading presented in chapter I of the present meta-analysis posited that decoding and oral language and linguistic-comprehension skills including listening comprehension contribute to reading comprehension (Hoover & Gough, 1990). The influence of decoding skills, however, tends to weaken with time whereas, in contrast, the influence of linguistic comprehension increases (Lesaux, Crosson, Kieffer, & Pierce, 2010). Hoover and Gough (1990) found that although decoding accounts for most of variation in reading comprehension for beginning readers, for older more developed decoders, linguistic comprehension explains a larger proportion of variability and is a powerful predictor of reading comprehension in ELs. Although research has been conducted on development of comprehension for beginning readers, that research has focused on instruction in word decoding and fluency (Solari & Gerber, 2008). There is a lack of research, therefore, focusing on listening comprehension as an indicator of risk for reading failure. A model of comprehension for Spanish-speaking ELs was proposed by Proctor, Carlo, August, and Snow (2005).

The purpose of the Proctor et al. (2005) study was to investigate a structural

equation model of reading comprehension for second language learners. The study, a longitudinal 4-year study of the acquisition of literacy skills in English and Spanish for bilingual learners, was conducted in three large urban elementary schools in Boston, Chicago, and El Paso. Participants were 135 Spanish-speaking ELs in the fourth grade. The majority of students, mainly from the Chicago and El Paso schools, were of Mexican origin, whereas the students from Boston were mostly of Puerto Rican and Dominican Republic origin.

The curriculum used in all the schools was Success for All (Madden, Slavin, Karweit, Dolan, & Wasik, 1993). The Success for All curriculum is highly structured, has both Spanish and English components, with students receiving 90 minutes per day of literacy instruction. Decoding skills (alphabetic knowledge and fluency) were measured using the Computer-Based Academic Assessment System (Sinatra & Royer, 1993). Listening comprehension, vocabulary knowledge, and reading comprehension were measured with the *Woodcock Language Proficiency Battery-Revised* (Woodcock, 1991).

Results indicated that on the listening-comprehension measure students comprehended English at a second-grade level (raw score of 17.7) and on the reading-comprehension measure students scored near grade level (raw score of 18.0). Reading-comprehension scores were close to what would be expected for monolingual English speakers due to reading-comprehension measures at this grade level still being influenced by decoding ability. Listening comprehension and vocabulary knowledge in the structural equation model were statistically significant correlated strongly with reading comprehension (.76 and .73, respectively). The study finding that EL listening

comprehension in English has a strong correlation with English reading-comprehension lends support to the simple view of reading as a model for EL reading comprehension and to the importance of instruction in listening comprehension for Spanish-speaking ELs. Another finding was that because vocabulary knowledge was related to both reading comprehension and listening comprehension, the study lent strong support to the importance of vocabulary instruction for ELs. One limitation of the study was that there was no testing or comparison of the model with monolingual English speakers. A comparison of monolingual English speakers would have allowed the researchers to investigate whether decoding skills, vocabulary knowledge, and listening comprehension explained reading comprehension similarly for both monolingual and Spanish-speaking students.

Listening comprehension is an important component of early reading interventions for both students with reading disabilities and without disabilities. Research has demonstrated a strong relationship between listening comprehension and reading comprehension (Hagtvet, 2003). Furthermore, research has shown that listening- and reading-comprehension abilities can be enhanced through instruction in comprehension strategies (Palincsar & Brown, 1984; Solari & Gerber, 2008).

A study was conducted by Solari and Gerber (2008) investigating the effects of three instructional interventions on measures of reading for Spanish-speaking ELs. Eighty-two Hispanic American children from four kindergarten classrooms at one school participated in the study. The Southern California school qualified as a Title I school with 98 % of the students receiving free or reduced price lunch. The school also received

an Academic Performance Index score of 1, indicating that most of the students were not making adequate yearly progress on statewide assessments.

The Houghton-Mifflin reading series was used for the 8 weeks of the study. Whole class instruction was conducted in decoding, vocabulary, high-frequency words, sight words, storybook comprehension, listening and speaking skills, phonological awareness (segmentation and rhyming), and in writing. Trained research assistants implemented the study intervention in literacy centers three times per week for 20 minutes as part of the regular classroom language arts instruction. Senior research assistant monitored the intervention for treatment fidelity.

An alternate treatment comparison groups design was used in the study. Based on risk status, students were assigned to one of three instructional groups. One treatment group received phonological awareness instruction (PA Concentration), with the other group receiving listening comprehension instruction (LC Concentration). The treatment comparison group received phonological awareness instruction (PA Only). DIBELs measures, researcher-developed Spanish and English PA measures, and the Peabody Picture Vocabulary (Dunn & Dunn, 1981) and the Test de Vocabulario de genes en Peabody (Dunn, Padilla, Lugo, & Dunn, 1986) were used to rank-order children for at-risk and not-at-risk groups. Students were then assigned randomly to the treatment or treatment-control group within the risk category. Treatment students were then assigned randomly to the two treatment groups: PA Concentration or LC Concentration. Seventy percent of the time in the PA Concentration was spent on phonological awareness, with the balance spent on alphabetic knowledge, listening comprehension, and vocabulary.

Seventy percent of the time in the LC Concentration was spent on listening comprehension and vocabulary, with the balance spent on alphabetic knowledge and phonological awareness. The treatment-control group received instruction only in alphabetic knowledge and phonological awareness.

English and Spanish versions of the Comprehensive Test of Phonological Processing (Wagner, Torgesen, & Raschotte, 1999) were used to measure phonological awareness. The Woodcock-Johnson Story Recall assessment (Woodcock, McGrew, & Mather, 2001) and an experimental measure designed by the authors were used to measure listening comprehension. Word-decoding and word-attack skills were assessed with the Woodcock-Johnson Word Identification subtest (Woodcock et al., 2001) and the Woodcock-Johnson Word Attack subtest (Woodcock et al., 2001).

Analyses of variance results indicated no statistical differences between groups on any of the measures at pretest. The present literature review examined only results of the interventions for the at-risk group in order to focus on the effects of instruction on listening comprehension. Analyses of covariance (ANCOVA) were conducted to investigate intervention effects. The ANCOVAs results indicated no statistically significant differences on the posttest Woodcock-Johnson Story Retell or on the experimental listening comprehension measure for the at-risk students in the LC Concentration and the PA Concentration groups. Results showed statistically significant differences between the LC Concentration and PA Concentration groups and the PA Only group with findings in favor of the former. Students at-risk in the LC Concentration group showed improvement on posttest measures of listening comprehension and

outperformed students in the other groups on almost all the measure. Results of the study showed that listening-comprehension skills can be taught to kindergarten ELs at-risk for failure in reading. Study findings demonstrated that kindergarten student should be taught listening-comprehension skills even though their decoding skills are just developing. Importantly, improvement in listening-comprehension skills including vocabulary may lead to improvement in reading comprehension.

The Solari and Gerber (2008) study had limitations. First, the study was implemented in only one school. Second, data on EL status were not available making comparisons impossible between students whose home language is only Spanish or both Spanish and English. A larger scale study may help to determine study generalizability to larger populations. A study of empirical data on the effectiveness of listening comprehension as a precursor to success in reading for ELs would expand the literature on reading interventions for ELs.

In summary, the research literature indicated a dearth of research on listening-comprehension development and measurement with young readers. The two research articles that were evaluated in this section provided support for the positive effect on English reading comprehension of instruction in listening comprehension for ELs struggling with reading. The studies also lent support to the simple view of reading as a model for EL reading comprehension. Finally, the studies lent support to the positive effect of instruction in vocabulary knowledge not only on listening comprehension but also on reading comprehension. The present meta-analysis investigated empirical research studies on the effects of instructional interventions utilizing listening

comprehension and vocabulary on the reading achievement of Spanish-speaking ELs with reading disabilities and ELs who struggle with reading.

Repeated Reading

Reading fluency is the ability to read text accurately with speed, smooth phrasing, and correct intonation (Hapstack & Tracey, 2007; NRP, 2000). The ability to read with fluency allows readers to focus sufficient attention on the meaning of text to comprehend the message (Musti-Rao, Hawkins, & Barkley, 2009). The number of words read correctly per minute determines oral reading fluency. Because fluent reading is viewed as a prerequisite to reading comprehension, instructional techniques to improve the reading fluency of dysfluent readers are of importance. Although fluency is one of the most difficult areas of reading to correct for students with reading disabilities (O'Connor, White, & Swanson, 2007), one instructional approach that has been used to improve fluency is repeated reading (Schwanenflugel et al., 2009). Repeated reading is defined as an instructional practice that requires students to read connected-text passages more than once (Castillo, 2011).

A research study by O'Connor et al. (2007) investigated two methods to improve the reading fluency of struggling readers with and without reading disabilities. Thirty-seven students who met the eligibility criteria for struggling readers in four second-grade and four fourth-grade classes participated in the study. Of the struggling readers, 50% were European American, 29% Hispanic American, and 18% African American. Students in second grade who read between 12 and 45 words per minute and fourth-grade students who read between 20 and 80 words per minute on grade-level passages were

eligible to participate. The researchers ensured that the students selected possessed adequate skills in English to be able to read text aloud; score greater than 69 on the Peabody Picture Vocabulary Test-III (Dunn, & Dunn, 1997) satisfied the reading requirement. Sixteen of the participants were children identified as students with reading disabilities and receiving special education services. Students were assigned randomly to two fluency practice groups or to a comparison group. The two interventions were conducted one-on-one and involved practice reading aloud with repeated reading or continuous reading. Treatments consisted of reading aloud to a tutor for 15 minutes, three times per week for 14 weeks. Under the repeated reading conditions students read each page of text three times for 15 minutes. Under the continuous reading conditions students read pages without repeating for 15 minutes. No interventions were provided for the students in the comparison group. Two trained tutors acted as adult listeners and worked with students across the two treatments. Tutors received 2 hours of training by the researchers and were observed for fidelity of treatment.

Alternate forms of three measures were used as pretests, midway tests, and posttests. The Peabody Picture Vocabulary Test-III (Dunn, & Dunn, 1997) was used as a measure of receptive language. The word identification subtest of the Woodcock Reading Mastery Tests-NU (WRMT-NU; Woodcock, 1998) was used to identify words in isolation and passage comprehension. The Gray Oral Reading Tests, Fourth Edition (GORT4; Wiederholt & Bryant, 2001) was used to measure accuracy, reading rate, and comprehension. In addition, the Analytic Reading Inventory (ARI; Woods & Moe, 1999) was used to measure oral reading rate.

The review of the study focused only on results for students who were identified as struggling readers. Results of the mixed model with repeated measures statistical analysis (i.e., hierarchical linear modeling) showed no statistically significant differences between repeated reading and continuous reading in terms of growth in fluency, with alpha set at .01. The two treatments showed statistically significant growth in fluency compared with the comparison condition on GORT Fluency, and ARI Fluency. With Cohen's (1992) criterion of .20 as a small effect size, .50 as a moderate effect size, and .80 as a large effect size, the study obtained important findings. An effect size of .97 was obtained for repeated reading versus comparison condition and an effect size of 1.04 was obtained for continuous reading versus comparison condition, both on the GORT4 Fluency test. An effect size of .98 was obtained for repeated reading versus comparison condition and an effect size of .88 was obtained for continuous reading versus comparison condition, both on the ARI test. Results on the Passage Comprehension subtest of the WRMT-NU showed statistically significant growth for the two treatment conditions compared with the comparison condition. An effect size of 1.03 was obtained for repeated reading versus comparison condition, and an effect size of 1.01 was obtained for continuous reading versus comparison condition, both on the WRMT-NU Passage Comprehension subtest.

Findings of the O'Connor et al. (2007) study showed that struggling readers receiving repeated reading and continuous reading interventions outperformed struggling readers in the comparison condition, with effect sizes near 1.0 for each treatment versus comparison. The results demonstrated that struggling readers must be provided with

supplemental interventions such as repeated reading because they are unlikely to improve in reading fluency, an important prerequisite of reading comprehension, without interventions.

Limitations of the study included a small sample size of students and a very small sample size of students struggling with reading. The results did not distinguish between the students with reading disabilities (i.e., receiving special education services) and students identified as struggling readers. Given that a part of the study included second graders, it is possible that some of the struggling readers had not yet qualified or had been evaluated for reading disabilities. The study investigated one type of repeated reading intervention: practice repeated reading aloud. Future studies should investigate whether other models of repeated reading could obtain superior results. The present meta-analysis investigated the effectiveness of empirical research studies that use models of repeated reading with Spanish-speaking ELs with reading disabilities and ELs who struggle with reading.

A research study on the effects of a peer-mediated repeated-reading intervention on the oral reading fluency of urban fourth-grade students at risk for failure in reading was conducted by Musti-Rao et al. (2009). The researchers investigated the repeated reading intervention and also the fidelity with which the classroom teachers were able to implement the instruction. This literature review focused on the results of the reading intervention only.

The study took place in an urban Midwest charter school. Of the 605 students in kindergarten through ninth grade, 96% were African American, with the remaining 4%

consisting of a mix of European American, Hispanic American, and multiracial students. Ninety-one percent of the students qualified for free-or-reduced-price lunch. Twelve African American students from a classroom of 32 fourth-grade students were selected as target students in the study. Although the entire class engaged in repeated reading, data were collected for only the 12 students. Six of the twelve were identified as students with a disability and receiving special education services. Of the six, one was diagnosed with cognitive disability, one was diagnosed with other health impairment, and one was diagnosed with severe emotional disability. Participants were selected based on results from the DIBELS (Good & Kaminsky, 2002) assessments. The DIBELS oral reading fluency subtest (Good & Kaminsky, 2002) served as the dependent variable and provided progress monitoring for the study. The researchers used a multiple-baseline-across-participants design with two conditions to investigate the effects of repeated reading instruction on the oral reading fluency of the participants. During the baseline condition, students were assigned sustained silent reading for 30 minutes. Students were then administered a DORF progress-monitoring assessment. Students were then assigned to paired repeated reading for 30 minutes per week. Each session consisted of paired reading of a passage for 10 minutes, with a rereading of the passage for 10 minutes. Students then were asked to read individually the passage for one minute. The students then recorded the number of words read correctly in a log with a goal of 118 words per minute.

Results indicated that all the students made progress on oral fluency rates; however, none of the students reached the end-of-year goals for fluency. Furthermore,

although all of the students were able to improve their oral-reading fluency rate, that ability did not transfer to unfamiliar passages. The study data indicate a mean percentage increase of 39.8% (*SD* = 29.6%) for the 12 students. Musti-Rao et al. (2009) did not report effect sizes but reported effect-size estimates of moderate to large effects on oral-reading fluency rates. Two limitations of the study are apparent. The study did not investigate the effects of improvements in oral-reading fluency from repeated reading on reading comprehension. Because some researchers have asserted that low reading fluency is correlated with low comprehension (Musti-Rao et al., 2009), whereas others have asserted the lack of such a connection (Kuhn, 2005), the Musti-Rao et al. (2009) study could have added to the research base on this issue by implementing a comprehension-building component into the intervention. Another limitation was the small amount of time allotted to repeat reading during the week. Given the importance of oral-reading fluency to reading at grade level, the researchers could have investigated increased time spent on the practice of repeated reading. Study results produced limited gains for students, suggesting that more time spent on repeated reading could further improve the oral-reading fluency of students with disabilities. Given the results of the study with students with disabilities, the present meta-analysis investigated research studies on the effectiveness of repeated reading interventions on the reading performance of Spanish-speaking ELs who struggle with reading

In a study examining research on repeated reading interventions for students with reading disabilities, Chard, Ketterlin-Geller, Baker, Doabler, and Apichatabutra (2009) obtained results that differed from the O'Connor et al. (2007) study. The researchers

investigated experimental, quasi-experimental, and single-subject research studies with results that suggested that repeated reading does not meet the quality standards set forth and, thus, is not an evidence-based intervention for students with reading disabilities. The researchers applied the standards of evidence proposed by Gersten, Fuchs, et al. (2005) and Horner et al. (2005) and adapted them to a 4-point scale for analysis. Quality indicators for single-subject research used in the study included *Participants and Setting*, *Dependent Variables*, *Independent Variable*, *Baseline*, *Experimental Control Internal Validity*, *External Validity*, and *Social Validity*. Quality indicators for experimental or quasi-experimental research included *Description of Participants, Intervention and Comparison Conditions, Outcome Measures, and Data Analysis* including effect sizes. In order for a repeated reading practice under experimental or quasi-experimental conditions to be considered "evidence-based" and high quality, it had to meet (i.e., score an average of at least 3 on the 4-point scale) all but one of the quality indicators. Additionally, in order for a repeated-reading practice under experimental or quasi-experimental conditions to be considered evidence-based, at least two studies had to meet the minimum criteria. The researchers analyzed five experimental and quasi-experimental research studies. Only one study met the minimum criteria for identification as an evidence-based practice. In order for a repeated-reading practice under single-subject conditions to be considered evidence-based and of high quality, a minimum of five studies that met the quality indicators and were conducted in three different regions of the country with at least 20 subjects total had to produce positive effects from applying the intervention. Out of six single-subject research studies

analyzed by the researchers, none of the studies met the minimum criteria for identification as an evidence-based practice. Based on the evidence, the researchers concluded that repeated reading does not qualify as an evidence-based practice for students with reading disabilities.

Although not a limitation, an unfortunate result of this study may be that the rigorous standards applied to qualifying as an evidence-based practice could result in some repeated reading practices that have been shown to be effective with students with reading disabilities from being implemented in the classroom. Most of the studies were excluded from consideration due to missing information. This situation is problematic because it makes it difficult to separate the true effectiveness of an intervention from researcher error or omission. For example, Chard et al. (2009) reported that few of the older studies included effect sizes in their results until the American Psychological Association (2001) made clear it expected the magnitude of effects for treatments to be published. Under these conditions, some of the older studies could be excluded on procedural grounds even when the study results might prove beneficial to students. Although the results of the Chard et al. (2009) study did not qualify repeated reading as an evidence-based practice for students with reading disabilities, future quality research should be conducted on repeated reading to investigate its efficacy.

The research literature indicated that oral-reading fluency, a prerequisite to reading comprehension, may be improved through the practice of repeated reading. This section of the literature review evaluated three research articles investigating the efficacy of repeated reading as an instructional practice for struggling readers including students

with reading disabilities. The studies produced mixed results. A study by O'Connor et al. (2007) found that struggling readers who received repeated reading instruction outperformed strongly struggling readers who received regular classroom instruction. A study by Musti-Rao et al. (2009) found that peer-mediated repeated reading produced positive results in oral-reading fluency rates for struggling readers but that the improvements did not extend to reaching year-end goals for the students and were not transferrable to reading unfamiliar passages. In contrast, an investigation of empirical research studies on repeated reading by Chard et al. (2009) found that repeated reading did not qualify as an evidence-based practice. Limitations of the studies included small sample sizes and a lack of a reading comprehension component in repeated-reading instruction. Given the mixed results produced by the studies reviewed, it is important to investigate the efficacy of repeated reading interventions on the reading performance of Spanish-speaking ELs. The present meta-analysis evaluated empirical research studies on repeated-reading practices.

Peer-Assisted Learning Strategies

Spanish-speaking ELs who struggle with reading or who have reading disabilities benefit from differentiated instruction. One instructional approach that has shown promise for struggling readers is peer-assisted learning strategies or peer-mediated instruction (PALS; Fuchs & Fuchs, 2005). Under peer-assisted instruction, students work together to ensure their learning. With PALS, teachers are able to differentiate instruction by assigning appropriate levels of work to different groups of students. Teachers can assign different instructional procedures depending on the learning needs of

students. This type of instructional flexibility allows teachers to meet the needs of ELs and monolingual English speakers, simultaneously. PALS was designed to strengthen the capacity of teachers to meet the academic needs of a broader range of students. Its specific focus was to enhance the reading fluency and comprehension of children in second grade through sixth grade. ELs benefit from PALS for several pedagogical reasons (Saenz et al., 2005). First, ELs benefit because they engage in language practice more frequently and for longer periods than during regular classroom instruction. Second, ELs benefit from the development of higher order thinking skills associated with summarizing the main ideas of stories they read under PALS. Third, differentiated instruction under PALS allows ELs to receive reading instruction at their level of proficiency. Fourth, with PALS, corrective feedback from peers allows students to discuss their learning without having to worry about giving accurate answers in front of the whole classroom. Finally, PALS' climate of collaboration and teamwork provides ELs with a motivation to practice their English language skills. In terms of second language learning theory (Swain, 1993), PALS provides opportunities for ELs to receive comprehensible input, to produce comprehensible output, and to negotiate with their peers for meaning of text and language (Saenz et al., 2005).

A peer-mediated supplemental reading program designed to improve the reading achievement of first-grade students in a two-way bilingual immersion (TWBI; Lindholm-Leary, 2012) program was investigated by Calhoun, Al Otaiba, Cihak, King, and Avalos (2007). Participants in the study were 76 first-grade students in three Title 1 elementary schools in a Southwestern school district located near the border with Mexico. Over 80%

of the students received free or reduced-cost lunch. Seventy-nine percent of the participants (60 students) were Hispanic American students, however, only 21 of them were determined to have limited proficiency in English based on the IDEA Oral Language Proficiency Test (Williams, Ballard, Tighe, Dalton, & Amori, 2006). The TWBI program used a 50/50 model, that is, the instruction was conducted in equal percentages of Spanish and English through the instructional day. Forty-three students were assigned randomly to the PALS condition with 33 students assigned to the contrast condition.

The intervention used the PALS teacher training protocols developed by Fuchs et al. (2000). The training manual instructs teachers on how to pair students, usually pairing one high- and one low-performing student. The students are taught the PALS procedures consisting of the teacher presenting the activity for the day, student practice of sounds and words, followed by a story sharing activity. The high-performing student coached first, then the students switched roles. Students received 60 PALS lessons lasting 30 minutes for 20 weeks.

Reading achievement was measured with the DIBELS Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF), and Oral Reading Fluency (ORF) subtests (Kaminski & Good, 1996). This review focused on results for ELs only. A repeated-measures analysis of variance (ANOVA) with Time (Fall, Winter, and Spring) and Condition (PALS vs. Contrast) was conducted for PSF, NWF, and LNF. Statistically significant results were obtained for Time on both conditions with PSF, $F(2, 44) = 54.22$; NWF, $F(2, 44) = 46.37$; and LNF, $F(2, 44) =$

51.87. Effect sizes calculated for NWF and LNF favored ELs in the PALS condition with large effect sizes of 1.29 and 1.15, respectively. Calculations for ORF resulted in a moderate effect size of .38 in favor of ELs in the PALS condition. Calculations for PSF, however, favored the Contrast condition with an effect size close to zero–.06.

High rates of poverty and high percentages of students of Hispanic American origin are both indicators of at risk status for difficulties with reading. In the Calhoun et al. (2007) study, PALS techniques appeared to be effective for ELs in developing NWF and LNF (1.29 and 1.15, respectively). Improvement in NWF (i.e., decoding) is important for ELs because poor word-attack skills result in poor reading comprehension. ELs in the PALS condition showed strong growth in NWF compared with ELs in the contrast condition; ELs in the contrast condition remained at risk through spring of first grade. Improvement in LNF is important for ELs in that many ELs begin first grade with little knowledge of letter names. PALS instruction, therefore, removed a large risk factor for ELs by spring of first grade (Calhoun et al., 2007). The ORF scores did not improve sufficiently to remove ELs from the at risk category. The results indicated that ELs need more than PALS instruction to read at grade level, that is, ELs at risk for reading failure or for referral for special education services require more intensive interventions. Results for PSF indicated that ELs did not benefit from PALS instruction (-.06). These findings indicated that ELs need instruction in phonemic awareness and phonics in order to improve their skills in phoneme segmentation. Further research on ELs' response to instruction will help to illuminate the effects of English proficiency on student reading achievement.

Limitations of this study included small sample sizes affecting the generalizability of results to larger populations. The study added to the research base on instruction in TWBI programs; however, given that most instructional settings are not based on a bilingual education model, the results are limited to Hispanic American students in TWBI settings. Another limitation was the lack of a measure of reading comprehension. Given an established correlation between reading fluency and reading comprehension (Musti-Rao et al., 2009), the study would have been strengthened by the addition of a reading-comprehension measure. Finally, in a TWBI setting, it would strengthen the results to measure student growth with a Spanish language measure.

Another research study of peer-assisted learning strategies was conducted by McMaster, Kung, Han, and Cao (2008). The purpose of the study was to investigate the effectiveness of Kindergarten Peer-Assisted Learning Strategies (K-PALS; Fuchs et al., 2001)—a supplemental peer-tutoring program designed for beginning readers—as a Tier 1 intervention with ELs.

The study was a subset of a large-scale randomized field trial of evidence-based reading practices. Eighteen hundred kindergartners in 46 public elementary schools in Minnesota, Tennessee, and Texas participated in the large-scale study. The McMaster et al. (2008) study focused on the effectiveness of K-PALS with ELs in Minnesota. Participants in the study included 60 kindergartners with 11 Hispanic American students (20%), 16 African American students (27%), 7 European American students (12%), 24 Asian American or Indian American students (40%), and 2 students (3%) designated as Other (percentages exceed 100% due to rounding). Students were assigned to groupings

based on a matching procedure with 20 students in each of three groups: K-PALS ELs, Comparison ELs, and KPALS non-ELs. Within the study groupings, there were 8 Hispanic American students in the K-PALS ELs group, 2 Hispanic American students in the Comparison ELs group, and one student in the K-PALS non-ELs group. Fifty-eight percent of the participants qualified for free-or-reduced-cost lunch. Only 3 students had an IEP or were in process of being evaluated for special education services. Most likely, the small number of students with special education services was due to their status as kindergartners, that is, they had not had time enough to demonstrate a disparity between ability and achievement or experienced a failure to respond to intervention.

The K-PALS intervention consisted of two types of activities: Sound Play and Sounds and Words. Sound Play is a phonemic awareness activity that emphasizes first sounds, rhyming, segmenting, blending, and final sounds. Sounds and Words consists of four activities based on reading and decoding. Teachers preview the activities and instruct students in the K-PALS procedures. Students take turns playing Coach and Reader, then switch roles. Control instruction consisted of the regular classroom reading instruction. K-PALS was implemented four times per week for 18 weeks.

The researchers used a pretest-posttest comparison group design with matched samples. Three measures were used pretest and posttest: phonemic awareness, alphabetic, and oral reading. Analyses of covariance (ANCOVA) on posttest measures were conducted. The Yopp-Singer test (Yopp, 1988) was used to assess phonemic awareness. A test of rapid letter identification developed for use in PALS (RLN; Fuchs et al., 2001) was used. A test of letter-sound identification developed for use in PALS (RLS; Fuchs et

al., 2001) was used. Word recognition and decoding were measured with the Word Identification (Word ID) and Word Attack subtests of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1987). Spelling was assessed at posttest only with the Wechsler Individual Achievement Test (WIAT; Psychological Corporation, 1992). A curriculum-based oral reading assessment was used at posttest only.

This review focused on results for ELs receiving K-PALs only. Results of the ANCOVAs comparing K-PALS ELs to Comparison ELs on posttest measures, using pretest RLN as covariate, showed statistically significant differences with K-PALS ELs outperforming Comparison ELs on Segmentation, $F(1, 37) = 5.32$, $d = .69$; Blending, $F(1, 37) = 5.46$, $d = .65$; and RLS, $F(1, 37) = 6.14$, $d = .58$. Results for other measures showed no differences between K-PALS ELs and Comparison ELs.

Results of the study indicated that ELs receiving PALS instruction improved in phonemic awareness and letter-sound recognition skills, both important skills for developing reading skills. The results added to the research base on the importance of instruction targeting basic skills for beginning EL readers. Negative or weak results in terms of decoding, word attack, spelling, and oral reading mean future studies with stronger sensitivity to differences should be conducted.

Limitations of the study included small sample sizes. The large-scale study of which the McMaster et al. (2008) study was a part used random assignment of classrooms to K-PALS or to Comparison. Because it was a part of the larger study, the K-PALS EL study was unable to use random assignment of ELs to K-PALS or to Comparison. Of great benefit in determining the overall effects of PALS instruction on

ELs would be a follow-up study on the retention of gains and on whether improvements in decoding and oral reading would occur later on.

Saenz et al. (2005) conducted a study of peer-assisted learning strategies for ELs with reading disabilities. The purpose of the study was to investigate the effects of PALS on the reading achievement of ELs with reading disabilities (LD). Further, the study investigated the effects of PALS on the reading achievement of low- (LA), average- (AA), and high-achieving (HA) ELs.

One hundred thirty-two Spanish-speaking ELs in 12 transitional bilingual education classrooms in third through sixth grade participated in the study. The schools were located in a South Texas school district and had at least two students receiving special education services in each classroom. All students in each of the classrooms participated in PALS activities.

PALS activities were similar to those used by Fuchs et al. (2000) in previous studies. PALS was implemented three times per week for 35 minutes for 15 weeks. Students were ranked as low-, average-, and high-achieving based on their scores on the Woodcock-Munoz Language Survey (Woodcock & Munoz-Sandoval, 1993). Based on the ranking lists, a stronger reader was paired with a weaker reader. Pairs were rotated after 3 or 4 weeks. The roles of tutor or tutee also were rotated. Three PALS activities were implemented: Partner reading with story retell, paragraph summarizing, and paragraph prediction and summarizing. Students in the Contrast condition received regular reading instruction. Achievement was measured using the Comprehensive Reading Assessment Battery (CRAB; Fuchs, Fuchs, & Hamlett, 1989), which measures

reading comprehension. CRAB measures included words correct, questions correct, and maze-choices correct.

Results of pre- to posttreatment scores for the PALS condition and the Comparison condition were calculated using a between-subjects (PALS vs. Contrast) ANOVA and a within-subjects (LD, LA, AA, and HA) ANOVA. For words correct, the main effect of treatment, the main effect of student type, and the treatment by student type interaction were not statistically significant. Effect sizes for LD, LA, AA, and HA on the main treatment effect were 1.01, .04, .32, and .13. For number of questions correct: the main effect of treatment was statistically significant with $F(1, 10) = 12.91$; in contrast, the main effect of student type and the treatment by student type interaction were not statistically significant. Effect sizes for LD, LA, AA, and HA on the main treatment effect were 1.03, .86, .60, and 1.02. For maze choices correct, the main effect of treatment, the main effect of student type, and the treatment by student type interaction were not statistically significant. Effect sizes for LD, LA, AA, and HA on the main treatment effect were .75, .02, .13, and .68.

Results of the PALS intervention were strong for ELs with LD with effect sizes above 1.0 for words correct and number of questions correct. Treatment effects were strong for LA, AA, and HA students with effect sizes of .86, .60, and 1.02 for number of questions correct. These results demonstrated positive effects of PALS instruction not only for struggling readers but also for average and capable readers. For teachers of ELs with LD who struggle with reading, these findings are an important addition to the research base.

A strength of this study was its focus on reading comprehension, an essential element of reading achievement. A limitation of the study was that the classrooms were in bilingual education settings composed of all EL populations. This situation limited the generalizability of the results because most ELs do not receive their education in bilingual education settings. Future studies of the effects of PALS instruction on the reading achievement of ELs with LD in third through sixth grade should be conducted in settings in which more than one language is spoken.

The research literature indicated that ELs who have reading disabilities and ELs who struggle with reading benefit from differentiated instruction. One reading intervention that incorporated differentiated instruction and that has shown promise in improving the reading achievement of ELs was peer-assisted learning strategies. The research articles evaluated in this section produced varying results on the effectiveness of PALs. One study demonstrated that PALS techniques appeared to be effective for developing decoding, word attack skills, and letter naming skills, which are crucial for kindergarten ELs who may not have encountered the alphabet in English. The same study produced results that indicated PALS was moderately effective at improving oral reading fluency but not effective at improving phoneme segmentation. A second study showed contrasting results with ELs improving in phonemic awareness and letter-sound recognition skills but with negative or weak results in terms of decoding, word attack, spelling, and oral reading. A third study indicated gains from PALS in reading comprehension for ELs with reading disabilities. The findings from these studies indicated that although ELs who struggle with reading benefit from PALS instructional

techniques, they may need more intensive and explicit instruction in basic skills in order to avoid being at risk for failure in reading. There were several limitations to these studies that weakened their generalizability to larger populations. Limitations included small sample sizes. Although there is an established correlation between reading fluency and reading comprehension, two of the studies lacked of a measure of reading comprehension. Other limitations included the lack of a Spanish language measure to identify EL student growth, and the lack of follow-up studies on the retention of gains and on subsequent growth in decoding and oral reading. The present meta-analysis reviewed empirical research studies that investigated the effectiveness of peer-assisted learning strategies with ELs who struggle with reading or who have reading disabilities.

Review of Cheung and Slavin's (2012) Effective Reading Programs for Spanish-Dominant English Language Learners (ELLs) in the Elementary Grades: A Synthesis of Research

This section presents a review of Cheung and Slavin's (2012) meta-analysis of effective reading programs for Spanish-speaking ELs in elementary school. This section is included in the present review of the literature because Cheung and Slavin's (2012) meta-analysis is similar to the present meta-analysis in terms of its attention on reading instruction for Spanish-speaking ELs. Although similar, the two studies are different in important ways. The most important difference is that, whereas Cheung and Slavin (2012) focused on effective reading interventions for all Spanish-speaking ELs, the present meta-analysis focused on reading interventions for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. A second difference is that Cheung and Slavin (2012) focused on both small-group and individualized instruction

and whole-class and whole-school reading programs whereas the present meta-analysis focused on small-group and individualized instruction. A third difference is that Cheung and Slavin (2012) reviewed the effectiveness of language of instruction, a subject the present meta-analysis did not investigate (see chapter 1 for an explanation). In concert with this decision, the present review of the literature did not review the results of Cheung and Slavin's (2012) meta-analysis of the effectiveness of language of instruction on the reading achievement of ELs. Other differences between the two meta-analyses included the range of the search for primary research literature, the definition of several key constructs, and the moderator variables that were identified. The purpose of Cheung and Slavin's (2012) meta-analysis was to synthesize research on English reading outcomes of programs for Spanish-dominant ELs in elementary schools. The review reported results from 22 studies of whole-class and whole-school interventions that showed positive evidence of effectiveness with ELs. Additionally, the review demonstrated the effectiveness of professional development, coaching, and cooperative learning across the interventions.

Cheung and Slavin (2012) concentrated on the following research questions:

1. For English language learners, what approaches to language of instruction are most beneficial for the development of proficiency in English reading: bilingual, English-only, or dual language?

2. Holding constant language of instruction, which reading programs and approaches are most effective for building the English reading of English language learners?

The present review focused on Cheung and Slavin's (2012) second research question regarding effective reading programs and approaches for improving the reading of ELs.

Cheung and Slavin (2012) used the best-evidence synthesis review techniques developed by Slavin (1986). Best-evidence techniques describe "consistent, clear standards to identify unbiased, meaningful information from experimental studies and then discusses each qualifying study, computing effect sizes, but also describing the context, design, and findings of each study" (Cheung & Slavin, 2012, p. 354). Based on the inclusion and exclusion criteria, the literature search for effective reading programs for ELs produced 22 studies with over 4,300 student participants.

The overall effect size for all 22 studies was small ($d = .23$). The researchers suggested that the large Q value ($Q_B = 52.07$, $df = 21$, $p < .01$) indicated that there was a substantial variation in the collective set of studies. The different types of programs may explain this variation. As an example, the researchers asserted that programs that use small-group instruction or cooperative learning produce generally larger effects than other approaches.

A review of the Cheung and Slavin (2012) meta-analysis results showed that programs that emphasize direct, explicit, and systematic instruction in phonics in small-groups for beginning readers are effective in improving the reading performance of Spanish-speaking ELs. The meta-analysts asserted that programs that provide extensive professional development and coaching for instructors and program implementation increased the effectiveness of the instruction. Results showed that programs that use cooperative learning are effective because they provide students with opportunities to

develop English language skills.

Based on results obtained in their meta-analysis, and in terms of improving instructional interventions for ELs, Cheung and Slavin (2012) recommended the following:

1. Efforts to improve outcomes for English learners should be based on the best evidence available.

2. The evidence points towards a focus on professional development in strategies such as cooperative learning, and small-group and individual tutoring.

3. Proven approaches should be broadly disseminated among schools serving ELs.

4. Additional effective methods should be developed, rigorously evaluated, and disseminated.

5. Grants and investments should be made in programs and interventions that have been proven to be effective and that are implemented with fidelity.

In line with the recommendations of Cheung and Slavin (2012), cooperative learning strategies such as peer-assisted learning and small-group instruction were investigated for their effectiveness in improving the reading comprehension abilities of ELs who struggle with reading. Additionally, consistent with the review of the literature, the present meta-analysis analyzed studies using elements of culturally responsive pedagogy including Spanish in instruction and elements of instruction such as length, frequency, and quality of instruction.

CHAPTER III

METHODOLOGY

The purpose of this meta-analytic study was to examine research into effective instructional practices and strategies in second through fifth grade for Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading. Experimental, quasi-experimental, and single subject studies that focused on reading instruction in second through fifth grade for ELs who have reading disabilities and ELs who struggle with reading were included. This chapter contains the methodology of the study including the literature search and procedures for describing, classifying, and coding the research studies and for measuring and analyzing the study findings and limitations. The meta-analysis was conducted in accordance with the procedures and recommendations set forth by Borenstein, Hedges, Higgins, and Rothestein (2009), Card (2012), Cooper (2010), Cooper, Hedges, and Valentine (2009), Glass, McGaw, and Smith (1981), and Lipsey and Wilson (2001). The literature search was conducted in accordance with the recommendations set forth by Glass et al. (1981) in *Meta-Analysis in Social Research* and Lipsey and Wilson (2001) in *Practical Meta-Analysis* to have the review be inclusive as possible, that is, the literature search included unpublished works and dissertation reports.

Research Design

The methodology of meta-analysis was used in this study to investigate effective instructional interventions in second through fifth grade for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. The importance placed on

evidence-based decision making in the current educational and research environment has placed a premium on best practices derived from cumulative research. Research synthesis and meta-analysis have replaced traditional narrative synthesis because of the latter's potential for imprecision and error (Cooper, 2010). According to Cooper (2010), modern research synthesis is defined as a literature review that focuses on empirical studies and that seeks "to summarize past research by drawing overall conclusion from many separate investigations that address related or identical hypotheses" (p. 4). Traditional narrative synthesis, however, was deemed by Glass et al. (1981) as limited in dealing with the magnitude of the task of integrating the results of hundreds and sometimes thousands of research studies to which it was applied. Glass (1976) referred to meta-analysis as "the analysis of analyses" (p. 3). According to Glass et al. (1981), meta-analysis is the statistical analysis of the summary findings of a group of empirical studies. Meta-analysis is characterized as quantitative, inclusive, systematic, and aimed at generalization and the drawing of conclusions. In this study, the term meta-analysis was used to mean the statistical combination of groups of research studies using quantitative methods and procedures in order to summarize their findings.

Meta-analysis can be contrasted with the terms and concepts of primary analysis and secondary analysis. According to Card (2012), primary analysis refers to data analysis conducted from data collected from individuals or groups in order to answer the research questions prompted by the study. Secondary analysis refers to reanalysis of the same data in order to answer different research questions or to analyze the data in a different way. Meta-analysis, however, refers to the statistical analysis of the results of

groups of studies, specifically the results obtained in the form of effect sizes. Borenstein et al. (2009) defined effect size as the strength of a relationship between two variables or, more specifically, the degree or magnitude of the treatment effect. Cohen (1988, pp. 8-9) defined effect size to mean "the degree to which the phenomenon is present in the population" or "the degree to which the null hypothesis is false." The null hypothesis assumes that there is no effect or that the effect size is zero. Therefore, when the null hypothesis is false, the effect size is presumed to be some value greater or less than zero. The larger the effect size is (above or below zero), the greater the degree to which the phenomenon being measured is manifested in the population.

Meta-analysis as a form of research synthesis allows investigators to standardize and make precise the methodological and statistical techniques and procedures used to identify, combine, and compare primary research studies, principally through the use of effect sizes, for the purposes of answering research questions that social scientists at one time could not answer adequately through their summaries of empirical research (Cooper, 2010). Focus and methods of synthesis help to distinguish meta-analysis from other forms of literature reviews (Card, 2012). The outcomes of research are the principal focus of meta-analysis; however, not all literature reviews focusing on research outcomes can be called meta-analysis. Meta-analysis differs from other methods of synthesis in its approach to synthesizing findings to answer research questions. For instance, meta-analysis is not as subject to subjectivity on the part of the reviewer as is apparent in narrative research review in which the aim is to qualitatively synthesize research results to reach conclusions. Informal and formal vote counting methods—in which the

reviewer tallies the number of studies for positive, negative, or nonsignificant results or attempts a statistical analysis of these effects in order to draw conclusions—provide more limited and less powerful conclusions than do the meta-analytic methods of focusing on effect sizes (Bushman & Wang, 2009).

However powerful meta-analytic methods may be in allowing researchers to reach conclusions regarding empirical research, meta-analysis cannot overcome the limitations and problems that exist in the primary studies used to produce the meta-analysis (Card, 2012), that is, limitations present in the study design of a primary study will appear in the meta-analysis of the study. Limitations of primary studies could include problems of internal validity and attempts to establish causal relations when meta-analyzing correlational studies. Other limitations affecting meta-analysis arising from restrictions in the research design of primary research studies include limits of methodological artifacts, limits of sampling, and the limits of statistical power (Card, 2012). Methodological artifacts arise from mistaken or biased results produced by the measurement rather than by the effect being studied (Vogt, 2005). Sampling errors can limit the generalizability of study results. Meta-analyses may have inadequate statistical power, that is, they may be prone to Type II error, if the studies used in the meta-analyses are underpowered. Nevertheless, meta-analysis has the potential to create an analysis with more statistical power from primary studies that are underpowered (Card, 2012). This meta-analysis addressed these limitations by incorporating the factors mentioned into the meta-analysis. These factors were coded and subsequent analyses investigated the extent to which these factors affected the overall effect size.

Data Sources and Search Strategies

To locate studies for possible inclusion in the meta-analysis and the review of the literature, the following steps and procedures were used:

1. Searches for key words and subjects were conducted using the Educational Resource Information Center (ERIC), Academic Search Premier, Education Full Text (H.W. Wilson), Education Research Complete, PsycINFO, SAGE Journals, JStor Journals, Wiley Online Libraries, Taylor and Francis Online, Database of Abstracts of Reviews of Effects, E-Journals, CINAHL Plus with Full Text, eBook Collection (EBSCOhost), Health Source: Nursing/Academic Edition, SCOPUS, Education Source, Academic Search Complete, eBook Academic Collection, eJournals, Humanities International Complete, MLA Directory of Periodicals, Political Science Complete, Primary Search, SocINDEX with Full Text, Urban Studies Abstracts Full Text, Google Scholar, ProQuest Dissertations and Theses, and Dissertation Abstracts International Section A: Humanities and Social Sciences. Search terms included Boolean and exact phrase searching using the following terms: *reading interventions, effective reading interventions, reading instruction, effective reading instruction, teaching reading, English language learners, English learners, Spanish-speaking English language learners, Spanish-speaking English learners, reading difficulties, reading disabilities*, and *struggle with reading, meta-analysis + education, meta-analysis + English language learners, meta-analysis + ELLs, meta-analysis + ELs, meta-analysis + learning disabilities, meta-analysis + English language learners + learning disabilities, meta-analysis + English learners + special education, meta-analysis + English learners +*

reading difficulties, reading interventions + English language learners + learning disabilities. Searches were conducted in order to locate all possible studies for inclusion in the meta-analysis.

2. Searches within the following relevant journals were conducted: *Journal of Educational Psychology, School Psychology Review, Psychology in the Schools, The California School Psychologist, Teachers College Record, Reading and Writing Quarterly, American Educational Research Journal, Review of Educational Research, Educational Researcher, Review of Research in Education, School Psychology International, Theory Into Practice, Reading Research Quarterly, Child Development, Preventing School Failure, The Elementary School Journal, Reading Horizons Journal, Learning Disabilities Research & Practice, Learning Disability Quarterly, Journal of Learning Disabilities, The Journal of Special Education, Remedial and Special Education, Topics in Early Childhood Special Education, Teacher Education and Special Education, International Journal of Bilingualism, Second Language Research, TESOL Quarterly, Journal of Latinos and Education, Multicultural Education*, *Bilingual Research Journal, Journal of Applied Linguistics, and Hispanic Journal of Behavioral Sciences.*

3. The reference sections of highly cited articles and seminal articles in the field of education for ELs were examined in order to locate additional studies for possible inclusion in the meta-analysis.

4. The bibliographies of important and highly cited books in the field of education for ELs were examined in order to locate references for studies for possible inclusion in

the meta-analysis.

A concern in meta-analysis is the threat to validity of results due to publication bias. Publication bias refers to the possibility that studies finding effects that are not statistically significant or that are statistically significant but in a negative direction are less likely to be published than studies finding effects that are statistically significant in a positive direction (Card, 2012). Furthermore, a study's content may be judged by journal peer reviewers to be inappropriate for the editorial focus of a particular issue of the publication for which they are reviewing manuscripts (Cooper, 2010). In such a case, the journal may choose not to publish the study even though it may otherwise be a product of quality research. The pattern of exclusion of studies through publication bias works against the goal of meta-analysis, which is to provide a quantitative, impartial, and accurate description of the findings of a population of studies by exhausting the population (Glass et al., 1981). Rosenthal (1979) referred to the missing, unpublished studies as the *file drawer problem.* The negative effects of the file drawer problem can be mitigated through statistical techniques such as the *trim and fill* method and the *fail-safe N* method (Cooper et al., 2009). Both methods work by adjusting the effects of publication bias. Limitations include poor performance in the presence of no publication bias and an overestimation of the number of studies needed to overcome the effects of publication bias.

Fail-Safe N

Lipsey and Wilson (2001) warned against a potential upward bias of the mean effect size due to sampling bias or the omission of unpublished and difficult to locate

studies. Fail-safe N is the number of excluded studies confirming the null hypothesis that would have to exist and be included in a meta-analytic study to lower the average effect size to a statistically nonsignificant level (Card, 2012). The present meta-analysis addressed the file-drawer problem partly through the inclusion of unpublished studies. Although 33% of the studies included in the present meta-analysis were unpublished dissertations, there could exist other studies that were not published (and therefore not included) because of statistically nonsignificant results. Because the number of studies eligible for inclusion in the present meta-analysis was small, the potential for bias remained. Therefore, fail-safe N was calculated. The results of the fail-safe N statistic revealed that approximately 70 studies confirming the null hypothesis would be needed to lower the average mean effect size of the present meta-analysis to a statistically nonsignificant level. Because the extensive searches conducted through electronic databases and manual searches through reference sections of studies produced only 15 studies that met the inclusion and exclusion criteria for the present meta-analysis, it appears unlikely that the number of studies existing unpublished in file drawers is large.

Eligibility Criteria

Studies were deemed eligible and included or excluded from the meta-analysis based on whether they met the following criteria. Eligibility criteria were determined in accordance with principles and recommendations set forth by Clarke (2009).

Inclusion Criteria

To be included in the meta-analysis, a quantitative study met the following criteria:

1. The study investigated reading interventions in second through fifth grade for Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading.

2. The reading intervention served as the independent variable.

3. The study used one of the following types of interventions: reading instruction, vocabulary instruction, oral-language instruction, phonics instruction, phonological awareness instruction, reading fluency instruction, reading-comprehension instruction, one-on-one instruction, small-group instruction, or whole-group instruction.

4. The dependent variable was a score that measured gains in reading.

5. The primary outcome measure was reading comprehension.

6. The study was an experimental, quasi-experimental, or single-case study.

7. The study was published or reported between January 2000 and April 2014.

8. The study was reported—published or unpublished—as a journal article, dissertation, report, or conference presentation.

9. The study was conducted in the United States.

Exclusion Criteria

Studies reviewed for potential inclusion were assessed for exclusionary criteria. To be excluded from the meta-analysis, the study included one of the following approaches.

1. The study was reported or written in a language other than English.

2. The study was conducted in a country other than the United States.

Search Results

The initial searches for studies to include in the present meta-analysis using the prescribed key words and search terms and within the selected databases and research journals yielded 149 articles, dissertations, and conference reports. The 149 studies were all published or issued between January 2000 and April 2014. Application of the inclusion and exclusion criteria resulted in the exclusion of 116 studies. The narrowing down of the studies produced a list of 33 studies for coding. A more careful analysis of the 33 studies through the coding procedure resulted in 18 of the studies being excluded from the meta-analysis because they failed to meet the criteria for inclusion. A final qualifying list of 15 studies that met all of the inclusion and exclusion criteria was produced. The 15 studies were analyzed through the coding protocol and are identified in the reference section with an asterisk. Of the 15 qualifying studies, 10 are articles published in peer-reviewed research journals, and five are unpublished doctoral dissertations obtainable through dissertation databases. The publication or issuance dates for the 15 studies ranges from 2001 to 2013.

Coding

Data were collected through a coding protocol designed by the researcher (see Appendix A for coding protocol). The coding protocol was pilot tested in order to learn whether modifications were warranted. Pilot testing consisted of having the researcher and another coder independently code a set of five studies. The second coder was an experienced researcher and professor of education with a doctorate degree in education. The coded set of studies allowed for evaluation of intercoder reliability (Card, 2012),

which was assessed through percentage of agreement. Candidate studies meeting the inclusion criteria for the meta-analysis were coded.

The researcher and the second coder completed the pilot testing for the meta-analysis. Training of the coder consisted of an introduction to the meta-analysis and its purpose and an explanation of the coding protocol (Orwin & Vevea, 2009). Each coder independently coded a selected subset of studies in order to identify problem areas involving coder variability. In order to check for accuracy of coding and to evaluate the replicability of coding for the meta-analysis, the interrater reliability between the coders was evaluated and established. Interrater reliability is reported through the indices of agreement rates and Cohen's kappa (Card, 2012). The researcher selected five studies to be coded for interrater reliability. The researcher and the second coder coded the five studies independently and compared the completed coding forms. After all five of the studies were coded, the ratio of agreement was calculated and established at 98%. The coders then reviewed and discussed the differences in coding. After discussions, the coders resolved the differences resulting in a 100% agreement on coding. Discussions between the coders revealed flaws in the coding protocol. The researcher revised the coding protocol to reflect the typical format and flow of peer-reviewed research articles in order to simplify the task of coding and lessen the time needed to complete a study coding. In order to test the revised coding protocol, the researcher conducted a second round of pilot testing. The second pilot test was conducted approximately 9 months after the initial pilot test. The researcher and the second coder independently recoded a set of two studies previously included in the original set of five studies. The second coder

confirmed the improved ease and flow of the revised coding protocol. Both coders reported obtaining nearly identical coding results compared with the first coding. The interrater reliability was 100% for the second round. The revised coding protocol is included in Appendix A.

Report Characteristics

The report characteristics of the study were coded in this section. Included in this section are the report ID number, the author's or authors' names, the year of appearance of the report or publication, the type of report (e.g., journal article, book or book chapter, etc.), whether the document was peer reviewed, validity and reliability of the intervention, source and funding for the intervention, study characteristics (e.g., experimental, qualitative, etc.), and intervention characteristics.

Setting Characteristics

The characteristics of the setting were coded using the following categories: participant setting (state), type of community (e.g., urban, suburban, or rural), type of school (public, private, charter), student placement setting (e.g., general education, special education, etc.), study instructional grouping, and instructional language format or program.

Participant and Sample Characteristics

Participant and sample characteristics were coded in this section. Included in this section were school labeling of students (e.g., gifted, average, at-risk, etc.), type of disability (if applicable), socioeconomic status, grade level, sample size, type of sampling (e.g., random selection, random assignment, or convenience sample), gender, ethnicity,

and reading level. Participant and sample characteristics were coded for experimental studies and for comparison studies.

Interventions and Independent Variables

Studies were coded based on the type of interventions or independent variables. Included in this section were the types of intervention or instruction (e.g., decoding, fluency, vocabulary, Response to Intervention, Peer-Assisted Learning Strategies, phonemic awareness, Culturally Responsive Pedagogy, etc.).

Outcome or Dependent Measure

In this category, the outcome measures of the study were coded. The dependent measures of the study included the type of achievement test (e.g., standardized achievement test, teacher-developed, curriculum-based, aptitude test, etc.), the validity and reliability of the outcome measure, and the time measurement relative to administration of the intervention.

Effect Sizes and Statistics Reported

Studies were coded for the types of statistics reported. This category included means and standard deviations, sample sizes, confidence intervals, effect sizes, Hedges' g, standard error, weights, and effect-size measure.

Research Questions

The meta-analysis addressed the following research questions:

1. What outcomes result from reading interventions in second through fifth grade for Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

2. To what extent are reading-comprehension strategies (e.g., listening comprehension, repeated reading, direct instruction, cooperative learning, peer-assisted learning, guided reading, meta-cognitive strategies, developing background knowledge, and second-language acquisition strategies) effective in improving the reading performance in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

3. What is the effect of including culturally responsive pedagogy on the reading comprehension in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

4. To what extent is a reading intervention's effectiveness moderated by the following variables: duration of instruction, frequency of instruction, length of instruction, quality of instruction, instructional groupings (small-group versus whole-class), general education inclusion, resource program pullout or push-in, or special day class instruction?

Data Analysis

In order to address the research questions, effect sizes obtained from the primary study reports were computed. Multiple effect sizes for the same dependent variable were combined so that there is one effect size per dependent variable in a study resulting in independent effect sizes (Lipsey & Wilson, 2001). The effect sizes were tested for equality using the test of homogeneity. The test of homogeneity was found to be statistically significant, and, therefore, the effect sizes were not homogeneous. Because the test of homogeneity was statistically significant, an investigation of the effect sizes was undertaken to assess the outlying effect sizes and to obtain a homogeneous set.

Three of the studies produced effect sizes that appeared to be extreme values and therefore unrepresentative of the research and the entire distribution of effects. In accordance with the recommendation of Hedges and Olkin (1985), the outliers were removed and the adjustment resulted in a homogenous distribution of effect sizes.

More fine-tuned analyses were conducted with effect sizes aggregated according to distinct coded features (e.g., different kinds of treatments, outcome measures, learner populations, quality of research studies), and comparisons were drawn between these average effects. The following subsections outline the statistical procedures that were used in the present meta-analysis.

Effect-Size Measures

Effect sizes were extracted from the study reports (or calculated based on the data provided in the reports) and compared. Cohen's (1988) *d* was used in order to compare the performance of treatment groups against the performance of the comparison groups on the outcome measures. For the subset of primary studies that reported group change between pretests and posttests, Cohen's *d* was used as well to compare the magnitudes of the gains.

The *d* index, or the standardized mean difference (Cohen 1988), was calculated by subtracting the mean value of the comparison group on the dependent measure from the mean value of the treatment group on the same measure and then dividing the difference by the pooled standard deviation of the two groups. If the primary study investigated pretest to posttest differences within a single group (i.e., repeated measures design), Cohen's *d* was calculated on the basis of the mean gain from the pretest to the posttest for

a single group on a single measure by dividing the difference between the mean posttest and pretest values by the standard deviation of the difference scores (Borenstein et al., 2009, pp. 23-24).

If a study did not report the effect size measure, every effort was made to calculate it from the statistics reported in the study and to obtain additional information from the authors if necessary. If a study reported the group means and standard deviations or the participants' raw scores, Cohen's *d* was calculated from these reported values. For studies reporting *t* or *F* values, *d* was calculated from these values using the formulas provided by Lipsey and Wilson (2001, p. 198).

The 15 qualifying studies for the present meta-analysis generated 21 effect sizes due to single studies reporting multiple effect sizes. In order to increase the generalizability of the meta-analysis, only one set of effect sizes (i.e., one effect size per study) should be reported (Ellis, 2010). Additionally, Lipsey and Wilson (2001) recommended combining effect sizes within one study in order to avoid the issue of nonindependence of effect size values. Therefore, effect sizes from studies in the present meta-analysis that contributed multiple effect sizes were combined (Lipsey & Wilson, 2001, p. 114). The result was multiple effect sizes combined into one effect size with a common metric.

Borenstein et al. (2009, p. 27) pointed out that the *d* index tends to be biased upwardly when based on small sample sizes. Therefore, after the *d* values were obtained, they were converted to Hedges' *g* values, that is, unbiased estimates (Borenstein et al., 2009, p. 27).

The effect sizes were tested for homogeneity using Hedges' (1981) *Q* statistic for each type of outcome, and outliers, when identified, were examined. The purpose of the homogeneity test is to investigate the possible presence of extreme values that may not be representative of the population and does not influence the findings of the meta-analysis disproportionately (Lipsey & Wilson, 2001). Effect sizes that were homogeneous were pooled across all treatment groups, and the pooled effect size was tested for statistical significance. Because statistical significance was found, the fail-safe *N* was calculated.

Based on the guidelines suggested by Cohen (1992), the effect size of .20 was interpreted as small, .50 as medium, and .80 as large. The first research question was addressed by the reporting of each study's effect sizes. The outcomes from each of the reading interventions were averaged to obtain an overall effect size.

To address Research Question 2, effect sizes were averaged and tested for homogeneity and statistical significance.

Moderator Variables

As evident from the Research Questions, the purpose of the study was not only to establish the overall relationship between the independent variable (i.e., reading instructional practices and strategies) and the dependent variable (i.e., reading) but also to investigate the factors that are associated with variations in the magnitudes of the relationships between these two variables, that is, the so-called moderator variables (Rosenthal, 1991).

In line with Research Question 3, if the extent of inclusion of cultural practices and strategies can be coded as a continuous variable, then Research Question 3 was

addressed using a regression analysis (Card, 2012, pp. 207-210). If inclusion of cultural practices and strategies cannot be coded as a continuous variable, the fixed effects analysis of variance (ANOVA) was used, if there were sufficient numbers of studies using cultural practices and strategies.

Research Question 4 investigated the moderator variables: duration of instruction, frequency of instruction, length of instruction, quality of instruction, whole-class versus small-group instruction, general education inclusion, resource program pullout or push-in, and special day class instruction. If there was a sufficient accumulation—at least three or four—for each of the components of the variables, then a fixed effects ANOVA was used (Card, 2012, pp. 198-207) to assess for differences.

CHAPTER IV

RESULTS

The purpose of this study was to conduct a meta-analysis of research into effective instructional practices and strategies in second through fifth grade for Spanish-speaking English learners (EL) who have reading disabilities and English learners who struggle with reading. Specific goals were to investigate the effects of reading instruction on the reading achievement of ELs, to identify moderator variables and their influence on reading instruction and achievement, and to investigate which instructional interventions, techniques, and practices can be considered effective and evidence based. The following section provides descriptions of the study results and constitutes an overview of the study. The section does not directly address the research questions. Research questions with accompanying tables discussing study results and a summary follow this section.

Overview of Results

The meta-analysis synthesized the results of 15 empirical research studies that met the inclusion criteria for instructional interventions for ELs who have reading disabilities and ELs who struggle with reading. The descriptive information for the 15 qualifying studies including intervention description, study design, criteria for inclusion of students in the study, and type of posttest were presented in Table 1. The research studies were published (peer-reviewed journal articles) and unpublished (dissertations) quasi-experimental and single-subject studies and were available in research databases in education. Ten of the studies were research articles published in journals, and five of the studies were doctoral dissertations. Seven-hundred-and-eighty-nine students participated

in the 15 studies. The majority of the studies were pretest-posttest design. The reading interventions varied with instruction based on published commercial programs, researcher-developed interventions, and school-based classroom and supplemental reading instruction.

Although the present meta-analysis sought to review empirical research on effective reading interventions in second through fifth grade for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading, only one study that met the inclusion criteria directly investigated ELs with reading disabilities (Saenz et al., 2005, see Table 2). This situation severely limited the generalization of results of the present meta-analysis to the population of ELs with reading disabilities. ELs with reading disabilities were included in all of the other studies, but they could not be disaggregated. The other 14 studies investigated ELs based on inclusion criteria that consisted of a mix of categories such as *at risk for reading difficulties, reading below grade level, difficulty learning to read, at risk for reading related disabilities, at risk for failure in reading, struggling readers,* and *reading assessment prescreening,* among other categories. The results of the 14 studies helped to inform an understanding of ELs who struggle with reading for whom conclusions can be drawn based on the meta-analytic results.

Of the 15 studies, seven studies used commercial reading interventions such as Harcourt Reading Interventions (Arriaza de Allen, 2010), SRA Early Intervention in Reading (Arriaza de Allen, 2010), Read Naturally (De la Colina, Parker, Hasbrouck, & Lara-Alecio, 2001; Denton et al., 2004; Kamps et al., 2007), Read Well (Denton et al., 2004; Kamps et al., 2007; Santoro, Jitendra, Starosta, & Sacks , 2006), Reading Mastery

Table 1
Overview and Descriptive Information for Qualifying Studies

Study	Intervention description	Design	Grade	Criteria for student inclusion	Posttest
Allen (2010)	Harcourt Reading Interventions; SRA Early Intervention in Reading	baseline across groups		grade level; prescreening; teacher recommendation	comprehension
Baker et al. (2012)	paired bilingual program: Spanish and English instruction and English only	longitudinal study	2-3	at risk for reading difficulties	reading comprehension
De la Colina et al. (2001)	Read Naturally translated into Spanish	multiple-baseline (across subjects) 3 groups	2	at risk: low achieving; prescreening	comprehension questions

Table 1 continues

Table 1 (continued)

Study	Intervention description	Design	Grade	Criteria for student inclusion	Posttest
Denton et al. (2004)	tutoring Read Well, systematic phonics and decodable text Read Naturally, repeated reading, fluency, vocabulary, and comprehension	pretest-posttest, treatment and comparison	2-5	difficulty learning to read	passage comprehension
DiGirolamo (2012)	vocabulary/ comprehension instruction	pretest-posttest, one-group treatment only	3-5	DIBELS intensive category; teacher recommendation	Delaware Comprehensive Assessment System (DCAS) comprehension
Haager & Windmueller (2001)	Project Plus; supplemental reading instruction	repeated measures	2	at risk for reading-related disabilities; prescreening, DIBELS	DIBELS, Word Sentence Fluency (WSF)

Table 1 continues

Table 1 (continued)

Study	Intervention description	Design	Grade	Criteria for student inclusion	Posttest
Kamps et al. (2007)	RTI; second tier: Reading Mastery, Read Well, and Read Naturally; third tier: reading program	pretest-posttest, experimental, comparison	2	at risk for reading failure; prescreening, DIBELS	Woodcock Reading Mastery Test (WRMT), passage comprehension
Landa (2009)	oral repeated reading, fluency and literal comprehension questions	multiple baseline across subjects	3-5	at least one year behind grade level; teacher recommendation	Analytical Reading Inventory, oral reading and comprehension
Linan-Thompson & Hickman-Davis (2002)	supplemental reading instruction: fluency, phonemic awareness, comprehension, spelling, word analysis, oral language, vocabulary	repeated measures	2	at risk for reading difficulties; prescreening, phoneme segmentation fluency (PSF) DIBELS	Woodcock Reading Mastery Test (WRMT), passage comprehension

Table 1 continues

Table 1 (continued)

Study	Intervention description	Design	Grade	Criteria for student inclusion	Posttest
Linan-Thompson et al. (2003)	English as a Second Language strategies	repeated measures	2	at risk for reading difficulties; teacher recommendation; prescreening, Texas Primary Reading Inventory (TPRI)	Woodcock Reading Mastery Test-Revised (WRMT-R), passage comprehension
Miller (2013)	Sing, Spell, Read, Write (SSRW) phonics and music curriculum	pretest-posttest, one group treatment only	3, 5	prescreening, STAR reading assessment; teacher recommendation, RTI	STAR, comprehension
Proctor et al. (2007)	reciprocal reading, embedded vocabulary; Universal Literacy Environment: computer lab instruction	pretest-posttest, one group treatment only	4	teacher recommendation, struggling readers; prescreening, Gates- MacGinitie Reading Achievement Test	Gates- MacGinitie Reading Achievement Test, comprehension

Table 1 continues

Table 1 (continued)

Study	Intervention description	Design	Grade	Criteria for student inclusion	Posttest
Ramos (2012)	reciprocal teaching and Spanish use	pretest-posttest, one group treatment only	4	prescreening, Woodcock-Munoz Language Survey-Revised (WMLS-R); poor comprehenders	reading comprehension
Saenz et al. (2005)	Peer Assisted Learning Strategies (PALS), partner reading with retell, prediction, summarizing, main ideas	prestest-posttest, treatment, comparison, 3 groups	3-5	ELLs with learning disabilities	Comprehensive Reading Assessment Battery (CRAB), comprehension
Santoro et al. (2006)	Read Well, phonological awareness, phonics, fluency, vocabulary, comprehension	pretest-posttest, one group treatment only	2	underachieving/ below grade level; poor readers	Woodcock Reading Mastery Test-Revised (WRMT-R), passage comprehension

(Kamps et al., 2007), and Sing, Spell, Read, Write (Miller, 2013). Except for the Sing, Spell, Read, Write program, the other commercial programs have been validated through research and can be considered evidence based. Evidence-based instruction is defined as an instructional strategy or intervention that has resulted in consistent positive results when experimentally tested (Mesibov & Shea, 2010).

Those studies not using evidence-based instruction employed the following methods. One study used English as a second language (ESL) strategies (Linan-Thompson, Vaughn, Hickman-Davis, & Kouzekanani, 2003), and one study was conducted in a paired bilingual program (Baker et al., 2012). The other four studies (in addition to the studies using commercial reading programs) used supplemental, school-based reading interventions consisting of instruction in vocabulary, reading, decoding, fluency, phonemic awareness, spelling, word analysis, oral language, and comprehension (DiGirolamo, 2012; Haager & Windmueller, 2001; Landa, 2009; Linan-Thompson & Hickman-Davis, 2002). Ramos (2012) used reciprocal teaching and Spanish for instruction. One study (Proctor, Dalton, & Grishman, 2007) used computers to instruct students with no active instruction by teachers. Peer-assisted learning strategies (PALS) were used by one study (Saenz et al., 2005) for instruction. PALS reading-comprehension strategies included partner reading with retell, prediction, summarizing, and formulation of main ideas.

All of the studies used a form of reading-comprehension assessment for posttests. Two of the studies used state-mandated assessments such as the Delaware Comprehensive Assessment System (DACS) and the Standardized Testing and Reporting

(STAR) assessments (DiGirolamo, 2012; Miller, 2013). Several studies used commercial assessments. Four studies used the Woodcock Reading Mastery Test (WRMT; Kamps et al., 2007; Linan-Thompson & Hickman-Davis, 2002; Linan-Thompson et al., 2003; Santoro et al., 2006), one study used the Analytical Reading Inventory (Landa, 2009), Saenz et al. (2005) used the Comprehensive Reading Assessment Battery (CRAB), and one study used the Gates-MacGinitie Reading Achievement Test (Proctor et al., 2007). Additionally, one study used the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Haager & Windmueller, 2001), and five studies used researcher-developed or school-based reading comprehension tests (Arriaza de Allen, 2010; Baker et al., 2012; De la Colina et al., 2001; Denton et al., 2004; Ramos, 2012).

Research Questions

The results of the literature search and the coding were used to address the research questions advanced in this meta-analysis that investigated effective reading interventions for ELs with reading disabilities and ELs who struggle with reading. The meta-analysis addressed the following research questions:

1. What outcomes result from reading interventions in second through fifth grade for Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

2. To what extent are reading comprehension strategies (e.g., listening comprehension, repeated reading, direct instruction, cooperative learning, peer-assisted learning, guided reading, meta-cognitive strategies, developing background knowledge, and second language acquisition strategies) effective in improving the reading

performance in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

3. What is the effect of including culturally responsive pedagogy on the reading comprehension in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

4. To what extent is a reading intervention's effectiveness moderated by the following variables: duration of instruction, frequency of instruction, length of instruction, quality of instruction, instructional groupings (small-group versus whole-class), general education inclusion, resource program pullout or push-in, or special day class instruction?

Research Question 1

The effect size data, Hedges' *g* statistics, standard error, and sample sizes for the meta-analytic studies investigating reading interventions for Spanish speaking ELs with reading disabilities and ELs who struggle with reading are summarized in Table 2.

Calculations completed on the 15 studies yielded 21 effect sizes measuring the results of the interventions investigated by these studies. Five studies yielded multiple effect sizes. Linan-Thompson and Hickman-David (2002) produced three effect sizes (1.20, 1.35, 0.89), Denton, Anthony, Parker, and Hasbrouck (2004) yielded two effect sizes (0.00, 0.16), Saenz, Fuchs, and Fuchs (2005) produced two effect sizes (0.75, 0.02), Baker et al. (2012) yielded two effect sizes (0.51, 0.08), and DiGirolamo (2012) produced two effect sizes (0.50, 0.80). For each of these studies, the effect sizes were combined to yield one effect size per study (Borenstein, Hedges, Higgins, & Rothstein, 2009). Effect sizes were corrected to yield an unbiased effect-size estimate *g* (Hedges, 1981).

The *g* statistics ranged from .07 (Proctor, Dalton, & Grisham, 2007) to 4.17 (Ramos, 2012). Grouped according to Cohen's (1992) criteria for evaluating magnitude of effect size, two studies produced very small effect sizes (*g* = .07, Proctor et al. 2007; *g* = .10, Denton, Anthony, Parker, & Hasbrouck, 2004), two studies produced small effect sizes (*g* = .33, Baker et al., 2012; *g* = .38, Saenz, Fuchs, & Fuchs, 2005), four studies yielded medium effect sizes (*g* = .52, Santoro, Jitendra, Starosta, & Sacks, 2006; *g* = .71, De la Colina, Parker, Hasbrouck, & Lara-Alecio, 2001; *g* = .78, Miller, 2013; *g* = .71, DiGirolamo, 2012), three studies had large effect sizes 1.00 or greater (*g* = 1.00, Linan-Thompson & Hickman-Davis, 2002; *g* = 1.01, Landa, 2009; *g* = 1.24, Linan-Thompson et al., 2003), four studies had very large effect sizes (*g* = 1.33, Kamps et al., 2007; *g* = 1.34, Arriaza de Allen, 2010; *g* = 2.75, Haager & Windmueller, 2001; *g* = 4.17, Ramos, 2012). Lipsey and Wilson (2001) cautioned against dismissing small or modest effect sizes without considering the context of the study. Given this caveat, it is evident from the effect-size statistics that overall the studies produced positive effects for the students who participated in the study interventions.

Sample sizes varied widely among the meta-analytic studies. Sample sizes ranged from 2 (Santoro et al., 2006) to 179 (Haager & Windmueller, 2001). According to Card (2012), larger sample sizes yield greater statistical power; that is, studies need adequate statistical power in order to detect a meaningful magnitude of effect. By combining effect sizes into an overall effect size representing all of the meta-analytic studies, the present meta-analysis overcomes the effects of the underpowered studies. Studies with small sample sizes (N < 30) produced medium to very large effect sizes with Arriaza de

Table 2
Effect Sizes for Qualifying Studies

Study		Sample size		Effect size	Study effect size Hedges' g	Standard error
Arriaza de Allen (2010)		10		1.49	1.34	0.50
		English Only	Bilingual			
Baker et al. (2012)	2nd grade	47	34	0.51	0.33	0.18
	3rd grade	38	20	0.08		
		85	54			
De la Colina et al. (2001)	pretest	29		0.72	0.71	0.27
	posttest	29				
Denton et al. (2004)	Read Well	19	14	0.00	0.10	0.21
	Read Naturally	32	28	0.16		
DiGirolamo (2012)	cycle 2	2		0.50	0.71	0.85
	cycle 1	5		0.80		
Haager & Windmueller (2001)		179		2.76	2.75	0.15

Table 2 continues

Table 2
(continued)

Study		Sample size	Effect size	Study effect size Hedges' *g*	Standard error
Kamps et al. (2007)	DI*	32	1.35	1.33	0.30
	EL	23			
Landa (2009)		4	1.01	1.005	0.75
Linan-Thompson & Hickman-Davis (2002)	1:1	8	1.20	1.00	0.24
	1:3	12	1.35		
	1:10	20	.89		
Linan-Thompson et al. (2003)		26	1.28	1.24	0.30
Miller (2013)		29	0.80	0.78	0.27
Proctor et al. (2007)		ELL 16	EO 14	0.07	0.07	0.37
Ramos (2012)		10		4.38	4.17	0.84
		8				
Saenz et al. (2005)		10, 10	LD	0.75	0.38	0.33
		10, 8	LA	0.02		
Santoro et al. (2006)		2		0.13	0.52	1.02

*direct instruction

Allen (2010; N = 10) with *g* of 1.34, DiGirolamp (2012; N = 7) producing *g* of .71, Landa (2009; N = 4) generating *g* of 1.01, Linan-Thompson et al. (2003; N = 26) obtaining *g* of 1.24, Miller (2013; N = 29) producing *g* of .78, Ramos (2012; N = 18) yielding *g* of 4.17, and Santoro (2006; N = 2) generating *g* of .52. Because these studies lack statistical power and given that statistical power refers to the probability that an effect exists when it truly does (Card, 2012), their effect sizes should be viewed with caution.

Studies with larger sample sizes produced small to very large effect sizes with Baker et al. (2012; N = 139) generating *g* of .33, De la Colina et al. (2001; N = 58) obtaining *g* of .71, Haager and Windmueller (2001; N = 179) with *g* of 2.75, Kamps et al. (2007; N = 55) yielding *g* of 1.33, Linan-Thompson and Hickman-Davis (2002; N = 40) producing *g* of 1.00, and Saenz et al. (2005; N = 38) generating *g* of .38. The effect size estimates for the studies are more reliable because they have smaller standard errors (.15 to .33) and have more statistical power due to larger sample sizes. Their results, therefore, should be viewed with more confidence. The standard error statistic is important because the smaller the standard error, the more precise is the estimate of the mean (Ellis, 2010). Additionally, the smaller the standard error, the narrower is the confidence interval. Finally, two of the studies with adequate sample sizes produced below small effect sizes with Denton et al. (2004; N = 93) producing an effect size of .10 and Proctor et al. (2007; N = 30) producing an effect size of .07. For both of these studies, the standard errors are large so that zero is in the 95% confidence interval. Therefore, results of these two studies should be viewed with caution.

The effect sizes for studies using commercial reading programs varied widely. For example, Denton et al. (2004) using Read Well and Read Naturally had a very small effect of .10. Santoro et al. (2006) using Read Well had a g = .52, which is a medium effect. Kamps et al. (2007) using Read Well, Read Naturally, and Reading Mastery yielded a very large effect of 1.33. Arriaza de Allen (2010) used Harcourt Reading Interventions and SRA Early Intervention in Reading with g = 1.34. The standard error for these four studies was .21 for Denton et al. (2004), .30 for Kamps et al. (2007), .50 for Arriaza de Allen (2010), and 1.02 for Santoro et al. (2006) indicating a larger confidence interval for the estimate of the population effect size. The Denton et al. (2004) study produced a small effect size of .10 with a large standard error, so that the confidence interval for the estimate of the population effect size would contain zero.

The largest effect size (g = 4.17) resulted from the Ramos (2012) study. Ramos used reciprocal teaching and the use of Spanish in instruction for his reading intervention. Given Cohen's (1992) criterion of .20 as a low effect size, .50 as a moderate effect size, and .80 as a large effect size, the study obtained an extremely large effect. The study by Haager and Windmueller (2001; g = 2.75) with a very large g used the Project Plus intervention that emphasized early intervention for ELs struggling with reading.

Proctor et al. (2007) used computer-based instruction with no active instruction by teachers to yield a very small effect of .07. For population effect size, the confidence interval contains zero indicating that this computer-based instruction may not improve reading comprehension.

The study by Ramos (2012) generated a very large effect size of 4.17. Although

the study had a relatively small sample size of 18 students, a large standard error of .84, and a wide interval, the study produced a large effect. The Ramos (2012) study was one of three studies using Spanish intentionally in instruction. De la Colina (2001) used Read Naturally translated into Spanish with *g* of .71. Baker et al. (2012) produced an effect size of .33 in a bilingual education classroom setting. With a sample size of 58 and a standard error of .27 for the De la Colina (2001) study, and a sample size of 139 and standard error of .18 for the Baker et al. (2012) study, alongside the Ramos (2012) study, results indicated a positive effect for the use of Spanish in interventions for ELs struggling with reading.

Studies that used comprehension instruction as part of a regular classroom curriculum generated small to large effect sizes. The DiGirolamo (2012) study yielded *g* of .71, the Landa (2009) study produced an effect size of 1.01, the Linan-Thompson and Hickman-David (2002) study had *g* of 1.00, and the Saenz et al. (2005) study, used peer-assisted learning strategies, to obtain an effect size of .38. Results indicated that direct instruction in comprehension, although taught through the different methods used in the different classrooms of the studies cited, demonstrated promise as an effect instructional intervention for ELs who struggle with reading.

The final two studies, which did not fit in with the other studies, produced medium to large effect sizes. The Linan-Thompson et al. (2003) study, conducted in an English as a second language setting, had *g* of 1.24. The Miller (2013) study used a curriculum of phonics and music called Sing, Spell, Read, Write to produce *g* of .78. Both studies had small sample sizes with N = 29 for Miller (2013) and N = 26 for Linan-

for Linan-Thompson et al. (2003).

Research Question 2

The average effect size (Hedges' *g,* correcting for the small upward bias affecting the calculation of *d*; Hedges, 1981) for the 15 studies was $g = 1.15$ with a standard error of .07. The effect size was based on all the study interventions (commercial reading programs, research-developed interventions, and curriculum-based classroom reading interventions). The test for homogeneity yielded a large *Q* value of 198.11 for the 15 studies and indicated that there is a substantial variation and a lack of homogeneity in the set of studies. [The chi-square value for $k - 1$ degrees of freedom, where *k* equals the number of effect sizes in the meta-analysis, was smaller ($X^2_{14} = 24.64$) than the *Q* statistic indicating rejection of the hypothesis that the population effect sizes were homogeneous.] In order to investigate outliers that resulted in the rejection of homogeneity, contributors to the *Q* statistic were investigated. The largest contributor (Haager & Windmueller, 2001) was eliminated resulting in an average *g* of .66 and a *Q* of 44.67 based on 14 studies. Still lacking homogeneity, the contributors to *Q* were investigated, and the Proctor et al. (2007) study was found with the largest value. Upon elimination, the resulting average *g* based on 13 studies was .62 and *Q* (27.16) was still not homogenous. The Denton et al. (2004) study was eliminated with a resultant average *g* of .72 and a nonstatistically significant *Q* (19.59) based on 12 studies. The recalculated average effect size was $g = .72$ with a standard error of .09 and 95% confidence interval of $.72 \pm .18$ (.54, .90) indicating that the overall effect size is not zero and the range is moderate to large effect size. The medium average effect size of .72 indicated that the reading

interventions used in the 12 studies produced positive results in improving reading comprehension for ELs who struggle with reading.

Research Question 3

Five of the meta-analytic studies used features of culturally responsive pedagogy in instruction (Baker et al., 2012; Denton et al., 2004; De la Colina et al., 2001; Proctor et al., 2007; Ramos, 2012). Within the five studies, between one and three of the set of 14 strategies for culturally responsive pedagogy (CRP) listed on the coding protocol were used. The five studies used CRP strategies such as elicitation of prior knowledge, building on students' cultural interests, use of Spanish-English cognates in instruction, and use of Spanish language in instruction. The average effect sizes for the five studies were Denton et al. (2004) and Proctor et al. (2007) with very small effect sizes of .07 and .10, respectively, Baker et al. (2012) producing a small effect size of .33, De la Colina et al. (2001) generating a medium *g* of .71, and Ramos (2012) producing a very large *g* of 4.17.

Research Question 4

The duration of instruction, frequency of instruction, length of instruction, quality of instruction, and intervention instructor training for the meta-analytic studies investigating reading interventions for Spanish speaking ELs with reading disabilities and ELs who struggle with reading are summarized in Table 3.

To address whether an intervention's effectiveness was moderated by length of instruction (measured in total days of instruction), the meta-analytic studies were placed in groups according to number of total days of instruction students received for each

Table 3
Length and Quality of Instruction for Qualifying Studies

Study	Duration of Instruction	Frequency of Instruction	Length of Instruction	Measure of Fidelity	Intervention Instructor and Training
Arriaza de Allen (2010)	45 minutes per day	2 to 5 days per week	47 days	interobserver agreements between tutor and an observer; fidelity checklist; self-evaluations; observations	researcher: trained in University of Florida Literacy Initiative (UFLI)
Baker et al. (2012)	2nd grade: 120-135 minutes per day 3rd grade: 120 minutes per day	5 days per week	school year	teachers trained in reading programs; literacy coaches; planning meetings; Schoolwide Reading Model fidelity standards	classroom teachers: trained in school-adopted language arts programs

Table 3 continues

Table 3 (continued)

Study	Duration of Instruction	Frequency of Instruction	Length of Instruction	Measure of Fidelity	Intervention Instructor and Training
De la Colina et al. (2001)	45 minutes per day	3 days per week	36 days	direct observation during weekly visits by researcher; fidelity checklist; teacher self-monitoring	classroom teacher: no data on training
Denton et al. (2004)	40 minutes per day	3 days per week	30 days	active engagement, pacing, prescribed procedures for each intervention; feedback; observations; fidelity ratings; collected data; supervision	tutors (undergraduate students): trained in Read Well and Read Naturally

Table 3 continues

Table 3 (continued)

Study	Duration of Instruction	Frequency of Instruction	Length of Instruction	Measure of Fidelity	Intervention Instructor and Training
DiGirolamo (2012)	40 minutes per day	5 days per week	100 days	daily common planning time; twice-weekly Professional Learning Community (PLC) sessions; literacy specialist coaching and observations	classroom teacher: trained in school-adopted language arts programs
Haager & Windmueller (2001)	no time data; 3-4 lessons per day	one hour per day with resource specialist for students with LD in inclusion and small group	school year	professional development; consultation; feedback	general education classroom teachers, special education resource specialist, and paraprofessionals: teacher professional development

Table 3 continues

Table 3 (continued)

Study	Duration of Instruction	Frequency of Instruction	Length of Instruction	Measure of Fidelity	Intervention Instructor and Training
Kamps et al. (2007)	no time given for literacy block	no data	no data	fidelity checklist and scoring	classroom teachers, reading teachers, paraprofessionals, volunteers: training, professional development, coaching
Landa (2009)	10-20 minutes per day	5 days per week	60 days	fidelity checklist; Interobserver Agreement Forms and ratings	researcher: no data
Linan-Thompson & Hickman-Davis (2002)	30 minutes per day	4 to 5 days per week	58 days	teachers and researchers met once a week	classroom teacher: intervention training

Table 3 continues

Table 3 (continued)

Study	Duration of Instruction	Frequency of Instruction	Length of Instruction	Measure of Fidelity	Intervention Instructor and Training
Linan-Thompson et al. (2003)	30 minutes per day	4 to 5 days per week	58 days	fidelity checklists; observations; quality of instruction composite score	classroom teachers: 34 hours of professional development
Miller (2013)	30 minutes per day	5 days per week	160 days	no information	classroom teacher–Tier 1; researcher–Tier 2: 3 hour training video
Proctor et al. (2007)	45 minutes per day	3 days per week	12 days	not applicable; no active teaching	not applicable; no active teaching
Ramos (2012)	30 minutes per day	5 days per week	28 days	fidelity checklist; audio recordings of sessions; fidelity ratings	researcher: no data

Table 3 continues

Table 3 (continued)

Study	Duration of Instruction	Frequency of Instruction	Length of Instruction	Measure of Fidelity	Intervention Instructor and Training
Saenz et al. (2005)	35 minutes per day	3 days per week	45 days	observation checklist; lesson plan review	classroom teachers: full-day workshop, PALS manual
Santoro et al. (2006)	30 minutes per day	3 days per week	38 days	interobserver agreements; feedback; rating list	special education teacher; graduate students: overview of lessons, curriculum, program design, lesson modeling, trainee practice, lesson scripts; 2 hour training in Read Well

intervention. Group 1 (small number of days of instruction) consisted of five studies: Proctor et al. (2007; 12 days), Ramos (2012; 28 days), Denton et al. (2004; 30 days), De la Colina et al. (2001; 36 days), and Santoro et al. (2006; 38 days). Group 2 (medium number of days of instruction) had six studies: Saenz et al. (2005; 45 days), Arriaza de Allen (2010; 47 days), Linan-Thompson & Hickman-Davis (2002; 58 days), Linan-Thompson et al. (2003; 58 days), Landa (2009; 60 days), and DiGirolamo (2012; 100 days). Group 3 (large number of days of instruction) consisted of three studies: Miller (2013; 160 days), Baker et al. (2012; year long), and Haager and Windmueller (2001; year long). The Kamps et al. (2007) study had no data on length of intervention.

The analog to one-way analysis of variance (ANOVA) was calculated on length of instruction for three groups. The Q value of 19.68 for between groups with 2 degrees of freedom exceeded the chi-square value of $X^2_2 = 5.99$ indicating that these groups are significantly different. The mean for the 14 studies was 1.11 with a standard error of .07 and a 95% confidence interval of 1.11 ± .14 (0.97, 1.25). The weighted mean effect size for group 3 ($g = 1.60$, standard error = .10 and a 95% confidence interval from 1.40 to 1.80) was larger than for both group 1 ($g = 0.41$, standard error = .15 and a 95% confidence interval from 0.12 to 0.70) and group 2 ($g = 0.94$, standard error = .15 and a 95% confidence interval from 0.65 to 1.23) with no overlapping confidence intervals. The mean effect size for group 2 was larger than the effect size for group 1. Based on the results of the weighted mean differences in groups by length of instruction, greater numbers of days of instruction are associated with improved reading comprehension.

A review of the frequencies for the variable duration of instruction indicated that

the majority of the studies (11 of 15 studies) implemented their instructional interventions in lessons of between 30 and 45 minutes of duration. One study implemented its lessons in blocks of 10 to 20 minutes. One study's lessons took 120 to 135 minutes per day. Two studies provided no data for duration of lesson. Due to the lack of variability in duration of lessons between the studies, this variable could not be analyzed and, consequently, was not investigated for its effect on reading comprehension.

The variable instructional grouping lacked variability in implementation between studies. The majority of studies (10 of 15 studies) used small group and individual tutoring in their instruction. Two studies implemented instruction in whole-class settings. Three studies used both whole-class and small-group settings for instruction without differentiating between the two. Distinctions within the studies were often not made between small group and individual tutoring. Due to the lack of variability in instructional groupings between the studies, this variable could not be analyzed and, consequently, was not investigated for its effect on reading comprehension.

Summary

The literature search of published and unpublished studies that met the inclusion and exclusion criteria for the present meta-analysis that investigated effective reading interventions for ELs with reading disabilities and ELs who struggle with reading identified 15 studies. There were 21 effect sizes from these 15 studies ranging from 0.00 to 4.38. When effect sizes within studies were combined to yield one independent effect size per study and converted to Hedges' *g*, the *g* values ranged from 0.07 to 4.17. Only one study that met the inclusion criteria (Saenz et al., 2005) directly investigated ELs

with reading disabilities and yielded an effect size of 0.75, which is a medium to large effect size. Seven studies used evidence-based reading interventions with varying effect-size values, and the remaining studies employed a variety of methods (research question 1).

The average effect size based on the 15 studies was 1.15, and the studies were found not to be homogeneous (research question 2). When effect sizes from the Haager and Windmueller (2001), Proctor et al. (2007), and Denton et al. (2004) studies were deleted from calculating the average effect size, the resulting average effect size was .72, and the studies were homogeneous. The average effect size is medium to large and statistically different from zero indicating that the results of reading interventions for ELs who struggle with reading were positive.

Research question 3 involved the effect of including culturally responsive pedagogy on reading comprehension. The five studies that used culturally responsive pedagogy generated insufficient data to reach conclusions.

Only the moderator variable of length of instruction was able to be investigated for research question 4. The result of the fixed effects analysis of variance used to compare three levels of length of instruction was statistically significant, indicating that the greater number of days of instruction is associated with larger effects in reading comprehension.

CHAPTER V

DISCUSSION, LIMITATIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to conduct a meta-analysis of research into effective instructional practices and strategies in second through fifth grade for Spanish-speaking English learners (ELs) who have reading disabilities and English learners who struggle with reading. Specific goals were to determine the effects of reading instruction on the reading achievement of ELs, to identify moderator variables and their influence on reading instruction and achievement, and to determine which instructional interventions, techniques, and practices can be considered effective and evidence based.

An extensive search of the literature found 15 empirical research studies that met the inclusion and exclusion criteria for instructional interventions for ELs who have reading disabilities and ELs who struggle with reading. The inclusion and exclusion criteria were different from previously conducted meta-analyses on effective reading interventions for ELs (Cheung & Slavin, 2005, 2012; Gersten & Scott, 1999). The focus of the present meta-analysis was narrowed to both ELs with reading disabilities and ELs who struggle with reading. The literature search included both published and unpublished works (dissertations) conducted between 2000 and 2014.

In order to collect and analyze data from the 15 studies, a coding protocol was developed and pilot tested (see Appendix A). The study characteristics, participant and sample characteristics, setting characteristics, dependent and outcome measures, study designs, interventions and independent variables, and effect sizes and statistics were coded and tallied from the qualifying studies. Effect sizes were retrieved from the studies,

and Hedges' *g* was calculated to correct the upward bias of Cohen's *d* index. Several studies yielded multiple effect sizes; therefore, an average effect size was calculated for each study. The findings from the studies were collected, categorized, and analyzed for differences in effect sizes for the different moderator variables (i.e., duration of instruction, frequency of instruction, length of instruction, quality of instruction, instructional groupings (small-group versus whole-class), general education inclusion, resource program pullout or push-in, or Special-day-class instruction).

Chapter V includes a discussion of the results for each of the four research questions presented in chapter IV. Included are limitations of the meta-analysis, implications for practice, recommendations for future research, and conclusions. The next section provides a summary of results, followed by a presentation of the limitations.

Summary of Results

Research question 1 investigated the outcomes resulting from reading interventions in second through fifth grade for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading. Of the 15 studies that met the inclusion and exclusion criteria, only one study investigated ELs with reading disabilities (Saenz et al., 2005). Although several of the other studies included students with reading disabilities, none of them disaggregated the results for these students. Saenz et al. (2005) obtained a medium effect size of .75 for ELs with reading disabilities, which is comparable to the overall effect size from homogenous studies of .72. The results for research question 2 investigating the effectiveness of reading-comprehension strategies revealed effect sizes for the meta-analytic studies ranging from very small to very large

(*g* values ranged from 0.07 to 4.17). The average effect size for the 12 studies that were found to be homogeneous was .72. The results indicated that reading interventions, in general, are associated with positive effects that improve reading comprehension. Research question 3, investigating the effects of culturally responsive pedagogy on reading achievement, generated insufficient data to reach conclusions. The results for research question 4, investigating moderator variables and their effect on reading comprehension, produced data that suggest increased length of instruction (measured in days) has a positive effect.

Limitations

This section presents some of the limitations that may have an adverse effect on the generalizability of the results and findings of the present meta-analysis.

Publication Bias

Publication bias is a potential threat to the validity of the present meta-analysis of effective reading interventions in second through fifth grade for Spanish-speaking ELs with reading disabilities and ELs who struggle with reading. The exclusion of studies through publication bias may work against the goal of providing a quantitative, impartial, and accurate description of the findings of the empirical studies selected for the meta-analysis. Because the most important predictor of whether a study is published is whether the study produced a positive result (Card, 2012), it is reasonable to assume that the exclusion of unpublished studies through publication bias may have the unintended result of inflating the meta-analytic effects of reading interventions on the reading achievement of ELs with reading disabilities and ELs who struggle with reading. In

other words, the actual effects of the reading interventions may be smaller than the effects and effect sizes obtained through the meta-analysis. Although the present meta-analysis made efforts to avoid the limitations inherent in publication bias, there is no way to know whether all eligible studies have been included. One approach to the limitation of publication bias is through the Fail-safe N (Rosenthal, 1979), wherein the researcher computes the number of excluded studies that would have to exist in file drawers in order to conclude that no true effect exists. Because the number of studies eligible for inclusion in the present meta-analysis was small, the potential for bias remained. Therefore, fail-safe N was calculated. The results of the Fail-safe N statistic revealed that approximately 70 studies confirming the null hypothesis would be needed to lower the average mean effect size of the present meta-analysis to a statistically nonsignificant level. Because the extensive searches conducted through electronic databases and manual searches through reference sections of studies produced only 15 studies that met the inclusion and exclusion criteria for the present meta-analysis, it appears unlikely that the number of studies existing unpublished in file drawers is large.

Inclusion and Exclusion Criteria

Another source of limitation for this meta-analysis may be errors in the statement of the eligibility criteria. Errors may appear in the process of setting the inclusion and exclusion criteria and in the actual execution of the criteria when considering selection or exclusion of studies.

Threats to Validity

Meta-analysis is subject to the limitations inherent in the research designs of

primary studies that are investigated in the meta-analysis (Card, 2012). For the purposes of this meta-analysis, and to the extent possible, threats to the validity of primary studies were identified and reported. The threats to the validity of the primary studies may, however, have the effect of yielding conclusions in the meta-analysis that also reflect this threat.

Sample Homogeneity

It is well established in social science research that results from primary studies can only be generalized to populations represented by the sample (Card, 2012). In terms of characteristics, the subjects in the sample must be representative of the population in order for the findings of the study to inform understanding of the population. For example, to draw conclusions about the reading achievement of Spanish-speaking ELs in the United States, the sample in a study cannot be a group of ELs whose first language is other than Spanish. This question of sample homogeneity can be a limiting factor in meta-analysis. The present meta-analysis attempted to avoid this sample generalizability limitation by applying conclusions to a homogeneous population (i.e., Spanish-speaking ELs with reading disabilities and ELs who struggle with reading) only from samples drawn from a similar set of participants.

Methodological Artifacts

Another potential limitation of the present meta-analysis is the limits imposed by methodological artifacts. Methodological artifacts are errors or biases stemming from imperfections in primary studies that threaten the validity of research findings (Schmidt & Le, 2009). Such artifacts, therefore, threaten meta-analytic findings based on the

primary research. According to Schmidt and Le (2009), sampling errors and data errors are among the study imperfections that create artifacts. Errors in sampling cannot be corrected for because the magnitude of the sampling error in a study is not known. Data errors (e.g., the result of mishandling of data, coding errors, transcription errors, programming errors) are also difficult to correct. Methodological artifacts in primary studies, when apparent, were identified and acknowledged.

Underpowered Studies

Primary research studies can be underpowered or lack statistical power if the study sample size is small (Card, 2012) or if the study sample is disaggregated into subgroups for further analysis (Matt & Cook, 2009). Small sample size in studies may be due to many reasons; however, one source of small sample size occurs when the researcher fails to conduct a power analysis to determine the number of participants needed to achieve an effect size of a certain magnitude. Some of the studies obtained for this meta-analysis had small samples because the researchers used single-subject designs, and not because of a failure to conduct a power analysis. One solution to a situation in which primary studies lack statistical power and thus fail to produce an effect or produce a weak effect is to combine the results of these studies in a meta-analysis to produce a single analysis with greater statistical power (Card, 2012). The present meta-analysis attempted such a meta-analytic combination in order to reveal hidden effects.

Questions Raised Through Meta-Analysis

Although meta-analysis may provide a quantitative and statistical robustness to reviews of educational research, in some cases it may raise questions not sought initially

and point toward the need for further research. For instance, although a meta-analysis may demonstrate the effectiveness of an instructional intervention, it might not show how or in what situation or with what population the intervention would be most effective (Boston, 2002). The present meta-analysis attempted to avoid this limitation by evaluating and reporting on the effects of moderator variables on the instructional interventions.

In conclusion, the limitations presented in this section may affect adversely the reliability and validity of the present meta-analysis. The purpose of this meta-analytic study was to contribute to the knowledge base regarding instruction for ELs. It is hoped that, notwithstanding the limitations presented here, the present meta-analysis contributes to improvements in instructional practices and reading achievement for ELs who have reading disabilities and ELs who struggle with reading. The following section presents a discussion of the findings for the study research questions.

Discussion of Results

The following sections address each of the four research questions presented by the present meta-analysis.

Research Question 1

What outcomes result from reading interventions in second through fifth grade for Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

The findings of the review support the use of instruction addressing EL students' deficits in phonological processing, oral language abilities, listening comprehension, and

reading comprehension, as noted in research cited in the chapter II review of the literature (Durgunoglu et al., 1993; Lindsey et al., 2003; Manis et al., 2004; Nakamoto et al., 2007; Scanlon & Vellutino, 1996; Wagner & Torgeson, 1987). The large effects obtained by using the Read Well, Read Naturally, and Reading Mastery may be due to these programs' emphasis on instruction featuring phonological processing, oral language abilities, listening comprehension, and reading comprehension.

Evidence-based commercial reading programs, in general, were found to have been effective in improving the reading comprehension of ELs who struggle with reading. The programs generated a wide range of effect sizes. For example, Denton et al. (2004) obtained a very small effect of .10 using Read Well and Read Naturally; Santoro et al. (2006) had a medium effect with Read Well of .52; Kamps et al. (2007) achieved a very large effect of 1.33 using Read Well, Read Naturally, and Reading Mastery; and Arriaza de Allen (2010) achieved a very large effect (g = 1.34) with Harcourt Reading Interventions and SRA Early Interventions in Reading. The Read Well program featured systematic phonics, fluency, vocabulary, comprehension instruction, and decodable text for instruction. Read Naturally used repeated reading, oral reading fluency, vocabulary instruction, comprehension instruction, and progress monitoring to instruct students. Harcourt Reading Interventions and SRA Early Interventions in Reading were delivered in individual tutoring sessions. The instructors in the Denton et al. (2004) study were undergraduate students studying special education. They received an unspecified type and amount of training in Read Well. The Santoro et al. (2006) study employed a special education teacher and graduate students as teachers who received extensive training in

Read Well: a workshop in Read Well, overview of lessons, curriculum, program design, lesson modeling, trainee practice, and prereading of lesson scripts. Instructors for the Kamps et al. (2007) study consisted of classroom teachers, reading teachers, paraprofessionals, and volunteers. They received professional development, training, and coaching of an unspecified type and length. Arriaza de Allen (2010), the researcher, delivered the instruction for all the students in her study. Differences in study effects are consistent with the level of expertise expected of classroom teachers with both studies that used classroom teachers (Kamps et al., 2007; Santoro et al., 2006) achieving higher effect sizes than the Denton et al. (2004), who used undergraduate students for instruction. The study researcher (Arriaza de Allen, 2010) also would be expected to provide good fidelity of intervention. Other differences between the studies included a very small sample size of 2 students for the Santoro et al. (2006) study compared with adequate sample sizes for Kamps et al. (2007; N = 55) and for Denton et al. (2004; N = 93). Although all three studies used small-group instruction and included similar types of students (at risk, difficulty learning to read, poor readers), the Kamps et al. (2007) study was conducted in a tier 3 setting (note: although typically tier 3 response to intervention settings are considered to be special education programs, the setting in the Kamps et al., 2007, study was not designated as such). The tier 3 setting was a reading program emphasizing phonological awareness, letter-sound recognition, alphabetic decoding, and fluency. Before being placed in the tier 3 program, the students had received interventions in tiers 1 and 2. The intensity of the tier 3 program may account for the very large effects obtained by Kamps et al. (2007). The results suggest that evidence-

based commercial reading programs, when implemented in a small-group setting with fidelity and by instructors afforded extensive professional development, can be effective for improving the reading comprehension of ELs who struggle with reading. (Note: the inclusion of commercial reading programs in this meta-analysis should not be construed as an endorsement or recommendation of a particular program; rather the emphasis is properly placed on the effective features of the programs.)

Studies using interventions that did not include evidence-based commercial programs were found to have been effective in improving the reading outcomes of ELs who struggle with reading. These studies used standard school-based supplemental reading curricula, although often in a more intensive small-group setting. For example, DiGirolamo (2012) used vocabulary and comprehension instruction in a mix of whole group and small group settings to produce a medium effect size of .71. The DiGirolamo intervention was delivered by regular classroom teachers who received common lesson planning time with their colleagues on a daily basis, engaged in twice weekly professional learning communities, and benefitted from coaching and observation by a literacy specialist. Individual tutoring of oral repeated reading, fluency, and literal comprehension questions were used by Landa (2009) to obtain a large *g* of 1.01. The researcher provided the instruction for the Landa (2009) intervention, which featured progress monitoring, error correction, and maintenance sessions conducted 2, 4, and 6 weeks after the end of the intervention. Supplemental reading instruction in a small group or individual tutoring was used by Linan-Thompson and Hickman-Davis (2002) to generate a large effect size of 1.00. The Linan-Thompson and Hickman-Davis (2002)

supplemental reading instruction was explicit, systematic, and intensive and focused on fluency, phonemic awareness, comprehension, word analysis, spelling, oral language, and vocabulary. The medium to large effect sizes achieved by these three studies was likely due to the implementation of features of effective reading instruction for ELs as detailed in chapter II of the present meta-analysis. Foorman and Torgesen (2001) asserted that ELs at risk for failure in reading require instructional intensity, that is, they require more explicit, more comprehensive, and more intensive instruction (provided in small group settings) than do average readers. Another factor in the medium to large effect sizes generated by the three studies was the quality of instruction, which, as noted in chapter II (Brophy & Good, 1986; Stevenson & Stigler, 1992), is correlated with adequate teacher preparation.

An appraisal of the features of the interventions that demonstrated the most effectiveness focused attention on several elements. First, several of the interventions concentrated on providing instruction addressing phonological processing (decoding) and oral language ability (listening comprehension) as noted in the simple view of reading (see figure 1, chapter I). Second, the interventions supported these two features of instruction by providing instruction in listening comprehension, reading comprehension, systematic phonics, fluency, vocabulary, repeated reading, oral reading fluency, and decodable text. These features of instruction support and help to develop phonological-processing skills and oral-language skills, which, together, lead to improvements in reading comprehension for ELs who struggle with reading. Third, several of the interventions, the evidence-based commercial programs, in particular, provided explicit,

systematic, and intensive instruction, features found to be essential for developing reading in ELs who struggle with reading (Linan-Thompson & Hickman-Davis, 2002). Fourth, the interventions were delivered almost exclusively in a small-group setting. As noted by Foorman and Torgesen (2001), one way to increase the intensity of instruction for struggling readers is to provide instruction individually or in small groups.

Research Question 2

To what extent are reading comprehension strategies (e.g., listening comprehension, repeated reading, direct instruction, cooperative learning, peer-assisted learning, guided reading, meta-cognitive strategies, developing background knowledge, and second language acquisition strategies) effective in improving the reading performance in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

The overall findings of the studies discussed in this section suggest that reading comprehension for ELs who struggle with reading can be improved through use of instructional strategies emphasizing oral-language ability. Strategies such as listening comprehension, repeated reading, direct instruction, cooperative learning, peer-assisted learning, guided reading, meta-cognitive strategies, developing background knowledge, and second-language-acquisition strategies develop oral language abilities because they provide multiple opportunities for students to practice English language skills in meaningful contexts.

The theoretical framework for the present meta-analysis was based in part on the simple view of reading, a theory presented in chapter II under the section titled

Phonological Processing and Struggling Readers Including ELs Struggling with Reading. One aspect of the theory stated that oral language proficiency (along with phonological awareness and decoding) is a necessary component of reading comprehension. Of the studies in the present meta-analysis, Landa (2009), Linan-Thompson and Hickman-Davis (2002), Linan-Thompson et al. (2003), Ramos (2012), and Saenz et al. (2005) focused on developing oral language proficiency. Study effect sizes for these studies were $g = 1.01$ for Landa (2009), $g = 1.00$ for Linan-Thompson and Hickman-Davis (2002), $g = 1.24$ for Linan-Thompson et al. (2003), $g = 4.17$ for Ramos (2012), and $g = 0.38$ for Saenz et al. (2005). Although the study effect size (g) for Saenz et al. (2005) was 0.38, a small effect, the effect size for ELs with reading disabilities within the same study was 0.75, a medium effect. Effects for the other studies were large to very large. In addition to using elements of culturally responsive pedagogy and oral language development, the Saenz et al. (2005) study used peer-assisted learning strategies or peer-mediated instruction (PALS). As detailed in chapter II under the heading *Peer-Assisted Learning Strategies,* among the several ways PALS benefits ELs is that they engage more frequently and for longer periods in language practice than they would during regular classroom instruction. Because PALS expect students to teach each other and to focus on main ideas and comprehending what they are reading, the ELs engage in developing their oral-language skills and listening-comprehension skills, both prerequisites for developing reading comprehension (see Figure 1, p. 15 for model of the modified simple view of reading for ELs). Furthermore, PALS provide ELs with opportunities to receive comprehensible input, to produce comprehensible output, and to negotiate with their peers for meaning of

text and language (Saenz et al., 2005; Swain, 1993). The findings suggest that the instructional features in Saenz et al. (2005)—oral-language development, elements of culturally responsive pedagogy, and PALS strategies—combine to form an effective method for improving the reading comprehension of ELs with reading disabilities.

Ramos (2012) and Haager and Windmueller (2001) achieved very large effects with effect sizes of 4.17 and 2.75, respectively. Haager and Windmueller (2001) used Project Plus, a supplemental reading intervention, in their study. Project Plus worked to identify students whose skills were insufficient for grade-level success and to implement instruction that targeted their specific areas of need. Additionally, Project Plus emphasized extensive professional development and ongoing progress monitoring. The effect generated by the Haager and Windmueller (2001) study demonstrated the Project Plus methods and interventions as a positive means for addressing the reading comprehension difficulties of ELs who struggle with reading. The Ramos (2012) intervention used reciprocal teaching and elements of culturally responsive pedagogy such as Spanish language as a bridge to understand content and Spanish-English cognates. In reciprocal teaching, teachers model how to guide group discussions using four strategies: question generating, clarifying, predicting, and summarizing (Palincsar & Brown, 1984). Once students have learned the strategies they become the teacher in small-group reading sessions with students taking turns leading the discussion, leading to increased meta-cognitive awareness for students. Although it is not possible to separate the effects of reciprocal teaching from the effects of the use of Spanish in instruction, the extremely large effect size obtained by this study suggests that both strategies have value

in the instruction of ELs who struggle with reading. Differences existed in length of intervention between Haager and Windmueller (2001; year long) and Ramos (2012; 28 days). The short length of the Ramos (2012) study suggests the importance of reciprocal learning (metacognitive awareness) and use of Spanish to increase access to content.

The findings of the present meta-analysis lend support to the importance of oral-language (listening comprehension) development for ELs struggling with reading. In line with the modified simple view of reading model (Hoover & Gough, 1990; Gottardo et al., 2008), the input-interaction-output model (Gass, 2006), the comprehensible input hypothesis (Krashen, 1985), and the output hypothesis (Swain, 1993), meta-analytic studies that allowed ELs to practice oral language skills improved the students' reading comprehension skills. Opportunities for ELs to practice oral-language skills, such as provided in PALS or other peer-mediated instruction, should be an emphasized element of instruction for ELs with reading disabilities and ELs who struggle with reading.

Research Question 3

What is the effect of including culturally responsive pedagogy on the reading comprehension in second through fifth grade of Spanish-speaking English learners who have reading disabilities and English learners who struggle with reading?

As presented in chapter IV, features of culturally responsive pedagogy (CRP) in instruction were used in five of the studies (Baker et al., 2012; Denton et al., 2004; De la Colina et al., 2001; Proctor et al., 2007; Ramos, 2012). The studies used CRP strategies such as elicitation of prior knowledge, building on students' cultural interests, and using Spanish language and Spanish-English cognates in instruction.

The findings of the review support the use of Spanish in reading instruction for ELs who struggle with reading. Baker et al. (2012), with an average effect size of 0.33, compared the effects of the use of Spanish in instruction (paired bilingual program) with an English-only reading program. Results indicated that second-grade ELs in the paired bilingual program achieved statistically significant higher scores in reading comprehension than the ELs in the English-only reading program (d = +0.51). The De la Colina (2001) study, with an effect size of 0.71, used Spanish extensively by translating the Read Naturally program into Spanish and conducting the intervention in Spanish. Intervention in the De la Colina (2001) study resulted in improved reading comprehension for ELs. Ramos (2012), with an average effect size of 4.17, used Spanish and reciprocal teaching to improve the reading comprehension abilities of fourth-grade ELs. Study results indicated a minimal use of Spanish by instructors and students. The very large effect sized generated by this study, therefore, was due, most likely, to the use of reciprocal teaching. In general, interventions that used Spanish extensively generated positive outcomes in reading comprehension for ELs who struggle with reading.

As noted in chapter IV, five studies used CRP practices in instruction for ELs who struggle with reading. Teachers who make the effort to incorporate students' home language and cultural norms within the curriculum advance the students' academic engagement and promote a sense of belonging that is associated with academic motivation (Chun & Dickson, 2011). A number of instructional practices considered to be effective were emphasized by Klingner and Soltero-Gonzalez (2009) in their review of research on culturally and linguistically responsive literacy instruction for ELs with LD.

The practices included incorporating the student's home language in lessons by accessing prior knowledge and by using cognates to develop vocabulary skills, use of Spanish-language literacy instruction (decoding, fluency, and comprehension) to promote transfer to English, ensuring that students engage in frequent and meaningful discussion to develop oral language and comprehension skills, using authentic activities to instruct students in phonological awareness and phonics instruction, and incorporating collaborative learning and peer tutoring activities in the classroom. Ramos (2012) used Spanish-English cognates in instruction to facilitate ELs' reading comprehension and to serve as a bridge to understanding content. In terms of CRP practices, the only feature used by the Baker et al. (2012) study was Spanish. Elicitation of prior knowledge and building on students' cultural interests were CRP practices used in the De la Colina (2001) study. Proctor et al. (2007), with an average effect size of 0.07, used CRP practices such as building on students' cultural interests, Spanish-English cognates, and Spanish as a bridge to understanding content to improve ELs' reading comprehension. CRP methods such as elicitation of prior knowledge and frequent progress monitoring were used by Denton et al. (2004) with a resulting effect size of 0.10. Although CRP practices hold much promise in generating improved reading comprehension abilities for ELs who struggle with reading, the use of CRP in the studies reviewed in this meta-analysis was sparse and lacked intensity. The studies that used Spanish (Baker, 2012; De la Colina, 2001; Ramos, 2012) achieved small to very large effect sizes. The studies that used CRP, but not systematic instruction in Spanish (Denton et al., 2004; Proctor et al., 2007), produced very small effect sizes. Conceivably, the very small effect sizes are due

to the lack of instruction in Spanish.

As noted in chapter II, Rueda and Haager (2006) posited that in order for instructional interventions for ELs and for ELs with special needs to be effective, they must include, beyond the usual emphasis placed on the cognitive processes utilized in reading, instruction that takes into account the cultural strengths of these students. Haager and Windmueller (2001), in their supplemental reading intervention, did not use any features of culturally responsive pedagogy in producing a very large effect size of 2.75. The very large effect obtained could due to a number of reasons: the professional development afforded teachers, on-going consultations, special education teachers, resource specialists, general education teachers, special education paraprofessionals, and the 3 to 4 supplemental small-group lessons added to the full general education lesson provided every day.

Cummins' (2000) Theory of Common Underlying Proficiency, which proposes that skills acquired in the first language transfer to the second language, and Gottardo's (2002) findings that phonological awareness skills also transfer from the first language to the second language, when blended with CRP practices, provide a model for the development of ELs' listening comprehension, decoding, and reading skills. The model posits that classroom reading and language instruction, when supported by culturally responsive practices, enhances and accelerates the acquisition of reading and comprehension skills for ELs. It is conceivable that many of the studies in the present meta-analysis achieved considerable effects due to intensive implementation of interventions. For studies such as Denton et al. (2004), the lack of instructional intensity

combined with the absence of culturally responsive practices resulted in a very small effect of .07.

Research Question 4

To what extent is a reading intervention's effectiveness moderated by the following variables: duration of instruction, frequency of instruction, length of instruction, quality of instruction, instructional groupings (small-group versus whole-class), general education inclusion, resource program pullout or push-in, or special day class instruction?

Data for the variable length of instruction (measured in total days of instruction) were presented in chapter IV. Results indicated that greater length of instruction is associated with improved reading comprehension. Interventions for three studies (Miller, 2013; Baker et al., 2012; Haager & Windmueller, 2001) were conducted over a large number of days of instruction (160 days to year long). This intuitively reasonable result appeared across studies with a range of interventions.

Data from the meta-analytic studies for duration of instruction (measured in minutes per day) revealed that the majority of studies (11 of 15 studies) implemented instruction in periods of between 30 and 45 minutes of duration. This feature of interventions may be due to the nature of small-group instruction. Typically, students receiving supplemental instruction or assigned to resource programs are pulled out of general education classroom and given instruction in small-group settings. After the intervention is completed, students are returned to their general education classrooms. Because elementary class periods are often 45 to 50 minutes in length, the supplemental

intervention tends to be a bit shorter in length. It is, therefore, not surprising that the majority of studies were implemented in sessions of between 30 and 45 duration. Due to the lack of variability in duration of lessons between the studies, this variable could not be analyzed and, consequently, was not investigated for its effect on reading comprehension.

A complementary issue to duration of instruction is the processing time required by some ELs. Research has shown that ELs, particularly ELs struggling with reading, may require more time to process language and information (Ankrum & Bean, 2007; August & Shanahan, 2006; Echevarria, Short, & Powers, 2006). For example, a key strategy promoted by Echevarria, Vogt, and Short (2012) in their Sheltered Instruction Observation Protocol, an empirically-validated approach to teaching ELs, is the concept of *wait time* in which teachers allow sufficient time for ELs to respond to questions. Because supplemental interventions tend to be short in length, teachers may feel pressure to rush through lessons thereby minimizing wait time and, possibly, misjudging their students' progress in acquiring English reading and language skills.

As noted in chapter II, ELs struggling with reading may need more frequent instruction in order to benefit from lessons (Ankrum & Bean, 2007). Results for the variable frequency of instruction (measured in days per week) did not demonstrate sufficient variability to allow for analysis or comparison between studies. Fourteen of the 15 studies conducted their interventions in frequencies of between 3 and 5 days, with several studies stating no set amount of instruction per week. One study presented no data on frequency of instruction.

Evidence from the meta-analytic studies supports the conclusion that ELs who struggle with reading benefit from interventions that are implemented with fidelity. The inference can be made that interventions that implement checks on fidelity such as fidelity checklists, quality of instruction scores, fidelity ratings, observations, and feedback increase the quality of instruction provided. The majority of studies (13 of 15 studies) implemented some form of fidelity checklist, observation of instruction, or feedback to ensure quality of instruction (see Table 3 for more information). The Miller (2013) study failed to provide information on quality of instruction and the Proctor et al. (2007) study involved no active instruction.

Research has shown a correlation between quality of professional development and the opportunity to learn afforded to students through the implementation of intensive instruction (Wang, 1998). Interventions in the meta-analytic studies that showed evidence of professional development and support produced positive effects in reading comprehension for ELs. Baker et al. (2012), with an average effect size of 0.33, provided training on the reading programs for teachers; however, the study did not provide information on the amount of training. DiGirolamo (2012), with an average effect size of 0.71, implemented professional learning community sessions for instructors. Haager and Windmueller (2001), with an effect size of 2.75, provided professional development workshops on Saturdays and ongoing consultations for teachers. The time needed for learning increases in inverse proportion to the *quality of instruction*, that is, inadequate instruction necessitates more time for learning. A correlate to the quality of instruction variable is the *ability to understand instruction*. In other words, time needed for

instruction increases inversely to the student's ability to understand the instruction.

The overall large effect size for the studies in the meta-analysis supports a conclusion that interventions conducted in small-group settings are effective in improving the reading comprehension abilities of ELs who struggle with reading. Individual of small-group instruction increases the intensity of interventions for struggling readers (Foorman & Torgesen, 2001). Smaller groupings benefit students because of increased time on task, improved feedback, individual attention, augmented interaction with teachers, and increased progress monitoring and assessment. A compelling reason for providing interventions in small groups or individually is that research has shown the strong positive effects of small-group and individual instruction on reading achievement when compared with whole-class instruction (Foorman & Torgesen, 2001; Jitendra et al., 2004). Another reason for providing interventions in small-group settings is the tendency of teachers and school administrators to separate students at risk from the general education population in order to provide them with more intensive and specialized instruction. Furthermore, findings by Vaughn et al. (2003) demonstrated there is no difference between small-group instruction and one-to-one instruction in terms of achievement. One reason for the lack of distinction in studies between small-group and individual instruction could be that students were moved from small groups to individual sessions or conversely on a daily basis because of instructional needs or student attendance.

Results from the coding for the moderator variable instructional grouping showed that the majority of studies (10 of 15 studies) used small-group and individual instruction,

without making a distinction between the two. The other five studies implemented their interventions in either whole-class settings (two studies) or a mix of whole-class and small-group settings (three studies), without distinguishing between the two. Thirteen of the 15 studies, therefore, used small-group instruction at least part of the time for instruction. The lack of variation in instructional grouping did not allow for analysis or comparison between studies and was not investigated for its effect on reading comprehension.

The findings of this meta-analysis lend support to the implementation of instruction for ELs in small-group settings (Foorman & Torgesen, 2001; Jitendra et al., 2004). The studies made no distinction between individual instruction and small-group instruction. Although the absence of variability in instructional group settings between studies prevented analysis or comparison, the majority of studies used small-group instruction to produce positive effects in reading comprehension.

Although students with individualized education programs (IEP) were included in several of the studies, all of their assigned instructional settings were in general education classrooms (inclusion settings or resource programs). Because in the majority of studies students were pulled out of general education classrooms for intervention instruction, the studies made no distinction between special education resource program pull out and intervention pull out. The special education setting variables (general education inclusion, resource program pullout or push-in, or special day class instruction) could not be, therefore, analyzed or compared between studies and were not investigated for their effect on reading comprehension.

Generally, the investigation of moderator variables presented in research question 4 did not produce meta-analytic data susceptible to analysis. The intuitively reasonable and sensible result that schools and instructors within the meta-analytic studies preferred small-group instruction for interventions for ELs with reading disabilities and ELs who struggle with reading is predictable and is consistent with research findings that demonstrate that small-group instruction produces better reading outcomes than does whole-class instruction (Cheung & Slavin, 2012; Vaughn, Hughes, Moody, & Elbaum, 2001). For the purposes of the present meta-analysis, this finding does not explain any of the variation in effect sizes between studies.

The equally intuitively reasonable and sensible result that longer length of instruction produced larger effects in reading instruction also is predictable. One reason for shorter intervention periods in experimental studies is that researchers often do not have prolonged access to students and schools and must limit the length of their studies. Eleven of the 15 studies were conducted within a range of 12 to 100 days with an average study length of 47 days (approximately 8 weeks or a half a semester). Research has shown that ELs at risk for failure in reading require—in addition to more explicit, comprehensive, and intensive instruction—additional instructional time, plus a small-group setting (Foorman & Torgesen, 2001). Length of instruction was demonstrated to be a factor in positive effects for reading comprehension. Meta-analytic results indicated that interventions conducted over a period of at least 160 days provided improved reading comprehension for ELs. Longer instructional periods for studies may produce different results for reading comprehension than were obtained for this meta-analysis.

Implications for Practice

This section presents the pedagogical implications of the meta-analysis. The results of this meta-analysis and the studies reviewed in the literature review provide evidence that the implementation of certain features and strategies of instruction can have the effect of improving the reading comprehension of ELs with reading disabilities and ELs who struggle with reading.

Instructional practices, strategies, and interventions for ELs who have reading disabilities and ELs who struggle with reading should be based on data derived from research studies conducted with these students. In terms of improving reading comprehension abilities, evidence from the studies in the meta-analysis supports the use of CRP strategies such as elicitation of prior knowledge, building on students' cultural interests, and using Spanish language and Spanish-English cognates in instruction. In particular, educators should use Spanish systematically (and not incidentally) to improve the reading comprehension of ELs who struggle with reading.

Evidence generated by the meta-analytic studies supports the inclusion of instruction addressing deficits in phonological processing, oral language abilities, listening comprehension, and reading comprehension. Evidence-based commercial reading programs that feature phonics, fluency, vocabulary, comprehension instruction, decodable, repeated reading, peer-assisted learning, oral reading fluency, vocabulary instruction, comprehension instruction, and progress monitoring delivered in a systematic manner should be used to improve the reading achievement of ELs who struggle with reading. Educators should use standard school-based supplemental reading curricula

featuring systematic instructional elements to obtain equally effective results for ELs. Schools should provide systematic, explicit instruction for ELs with reading disabilities and ELs who struggle with reading in intensive, small-group tier 3 settings.

Additionally, the meta-analytic studies support increased length of instruction. Many research studies tend to implement interventions in periods of less than half a school year. Schools and districts should implement interventions that last an entire school year. Researchers should invest in longer research studies in order to give ELs the time they need to absorb the instruction and the English language. The increased intervention length would require an increase in funding for instruction and for research.

Finally, the meta-analysis supports the importance of quality of instruction, as indicated by the implementation within interventions of fidelity checklists, quality of instruction scores, fidelity ratings, observations, and feedback.

In summary, elements of the strategies and practices presented above, especially when combined in a well-designed and integrated mix of instructional interventions, have the power of improving the reading comprehension of ELs. Long intervention periods, small-group instruction, extensive professional development aligned with explicit, comprehensive, and intensive instruction focused on the development of oral language skills using culturally responsive pedagogy including the use of Spanish in instruction, all integrated within evidence-based commercial reading programs or regular school-based curricula have the potential to improve the reading comprehension of ELs with reading disabilities and ELs who struggle with reading. Notwithstanding the increase in costs for schools and school districts, the implementation of research-based instructional

interventions would be a worthy investment in improving the reading comprehension of ELs with reading disabilities and ELs who struggle with reading.

Recommendations for Future Research

This section presents recommendations for future research based on the findings of the present meta-analysis. As reported in chapter I, the achievement gap, along with the improvements in instruction for ELs, have focused attention on the importance of improving the reading comprehension of ELs who have reading disabilities and ELs who struggle with reading.

The major finding of this meta-analysis is that there is a dearth of research on Spanish-speaking ELs with reading disabilities and ELs who struggle with reading. An extensive search of the literature using the inclusion and exclusion criteria detailed in chapter III produced only 15 qualifying studies for this meta-analysis. Although the present meta-analysis sought to review empirical research on effective reading interventions in second through fifth grade for Spanish-speaking ELs who have reading disabilities and ELs who struggle with reading, only one study that met the inclusion criteria directly investigated ELs with reading disabilities (Saenz et al., 2005, see Table 2). Critically, although the knowledge base on ELs and on reading disabilities is extensive, little is known about ELs with reading disabilities (McCardle, Mele-McCarthy, & Leos, 2005). Research must be conducted on ELs with reading disabilities and ELs who struggle with reading in order for educators to help ELs close the achievement gap.

The major element missing from this meta-analysis is the inclusion of studies of ELs with reading disabilities. Within the four studies that included ELs with special

needs (Haager & Windmueller, 2001; Landa, 2009; Linan-Thompson & Hickman-Davis, 2002; Saenz et al., 2005), only students from the Linan-Thompson and Hickman-Davis (2002) study were identified as students with reading disabilities. The distinction between students with learning disabilities and students with reading disabilities is important because many students with learning disabilities do not have reading disabilities. The results of this meta-analysis cannot be generalized, therefore, to the population of ELs with reading disabilities. Experimental, quasi-experimental, and single-subject research studies are needed in the domain of ELs with reading disabilities. Research studies need to distinguish between students with learning disabilities and students with reading disabilities and to disaggregate data for ELs with reading disabilities.

The commercial reading programs used in the meta-analytic studies were designed to improve the reading of monolingual English speaking students who struggle with reading. Research is needed in the area of ways to adapt these commercial programs for ELs who have reading disabilities and ELs who struggle with reading. Specifically, elements of culturally responsive pedagogy should be investigated for their effectiveness in improving the reading comprehension of ELs at risk for failure in reading. With the advent of the Common Core State Standards (CCSS), commercial reading programs must be adapted to provide instructional supports to make content knowledge comprehensible and accessible for ELs.

Researchers and educators must take the lead in investigating and implementing the features of oral language development, phonological awareness, and culturally

responsive practices that promote reading comprehension for ELs. In order to fulfill the promise of CRP as an effective context for intervention, researchers must implement CRP in a comprehensive and intensive manner, along with the systematic use of Spanish in instruction. Researchers and educators must lead also in efforts to amend the CCSS to acknowledge the needs and challenges of ELs.

The small number of studies (15 studies out of 149 studies that were reviewed for inclusion) that met the inclusion and exclusion criteria for this meta-analysis was, in part, the result of a narrow meta-analytic focus on reading comprehension as an outcome. Another factor that narrowed the inclusion and exclusion criteria for the present meta-analysis was a focus on ELs with reading disabilities and ELs who struggle with reading. Previous meta-analyses have tended to focus on ELs in general, many of whom struggle with reading. Future meta-analysts should adopt both wider and narrower criteria for inclusion in order to produce data that allow for more generalizable results. The present meta-analysis focused on reading comprehension as an outcome. Future researchers should expand the dependent measures to include phonological awareness, reading fluency, vocabulary, and decoding.

Conclusions

The results of this meta-analysis demonstrate, notwithstanding all the positive efforts and attention that have been generated in the field of ELs, how much needs to be done in the area of effective reading interventions for ELs with reading disabilities and ELs who struggle with reading. For example, a comprehensive theory of reading for ELs with reading disabilities and for ELs who struggle with reading has yet to be articulated.

Such a theory would guide researchers in investigating interventions that incorporate the multiple elements needed for effectiveness in improving reading comprehension: interventions that take into account the cognitive processes needed for developing reading, the development of oral-language skills needed for comprehension, the phonological awareness required for decoding, and the culturally responsive pedagogy that would provide students with access to course content and academic English.

Although the present meta-analysis applied narrow inclusion and exclusion criteria, the number of extant research studies on both ELs with reading disabilities and ELs who struggle with reading is limited. The gaps in the research presented in chapter I have not been addressed in an adequate manner by the educational research community. In order to deal with the achievement gap (described in chapter I) and thereby ameliorate some of the deleterious effects of the gap on students, on their families, and on society, researchers must conduct research into the causes and prevention of reading difficulties for ELs with reading disabilities and ELs who struggle with reading. To fail to do so would be to continue a failure on the part of the educational system and of society toward a group of young people who will one day be expected to contribute positively to the nation.

The findings of the present meta-analysis provided glimpses of the potential power of culturally responsive pedagogy in improving reading comprehension for ELs. Although it is not clear from the results of this meta-analysis which of the instructional practices or variables would, in isolation, be effective in improving reading comprehension, it is apparent that a strong mix of the elements and practices detailed in

this analysis would provide positive results in reading comprehension for Spanish-speaking ELs with reading disabilities and ELs who struggle with reading.

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Appendices

Appendix A

Coding Protocol

Coding Protocol

C1. Coder: _____

C2. On what date did you complete this study? _____

C3. In minutes, how long did it take to code this study? _____

Notes (provide any notes about the study or any concerns regarding the coding of the study):

Report Characteristics

R1. APA citation _____

_____

_____

_____

R2. Year of appearance of report or publication: _____

R3. What type of report was this? _____

1 = Journal article

2 = Book or book chapter

3 = Dissertation

4 = MA thesis

5 = Private report

6 = Government report (federal, state, district)

7 = Conference paper

8 = Other (specify) _____

9 = No information

R4. Was this research funded? _____

0 = No

1 = Yes

2 = No information

R4a. If yes, who was the funder? _____

1. Federal government (specify) _____

2. Private foundation (specify) _____

3. Other (specify) _____

R5. Review process: (Place a checkmark in each category that applies).

a. Peer-reviewed _____

b. Not peer-reviewed _____

c. Not reported _____

Participant and sample characteristics

Experimental

P1. Ethnicity (Circle designation; insert numbers, if reported).

a. Hispanic/Latino/Mexican American _____

b. Other _____

P2. Language learning designation (Place a checkmark in each category that applies).

a. Spanish-speaking English learner (EL) or English language learner (ELL) _____
b. Spanish-dominant EL or ELL _____
c. Limited English proficient _____
d. Language minority student _____
e. Other (specify) _____

P3. Which of the following labels were applied to students in this sample? (Place a checkmark in each category that applies).

a. Gifted _____
b. Average _____
c. "At risk" _____
d. Underachieving/below grade level _____
e. Possessing a learning deficit _____
f. Other (specify) _____

P4. Criterion for study inclusion based on reading level (Place a checkmark in each category that applies).

a. Below Grade Level _____
b. "At-risk" _____
c. Percentile Rank _____ (specify) _____
d. Prescreening _____ (specify) _____
e. Teacher recommendation _____

P5. Type of disability (if applicable) or reading category (Place a checkmark in each category that applies).

a. Specific learning disability _____
b. Reading disability _____
c. Dyslexia _____
d. Struggling readers _____
e. Reading difficulties _____
f. Speech and language _____
g. Emotional disturbance _____
h. Cognitive impairment _____
i. Other (specify) _____

P6. Socioeconomic status of students in the sample: (Place a checkmark in each category that applies; insert numbers, if reported).

a. Low SES _____ _____
b. Low-middle SES _____ _____
c. Middle SES _____ _____
d. Middle-upper SES _____ _____
e. Upper SES _____ _____
f. Only labeled as “mixed” _____ _____
g. Free or Reduced Lunch _____ _____

P7. Grade level of students in the sample: (Place a checkmark in each category that applies; insert numbers, if reported).

a. K _____ _____
b. 1st _____ _____
c. 2nd _____ _____
d. 3rd _____ _____
e. 4th _____ _____
f. 5th _____ _____
g. Total sample size _____
h. Not reported _____

P8. Gender (Insert numbers, if reported).

a. Females _____
b. Males _____
c. No gender information given _____

Comparison

P9. Ethnicity (Circle designation; insert numbers, if reported).

a. Hispanic/Latino/Mexican American _____
b. Other _____

P10. Language learning designation (Place a checkmark in each category that applies).

a. Spanish-speaking English learner (EL) or English language learner (ELL) _____
b. Spanish-dominant EL or ELL _____
c. Limited English proficient _____
d. Language minority student _____
e. Other (specify) _____

P11. Criterion for study inclusion based on reading level (Place a checkmark in each category that applies).

a. Below Grade Level _____
b. "At-risk" _____
c. Percentile Rank _____ (specify) _____
d. Prescreening _____ (specify) _____
e. Teacher recommendation _____

P12. Which of the following labels were applied to students in this sample? (Place a checkmark in each category that applies).

a. Gifted _____
a. Average _____
b. "At risk" _____
c. Underachieving/below grade level _____
d. Possessing a learning deficit _____
e. Other (specify) _____

P13. Type of disability (if applicable) or reading category (Place a checkmark in each category that applies).

a. Specific learning disability _____
b. Reading disability _____
b. Dyslexia _____
c. Struggling readers _____
d. Reading difficulties _____
e. Speech and language _____
f. Emotional disturbance _____
g. Cognitive impairment _____
h. Other (specify) _____

P14. Socioeconomic status of students in the sample: (Place a checkmark in each category that applies; insert numbers, if reported).

a. Low SES _____ _____
a. Low-middle SES _____ _____
b. Middle SES _____ _____
c. Middle-upper SES _____ _____
d. Upper SES _____ _____
e. Only labeled as "mixed" _____ _____
f. Free or Reduced Lunch _____ _____

P15. Grade level of students in the sample: (Place a checkmark in each category that applies; insert numbers, if reported).

a. K _____ _____
b. 1st _____ _____
c. 2nd _____ _____
d. 3rd _____ _____
e. 4th _____ _____
f. 5th _____ _____
g. Total sample size _____
h. Not reported _____

P16. Gender (Insert numbers, if reported).

a. Females _____
b. Males _____
c. No gender information given _____

Setting Characteristics

S1. What state was the study conducted in? (Use postal codes, if available.)

_____

0 = No information

S2. What type of community was the study conducted in? _____

1 = Urban

2 = Suburban

3 = Rural

4 = No information

S3. What type of school was the study conducted in? _____

1 = Public school

2 = Private school

3 = Private school with a religious affiliation (specify religious group)

_____

4. No information

S4. What placement types were represented among the settings? (Place a checkmark in each category that applies).

1. General education _____
2. Special education _____
2. Resource specialist program (push-in model) _____
3. Resource specialist program (pull-out model) _____
4. Inclusion _____
5. Other (specify) _____
6. No classroom types given _____

S5. What type of grouping format was used in the study? (Place a checkmark in each category that applies).

1. Small group _____
2. Whole class _____
3. Single subject _____
4. Other (specify) _____
5. No information _____

Dependent or Outcome Measure

D1. Type of outcome measure for reading comprehension: (Place a checkmark in each category that applies).

a. Standardized achievement test (specify) _____

_____

b. Another test measuring achievement (e.g., teacher developed, curriculum based, textbook test, aptitude test; specify) _____

_____

D2. Dependent variable: (Place a checkmark in each category that applies).

a. Decoding _____
b. Reading comprehension _____
c. Vocabulary _____
d. Fluency _____

D3. Measured in days, when was the outcome measure administered relative to the end of the reading intervention? (Enter 0 if outcome measure was given on the last day of the study.) _____

D4. Was the outcome measure valid and reliable? (yes or no) _____

D5. What evidence was presented regarding the validity and reliability of this outcome measure? (Place a checkmark in each category presented. A statement indicating that internal consistency was "acceptable" is sufficient, even if the specific value was not reported. A citation to an external source is sufficient).

a. Internal consistency _____ _____
b. Test-retest correlation _____ _____
c. Outcome measure _____ _____
d. Other (specify) _____ _____

Type of Design

T1. Study characteristics: (Place a 1 in each category that applies).

a. Repeated Measures (more than 2 times) _____
b. Single Subject _____
c. Pretest-Posttest design — one-group treatment only _____
d. Pretest-Posttest design — treatment and comparison _____
e. Posttest only design — one-group treatment only _____
f. Posttest only design — treatment and comparison _____

T2. Sampling (Place a checkmark in each category that applies).

a. Random selection _____
b. Random assignment _____
c. Convenience sample _____

Interventions or Independent Variables

I1. Type of intervention or instruction: (Place a checkmark in each category that applies).

a. Reading comprehension _____
b. Repeated reading _____
c. Listening comprehension _____
d. Questioning strategies _____
e. Peer-mediated _____
f. Peer-Assisted Learning Strategies (PALS) _____
g. Cooperative learning _____
h. Key vocabulary and concepts _____
i. Self-monitoring of comprehension _____
j. Graphic and semantic organizers _____
k. Summarizing _____
l. Corrective feedback _____
m. Structured language practices _____
n. Direct instruction _____
o. Guided reading _____
p. Meta-cognitive strategies _____
q. Developing background knowledge (schema theory) _____
r. Connections to students' lives _____
s. Second language acquisition strategies _____
t. Other (specify) _____

I2. Were Culturally Responsive Pedagogy (CRP) practices or methods used?

_____ (yes or no) If yes, specify type of cultural practices, strategies, and metrics used. (Place a checkmark in each category that applies).

a. Elicitation of prior knowledge _____
b. Build on students' cultural interests _____
c. Connect what students are learning in school to their lives _____
d. Use of cultural artifacts (e.g., music, art, customs) in instruction _____
e. Use of Spanish as a bridge to understanding content _____
f. Use of cognates in instruction _____
g. Evidence-based social skill ***instruction*** _____
h. Differentiated instruction _____
i. Appropriately paced ***instruction*** _____
j. Early intervention _____
k. Complete, clear, and measurable learning objectives _____
l. Frequent progress monitoring _____
m. Corrective feedback _____
n. Communal learning environments _____

I3. Who conducted the intervention? _____

1 = Teacher
2 = Researcher
3 = Other (specify) _____

I4. If applicable, what type of training did the teacher (or other person) receive from the researcher?

_____

_____

I5. If applicable, what was the length of the training received by the teacher (or other person) conducting the intervention? _____

I6. Were there any checks or monitoring of the intervention to ensure fidelity of treatment? _____

1 = Yes

2 = No

3 = No information

I6a. If the answer to I6 is yes, please specify. _____

_____

I7. Were the validity and reliability of the intervention established? _____

1 = Yes

2 = No

3 = No information

I7a. If the answer to I7 is yes, please specify. _____

_____

I8. Description of intervention:

a. Length: How many days or weeks did the intervention last? _____ (Report as number of days)
b. Frequency: How many days per week was the intervention implemented? _____
c. Duration: What was the length in minutes of each session? _____
d. Quality: Were there indicators that the intervention was explicit, intensive, supportive, and comprehensive? _____
e. If yes, report the indicators. _____

_____

_____

Effect Sizes and Statistics Reported for outcome measure — Single grade (specify grade and outcome measure) _____

E1. Means ($\bar{x}$) and Standard Deviations (specify sample sizes) _____

_____

_____

E2. *t* test and Degrees of Freedom (specify)_____

E3. *F* test and Degrees of Freedom (specify)_____

E4. *alpha* and *p* value (specify) _____

E5. Confidence intervals (specify) _____

E6. Effect Size (specify) _____

E7. Effect Size measure (specify) _____

E8. Correlation coefficient (*r*) (specify) _____

Effect Sizes and Statistics Reported for outcome measure — Mixed grades (specify grades and outcome measure) _____

F1. Means ($\bar{x}$) and Standard Deviations (specify) _____

_____

F2. *t* test and Degrees of Freedom (specify)_____

F3. *F* test and Degrees of Freedom (specify)_____

F4. *alpha* and *p* value (specify) _____

F5. Confidence intervals (specify) _____

F6. Effect Size (specify) _____

F7. Effect Size measure (specify) _____

F8. Correlation coefficient (*r*) (specify) _____

Appendix B

Additional Definitions of Terms

Additional Definitions of Terms

Decoding is defined as efficient word recognition derived from printed text. Decoding is the recoding of letter sounds into words (Hudson, Torgesen, Lane, & Turner, 2012).

Developmental bilingual education (DBE) is used interchangeably with

> "one-way dual language, one-way developmental, maintenance bilingual, and late-exit transitional bilingual education and includes classrooms of only or primarily language-minority students. DBE provides strong grade-level primary language schooling throughout the elementary-school years and in most cases gradually increases the amount of instruction in English with each year until 50% of the content instruction is in English by fourth grade" (Tong, Irby, Lara-Alecio, & Mathes, 2008, p. 501).

Dyslexia is another term for reading disability. Their meaning is identical (Siegel, 2003).

Effect size is a generic term that refers to the magnitude of an effect or in general terms to the size of the relation between two variables (Cooper et al., 2009). Cohen (1988, pp. 8-9) defined effect size to mean "the degree to which the phenomenon is present in the population" or "the degree to which the null hypothesis is false." The effect-size statistic is calculated by taking the difference between the means of the experimental and comparison groups and dividing the difference by the combined standard deviation of both groups.

Funds of Knowledge is a theoretical framework that validates and recognizes the skills, knowledge, and resources intrinsic to Latino homes and culture (Rios-Aguilar, 2010). Funds of knowledge contradicts the view prevalent in society that Latino families and communities require remediation in order for students to succeed academically. Rather, the concept of funds of knowledge presupposes that it is critical to build on the life experiences, skills, and cultural knowledge that English learners bring to school.

Homogeneity test is based on the *Q* statistic, which has a chi-square distribution with *k* – 1 degrees of freedom with *k* being the number of effect sizes (Hedges & Olkin, 1985). The homogeneity test indicates whether the observed variance in effect sizes is statistically significantly different than would be expected by sampling error alone or by chance. When the statistical test reveals variability larger than would be expected from sampling error, the meta-analyst rejects the null hypothesis of homogeneity and, therefore, concludes that each effect size does not estimate a common population mean (Lipsey & Wilson, 2001).

Language minority students are defined as students whose parents reported the home language as other than English (August & Shanahan, 2006; Vadasy & Sanders, 2010).

Limited English proficiency (LEP) is the operational classification given to students who are nonnative speakers of English and who score low on English proficiency tests. The operational definition varies across school districts and states causing inconsistencies in LEP classification and reclassification, thus affecting LEP accounting and reporting and consequently state and federal policy decisions (Abedi, 2004).

Phoneme is the basic unit of sound in speech. There is not, however, a universal agreement that the phoneme is a discrete, observable unit used in speech (Uppstad & Tonnessen, 2007). Vellutino (1979) and Goswami and Bryant (1990) rejected the phoneme, but the construct survives because no alternative theory has replaced it.

Phonics involves systematic instruction in the relationship between written letters (i.e., graphemes) and spoken sounds (i.e., phonemes; Brice & Brice, 2009).

Reading fluency in the present study refers to text reading fluency. Text reading fluency

is defined as the reading rate with accuracy in connected text in oral or silent mode. Fluency is differentiated from word reading automaticity, which refers to context-free fast and accurate word reading (Kim, 2012).

Two-way bilingual immersion refers to bilingual education with the goal of bilingualism, that is, the ability to read, write, and speak in two languages. Both native English speakers and speakers of another language are taught and learn in the same classroom (Tong, Irby, Lara-Alecio, & Mathes, 2008).

Vocabulary is defined generally as the number of words and their meanings students know in a particular language (Cena et al., 2013). Vocabulary words are divided into two types: receptive and expressive (Swanson et al., 2012). Expressive vocabulary is defined as the ability to name objects and to define each word. Receptive vocabulary is defined as the ability to identify objects presented. Children demonstrate superior receptive vocabulary skills and knowledge before expressive skills, indicating expressive skills require more lexical experience, knowledge, and skills to achieve (Lugo-Neris, Jackson, & Goldstein, 2010).

Word attack refers to an individual's ability to apply phonetic and structural analysis to pronounce unfamiliar words in print, for example, nonsense words (Dilberto, Beattie, Flowers, & Algozzine, 2009).

Word identification is the ability to read words in print (Clemens, Shapiro, & Thoemmes, 2011).