

Investigating the Effects of a Kindergarten Vocabulary Intervention
on the Word Learning of English-Language Learners

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The purpose of this dissertation study was to reanalyze the data from Year 03 of Project VITAL, an 18-week vocabulary intervention study, to determine how English-language learners (ELLs) responded to direct vocabulary intervention compared to English-only learners (EOLs) using the *simple view of reading* (Gough & Tunmer, 1986) as its theoretical framework. Participants included 122 kindergarteners from three elementary schools within three separate school districts in the northeastern United States who were assigned to either a treatment condition (ELLs, $n = 31$; EOLs, $n = 49$) or no-treatment condition (ELLs, $n = 17$; EOLs, $n = 25$). Interventionists were trained to deliver direct vocabulary instruction using one of 18 storybooks twice per week in 20-25 minute sessions. The research design of the study employed a pretest, posttest, quasi-experimental group design. Analyses consisted of two-by-two analyses of variance (2 x 2 ANOVAs), with two between-subjects factors (instructional condition x language status), and *t*-tests to examine the effects of vocabulary intervention on the word learning of ELLs and EOLs, and hierarchical multiple regression (HMR) to investigate word learning differences between ELLs and EOLs using pretest PPVT-III to predict posttest target-word and general, receptive vocabulary knowledge. Participants' knowledge of vocabulary was individually assessed with a researcher-developed measure of

target-word knowledge (TWKM) and the Peabody Picture Vocabulary Test-III (PPVT-III; Dunn & Dunn, 1997). Results for 2 x 2 ANOVAs and *t*-tests indicated that EOLs significantly outperformed ELLs on dependent measures with evidence on an interaction effect on TWKM. HMR results indicated (a) centered pretest PPVT-III accounted for a statistically significant proportion of the variance in posttest measures for participants in the treatment condition and (b) language status did not explain any additional variance in posttest measures above pretest PPVT-III. Each of the two mediation models using the independent variable, language status; mediating variable, centered pretest PPVT-III; and dependent measures TWKM and PPVT-III resulted in full mediation. Major findings indicated that treatment ELLs and treatment EOLs did equally well on posttest if they had similar initial general, receptive vocabulary knowledge on PPVT-III. Implications, limitations, and directions for future research are discussed.

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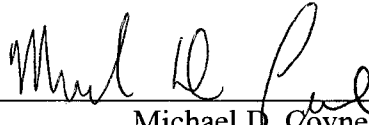
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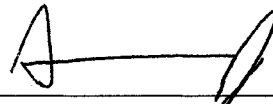
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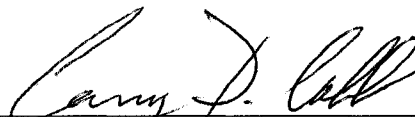
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CHAPTER I

INTRODUCTION

This dissertation study investigated the effects of a kindergarten vocabulary intervention on the word learning of non-native English learners (i.e., English-language learners [ELLs]). The relationship between vocabulary knowledge and academic achievement has been documented in research (Anderson & Nagy, 1992; National Research Council, 1998), but the research on teaching English vocabulary to ELLs is limited (National Literacy Panel [NLP], 2006; Vaughn, Mathes, Linan-Thompson, & Francis, 2005). There is little emphasis on vocabulary instruction in school curricula (Beck, McKeown, & Kucan, 2002; Biemiller, 2001), and consequently, little direct support is provided to support the vocabulary knowledge of students who are learning how to read in English. With a limited focus on vocabulary instruction in schools, it is difficult for ELLs and at-risk English-only learners (EOLs) to demonstrate what society often views as a component of academic success--possessing a rich vocabulary.

The National Reading Panel (NRP, 2000) documented the most effective ways to teach EOLs how to read. The NRP's scientifically-based review of reading research resulted in establishing five critical reading components deemed necessary to teach EOLs how to read: (a) phonemic awareness, (b) alphabetic understanding, (c) fluency, (d) vocabulary, and (e) reading comprehension. NRP findings confirmed the critical role of vocabulary knowledge with reading comprehension; however, they also noted that too few studies on vocabulary research exist at the primary grade levels.

EOLs demonstrate *meaningful differences* in language and vocabulary knowledge when they enter school (Hart & Risley, 1995). This gap between students with large and limited vocabularies has been associated with differences in school success (Anderson & Nagy, 1992; National Research Council, 1998); when this gap persists across grade levels differences in school success increase as well (Becker, 1977; Stanovich, 1986). More vocabulary intervention studies are needed to determine what works best for students with various ability levels, and especially for those in primary grades (Biemiller, 2001). Although all students enter schools needing to learn language and word meanings, these needs are confounded when students must also learn in a second language. A significant gap in vocabulary knowledge exists between ELLs and EOLs; this vocabulary gap can adversely affect the reading ability and academic achievement of ELLs (NLP, 2006). Beck, McKeown, and Kucan (2002) found that “to know a word is clearly a complicated, multifaceted matter, and one that has serious implications for how words are taught and how word knowledge is measured” (p. 11), and since reading ability develops from a range of skills that ultimately determine successful readers (Whitehurst & Lonigan, 1998; Storch & Whitehurst, 2002) the need to develop effective vocabulary interventions is critical to improving reading achievement, especially for ELLs. Regardless of language status, the vocabulary gap between students with high and low levels of vocabulary knowledge tends to increase over time (Stanovich, 1986).

Statement of the Problem

While evidence on how to teach English-only learners (EOLs) is growing, the evidence for English-language learners (ELLs) is not as well established. The National Literacy Panel (NLP; 2006) reviewed and analyzed 293 studies to report on how ELLs

develop literacy. A major finding of the NLP was the overall lack of well-designed experimental research studies evaluating the efficacy of reading instruction on ELLs who are learning how to read in English. Findings from the National Reading Panel (NRP; 2000) and NLP have provided researchers some guidance on how to address the reading needs of both ELLs and EOLs, but as classroom demographics become increasingly diverse the need to conceptualize how to effectively improve reading outcomes for ELLs increases as well.

With classroom demographics changing at a rapid pace over recent years, there is a growing concern to test the effects of vocabulary interventions within diverse classrooms. The population growth for ELLs from 1994-1995 to 2004-2005 was 60.76% nationwide (National Clearinghouse for English Language Acquisition, 2006). A survey of the states reported that (a) ELLs enrolled at the elementary level were over 67% of all enrolled ELLs, (b) ELLs enrolled in pre-kindergarten through third grade were over 44% of all enrolled elementary level ELLs, and (c) ELLs with Spanish-speaking backgrounds constituted 79.2% of all enrolled ELLs (Kindler, 2002).

Due to the dearth of ELL research on vocabulary acquisition and the rapidly increasing number of ELLs in the United States, there is an urgent need to investigate and document their responsiveness to the various types of instruction within intervention studies and on developing and testing effective interventions for ELLs (McCardle, Mele-McCarthy, & Leos, 2005; NLP, 2006).

Overview of Dissertation Study

In chapter two, the literature is reviewed on vocabulary interventions for English-language learners (ELLs) through the theoretical framework of Gough and Tunmer's

(1986) *simple view of reading* (SVR). The SVR states that reading ability (R) is the product of decoding (D) and linguistic comprehension (C). The reading components phonemic awareness, alphabetic understanding, and oral reading fluency constitute D in the theoretical framework of the SVR, whereas interpreting discourse, syntax, and the English lexicon (e.g., vocabulary and reading comprehension) constitute C. The SVR contends that reading cannot take place if readers do not develop D and C (i.e., $R = D \times C$). The chapter begins by providing statistics on the population growth of ELLs. Second, the theoretical framework of the SVR is described and then applied to ELLs. Third, findings from representative code-based research studies on the response of English-only learners (EOLs) and ELLs are reviewed, what Gough and Tunmer label as D. Next, the chapter describes in detail the identification criteria, evaluation, and summaries of research studies on vocabulary interventions for EOLs and ELLs, what Gough and Tunmer label as C. Fifth, the significance of this dissertation study is described. Last, the research questions that guided this dissertation study are presented.

In chapter three, the methodology for this dissertation is presented. First, the research design is described. The research design employed a pretest, posttest, quasi-experimental group design with two between-subjects factors. Instructional condition, a between-subjects factor, consisted of two levels, treatment condition and no-treatment condition; and the second between-subjects factor, language status, consisted of two levels, ELLs and EOLs. Second, school demographics are presented followed by a description of participants including how students were categorized and confirmed as ELLs and EOLs. The chapter then describes the instructional features of the independent variable, an 18-week vocabulary intervention. Next, the dependent variables that

measured participant vocabulary outcomes are presented followed by the procedures for the implementation of the vocabulary intervention. Last, the post hoc data analyses are described.

In chapter four, results are presented focusing on the effects of the vocabulary intervention for EOLs and ELLs. The chapter begins by addressing assumptions of statistical tests and preliminary screening for equivalency of groups. Next, the results for primary and secondary analyses are discussed.

In chapter five, the first section briefly reviews the current ELL literature base. Second, the results of this dissertation study are discussed within the theoretical framework of SVR. Next, the implications, limitations and directions for future research are discussed followed by the conclusion.

Context of Dissertation Study

This dissertation study reexamined findings from a study that was part of a federally funded, three-year program of research (Project VITAL: Vocabulary Instruction Targeting At-risk Learners) designed to develop and evaluate the efficacy of direct vocabulary instruction with kindergarten students. Project VITAL focused on developing and refining vocabulary intervention strategies designed to increase target word knowledge through direct instruction. Year three of Project VITAL investigated the effectiveness of an extended 18-week implementation of the vocabulary intervention in both whole- and small-group settings. Results revealed statistically significant differences that favored the treatment condition on all posttest measures, including target word knowledge, listening comprehension, and general receptive vocabulary knowledge. Findings indicated that direct vocabulary instruction increased target word learning and

suggested that extended instruction might facilitate word consciousness and independent word learning.

This dissertation study reanalyzed the data of Project VITAL's year-three study to determine how English-language learners (ELLs) responded to vocabulary intervention and whether the intervention had differential effects that favored ELLs or English-only learners (EOLs), or whether ELL results paralleled those of EOLs.

Results from this dissertation study contribute to our understanding of direct vocabulary instruction by examining the intervention response of kindergarten English-language and English-only learners.

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter, the population growth of English-language learners (ELLs) in the United States is presented first. Second, the theoretical framework of Gough and Tunmer's (1986) *simple view of reading* is described and then applied to ELLs. Third, research studies on the response of ELLs to code-based interventions are discussed before describing in detail the identification criteria, evaluation, and summaries of research studies on vocabulary interventions for ELLs. Last, the significance of the dissertation study is presented followed by the research questions.

English-language Learner Population Growth

The population growth of English-language learners (ELLs) has steadily increased over the years and with that so has classroom diversity. The United States Census Bureau has documented the increase in the number of people age 5 and over who speak a language other than English from 31 million in 1990 to 47 million in 2000 (Shin & Bruno, 2003) and one out of every five Americans speaks a language other than English at home. The changing home language demographic is also reflected in the number of ELLs that are in United States schools. In academic year 2003-2004, 3,829,284 (10.6%) United States public school students received English-language learner services (Hoffman & Sable, 2006), and almost 45% of teachers instructed at least one ELL in their classrooms (U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of the Assistant Secretary [USDoE], 2004). Due to the increasing number of ELLs in United States schools, there is a critical need to

conduct vocabulary intervention research in the primary grades (Biemiller, 2001; Biemiller & Slonim, 2001; USDoE, 2004), because ELLs know less vocabulary words and are less likely to fully comprehend the meanings of vocabulary words as they try to catch up to their English-only learner (EOL) peers (August, Carlo, Dressler, & Snow, 2005). Therefore, it becomes increasingly apparent that one of the major foci in education is not only teaching students how to decode but to help them and their teachers understand that “reading vocabulary is crucial to the comprehension processes of a skilled reader” (National Reading Panel, 2000, p. 4-15).

Theoretical Framework

Gough and Tunmer’s (1986) simple view of reading (SVR) is the theoretical framework for this dissertation study. The SVR characterizes the essential components of successful reading. Studies have used the SVR as a theoretical framework in other areas to help examine the (a) language basis of reading disabilities, (b) relationship between reading and writing, and (c) development of statistical models of reading development (e.g., Catts & Hogan, 2003; Hoover & Gough, 1990; Juel, 1988; Proctor, Carlo, August, & Snow, 2005); however, the SVR has not been used as a theoretical framework for examining vocabulary instruction for ELLs. The SVR provides a useful framework for conceptualizing the importance of vocabulary instruction and evaluating intervention research for ELLs. The next sections describe the SVR and explain why it is particularly helpful in explaining how ELLs and EOLs might respond to early reading instruction, particularly early vocabulary intervention.

Simple View of Reading

Gough and Tunmer's (1986) SVR states that reading ability (R) is the product of decoding (D) and linguistic comprehension (C). Readers who decode quickly and accurately exhibit the skills Gough and Tunmer view as D, whereas C is the process of interpreting discourse, syntax, and the English lexicon. According to the SVR, $R = D \times C$ and each variable within the equation can vary from null (0) to perfect (1). R exists only if both D and C are present, but nonexistent if either D or C is null (e.g., if $D = 1$ and $C = 0$, then $R = 0$). For example, the ability to decode an alphabetic orthography without C or the ability to converse in a given language without D would not result in R. In either case, D or C is necessary but not sufficient to result in R. The SVR contends that measures of pseudoword production and listening comprehension should predict R. Given this SVR, readers who read fluently and are able to understand language would be able to draw meaning from text without difficulty. Conversely, the SVR also contends that reading cannot take place if readers do not develop D and C.

The SVR conceptualizes reading disability (RD) as having three variants. RD could be described as a deficit in D, C, or a combination of D and C: (a) dyslexia, an inability to decode or limited decoding skills; (b) hyperlexia, an inability to comprehend text or average or inferior comprehension with average decoding skills; and (c) garden variety RD, difficulties with both decoding and comprehending text.

The SVR may enable researchers to conceptualize a theoretical framework that would inform the design, implementation, and interpretation of research on reading instruction and intervention for ELLs. The SRV would require researchers to examine carefully how D, C, and $D \times C$ are defined and operationalized. Specifically, the SVR

would require researchers to view D and C as separate, independent constructs that contribute to developing the product R.

SVR and English-language Learners

The hypothesis for this dissertation's theoretical framework states that the mechanism for developing English reading skills differs among EOLs and ELLs who enter kindergarten with no first language (L1) reading skills when examined through the type of reading skill targeted for instruction (i.e., D or C). In general, developing D in English should be similar for ELLs and EOLs learning how to read in kindergarten. If students' knowledge of phonemes/graphemes in their L1 are non-existent, then ELLs should learn the phonemes and graphemes associated with the second language (L2, i.e., English) as well as their EOL peers, because each type of language learner typically enters kindergarten with similar reading skills. Once in kindergarten, both ELLs and EOLs are taught early phonological skills that eventually develop into decoding skills (i.e., D) in English. If this hypothesis is the case, EOLs do not seem to have an advantage in knowing the English language because the elements associated with learning phonological skills are abstract, need to be taught, and cannot be drawn from EOLs' knowledge of English.

In sum, the mechanism for developing D in English for both kindergarten EOLs and ELLs should follow a similar process because both groups are learning abstract phonemes and letter-sound representations that do not depend on orally communicating in English. The key elements as to why developing D in English should be similar for ELLs and EOLs are: (a) ELLs and EOLs tend to enter kindergarten with similar background knowledge in English reading skills and (b) ELLs and EOLs simultaneously

learn English orthography and letter-sound combinations and translate this knowledge into decoding text.

As for the mechanism for developing C in English, it should be different between ELLs and EOLs. In general, ELLs must attempt to interpret oral English with no or limited academic and social experiences, whereas EOLs have extensive experience with the nuances of oral English prior to entering kindergarten. The mechanism for developing C, however, should be different from D because it is a more complex process that requires meaning to be drawn from the linguistic elements of English, whether through oral/listening comprehension or via text to draw meaning from vocabulary and listening/reading comprehension. ELLs are less able to take advantage of meaning that can be derived from oral or text-based linguistic comprehension in English due to their developing linguistic comprehension in English.

In sum, the mechanism for developing C in English for both kindergarten EOLs and ELLs should be a different process because both groups have differing levels of skill in linguistic or listening comprehension--ELLs are developing their knowledge and understanding of the English language while EOLs have a sophisticated understanding of how words and language are used to express meaning in English. The key elements for why developing C in English should be different for ELLs and EOLs are: (a) ELLs and EOLs tend to enter kindergarten with different experiences and knowledge about the nuances of English oral language and (b) ELLs and EOLs draw meaning differently from language/text based comprehension based on their experiences with and knowledge of English.

The SVR requires researchers to conceptualize ELL reading interventions as either focusing on D and/or C while taking into consideration the learning characteristics that may differentiate ELLs from EOLs. This dissertation study examines and categorizes phonemic awareness, phonics, and oral reading fluency as D and vocabulary and listening/reading comprehension as C.

English-language Learner Studies

The development and refinement of vocabulary intervention studies should consider the processes involved in learning how to read (Gough & Tunmer, 1986; Tunmer, 2008), especially for English-language learners (ELLs). Gough and Tunmer's simple view of reading (SVR) suggests that when we examine how ELLs and English-only learners (EOLs) respond to reading interventions we should consider response to D or C separately without overgeneralizing that ELLs and EOLs who respond to code-based instruction will also respond similarly to listening/reading comprehension instruction. Intervention research should differentiate ELL and EOL student response to instruction by focusing on developing D and C skills within an intervention. There is an emerging evidence base on the identification and classification of students who are experiencing reading difficulty from culturally and linguistically diverse backgrounds for code-based interventions, which has generally indicated that ELLs and EOLs respond similarly to code-based instruction. However, there are few studies that have examined the response of ELLs and EOLs to interventions focused on developing C (e.g., vocabulary and listening/reading comprehension). The following section provides examples from the literature on how pre-kindergarten through third-grade ELLs and EOLs respond to code-based instruction, and the subsequent section presents the pre-kindergarten through third

grade literature base on vocabulary interventions for ELLs through Gough and Tunmer's SVR.

Code-based Studies

The importance of D, or early phonologic and alphabetic skills, to future reading performance is well established (e.g., National Reading Panel, 2000). There is increasing evidence that cross-linguistic and/or early literacy-related skills transfer across languages (Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Gottardo, 2002; Koda, 2007; Lindsey, Manis, & Bailey, 2003).

Although further research is needed to isolate subtle linguistic differences in developing D in English (e.g., Campbell & Sais, 1995; Chiappe, Siegel, & Gottardo, 2002), the converging evidence suggests that ELLs and EOLs respond similarly to early code-based instruction (e.g., Chiappe & Siegel, 2006; Chiappe, Siegel, & Gottardo, 2002; Chiappe, Siegel, & Wade-Woolley, 2002; Fitzgerald, García, Jiménez, & Barrera, 2000; Gersten, Baker, Haager, & Graves, 2005; Geva & Wade-Woolley, 1998). The following study is an example of ELLs and EOLs' response to code-based instruction.

Chiappe, Siegel, and Wade-Woolley (2002) conducted a longitudinal kindergarten to first grade study with a total of 858 study completers from 30 schools in a school district in North Vancouver, Canada. The language status of participants was 727 EOLs and 131 participants who spoke a language other than English with their parents (ELLs). The primary languages spoken by ELLs included Chinese ($n = 38$), Farsi ($n = 23$), Korean ($n = 7$), Japanese ($n = 7$), Spanish ($n = 7$), and Tagalog ($n = 6$). More than 17 other languages were spoken by 1 to 3 ELLs, including Punjabi, Russian, and Dutch. Participants were then categorized as at risk (AR) or not at risk (NAR) using one standard

deviation below the mean (i.e., scores lower than 3) on the kindergarten administration of the Rhyme Detection Task (Muter, Hulme, & Snowling, 1997) as the AR cut off ($n = 108$, EOLs; $n = 32$, ELLs).

The instructional programs within the district included instruction in phonological awareness and systematic phonics as well as varied activities such as journal writing, leveled books, interactive discussions, and read alouds. Supplemental instruction for students who demonstrated difficulty with phonological awareness and phonics was provided individually or in small groups. Phonological awareness instruction was based on the prototype of Launch into Reading Success (Bennett & Ottley, 2000). Language support for ELLs in kindergarten and first grade was not provided, they received the same instruction and supplemental code-based reading support as did EOLs.

Several kindergarten and first grade reading and phonological processing measures were administered. Participants were tested individually in October and November of kindergarten and in the following year of first grade in March and April. In kindergarten, the following reading measures were administered: (a) reading subtest of the Wide Range Achievement Test-3 (WRAT-3; Wilkinson, 1995); (b) letter recognition, all 26 lower case letters; and (c) spelling, print their names and *no*, *mom*, *dad*, *cat*, and *I*. Phonological processing measures assessed (a) pseudoword repetition, (b) phonological awareness, (c) phonological recoding in lexical access, (d) syntactic awareness, (e) verbal short-term memory, and (f) print awareness/environmental print. In first grade, two decoding and two spelling measures were administered in addition to the WRAT-3. Decoding was assessed through the word identification and word attack subtests of the Woodcock Reading Mastery Test (Woodcock, 1989). Spelling skills were assessed using

10 real and 10 pseudowords. Real words contained five regular (*men, did, him, sad, and toy*) and five irregular words (*good, love, said, head, and some*). Phonetically appropriate spelling was assessed using 10 pseudowords. The pseudowords contained five predictable spellings (/fld/, /pem/, /gæn/, /het/, and /sag/), and five unpredictable words (/pUd/, /tæv/, /van/, /koth/, and /ged/). Phonological processing measures assessed (a) pseudoword repetition, (b) phonological awareness, (c) phonological recoding in lexical access, (d) syntactic awareness, and (e) verbal short-term memory.

Major findings were a product of several types of analyses; for example, (a) overall kindergarten and first grade reading and phonological processing outcomes, two-by-two multivariate analyses of variance (2 x 2 MANOVAs; risk group [at-risk vs. not-at-risk] x language group [ELL vs. EOL]); (b) children's experiences with environmental print, two-by-two-by three repeated measures analyses of variance (2 x 2 x 3 ANOVAs; risk group vs. language group vs. degree of completeness [stylized print with logos vs. stylized print only vs. typeface]); (c) growth from kindergarten to first grade, 2 x 2 x 2 ANOVAs (risk group x language group x grade); and (d) prediction of reading skill on kindergarten reading measures and decoding skill in first grade as well as the examination of the relationship between decoding and first grade reading skills, series of hierarchical regression analyses. Major findings indicated that both ELLs and EOLs had similar responses to code-based instruction in letter identification, decoding, and spelling in kindergarten and first grade. Measures that required more linguistic and cognitive processing revealed that kindergarten ELLs scored lower than EOLs on tasks that included more vocabulary, rapid automatized naming, and rhyme detection, but performed as well on remaining measures in kindergarten and first grade. The researchers

hypothesized that ELLs continued to demonstrate difficulty with syntactic awareness, working memory, and oral language in English because of two possibilities: (a) these areas did not receive a lot of instructional time and (a) these areas required more English proficiency. The simple view of reading prediction for ELLs held true in this study-- ELLs and EOLs who received reading instruction performed similarly on dependent measures of D (e.g., decoding); however, EOLs outperformed ELLs on dependent measures of C (e.g., vocabulary).

Vocabulary Intervention Studies

Vocabulary development plays a critical role for ELLs (August, Carlo, Dressler, & Snow, 2005; National Literacy Panel [NLP], 2006). Although there are several studies that examine the differences between ELLs and EOLs in response to code-based instruction (e.g., Chiappe, Siegel, and Gottardo, 2002; Chiappe, Siegel, Wade-Woolley, 2002), there are fewer studies on how ELLs and EOLs differ in their response to vocabulary instruction. Evidence on how ELLs respond to code-based instruction has indicated, overall, that ELLs and EOLs respond similarly to code-based instruction. Unfortunately, the research base for language- or meaning-based interventions is not as developed. Therefore, it is imperative that researchers investigate ELL response to language- or meaning-based intervention using validated theoretical frameworks, such as the simple view of reading (SVR; Catts, Adlof, & Weismer, 2006; Gough & Tunmer, 1986; Velluntino, Tunmer, Jaccard, & Chen, 2007), to test and evaluate both ELL and EOL response because we cannot assume that ELLs and EOLs will respond similarly to vocabulary instruction. The purpose of this dissertation study was to investigate the effects of an 18-week kindergarten vocabulary intervention (Project VITAL: Vocabulary

Instruction Targeting At-risk Learners) on the word learning of ELLs and EOLs. The remaining paragraphs in this section describe the (a) identification criteria and evaluation logic of the pre-kindergarten to third grade literature review, (b) pre-kindergarten through third grade intervention studies with various reading components that did not directly teach vocabulary, and (c) pre-kindergarten to third grade vocabulary intervention studies that directly taught vocabulary. Both direct and indirect vocabulary intervention studies were examined through the SVR.

Study identification. Four criteria and a four-step process determined studies to include in the dissertation literature review. The first criteria focused on study participants. One of the major foci of this dissertation study was on investigating the effects of vocabulary instruction on ELLs. Studies that had at least one-third or more of their sample categorized as ELLs were also included in the literature review. The grade range for inclusion was pre-kindergarten through third grade. Pre-kindergarten to third grade was chosen as the grade range because it was close to the kindergarten target population. Second, studies had to employ experimental or quasi-experimental group designs with control or comparison groups. Approximately five students per group was deemed the minimum number of students required to produce valid outcomes for each study (NLP, 2006). Third, studies were only selected from peer-reviewed journals. Last, studies were only selected if they included an English intervention with English as the language of instruction.

The four-step process to identify studies began with a review of NLP studies reviewed in Timothy Shanahan and Isabel Beck's chapter, *Effective Literacy Teaching for English-language Learners* (2006). Studies were identified if they taught vocabulary

through a direct approach (e.g., storybook read aloud). One study reviewed by the NLP met the criteria for this dissertation literature review. Second, selected members from the NLP and researchers working on beginning reading instruction with ELLs received an email from the author to solicit unpublished and in-press manuscripts. Next, a literature search was conducted to update those conducted by the NLP. The present literature review extended the searches of the NLP by searching peer-reviewed journal articles from January 2001 to June 2007. A second literature search was conducted in February 2008 and a final search in June 2008. Two additional studies were identified through subsequent literature searches. The last step in the selection process was an examination of the reference lists of identified studies and a review of two special issue journals on ELL; this examination revealed no omitted studies from database searches. In total, eight studies met the parameters of the search criteria for this dissertation study. See Table 2.1 for a summary of the five studies that did not directly teach target words but included reading programs that were comprised of various reading components including effective vocabulary strategies for ELLs (NLP, 2006). Summaries of the three identified studies that directly taught vocabulary are presented in Table 2.2.

Evaluation of studies. For each identified study, dependent and independent variables and the method of analysis were evaluated through the lens of the simple view of reading (SVR). Specifically, dependent measures were categorized as either D (i.e., measures of phonemic awareness, phonics, and oral reading fluency) or C (i.e., measures of vocabulary or reading comprehension). Examples of measures of D include (a) Woodcock Language Proficiency Battery-Revised's (WLPB-R; 1991) letter word identification subtest, (b) Comprehensive Test of Phonological Processing's (Wagner,

Torgesen, & Rashotte, 1999) nonword repetition subtest, or (c) Dynamic Indicators of Basic Early Literacy Skills' (DIBELS; Good & Kaminski, 2002) oral reading fluency subtest. Examples of measures of C include (a) WLPB-R's (1991) picture vocabulary subtest or (b) Woodcock Reading Mastery Tests-Revised's (WRMT-R; 1987) passage comprehension subtest.

The same evaluation logic was applied to each study's treatment condition. Interventions that focused on improving phonemic awareness, phonics, or oral reading fluency were categorized as D. Interventions that targeted vocabulary or comprehension were categorized as C. Treatments could also be categorized as including both D and C components.

Analyses of participants were categorized into one of three types. The first type of analysis (*Analysis 1*) compares ELLs who received intervention to ELLs who did not receive intervention. According to this dissertation's interpretation and application of the SVR to ELLs, the prediction would be that ELLs who received intervention would perform better than ELLs who did not receive intervention on dependent measures of both D and C.

The second type of analysis (*Analysis 2*) compares ELLs who received intervention to EOLs who received intervention. The SVR prediction would be that ELL and EOL participants who received intervention would perform similarly on dependent measures of D. The prediction also states that ELLs who received intervention would not perform as well as EOLs who receive intervention on dependent measures of C.

The third type of analysis (*Analysis 3*) compares ELLs and EOLs who received intervention with ELLs and EOLs who did not receive intervention. The SVR prediction

would be that there would be no evidence of an interaction between treatment condition and type of learner on dependent measures of D, but there would be evidence of an interaction between treatment condition and type of learner on dependent measures of C. EOLs would be predicted to benefit differentially compared to ELLs on measures of C.

PreK-3rd grade intervention studies with various reading components and indirect teaching of vocabulary. The five studies summarized in Table 2.1 did not directly teach target words but included reading programs that were comprised of various reading components and effective vocabulary/language strategies for ELLs. Some of these studies included 10 minutes of ELL vocabulary and oracy supports in addition to the reading programs (i.e., interventions) to develop vocabulary, listening comprehension, and language development (NLP, 2006; e.g., Vaughn, Cirino et al., 2006). Table 2.1 presents information on participants, the focus of intervention, the types of dependent measures, and the types of analyses. Independent and dependent variables were categorized as either focusing on D (phonemic awareness, phonics, and oral reading fluency) or C (vocabulary or listening/reading comprehension). The purpose of including intervention studies that did not directly teach vocabulary was to further illuminate the limited research on ELLs and to present some of the common features among these studies and across studies that directly taught vocabulary.

Gunn, Biglan, Smolkowski, and Ary (2000) selected 256 Hispanic ($n = 158$), primarily Mexican American, and non-Hispanic ($n = 98$) students in kindergarten through third grade from nine schools in three districts in Oregon. Students were selected based on screening measures of early reading skills ($n = 156$) and teacher ratings of aggression

($n = 100$). Participants were matched by ethnicity, grade, and reading ability and randomly assigned to treatment or control conditions in this experimental study.

The focus of the intervention was on developing phonemic and phonological awareness, and reading fluency, which are considered components of D in this review. Instruction materials were Reading Mastery (Engelmann & Bruner, 1988) for first and second grade and Corrective Reading (Engelmann, Carnine, & Johnson, 1988) for third grade. Both of these instructional materials for the intervention also included a secondary emphasis on vocabulary and comprehension literacy components as well, which are considered C.

Trained instructional assistants, both certified and noncertified teachers, pulled participants from classrooms daily for 25-30 minutes of instruction in groups of 2 to 3. If small group instruction was not possible, interventionists delivered one-on-one instruction to participants for approximately six to seven months in year one and a full year of instruction in year two. The dependent measures, Woodcock-Johnson Tests of Achievement (WJ-R ACH; Woodcock & Mather, 1990), and an experimenter-developed oral reading fluency measure, were administered during the fall (Time 1) and spring (Time 2) of year one and in the spring of year two (Time 3). The WJ-R ACH letter-word identification and word attack subtests as well as the measure of oral reading fluency, all considered components of D. The WJ-R ACH subtests reading vocabulary and passage comprehension are considered components of C.

The analysis compared posttest scores of ELL and EOL treatment participants to ELL and EOL control participants. This approach was categorized as Analysis 3. Results revealed statistically significant differences between treatment and control with treatment

participants outperforming control participants on word attack at spring of year one and on word attack, reading vocabulary, and passage comprehension at spring of year two. There were no statistically significant interactions between language status and condition at either posttest times. The SVR prediction for this study held partially true--ELLs and EOLs in the treatment condition performed better than participants in the control condition on measures of D, however, there was not a statistically significant interaction between ethnicity and condition on measures of C. The effect of the intervention on measures of C was similar for both ELLs and EOLs. However, EOLs had larger gains in reading vocabulary and their gains in oral reading fluency almost reached significance compared to ELLs, which suggests a trend toward evidence for an interaction between language status and condition on dependent measures assessing components of C.

Vaughn et al. (2003) conducted a study with a final sample of 77 second-grade students from 10 schools in two southwestern school districts that included students categorized as African American ($n = 17$), Hispanic ($n = 57$), and White ($n = 3$). Participant selection was based on teacher nomination of students identified as (a) struggling readers, (b) reading poorly or at risk for referral to special education, and (c) failing the second-grade Texas Primary Reading Inventory screening benchmark (Texas Education Agency, 1998). Fifty of the original 90 participants selected were EOLs identified by their teachers as (a) speaking only English or (b) receiving instruction in English since enrolling in school and spoke English as their primary language. The remaining 40 participants were ELLs (from general classroom, $n = 10$; from bilingual classrooms, $n = 30$) who were receiving English instruction for the first time. The Woodcock-Muñoz Language Survey (Woodcock & Muñoz-Sandoval, 1993) determined

both English and Spanish proficiency for ELLs. Participants were assigned to one of three grouping ratios. Both ELL and EOL participant totals for each treatment condition grouping ratio were (a) 27 for grouping ratio 1:1 (ELLs, $n = 15$; EOLs, $n = 12$), (b) 29 for grouping ratio 1:3 (ELLs, $n = 15$; EOLs, $n = 14$), and (c) 21 for grouping ratio 1:10 (ELLs, $n = 8$; EOLs, $n = 13$) in this quasi-experimental study.

The focus of the intervention was on developing (a) phonological awareness, word analysis and fluency, components of D; and on developing (b) vocabulary and comprehension, components of C. Instructional materials for the researcher-developed intervention included activities from Read Naturally (Inhot, 1991), Ladders to Literacy (O'Connor, Notari-Syverson, & Vadasy, 1998), and Phonemic Awareness in Young Children: A Classroom Curriculum (Adams, Foorman, Lundberg, & Beeler, 1998).

Five interventionists (two Spanish/English bilinguals and 3 native English speakers; four held Texas teaching certification) delivered 30-minute intervention lessons daily for 13 weeks. The dependent measures administered at posttest were (a) word attack and passage comprehension subtests of the WRMT-R (Woodcock, 1987), components of D and C, respectively; (b) median score of three first grade oral reading fluency passages of the Test of Oral Reading Fluency (Children's Educational Services, 1987), a component of D; and (c) phonemic segmentation fluency from DIBELS (Good & Kaminski, 2002; Kaminski & Good, 1996), a component of D.

The analysis compared posttest scores of ELLs who received intervention to EOL who received intervention within each respective grouping ratio. This approach was categorized as Analysis 3. Results revealed statistically significant differences between grouping ratio 1:1 and grouping ratio 1:10 with grouping ratio 1:1 participants

outperforming grouping ratio 1:10 participants on measures of phoneme segmentation and fluency, components of D, and comprehension, a component of C. Grouping ratio 1:1 did not outperform grouping ratio 1:3 on any posttest measure. Results revealed no statistically significant between-subject differences for main or interaction effects for language on phoneme segmentation, word attack, oral reading fluency, and passage comprehension. The SVR prediction for this study held partially true--ELLs and EOLs who received intervention performed similarly on dependent measures of D; however, EOLs who received intervention on dependent measures of C did not outperform ELLs who received intervention.

Denton, Anthony, Parker, and Hasbrouck's (2004) study had a final pool of 93 Spanish-bilingual second through fifth grade students (grade two, $n = 22$; grade three, $n = 37$; grade four, $n = 28$; and grade five, $n = 6$) from five schools in a central Texas school district. Participants were selected if (a) Spanish was their native language, (b) tutoring was recommended by their teachers because of difficulties learning to read, and (c) school administered standardized assessments suggested a minimal level of oral English proficiency and basic reading proficiency in Spanish. Participants were randomly assigned to a code-based or repeated readings intervention and matched to either a tutored or nontutored condition in this experimental study. Due to attrition, the code-based condition had 19 participants in the tutored condition and 14 participants in the nontutored condition, and the repeated readings condition had 32 and 28, respectively.

The focus of the interventions was either a code-based intervention for emergent readers, Read Well (Sprick, Howard, & Fidanque, 1998), or a modified repeated readings intervention for established first grade level readers, Read Naturally (Ihnot, 1992), which

are both primarily considered components of D in this literature review. Both interventions had components of C; Read Well had contextualized vocabulary and comprehension and Read Naturally was modified to include oral discussions of vocabulary and comprehension.

Supervised and trained undergraduate tutors delivered the instruction for each condition and met in 40-minute pullout sessions three times a week for 10 weeks. Tutored participants received instruction individually or in varied combinations of groupings of 2 to 4 (i.e., individual instruction, $n = 6$; groups of two, $n = 19$; groups of three, $n = 18$; and groups of four, $n = 8$). The dependent measures administered at posttest were the Woodcock Reading Mastery Tests-Revised's (Woodcock, 1987) word identification and word attack subtests, components of D, and the passage comprehension subtest, a component of C.

The analysis compared posttest scores of ELLs who received intervention to ELLs who did not receive intervention. This approach was categorized as Analysis 1. Results for Read Well (Sprick, Howard, & Fidanque, 1998) revealed that tutored participants outperformed nontutored participants on one measure of D, word identification, but not on word attack or passage comprehension, measures of D and C, respectively. Results for Read Naturally (Innot, 1992) revealed that tutored participants did not outperform nontutored participants on word identification, word attack, or passage comprehension. Major findings did not examine differences between both interventions because they targeted students with different reading needs. The SVR prediction for this study held partially true--ELLs who received Read Well performed better on one dependent measures of D when compared to ELLs who did not receive

intervention. However, tutored participants did not perform significantly better than non-tutored students on all other measures--measures that assessed both D and C.

Vaughn, Mathes et al.'s (2006) study had 41 first grade Hispanic students who were selected from 14 classrooms from four schools in two Texas school districts that completed the study. Participant selection was based on a screening of two tests that included the WLPR-R (Woodcock, 1991) letter-word identification subtest (in English and Spanish) and a 40-word experimenter-developed, K-3rd grade word-reading list (English and Spanish). Identified participants scored below the 25th percentile on the WLPB-R's letter-word identification subtest and were unable to read two or more words from the word-reading list that incorporated words from K-3rd grade vocabulary instructional materials, the Spanish word-frequency LEXESP database (Sebastián, Cuetos, Martí, & Carreiras, 2000), which has similar elements to that of Zeno, Irens, Millard, and Duvvuri (1995) English word-frequency database. Participants were randomly assigned within their schools to a treatment ($n = 22$) or a comparison ($n = 19$) condition in this experimental study.

The focus of the intervention, Proactive Reading (Mathes, Torgesen, Wahl, Menchetti, & Grek, 2004), was similar to that of Vaughn, Cirino, et al. (2006)--to enable participants to read connected text with comprehension, which are considered components of D and C in this literature review. The intervention included modified supports for English language acquisition found to be effective for ELLs (e.g., gestures, elaborated responses, facial expressions when teaching vocabulary or clarifying word meanings, etc.). In addition, the intervention included 10 minutes of oracy, vocabulary,

listening, and language development. The comparison condition used either Language Enrichment (Carreker, 1999) or McGraw Hill Reading (McGraw Hill, 2001).

From October to May, four Spanish-bilingual teachers delivered 50 minutes of reading instruction in six small groups of 3 to 5 students per day. The language of instruction for the intervention was English, but evaluated student outcomes were in both English and Spanish. Dependent measures administered at posttest were (a) letter-name identification; (b) letter-sound identification, (c) CTOPP's (Wagner, Torgesen, & Rashotte, 1999) rapid letter naming and nonword repetition subtests, and a phonological awareness composite; (d) WLPB's (Woodcock, 1991) word attack and dictation subtests; and (e) DIBELS' (Good & Kaminski, 2002) beginning and end-of-year first grade oral reading fluency subtest, which are considered components of D. Dependent measures at posttest that measured components of C were the WLPB-R's listening comprehension, picture vocabulary, verbal analogies, and passage comprehension subtests, and an oral language composite.

The analysis compared posttest scores of the treatment ELLs who received intervention to ELLs who did not receive intervention. This approach was categorized as Analysis 1. Results revealed statistically significant differences between treatment and comparison with treatment ELLs outperforming comparison group ELLs on rapid letter naming, letter-sound identification, phonological awareness composite, word attack, dictation, all measures of D, and passage comprehension, a measure of C. The SVR prediction held true--ELLs performed better on dependent measures that contained components of both D and C, when compared to ELLs who did not receive intervention for D and C. A benefit of the study was the finding that ELLs responded to instruction

similarly when compared to at-risk EOLs (e.g., Mathes, Torgesen, Wahl, Menchetti, & Grek, 2004) when instruction included over time, such features as reviews, practice, interactive discussions, and repeated reading.

Vaughn, Cirino et al. (2006) conducted two studies that examined either an English or Spanish comprehensive reading intervention for first grade Spanish-speaking ELLs in a nonoverlapping sample of students (i.e., replication of Vaughn, Mathes et al., 2006). Ninety-one Hispanic students from 20 classrooms in four schools across three Texas school districts completed Vaughn, Cirino et al.'s English study. Participant selection was based on those students who scored below the first grade 25th percentile on letter-word identification from the Woodcock Language Proficiency Battery-Revised (WLPB-R; Woodcock, 1991) and were unable to read two or more words from the first five, two to four letter words from a researcher-developed word-reading ability list (Foorman, Francis, Fletcher, Schatschneider, & Metha, 1998). Participants were randomly assigned to a treatment ($n = 43$) or a comparison ($n = 48$) condition in this experimental study.

The focus of the intervention, Proactive Reading (Mathes, Torgesen, Wahl, Menchetti, & Grek, 1999), was to enable participants to quickly read connected text with comprehension, which are considered components of D and C in this literature review, respectively. The Proactive Reading intervention also included modified supports for language and vocabulary development, which are considered C in this literature review. The comparison condition used each respective school site's core reading program, Language Enrichment (Neuhaus Education Center, 2000) or McGraw Hill Reading.

Eight Spanish-bilingual teachers delivered instruction to participants in the treatment condition for 50 minutes per day in groups of 3 to 5 participants from October to May. The language of instruction for the intervention was English, but evaluated participant outcomes for all participants were in both English and Spanish. The dependent measures administered at posttest were (a) letter-naming identification; (b) letter-sound identification; (c) Comprehensive Test of Phonological Processing's (CTOPP; Wagner, Torgesen, & Rashotte, 1999), rapid letter naming and nonword repetition subtests, and a phonological awareness composite; (d) WLPB-R's letter-word identification and word attack subtests (Woodcock, 1991); (e) Test of Word Reading Efficiency's (Torgesen, Wagner, & Rashotte, 1999) word reading efficiency subtest; (f) Dynamic Indicators of Basic Early Literacy Skills's (DIBELS; Good & Kaminski, 2002) oral reading fluency subtest; and (g) a researcher-developed spelling test of one or two syllable words, which are all considered components of D. Dependent measures at posttest that measured components of C were the WLPB-R's subtests listening comprehension, picture vocabulary, verbal analogies, and passage comprehension, as well as an oral language composite.

The analysis compared posttest scores of the treatment ELLs who received intervention to ELLs who did not receive intervention. This approach was categorized as Analysis 1. Results revealed statistically significant differences between treatment and comparison with treatment condition participants outperforming comparison group participants on phonological awareness, word attack, word reading, and spelling measures of D. The SVR prediction for this study held partially true--ELLs performed better on dependent measures that contained components of D but not on measures that

assessed C, when compared to ELLs who did not receive intervention. Limitations to the study included (a) not determining what specific elements influenced outcomes and (b) not knowing the extent to which such interventions is needed for ELLs. A benefit of the study was its ability to compare both an English and a Spanish intervention in nonoverlapping samples. Interestingly, results for the English intervention indicated no statistically significant differences between treatment and comparison participants on Spanish outcome measures, whereas in the Spanish intervention, English and Spanish outcomes were parallel in letter naming, phonological processing, and language but differed on rapid letter naming, letter-sound identification, and phonological awareness composite measures, favoring Spanish treatment over comparison participants.

In sum, the hypothesis for the SVR on pre-kindergarten through third grade intervention studies with various reading components and indirect teaching of vocabulary primarily held true. In the case of Analysis 3 (i.e., ELLs and EOLs who received intervention compared to ELLs and EOLs who did not receive intervention) the SVR held true for D but no interaction effect was evident for C in Gunn, Biglan, Smolkowski, and Ary (2000) and Vaughn, (2003). In the case of Analysis 1 (i.e., ELLs who received intervention compared to ELLs who did not receive intervention), the SVR held true for both D and C in Vaughn, Mathes et al. (2006) and true for D and false for C in Denton, Anthony, Parker, and Hasbrouck and Vaughn, Cirino et al. (2006).

Table 2.1

*PreK-3rd Grade Intervention Studies with Various Reading Components and Indirect Teaching of Vocabulary in Relation to Simple View of**Reading (R = D X C)*

Study (by year)	Sample		Simple View of Reading			
	N	Grade	Population	Focus of IV	Focus of DV	Analysis
Gunn, Biglan, Smolkowski, & Ary (2000)	256	1-3	Hispanic (61% at Time ₂)	D - one IV on phonemic awareness, letter-sound correspondence, blending, decoding; another IV on phonics, decoding, fluency	D - letter-word ID, word attack, researcher developed ORF for grades 1-3 C - reading vocabulary, passage comprehension	Analysis 3
			Non-Hispanic (39% at Time ₂)			
Vaughn, Linan-Thompson, Kouzekanani, Bryant, Dickson, & Blozis (2003)	77	2	Hispanic (n = 57; 74.03%) African American (n = 17; 22.08%) and White (n = 3; 3.90%)	D - phonological awareness, word analysis, fluency C - vocabulary, reading comprehension	D - word attack, ORF (1 st grade), phonemic segmentation fluency C - passage comprehension	Analysis 3 (comparison is by group ratio)

Note: D = phonemic awareness, phonics, and oral reading fluency; C = vocabulary and listening/reading comprehension. Analysis 1 = treatment ELLs compared to control/comparison ELLs; Analysis 2 = treatment ELLs compared to treatment EOLs; and Analysis 3 = treatment ELLs and EOLs compared to control/comparison ELLs and EOLs.

Table 2.1 (Continued)
PreK-3rd Grade Intervention Studies with Various Reading Components and Indirect Teaching of Vocabulary in Relation to Simple View of Reading (R = D X C)

Study (by year)	Sample			Simple View of Reading		
	N	Grade	Population	Focus of IV	Focus of DV	Analysis
Denton, Anthony, Parker, & Hasbrouck (2004)	93	2-5	Hispanic (100%)	D - one IV on phonics, decoding; another on fluency	D - word ID, word attack	Analysis 1
				C - both IVs: vocab. and comp.; one IV had extended activities and oral discussions of vocabulary and comprehension	C - passage comprehension	

Table 2.1 (Continued)

PreK-3rd Grade Intervention Studies with Various Reading Components and Indirect Teaching of Vocabulary in Relation to Simple View of

Reading (R = D X C)

Study (by year)	Sample		Simple View of Reading		
	N	Grade	Population	Focus of IV	Focus of DV
Vaughn, Cirino, Linan-Thompson, Mathes, Carlson, Cardenas-Hagan, et al. (2006)	91	1	Hispanic (100%)	<p>D - phonemic awareness, phonics instruction, application of alphabetic knowledge to word/text reading</p> <p>C - reading comprehension plus modified supports to develop vocabulary, listening comprehension, and language</p>	<p>D - letter name ID, rapid letter naming; letter-sound ID, phonological awareness composite, nonword repetition, letter-word ID, word attack, word reading efficiency, ORF, spelling (experimenter developed)</p> <p>C - listening and passage comprehension, picture vocabulary, verbal analogies, oral language composite</p>
					Analysis 1

Table 2.1 (Continued)

PreK-3rd Grade Intervention Studies with Various Reading Components and Indirect Teaching of Vocabulary in Relation to Simple View of

Reading (R = D X C)

Study (by year)	Sample		Simple View of Reading		
	N	Grade	Population	Focus of IV	Focus of DV
Vaughn, Mathes, Linan-Thompson, Cirino, Carlson, Pollard-Durodola, et al. (2006)	41	1	Hispanic (100%)	*same IV as Vaughn, Cirino et al. (2006); plus different and varied language supports	D - same as above (did not include nonword repetition and rapid letter naming in phonological awareness composite; dictation was standardized) C - same as above (oral language composite at posttest did not include memory for sentences)
					Analysis 1

Table 2.2

PreK-3rd Grade Intervention Studies with Direct Teaching of Vocabulary Related to Simple View of Reading ($R = D \times C$)

Study (by year)	Sample			Simple View of Reading		
	N	Grade	Population	Focus of IV	Focus of DV	Analysis
Perez (1981)	150	3	Mexican American (n = 75; 50%)	C - oral language and oral comprehension; comprehension: critical, literal and interpretive; word usage; vocabulary	D - word attack (analysis)	Analysis 1 (*control analyzed as ELL)
			*Control (undefined) (n = 75; 50%)		C - oral language and oral comprehension; word usage; vocabulary; comprehension: critical, literal & interpretive	
Roberts & Neal (2004)	33	PreK	Hmong (n = 23; 69.70%)	D - IV #1: letter ID and letter writing and rhyming	D - letter naming, writing (i.e., letter/word dictations), rhyming (dropped due to floor effects)	Analysis 1 (*Data only reported on ELLs)
			Hispanic (n = 10; 30.30%)		C - researcher-developed storybook picture book vocabulary and story event sequencing; concepts about print	
			*EOLs (n = 5)	C - IV #2: vocabulary and comprehension		

Table 2.2 (Continued)

PreK-3rd Grade Intervention Studies with Direct Teaching of Vocabulary Related to Simple View of Reading ($R = D \times C$)

Study (by year)	Sample		Simple View of Reading		
	N	Grade	Population	Focus of IV	Focus of DV
Silverman (2007)	72	K	ELLs ($n = 28$; 39% [13% an East Asian language, 10% Spanish, 7% Creole, 9% Other Languages]) EOLs ($n = 44$; 61%)	C - multidimensional vocabulary: (a) word introductions, (b) simple definitions and explanations, (c) questions and prompts, (d) opportunities to act out meanings, (e) visual aids, (f) pronunciation guidance, (g) guided spelling, (h) compare/contrast words, and (i) repetition and reinforcement	C - researcher-developed picture and oral vocabulary target word subtest; general vocabulary knowledge (semantic composite score): picture, relational, and oral vocabulary
					Analysis 2

PreK-3rd grade intervention studies with direct teaching of vocabulary. The three studies that include direct teaching of vocabulary are summarized in Table 2.2, which outlines information on participants, focus of intervention, focus of dependent measures, and types of analyses. The focus of independent and dependent variables were categorized as D (phonemic awareness, phonics, and oral reading fluency) or C (vocabulary or listening/reading comprehension. To elucidate some of the common features among identified studies that directly taught vocabulary by year, the following paragraphs summarize articles by dependent and independent variables, method of analysis, major findings, limitations pertinent to this dissertation, and benefits.

Perez (1981) selected 75 third grade Mexican-American students who mostly spoke Spanish as their first language and who were categorized as having low socioeconomic status from three classrooms in a Texas public school to receive a researcher-designed early literacy intervention. Seventy-five participants with similar means on the Prescriptive Reading Inventory served as the control condition in this quasi-experimental study (control analyzed as ELL).

The focus of the intervention was on developing oral language, which is considered a component of C in this review. The intervention taught participants English concepts considered confusing to ELLs who may encounter reading difficulties. The intervention introduced participants to vocabulary orally before they encountered the same vocabulary in written text. Examples of intervention English concepts were analogies, idiomatic expressions, words associated in pairs, and multiple meaning words, etc. (e.g., ‘When are roads angry? Answer: When they are cross roads,’ p. 25).

Three classroom teachers implemented the intervention for 20 minutes per day over three months. The dependent measure administered at posttest was the Prescriptive Reading Inventory, which assesses word attack, a component of D, and oral language, vocabulary, and comprehension, considered components of C.

The analysis compared posttest scores of treatment ELLs to control ELLs. This approach was categorized as Analysis 1. Results revealed statistically significant differences between treatment and control with treatment condition participants outperforming control group participants. The SVR prediction for this study held true-- ELLs performed better on the dependent measure, which contained components of both D and C when compared to ELL participants who did not receive intervention. Limitations to the study included no EOL students. Future research should investigate whether both treatment ELLs and EOLs perform similarly on idiomatic vocabulary compared to a control group of ELLs and EOLs.

Roberts and Neal (2004) conducted a study with thirty-three preschool ELLs who qualified for free lunch from low socioeconomic status families (Hmong, $n = 23$; Spanish, $n = 10$). Five EOLs participated in the study, but reported data were only on the 33 Hmong- and Spanish-speaking participants. Two preschool teachers corroborated parental reports on students' language backgrounds. Participants were grouped by language background and randomly assigned across two morning ($n = 22$) and two afternoon ($n = 21$) classrooms to either a letter-rhyme (17 students total [Hmong, $n = 10$; Spanish, $n = 4$; and EOLs, $n = 3$]) or comprehension (21 students total [Hmong, $n = 13$; Spanish, $n = 6$; and EOLs, $n = 2$]) condition in this experimental study.

The focus of intervention conditions used the SVR (Hoover & Gough, 1990) as the conceptual framework to examine the effects of a letter-rhyme and a comprehension condition, which are considered components of D and C in this review, respectively. The letter-rhyme intervention focused on letter naming and writing and on the identification and production of rhymes. The comprehension intervention focused on interactive storybook readings and vocabulary development through sequenced events.

Students participated in 16 weeks of in-class intervention ($n = 10-11$), three times per week for 20-25 minutes. Two trained undergraduate students taught 48 lessons. Each interventionist taught an intervention condition for two weeks at a time before alternating conditions to control for teacher effects. During intervention lessons, non-intervention students participated in other in-class or out of class activities. The researcher-developed dependent measures administered at posttest were letter naming, writing, storybook picture vocabulary, comprehension, and concepts about print (rhyming dropped due to floor effects). Letter naming and writing measured components of D, while storybook picture vocabulary, comprehension, and concepts about print measured components of C.

The analysis compared posttest scores of the ELL letter-rhyme participants to the ELL comprehension participants. This approach was categorized as Analysis 1. Results revealed that students who participated in the letter-rhyme condition outperformed students in the comprehension condition on letter naming and writing, whereas students in the comprehension condition outperformed students in the letter-rhyme condition on vocabulary and comprehension. The SVR prediction for this study held true--ELLs performed better on dependent measures that contained components of D or C, when compared to ELLs who did not receive intervention for D or C. Limitations to the study

included no small-group condition. Future research should investigate ELL and EOL intervention response in both small and whole-group instructional conditions.

Silverman's (2007) study had 72 ELL and EOL kindergarten students (ELL, $n = 28$; EOL, $n = 44$) who were selected from five classrooms across three schools in a northeastern, urban, public school district. The type of classroom varied: (a) three were mainstream English, (b) one was structured immersion, and (c) one was two-way Spanish-English bilingual. The number of ELLs in each classroom varied from one to all students. Approximately 46% received free or reduced-price lunch, which was the measure for low socioeconomic status (ELLs 57%; EOLs 39%). In this quasi-experimental study with no control or comparison condition, participants remained in their classrooms and vocabulary growth and knowledge were examined across classrooms rather than within classrooms.

The focus of the intervention, Multidimensional Vocabulary Program (MVP), incorporated effective vocabulary components, including instructional features designed to benefit ELLs learning of target words (50 words total) during storybook instruction, which is a component of C in this literature review. The two-way Spanish-English bilingual teacher was asked to implement the intervention in English during the English instructional session of the school day.

The five classroom teachers taught five to ten words of varying difficulty per book in 30-45 minute instructional sessions. Each of 12 books was read three times in a given week and two weeks were reserved for review. In total, the intervention lasted 14 weeks. Selected target words for *Chugga-Chugga Choo-Choo* (Lewis, 1999) included transportation, engine, caboose, load, mountain, steep, and tunnel. The dependent

measures administered at posttest were a researcher-developed target vocabulary measure (i.e., both picture and oral vocabulary) and the Test of Language Development-3 (TOLD-3; Newcomer & Hammill, 1997), both components of C.

The analysis compared posttest scores of ELLs who received intervention to EOLs who received intervention. This approach was categorized as Analysis 2. The SVR prediction for Analysis 2 states that ELL and EOL participants who received intervention would perform similarly on dependent measures of D, but EOLs would outperform ELLs on dependent measures of C. Results for target picture vocabulary revealed statistically significant differences in (a) initial target word knowledge, favoring EOLs and (b) rate of growth, favoring ELLs. Although ELLs learned significantly more words during the intervention than EOLs, there were no statistically significant differences between ELLs and EOLs from pretest to posttest and from posttest to delayed posttest. ELLs' vocabulary knowledge grew at a faster rate than EOLs. Results for oral target vocabulary revealed a statistically significant difference in initial target word knowledge, favoring EOLs. Rate of growth from pretest to posttest and from posttest to delayed posttest was not statistically significant. ELLs and EOLs' vocabulary knowledge grew at similar rates. The same result was evident in target oral vocabulary as it was in target picture vocabulary, EOLs knew more target oral vocabulary words at pretest but there were no statistically significant differences from pretest to posttest and from posttest to delayed posttest. In terms of general vocabulary knowledge on the TOLD-3 (Newcomer & Hammill, 1997), there was a statistically significant difference in initial general vocabulary knowledge, favoring EOLs, and in rate of growth, favoring ELLs; however, there was no statistically significant difference at the end of the study. The SVR

prediction for this study did not hold true--treatment EOLs did not perform better than treatment ELLs on measures of C. The effect of the intervention on measures of C was similar for both EOLs and ELLs. Limitations to the study included (a) no control group to capture differences between intervention and typical practice and (b) no analysis on whether an interaction between language status and classroom existed.

In sum, only one study used the SVR as a theoretical framework (i.e., Roberts & Neal, 2004), but this study did not explore participant outcomes through a prediction on how ELLs and EOLs would respond to instruction, nor did any of the studies examine the focus of the independent and dependent variables via the SVR framework. In the case of Analysis 1, the SVR prediction held true for both Perez (1981) and Roberts and Neal (2004)--ELLs performed better on dependent measures that contained components of D or C, when compared to ELLs who did not receive intervention for D or C. In the case of Analysis 2 in Silverman (2007), the SVR prediction did not hold true--EOLs who received intervention focused on the equation variable C (i.e., $R = D \times C$) did not perform better than ELLs who received intervention. The Silverman finding provides evidence that interventions focused on the direct teaching of vocabulary can close the gap in vocabulary knowledge between EOLs and ELLs.

The SVR provides a starting point to help explain participant outcomes. Only three studies investigated the direct teaching of vocabulary with ELLs, while five studies included vocabulary instruction as one of their reading components and indirectly taught vocabulary to ELLs. In general, there are a limited number of studies that have investigated how ELLs respond to instruction in beginning reading. Most beginning reading studies examined ELLs' response to code-base instruction and few examined

their response to meaning-based instruction. The emerging evidence for code-based instruction suggests that ELLs and EOLs respond similarly to instruction that is focused on D; however, using the SVR as a theoretical framework, caution should be exercised in generalizing the results of code-based instruction with meaning-based instruction (i.e., C). There were very few meaning-based studies that met the criteria for this dissertation study, and these studies found inconsistent results on ELLs' response to meaning-based instruction. One of the most significant limitations found in this literature review is the comparison of both ELL and EOL response to meaning-based instruction. Study designs that do not take into account language status make it impossible to determine whether ELLs and EOLs respond similarly or differentially to meaning-based instruction.

Significance of the Study

The number of students from culturally and linguistically diverse backgrounds in the United States has increased over recent years, and so has the need to conduct research that investigates the development and testing of interventions with English-language learners (ELLs) with and without disabilities (McCardle, Mele-McCarthy, & Leos, 2005). The National Literacy Panel (2006) supports the need for continued intervention research with ELLs by expressing a concern for their rapid growth wherein "low levels of literacy attainment and its consequences--high dropout rates, poor job prospects, and poverty--create an imperative to attend to the literacy development of these students" (p. xiii). From 1990 to 2000, a percentage change¹ of 47.4 has been documented by the U.S. Census Bureau in the number of people age 5 and over who speak a language other than

¹ Percent change is the difference between the number of people age 5 and over who speak a language other than English at home from 1990 (31,844,979) to 2000 (46,951,595) divided by the number of people in 1990.

English at home (Shin & Bruno, 2003). The number of students age 5 and over who speak a language other than English at home is also reflected in school demographics. D’Emilio (2003) reported that approximately 13.5% of the general student population is identified for special education services compared to an estimated 9.2% of ELLs, with the category specific learning disability accounting for approximately 56% of identified ELLs.

The National Symposium on Learning Disabilities in English Language Learners identified the development and testing of effective interventions for learning disabilities in ELLs as one of five critical research areas of need (McCardle, Mele-McCarthy, & Leos, 2005; USDoE, 2004). Currently, there is emerging evidence that indicates that ELLs and EOLs respond similarly to code-based instruction (e.g., Chiappe, Siegel, & Wade-Woolley, 2002), but the research on language- or meaning-based instruction is unclear, because there is a limited number of studies that examine both ELL and EOL vocabulary learning and the direct teaching of vocabulary. Therefore, there is a critical need to investigate the pattern of response of ELLs and EOLs to different types of reading interventions to develop and test interventions that are effective, efficient, relevant, and durable (McCardle, Mele-McCarthy, & Leos, 2005; Zins & Ponti, 1990).

Previous Project VITAL (Vocabulary Instruction Targeting At-risk Learners) studies revealed differences on all outcome measures favoring treatment participants, but what is not known is whether there is a difference in word learning between ELLs and EOLs using a theoretical framework as a guide to explain differences in language status treatment outcomes. The SVR provides a theoretical framework for why ELLs and EOLs might respond differentially to code-based or language- or meaning-based instruction.

Limited research on the direct teaching of vocabulary exists (e.g., Perez, 1981; Roberts & Neal, 2004; Silverman, 2007), and there are even fewer studies that use a theoretical framework to help explain language status outcomes. This dissertation contributes to the field by addressing the problem of limited research on the direct teaching of vocabulary in kindergarten by investigating the effects of the vocabulary intervention, Project VITAL, on the word learning of ELLs from three districts that serve a large concentration of students from culturally and linguistically diverse backgrounds using the SVR as its theoretical framework.

Research Questions

The purpose of this dissertation study was to determine ELLs and EOLs' response to vocabulary intervention by reexamining data from an 18-week vocabulary intervention study with kindergarten students (Project VITAL). Two primary research questions were addressed:

- (a) What are the main effects of the kindergarten vocabulary intervention on target-word knowledge and general receptive vocabulary knowledge for instructional condition (i.e., treatment and no-treatment conditions) and students' language status (i.e., English-language learner [ELL] and English-only learner [EOL])? Is there an interaction between instructional condition and language status?
- (b) Is there a difference in word learning between ELLs and EOLs who received vocabulary intervention on target-word knowledge and general, receptive vocabulary knowledge?

The secondary research question explored whether the relationship between initial general vocabulary knowledge and response to the intervention differed for ELLs and EOLs:

Do treatment only ELL and EOL participant scores on general, receptive vocabulary knowledge at pretest predict posttest scores on target-word knowledge and general, receptive vocabulary knowledge?

CHAPTER III

METHODOLOGY

In this chapter, the research design of this dissertation study is presented first. Second, school demographics are presented followed by participants and how participants were categorized as English-language learners (ELLs) and English-only learners (EOLs). Fourth, the instructional features of the independent variable, Project VITAL (Vocabulary Instruction Targeting At-risk Learners), are shared. Next, the dependent variables that measured participant outcomes are presented. Sixth, the procedures that facilitated the implementation of the vocabulary intervention are described. The post hoc data analyses of Project VITAL's database are presented last.

Research Design

This research study employed a pretest, posttest, quasi-experimental group design with two between-subjects factors. Instructional condition, a between-subjects factor, consisted of two levels, treatment condition and no-treatment condition. The treatment condition was an experimental independent variable designed to develop specific and general vocabulary knowledge. Assignment to treatment condition was by classroom at Schools A and B and by random assignment of participants at School C. At School A, two kindergarten teachers agreed to implement the intervention and one kindergarten teacher was the no-treatment condition classroom, whereas School B had one kindergarten teacher who agreed to implement the intervention and one kindergarten teacher who was the no-treatment condition classroom. Two graduate-student interns in a

master's degree program in special education at the University of Connecticut served as interventionists at School C. Participants from three kindergarten classrooms at School C were randomly assigned into small-group treatment condition or whole group no-treatment condition. The two interventionists from School C taught three small groups of 3 to 5 participants. The no-treatment condition was each school's typical storybook read aloud routine. The second between-subjects factor, language status, consisted of two levels, English-language learners (ELLs) and English-only learners (EOLs). ELLs were participants that spoke a language other than English at home or whose dominant language was not English. EOLs were participants whose home and dominant language was English. Dependent measures administered at posttest included a (a) researcher-developed measure of target-word vocabulary knowledge (TWKM) and (b) standardized measure of general, receptive vocabulary knowledge (i.e., Peabody Picture Vocabulary Test-III [PPVT-III]; Dunn & Dunn, 1997). The PPVT-III was administered at pretest to document students' entry-level general, receptive vocabulary knowledge.

School Demographics

This research study took place in three elementary schools within three separate school districts in the northeastern United States. All three schools serve a large concentration of students from low socio-economic and culturally/linguistically diverse backgrounds. After English, Spanish is the primary language spoken at home or recognized as students' dominant language at all three districts. Student performance in reading, writing, and mathematics in academic year 2005-2006 within each school was substantially lower than the state average. Based on school performance on state

assessments and overall socio-economic status, participants in the Project VITAL study were considered at risk for academic difficulties.

School A

School A is located in a small city with an estimated population of 23,770 people in July of 2006 (U.S. Census, 2007). Student enrollment was 291 in kindergarten through fourth grade. A large percentage of students (80.8%) were eligible to receive free or reduced-price lunch and 7.6% received special education services. Students with non-English home languages (28.5%) constituted 12.7% of the school population who received bilingual education or English as a second language instruction. Student ethnicity was 1.7% Native American, 2.1% Asian American, 7.6% Black, 60.1% Hispanic, and 28.5% White. On the state's grade three assessment, 22% of students met goal in reading compared to 54.4% statewide. The average age in months for participants was 65.55 ($n = 47$).

School B

School B is located in a small city with an estimated population of 25,926 people in July of 2006 (U.S. Census, 2007). Student enrollment was 276 in kindergarten through fifth grade. A large percentage of students (91.3) were eligible to receive free or reduced-price lunch and 12.3% received special education services. Students with non-English home languages (23%) constituted 21.9% of the school population who received bilingual education or English as a second language instruction. Student ethnicity was 1.8% Native American, 1.8% Asian American, 38% Black, 40.9% Hispanic, and 17.4% White. On the state's grade three high-stakes assessment indicated that 23.7% met goal in

reading compared to 54.4% statewide. The average age in months for participants was 65.71 ($n = 31$).

School C

School C is located in an urban city with an estimated population of 124,512 people in July of 2006 (U.S. Census, 2007). Student enrollment was 552 in pre-kindergarten through eighth grade. A large percentage of students (73.2) were eligible to receive free or reduced-price lunch and 16.3% received special education services. Students with non-English home languages (56.6%) constituted 9% of the school population who received bilingual education or English as a second language instruction. Student ethnicity was 0.5% Native American, 0.5% Asian American, 22.8% Black, 70.7% Hispanic, and 5.4% White. On the state's grade three high-stakes assessment indicated that 31.9% met goal in reading compared to 54.4% statewide. The average age in months for participants was 66.52 ($n = 44$).

Participants

Parents of all kindergarten students in the three schools were given consent to participate forms in either English/Spanish (see Appendix A). A total of 130 participants returned consent to participate forms (School A, $n = 50$; School B, $n = 34$; School C, $n = 46$). See Table 3.1 for a breakdown of participants by school and instructional condition. The final dataset was comprised of 123 participants. Participants were not included in the dataset for the following reasons: (a) 1 participant was removed by kindergarten teacher recommendation, (b) 4 participants moved out of their respective district, and (c) 2 participants were not administered all three posttest measures. The average age of participants by instructional condition, language status, and school are in Table 3.2.

Table 3.1

Participants (N = 130) by Instructional Condition and School

Instructional Condition	School A	School B	School C
No-treatment Condition	15	12	23
Treatment Condition	35	22	23

Table 3.2

Instructional Condition/Language Status by Average Age in Months and Number of Participants by School (N = 122)

Instructional Condition/ Language Status	Average Age in Months (n)	<u>Number of Participants by School</u>		
		School A	School B	School C
No-treatment EOLs	66.76 (25)	9	8	8
No-treatment ELLs	66.06 (17*)	3	2	12
Treatment EOLs	66.16 (49)	20	16	13
Treatment ELLs	64.93 (30**)	15	6	10
Total	65.94	47	32	43

Note. *One participant moved, no school records to confirm language status (17 instead of 18 participants). **One participant's age missing for Treatment ELLs (30 instead of 31 participants).

Interventionists

From Schools A and B, three kindergarten teachers served as interventionists while two graduate-student interns in a master's degree program in special education at the University of Connecticut served as the interventionists from School C. The three treatment interventionists from Schools A and B had 14 average years experience teaching kindergarten and 19 total average years teaching. The no-treatment condition kindergarten teachers had 13 average years teaching kindergarten and 25.66 total average years teaching. By the end of the study, the two graduate-student interns at School C completed university-supervised student teaching and had one year of supervised teaching experience through their internship.

Language Status Determination

A post-hoc two-step process was used to assign participants' language status as either EOL or ELL. First, interventionists and kindergarten teachers were asked to fill in the language for the following two blanks: (a) "What is the primary language spoken at [student's name] home," and (b) "What is [student's name]'s dominant language in school?" If either blank had an answer other than English the participant was considered an ELL, and if the response for both blanks was English the participant was considered an EOL. Next, first or second grade teachers, English-language specialists, or school records staff or administrators were asked the same two language status questions to confirm participants' initial language status assignments. Only school or district employees who worked with, knew participants and their families, or had access to participants' school records were consulted. If either blank had an answer other than English the participant was confirmed an ELL, and if the response for both blanks was

English the participant was confirmed an EOL. In cases where school records did not align with initial interventionists or kindergarten teachers' language status assignments, school records took precedence.

Language status assignment between interventionists or kindergarten teachers and follow-up consultations with school personnel was high. Interventionist or kindergarten teacher language status assignments and follow-up consultations confirmed 74 out of 74 participants as EOLs. Interventionist or kindergarten teacher language status assignments and follow-up consultations confirmed 48 out of 49 participants' as ELLs (no school records were available to confirm one participant's initial assignment). In School A, school records reversed an interventionist's initial language status assignment of EOL to ELL for three participants. No language status assignment changes occurred for Schools B and C. The language status determination process revealed a sample primarily comprised of Spanish-speaking ELLs (96% [one Farsi and one Haitian-/French-Creole speaker]).

Independent Variable

Participants in the treatment condition (EOL, $n = 49$; ELL, $n = 31$) were taught the meanings of 54 target words during 36 half-hour storybook readings and activities over 18 weeks. Storybook selection was based on (a) high-interest plots, and (b) rich engaging language. A list of the 18 storybooks is presented in Appendix B. The Project VITAL (Vocabulary Instruction Targeting At-risk Learners) research team selected storybooks and target words and was comprised of two faculty members with backgrounds in special education and measurement, evaluation, and assessment; and five doctoral students with backgrounds in bilingual education, school psychology, speech-

language pathology, special education, and teaching English to speakers of other languages (TESOL) from the Department of Educational Psychology at the University of Connecticut.

Target Word Selection

The 54 target words were selected using a three-step process and then incorporated into storybooks based on type of word and instructional condition. First, the Project VITAL research team selected 21 adjectives, 15 nouns, and 18 verbs that were deemed likely to be unknown by the kindergarten participants using the *Living Word Vocabulary* (LWV; Dale & O'Rourke, 1981). The LWV is considered the best available reference to determine when words would be learned and enabled the Project VITAL research team to select target words that were likely to be unknown to at least two-thirds of the participants (Biemiller, 2004). The average grade-level value for selected target words was 5.7. Biemiller and Slonim (2001) found that commonly known words in grades 1-5 were also likely to be known by students with small vocabularies, while students with large vocabularies also knew the meanings of less commonly known words. Next, selected adjectives, nouns, and verbs were rank ordered by the Project VITAL research team using available grade-level values and then grouped into sets of three by type of word. The various target words were incorporated into storybooks replacing synonymously related words.

Storybook Readings and Discussion Activities

The design of the present vocabulary intervention was informed by the findings of the first two years of Project VITAL (Coyne, McCoach, & Kapp, 2007). Project VITAL incorporated effective teaching strategies for students with learning disabilities and those

with diverse learning needs who may be at risk for academic failure (Coyne, Kame'enui, & Carnine, 2007), including effective vocabulary instruction strategies primarily focused on grades 3 and above (National Reading Panel, 2000; Stahl & Fairbanks, 1986). Coyne, Simmons, and Kame'enui (2004) noted similar effective vocabulary instruction strategies that accelerate vocabulary learning within the context of storybook readings and emphasized four critical features: (a) multiple readings, (b) select and instruct target words, (c) multiple exposures to target words, and (d) integrate and review target words systematically within and across lessons; these critical features were also incorporated into the present vocabulary intervention.

During each week of instruction, participants listened to the reading of one storybook on two separate days. Storybook readings were typically separated by one day. Before each storybook reading, participants were introduced to the target words for that story, asked to pronounce each word, and prompted to signal to interventionists when they heard a target word in the story by raising their hands. Three target words were introduced within the story each week. Introduced target words were discussed in post-reading activities. During post-reading discussion activities, interventionists followed scripted protocols and used researcher-developed materials, such as illustrations/photographs, to engage students in activities that would assist them in identifying, interacting with, discussing, and distinguishing minimal differences between target words and distractors; these target word activities were presented in varied visual or syntactic contexts and went beyond the contexts presented in the storybooks (Beck, McKeown, & Kucan, 2002). For both visual and syntactic stimuli post-reading discussion activities, participants were asked to respond orally or by gesturing with thumbs in the up

(i.e., positive reply) or down (i.e., negative reply) positions. For example, participants on day one were asked to distinguish between three target word examples and two minimal difference non-examples of illustrations/photographs, and subsequently asked on day two to distinguish between three target word examples and two minimal difference non-examples of sentences. The following is a brief example of how participants were asked to distinguish visual target word representations for the target word scalding: (a) “Does this picture show something that is scalding? If you put your thumb down like this, you’re right! The bath water in this picture would be warm, not scalding, or really hot. ‘The boy liked to play in the bathtub;’” and (b) “Does this picture show something that is scalding? If you put your thumb up like this, you’re right! The water in this picture would be scalding, or really hot. ‘The girl’s parents were boiling dinner in the scalding water.’” See Appendix C for the instructional protocol.

The vocabulary intervention focused on exposing participants to target words in multiple contexts to promote deep processing of word meanings (i.e., *extended instruction*; Coyne, McCoach, & Kapp, 2007). The type of review target words were assigned to was a small part of the overall vocabulary intervention. Grouped sets of three adjectives, nouns, and verbs were randomly assigned to one of three review conditions: (a) no review, interventionists gave no attention to target words; (b) embedded review, interventionists provided a simple definition of the target word then reread the storybook sentence with the simple definition (e.g., substitute the word hot for the target word scalding); and (c) extended review, interventionists conducted post-reading discussion activities that included both visual and syntactic representations (Coyne, McCoach, & Kapp, 2007). See Table 3.3 for a list of alphabetized target words by review condition.

Table 3.3

Target Words Alphabetized by Type of Review

No Review	Embedded Review	Extended Review
considerate	apex	ascend
courageous	brook	boulevard
devour	confused	cautious
dusk	cycling	cavern
exclaim	furious	crouch
festival	grasp	drenched
gaze	halt	elated
glum	immense	minute
hoist	irritated	plot
meadow	metropolis	plummet
parlor	peculiar	scalding
regretful	saunter	serene
residence	slender	slope
sprawl	soar	slumber
thrash	sprinted	stout
vanish	stalk	terrified
vivid	sturdy	voyage
weary	terrace	weep

Implementation of Intervention

The vocabulary intervention was implemented in either whole-class ($n = 57$) or small-group ($n = 23$) settings. Treatment classrooms ranged from 17 to 22 participants and their kindergarten teachers delivered the vocabulary intervention. School A had two treatment classrooms (treatment classroom one, $n = 18$; treatment classroom two, $n = 17$) and School B had one treatment classroom ($n = 22$). School A ($n = 12$) and School B ($n = 10$) each had one no-treatment classroom. Participants ($n = 45$) from three classrooms at School C were randomly assigned to either a pull-out, small-group treatment or no-treatment condition. The small-group, treatment condition occurred behind two stairwell doors each at the end of one hallway between school transition periods (i.e., art, music, etc.). Two graduate-student interns each delivered the small-group vocabulary intervention to 3 to 5 participants each for a total of 23 students. Participants in the no-treatment condition ($n = 21$) at School C remained in their classrooms and engaged in typical practice reading and read aloud classroom activities. No-treatment conditions at all research sites included storybook readings that did not confound the implementation of the vocabulary intervention (see *Fidelity of Implementation*) and followed their typical reading routines and read alouds. Posttesting began within one week and ended approximately two weeks following the last storybook reading at each research site.

Dependent Variables

This research study used two measures to assess the effectiveness of the storybook vocabulary intervention. The target-word knowledge measure (TWKM) assessed proximal vocabulary knowledge of target words. General, receptive vocabulary knowledge was assessed by the Peabody Picture Vocabulary Test (i.e., PPVT-III; Dunn

& Dunn, 1997), a standardized, norm-referenced, receptive vocabulary knowledge measure. The TWKM was developed by the Project VITAL research team.

Researcher-developed Measure of Target Word Knowledge

The TWKM was developed and refined by the Project VITAL research team. The untimed TWKM was individually administered at pre- and posttest to assess students' levels of target word knowledge (see Appendix D). The research team decided to sample and assess 37 of the 54 target words to reduce overall testing time. Participants were first asked to define an orally presented target word (e.g., "Tell me what the word stout means?"). The second question presented the same target word in a neutral context (e.g., "What would a stout person be like?").

The scoring rubric for the TWKM was developed by the Project VITAL research team and reflected the following designations: (a) 0, for no knowledge, (b) 1, for partial knowledge, and (c) 2, for full knowledge. For example, participant responses for defining *stout* were (a) 0 for "Someone is standing up straight," (b) 1 for "big," and (c) 2 for "Fat." For example, participant responses for *stout* in the neutral context were (a) 0 for "a good person," (b) 1 for "a very big person," and (c) 2 for "a little fat but a big stomach."

Peabody Picture-Vocabulary Test-III

The PPVT-III (Dunn & Dunn, 1997) is an untimed, individually administered, standardized, norm-referenced measure. The PPVT was administered at pre- and posttest to assess general, receptive vocabulary knowledge. Examiners ask respondents to point to a picture representing an orally stated vocabulary word on a plate of four pictures; the three remaining pictures are distractors. The PPVT-III is arranged in order of increasing vocabulary difficulty, and the average testing time takes between 11 and 12 minutes.

Concurrent validity of the PPVT was established during standardization and range from .75 to .90 with other measures of cognitive and language ability. Reliability coefficients for the Project VITAL participants' age group were consistently high: split-half reliability (.88 to .94), alternate-forms reliability (.93 to .94), test-retest reliability (.91 to .94). Internal consistency, alpha, ranged from .93 to .95. Test examiners adhered to the scoring instructions described in the examiner's manual for determining a basal and ceiling, and converting raw scores to standard scores (see *Data Collection and Scoring*).

Procedures

Training of Interventionists

The Project VITAL principal investigator and Project VITAL research team members trained interventionists. During the one-day training research team members (a) described and discussed the intervention, (b) modeled appropriate instructional delivery, (c) allowed interventionists to practice implementing the vocabulary intervention, and (d) provided immediate corrective feedback (see Participants for additional information).

Fidelity of Implementation

The Project VITAL team developed fidelity of implementation measures to monitor treatment integrity in the vocabulary intervention and treatment spill-over effects in the no-treatment condition (Gersten, Baker, & Lloyd, 2000; Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000). Treatment integrity observations for treatment and no-treatment conditions were conducted by five school psychology and special education doctoral-student members of the Project VITAL research team from the Department of Educational Psychology at the University of Connecticut.

After discussing and analyzing instructional and behavioral features deemed critical to implement the vocabulary intervention, a draft fidelity of implementation form was developed for the treatment condition. The final fidelity of implementation form was refined as based on pilot observations. The fidelity of implementation form consisted of sections focusing on general observations (14 items), the read aloud (9 items), and rich instruction/review (10 items). Items in the general observations section were scored on a 4 point scale and the items in the remaining sections were scored on a three point scale. The general observation section included items such as, “Does the teacher complete the entire lesson (according to instructions within the protocol)?” Examples of items in the read aloud section include, “Teacher immediately reads definition of the target word back within the sentence in which the target word appears;” and “Teacher conducts individual checks and allows students to respond individually to questions about the target words;” Interventionists were provided praise and brief feedback from observers after each observation. The fidelity of implementation form was used to conduct treatment integrity observations every two weeks for a total of individual 28 observations. Kappa-n (κ_n), a variant of Cohen’s κ (kappa), was used to account for chance between observers with the following guidelines for interpretation: (a) poor, $< .40$; (b) good, $.40 \leq \kappa \leq .75$; (c) excellent, $> .75$ (Cohen, 1960; Brennan & Prediger, 1981; Hsu & Field, 2003; von Eye & Mun, 2005; Watkins & Pacheco, 2000). The average interrater scores for skill (.89), read aloud (.94), and review (.89) were categorized as excellent, indicating interventionists implemented the vocabulary intervention with high fidelity. See Appendix E for the treatment condition *Fidelity of VITAL Implementation* measure.

A no-treatment condition observation form was primarily used to monitor the features of typical practice read alouds and to a lesser extent spillover effects from the treatment condition. The vocabulary intervention was in addition to the typical practice storybook read alouds that occurred as part of school curricula. Findings from the pilot of the draft fidelity of implementation form for the treatment condition was used to help develop the no-treatment condition observation form. The no-treatment condition observation form had the same scales for scoring and consisted of the following observational sections: (a) general (11 features); and (b) read aloud (10 features) and post-reading (6 features). The no-treatment condition observation form was used to conduct treatment integrity observations on three occasions scheduled shortly after the onset, during the middle, and then toward the end of the intervention. No-treatment condition observations revealed no targeted and systematic vocabulary instruction or words similar to the vocabulary intervention across their read storybooks. No-treatment condition teachers typically provided simple explanations of novel words contain in their storybooks that varied from the target words that were selected for the vocabulary intervention. See Appendix F for the *VITAL Control Teacher Observation* measure.

Training of Data Collectors

Doctoral and master's level school psychology and special education graduate students from the Department of Educational Psychology at University of Connecticut served as data collectors. Project VITAL research team members trained data collectors on the administration and scoring of dependent measures. The focus of the training was on following the standardized procedures for each measure. During the training sessions, research team members (a) described, explained, and modeled how to administer and

score measures; (b) and provided multiple opportunities to practice. Data collectors received immediate praise and corrective feedback.

Data Collection and Scoring

Pretest and posttest measures were individually administered in quiet locations that had tables or desks throughout each elementary school. All testing occurred across five 20-30 minute sessions to reduce participant fatigue. Posttesting of participants took place during the two weeks following the completion of the last storybook reading at each research site (see Appendix G). The Project VITAL research-team developed scoring rubrics for the TWKM. The PPVT-III was scored based on the examiner's manual. All measures were scored twice by Project VITAL research team members. When scoring differences occurred between data collectors, a Project VITAL research team member scored the item in question to determine the final scoring outcome.

Data Analyses

The reexamination of the year three Project VITAL study dataset investigated the effects of vocabulary instructional and language status through descriptive and inferential statistics. The Peabody Picture-Vocabulary Test (PPVT-III; Dunn & Dunn, 1997) served as the pretest measure, and dependent measures included the TWKM and PPVT-III. Prior to conducting primary and secondary analyses, independent-samples *t*-tests and correlational analyses were conducted to examine between group differences and effect sizes (Cohen, 1992) between instructional condition and language status using entry-level PPVT-III scores.

Primary analyses examined the effects of the vocabulary intervention through two-by-two analyses of variance (2 x 2 ANOVAs; instructional condition by language

status) on TWKM and PPVT-III (Dunn & Dunn, 1997) posttest dependent measures. The calculation of effect sizes (Cohen, 1992) determined the magnitude in word learning of English-only learners (EOLs) and English-language learners (ELLs). The focus of primary analyses was to determine whether treatment outcomes had (a) differential effects that favored ELLs or EOLs, (b) similar effects for ELLs and EOLs, and (c) interactions between instructional condition and language status for each of the dependent measures.

Secondary analyses examined whether hierarchical multiple regression analyses using centered pretest scores on PPVT-III (Dunn & Dunn, 1997) predicted posttest performance on the TWKM and PPVT-III. The focus of secondary analyses was to determine whether the relationship between initial vocabulary knowledge and response to vocabulary intervention differed as a function of language status.

CHAPTER IV

RESULTS

In this chapter, the results of five research questions are presented under primary analyses and secondary analyses. First, assumptions of statistical tests are addressed. Second, results of preliminary analyses to screen for equivalency of groups are presented. Last, results of primary and secondary analyses are presented focusing on the effects of vocabulary intervention for English-language learners (ELLs) and English-only learners (EOLs).

Assumptions of Statistical Tests

Normality and Linearity

The assumptions of independence and homogeneity of variance were examined within individual analyses. Frequency distributions by (a) instructional condition and (b) instructional condition and language status were examined to determine whether distributions met the assumption of normality. Scatterplots were generated to determine whether distributions met the assumption of linearity.

Frequency distributions were examined to investigate the assumption of normality. Normality for the distributions pre- and posttest PPVT-III (Dunn & Dunn, 1997) and posttest target word knowledge measure (TWKM) was examined for both treatment ($n = 80$) and no-treatment ($n = 43$) conditions. The skewness and kurtosis values of six distributions were examined (i.e., pretest PPVT-III and two dependent measures for both treatment and no-treatment conditions). Across the six distributions, four had approximately normal distributions and two had non-normal distributions. The

distribution for treatment condition, pretest PPVT-III was positively skewed, while no-treatment condition, pretest PPVT-III had an approximately normal distribution. The distribution for no-treatment condition TWKM was negatively skewed, while treatment condition TWKM had an approximately normal distribution. Preliminary analyses examined the difference between means for instructional condition to determine equivalency of groups. Descriptive statistics and skewness and kurtosis values by treatment and no-treatment conditions are presented in Table 4.1.

Table 4.1

Means, Standard Deviations, Medians, and Dependent Measure Skewness and Kurtosis Values by Treatment and No-treatment Conditions

Dependent Measures	<i>n</i>	<i>M (SD)</i>	<i>Mdn</i>	Skewness (<i>SE</i>)	Kurtosis (<i>SE</i>)
No-treatment Condition					
Pretest PPVT-III	41	91.12 (13.65)	91.00	-.368 (.369)	-.595 (.724)
Posttest PPVT-III	43	92.51 (10.43)	95.00	-.550 (.361)	-.758 (.709)
TWKM	43	9.70 (5.45)	10.00	.933 (.361)	.995 (.709)
Treatment Condition					
Pretest PPVT-III	80	94.28 (16.96)	95.00	-.670 (.269)	.752 (.532)
Posttest PPVT-III	78	98.99 (13.68)	99.00	.080 (.272)	.657 (.538)
TWKM	80	55.50 (37.58)	50.50	.324 (.269)	-.922 (.532)

Note. TWKM maximum score is 148 (2 questions for each target word [37 words], 2 point maximum for each question).

The assumption of normality for distributions of pre- and posttest measures was also examined by instructional condition and language status. Across 12 distributions for instructional condition by language status, 10 had approximately normal distributions and two had non-normal distributions. EOL students in both no-treatment and treatment conditions had positively skewed distributions on pretest PPVT-III, while ELL students in both no-treatment and treatment conditions had approximately normal distributions. Preliminary analyses examined the difference between means for instructional condition by language status to determine equivalency of groups. In sum, results for instructional condition by language status reasonably met the assumption for normality.

Bivariate scatterplots were examined across dependent measures to investigate the assumption of linearity in regression analyses for treatment ELLs and EOLs. The predictor variable, centered-pretest PPVT-III (Dunn & Dunn, 1997), had approximately normal distributions and linear relationships with dependent measures TWKM and posttest PPVT-III.

In sum, assumptions of statistical tests were examined using skewness and kurtosis values and bivariate scatterplots to determine assumptions of normality and linearity, respectively. Skewness and kurtosis values and the multiple regression predictor variable, centered-pretest PPVT-III (Dunn & Dunn, 1997), had approximately normal distributions and linear relationships with dependent measures, suggesting that the assumptions for the analyses were reasonably met. Descriptive statistics and skewness and kurtosis values by instructional condition and language status are presented in Table 4.2.

Table 4.2

Means, Standard Deviations, Medians, and Dependent Measure Skewness and Kurtosis Values by Instructional Condition and Language Status

Dependent Measures	<i>n</i>	<i>M</i> (<i>SD</i>)	<i>Mdn</i>	Skewness (<i>SE</i>)	Kurtosis (<i>SE</i>)
No-treatment EOLs					
Pretest PPVT-III	25	95.00 (13.53)	97.00	-.993 (.464)	.699 (.902)
Posttest PPVT-III	25	94.96 (10.04)	97.00	-.821 (.464)	-.457 (.902)
TWKM	25	11.32 (6.06)	11.00	.699 (.464)	.019 (.902)
No-treatment ELLs					
Pretest PPVT-III	16	85.06 (11.82)	84.50	.358 (.564)	.008 (1.091)
Posttest PPVT-III	17	89.47 (10.48)	93.00	-.460 (.550)	-.651 (1.063)
TWKM	17	7.24 (3.51)	7.00	-.104 (.550)	-.891 (1.063)
Treatment EOLs					
Pretest PPVT-III	49	98.73 (15.76)	102.00	-1.104 (.340)	2.913 (.668)
Posttest PPVT-III	49	102.53 (13.73)	103.00	-.202 (.340)	1.238 (.668)
TWKM	49	66.39 (37.09)	65.00	.072 (.340)	-.863 (.668)
Treatment ELLs					
Pretest PPVT-III	31	87.23 (16.61)	89.00	-.238 (.421)	-.033 (.821)
Posttest PPVT-III	29	93.00 (11.53)	92.00	.354 (.434)	1.460 (.845)
TWKM	31	38.29 (31.90)	31.00	.735 (.421)	-.671 (.821)

Preliminary Analyses

Pearson product-moment correlation coefficients were used to describe relationships between dependent variables, and inferential statistics were employed to

examine equivalency of groups at pretest for both instructional condition and language status. Cohen's (1992) guidelines for Pearson's product-moment r were used to interpret the magnitude of variable relationships. These guidelines suggest that relationships of $|.10|$ ($r^2 = .01$) $<|.30|$ ($r^2 = .09$) are weak, those of $|.30| <|.50|$ ($r^2 = .25$) are moderate, and those of $|.50|$ ($r^2 = .25$) or greater are strong.

Correlations

All participants. Pearson product-moment correlation coefficients were computed between dependent measures collapsed across instruction condition and language status group for all 123 participants (TWKM, $n = 123$, $M = 39.49$, $SD = 37.49$ and PPVT-III [Dunn & Dunn, 1997], $n = 121$, $M = 96.69$, $SD = 12.96$). Strong bivariate correlations were found between dependent measures at a statistical significance level of .01 (two-tailed), suggesting that participants with high scores on any one of the dependent measures would also be predicted to have high scores on remaining dependent measures (see Table 4.3).

Table 4.3

Correlations between Posttests TWKM and PPVT-III for All Participants

Dependent Measure	TWKM r (r^2)	PPVT-III r (r^2)
PPVT-III	.643 (.413)	1

Note. $p = < .01$ (two-tailed)

Treatment only by language status. One of the primary purposes of this dissertation study was to determine how English-language learners (ELLs) and English-only learners (EOLs) responded to vocabulary intervention and whether there were

differential effects by language status. Pearson product-moment correlation coefficients were computed for treatment condition only to determine if differences existed between ELLs and EOLs. Correlations between TWKM and PPVT-III (Dunn & Dunn, 1997; see Table 4.2 for *M* and *SD*) were statistically significant and had strong positive relationships. Pearson product-moment correlation coefficients suggest that EOL and ELL participants in the treatment condition with high scores on any one of the dependent measures should also have high scores on remaining dependent measures. Correlations between dependent measures for treatment condition only by language status are presented in Table 4.4.

Table 4.4

Correlations between Posttests TWKM and PPVT-III for Treatment Condition Only by Language Status (N = 78)

	TWKM r (r^2)	PPVT-III r (r^2)
Dependent Measure	n	n
Treatment EOLs	.697 (.486)	
PPVT-III	$n = 49$	1
Treatment ELLs	.642 (.412)	
PPVT-III	$n = 29$	1

Note. $p < .05$ (two-tailed)

Screening for Equivalency of Groups

To determine if preexisting group differences existed on pretest PPVT-III (Dunn & Dunn, 1997), the following *t* tests were conducted: (a) instructional condition, (b) language status, and (c) instructional condition by language status. Effect size was

calculated using Cohen's (1992) d , and interpreted according to Cohen's guidelines which regard $|.20|$ as small effects, $|.50|$ as medium effects, and $|.80|$ as large effects. Descriptive statistics are presented in Table 4.5 for instructional condition and language status.

There was no statistically significant mean score difference between treatment and no-treatment condition groups on the PPVT-III (Dunn & Dunn, 1997) at pretest, $t(119) = -1.03, p = .31$ (two-tailed), $d = .20$. For language status, there was a statistically significant mean score difference between ELLs and EOLs, $t(98.11) = 3.91, p < .001$ (two-tailed), $d = .73$, suggesting EOLs entered kindergarten with larger English vocabularies and a better understanding of the English language than ELLs.

Table 4.5

Descriptive Statistics for t-Tests on Pretest PPVT-III for Instructional Condition and Language Status

	<u>Instructional Condition</u>		<u>Language Status</u>	
	No Treatment	Treatment	EOLs	ELLs
<i>n</i>	41	80	74	47
<i>M</i>	91.12	94.28	97.47	86.49
<i>SD</i>	13.65	16.96	15.06	15.05

Mean score differences for EOLs and ELLs broken out for treatment and no-treatment conditions were also investigated. The mean score difference on PPVT-III between ELL students in the treatment condition and ELL students in the no-treatment condition was not statistically significantly different at pretest, $t(45) = -.463, p = .65$

(two-tailed), $d = .14$. Similarly, the mean score difference between EOL treatment and no-treatment groups was not statistically significantly different, $t(72) = -1.01$, $p = .32$ (two-tailed), $d = .25$ (see Table 4.6).

Table 4.6

Descriptive Statistics for t-Tests on Pretest PPVT-III by English-only Learners Only and English-language Learners Only

	<u>English-Only Learners</u>		<u>English-Language Learners</u>	
	No Treatment	Treatment	No Treatment	Treatment
<i>n</i>	25	49	16	31
<i>M</i>	95.00	98.73	85.06	87.23
<i>SD</i>	13.53	15.76	11.82	16.61

In sum, results for preliminary analyses indicated that group means on pretest PPVT-III (Dunn & Dunn, 1997) were not statistically significantly different from each other for treatment and no-treatment conditions; whether conditions were examined in aggregate or by language status. Group means were statistically significantly different for language status. Therefore, the multiple regression analyses will control for language status differences on pretest PPVT-III.

Primary Analyses

Primary Research Question One

What are the main effects of the kindergarten vocabulary intervention on target-word knowledge and general receptive vocabulary knowledge for instructional condition

(i.e., treatment and no-treatment conditions) and students' language status (i.e., English-language learner [ELL] and English-only learner [EOL])? Is there an interaction between instructional condition and language status?

To examine two sources of variance simultaneously and possible interactions, two-by-two analyses of variance (2 x 2 ANOVAs) were employed. Dichotomous independent variables included instructional condition (i.e., treatment condition and no-treatment condition) and language status (i.e., ELL and EOL). Separate analyses were conducted for each posttest measure (i.e., TWKM and PPVT-III; Dunn & Dunn, 1997). Effect sizes were interpreted using Cohen's (1992) d , with (a) $|.20|$ as small effects, (b) $|.50|$ as medium effects, and $|.80|$ as large effects.

TWKM

The first 2 x 2 ANOVA was instructional condition by language status on dependent measure TWKM. Descriptive statistics for TWKM are presented in Table 4.7. There was an interaction effect at the .05 level of significance between instructional condition and language status, $F(1, 118) = 4.60, p = .034$. The main effects for instructional condition, $F(1, 118) = 59.17, p < .001, d = 1.49$; and language status, $F(1, 118) = 8.26, p = .005, d = .56$, were also statistically significant.

In sum, while both EOLs and ELLs benefited from the intervention, the interaction effect suggested that EOL students received greater benefit from the intervention than did ELLs ($d = .80$). The magnitude of the comparison between no-treatment EOL and no-treatment ELLs nearly reached a large effect ($d = .79$). Cohen's d for the comparison between EOLs in treatment compared to EOLs in control was 1.81, indicating a large effect. The d value for the comparison between ELLs in treatment

compared to ELLs in no-treatment was 1.20, indicating a large effect. Overall, results suggest that it benefited participants to be in the (a) treatment condition rather than the no-treatment condition and (b) categorized as an EOL rather than an ELL. Descriptive statistics are presented in Table 4.7).

Table 4.7

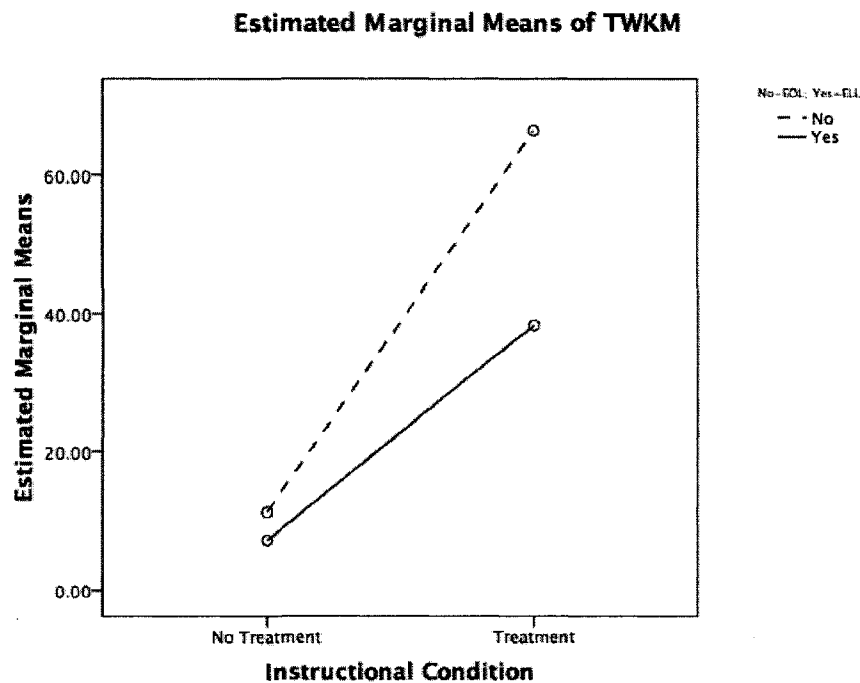
Descriptive Statistics for posttest TWKM

Condition	<i>n</i>	<i>M</i>	<i>SD</i>
No-treatment Condition			
EOLs	25	11.32	6.06
ELLs	17	7.24	3.51
Total	42	9.67	5.52
Treatment Condition			
EOLs	49	66.39	37.09
ELLs	31	38.29	31.90
Total	80	55.50	37.58
Total			
EOLs	74	47.78	40.05
ELLs	48	27.29	29.65
Total	122	39.72	37.55

Note. Maximum score for TWKM is 148.

Figure 4.1

Posttest TWKM Profile Plot for Instructional Condition and Language Status



PPVT-III

The second 2 x 2 ANOVA was instructional condition by language status on dependent measure posttest PPVT-III (Dunn & Dunn, 1997). Descriptive statistics for posttest PPVT-III are presented in Table 4.8. The main effect for instructional condition was statistically significant, $F(1, 116) = 5.49, p = .021, d = .49$, with a medium effect size. The main effect of language status was statistically significant, $F(1, 116) = 10.05, p = .002, d = .67$, and had a medium effect size. There was no interaction between instructional condition and language status, $F(1, 116) = .728, p = .395$ (see Figure 4.2).

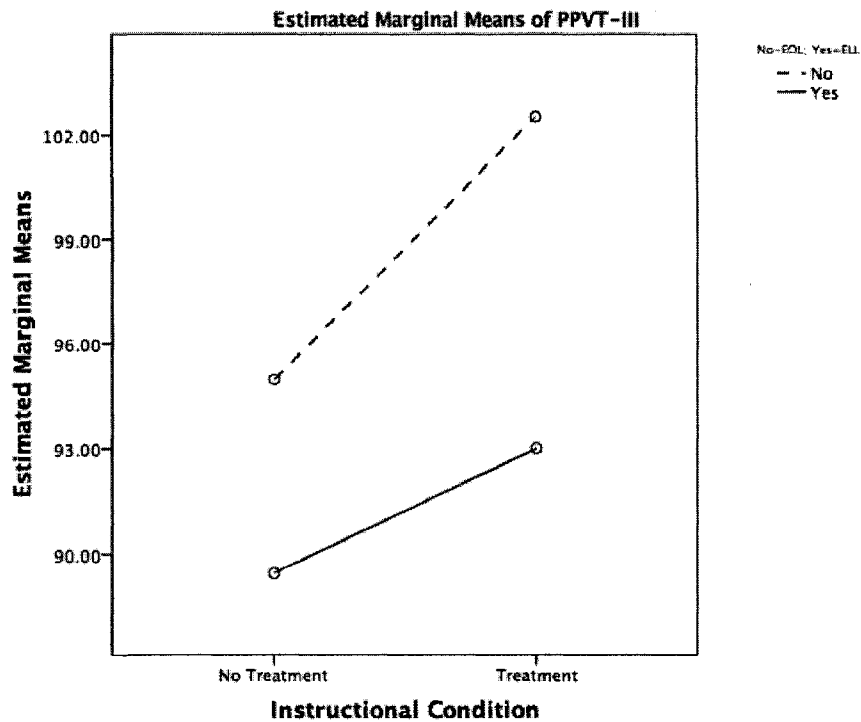
Table 4.8

Descriptive Statistics for posttest PPVT-III

Condition	<i>n</i>	<i>M</i>	<i>SD</i>
No-treatment Condition			
EOLs	25	94.96	10.04
ELLs	17	89.47	10.48
Total	42	92.74	10.45
Treatment Condition			
EOLs	49	102.53	13.73
ELLs	29	93.00	11.53
Total	78	98.99	13.68
Total			
EOLs	74	99.97	13.04
ELLs	46	91.70	11.17
Total	120	96.80	12.95

Figure 4.2

Posttest PPVT-III Profile Plot for Instructional Condition and Language Status



Primary Research Question Two

Is there a difference in word learning between ELLs and EOLs who received vocabulary intervention on target-word knowledge and general receptive vocabulary knowledge?

The second primary research question focused on possible differences in word learning between treatment only ELLs and EOLs on dependent measures. First, a *t*-test was conducted between treatment condition only ELLs ($n = 31$, $M = 38.29$, $SD = 31.90$) and EOLs ($n = 49$, $M = 66.39$, $SD = 37.09$) to examine whether there was a target-word knowledge difference. The *t*-test for treatment only ELLs and EOLs was statistically significant, $t(70.86) = 3.60$, $p = .001$ (two-tailed), suggesting that EOLs knew the

meaning of more target words than ELLs on TWKM. Next, a *t*-test was conducted to examine whether there was a mean score difference between ELLs and EOLs on general receptive vocabulary knowledge. There was a statistically significant mean score difference between ELLs ($n = 29$, $M = 93.00$, $SD = 11.53$) and EOLs ($n = 49$, $M = 102.53$, $SD = 13.73$), $t(67.14) = 3.28$, $p = .002$ (two-tailed), suggesting EOLs had a larger receptive general vocabulary than ELLs on PPVT-III (Dunn & Dunn, 1997). See Table 4.9 for Cohen's (1992) *d* and effect size confidence intervals for dependent measures target-word knowledge (i.e., TWKM) and general vocabulary knowledge (i.e., PPVT-III).

In sum, results for *t*-tests on posttest dependent measures indicated that there were target-word knowledge and general vocabulary knowledge mean score differences that favored treatment only EOLs over treatment only ELLs in both cases.

Table 4.9

*Language Status Effect Sizes and 95% Confidence Intervals for TWKM and PPVT-III
Dependent Measures*

Measures	Cohen's <i>d</i>	Magnitude	95% Confidence Interval for Cohen's <i>d</i>	
			Lower	Upper
TWKM	.80	Large	.32	1.26
PPVT-III	.74	Medium-large	.25	1.20

Note. |.80| is the cut off for a large Cohen's *d* effect size.

Secondary Analyses

Secondary Research Question

Do treatment only ELL and EOL participant scores on general receptive vocabulary knowledge at pretest predict posttest scores on target-word knowledge and general receptive vocabulary knowledge?

This research question focused on whether pretest PPVT-III (Dunn & Dunn, 1997) scores can help explain differences that consistently favored EOLs over ELLs on dependent measures in the treatment condition. Hierarchical multiple regression analyses were employed to investigate if centered pretest PPVT-III and language status explained statistically significant variance on dependent measures. In the multiple regression equations, predictor variables represent both continuous and categorical variables; (hierarchical) multiple regression analysis is robust and does not constrain the (a) form of the relationship, (b) nature of the predictor variables (i.e., quantitative, qualitative, correlated, uncorrelated, etc.), (c) nature of dependent variables (i.e., scaled, categorical, or ordered categories), or (d) nature of data (i.e., meeting underlying assumptions; Cohen, Cohen, West, & Aiken, 2003).

Intercorrelations

Intercorrelations for predictor variables and posttest dependent measures are presented in Table 4.10. Cohen's (1992) index for significance of Pearson's product-moment r was used to interpret the magnitude of variable relationships. The intercorrelations between predictor variable centered pretest PPVT-III (Dunn & Dunn, 1997) and dependent measures TWKM and posttest PPVT-III had strong positive relationships, suggesting that participants' scores on centered PPVT-III would predict

outcome scores on dependent measures. The intercorrelations between independent variable language status and the dependent measures TWKM and posttest PPVT-III had moderate negative relationships, indicating that language status would not predict outcome scores on TWKM and posttest PPVT-III.

Table 4.10

Intercorrelations Between Independent Variable Language Status and Predictor Variable Centered Pretest PPVT-III, and Dependent Measures TWKM and PPVT-III (N = 80)

Predictor Variables	Language Status r (r^2)	Centered Pretest PPVT-III r (r^2)	Posttest PPVT-III r (r^2)	TWKM r (r^2)
Language Status	1			
Centered Pretest PPVT-III	-.339 (-.114) $n = 78$	1		
Posttest PPVT-III	-.339 (-.114) $n = 78$.818 (.669) $n = 76$	1	
TWKM	-.367 (-.134) $n = 80$.714 (.509) $n = 78$.718 (.515) $n = 78$	1

Note. $p = < .01$ (two-tailed)

Regression Analyses

Two series of hierarchical multiple regression analyses were conducted to predict performance on dependent measures TWKM and PPVT-III (Dunn & Dunn, 1997) from

centered pretest PPVT-III and language status. The first series of hierarchical multiple regression analyses investigated whether the interaction term of language status and centered pretest PPVT-III contributed to the multiple regression equation above and beyond language status and centered pretest PPVT-III on posttest dependent measures. The second series of hierarchical multiple regression analyses investigated whether independent variable, language status, contributed to the multiple regression equation above and beyond predictor variable centered pretest PPVT-III on posttest dependent measures.

The first series of hierarchical multiple regression analyses investigated whether it was appropriate to move forward with the hierarchical regression analysis that would determine if pretest scores on general receptive vocabulary knowledge would predict performance on posttest TWKM and PPVT-III (Dunn & Dunn, 1997). First, multiple regression analyses were conducted using language status and centered pretest PPVT-III as independent variables. Results indicated that language status and centered pretest PPVT-III accounted for a statistically significant proportion of the variance in dependent measures TWKM, $R^2 = .52$, $F(2, 75) = 41.34$, $p < .001$ and PPVT-III, $R^2 = .68$, $F(2, 73) = 75.95$, $p < .001$. Next, an interaction term comprised of language status and centered pretest PPVT-III was included in the model. Results indicated that the interaction term did not account for a statistically significant proportion of the variance in dependent measures (see Tables 4.11-4.13).

Table 4.11

Centered Pretest PPVT-III, Language Status, and Centered Pretest PPVT-III & Language Status Interaction Term Hierarchical Multiple Regression Results for the Prediction of Performance on Posttest TWKM and PPVT-III

Models	R^2	$R^2\Delta$	$F\Delta(df_1, df_2)$	Sig. $F\Delta$
TWKM 1 ^a	.52	n/a	n/a	n/a
TWKM 2 ^b	.53	.01	1.13 (1, 74)	.29
PPVT-III 1 ^a	.68	n/a	n/a	n/a
PPVT-III 2 ^b	.68	.01	2.00 (1, 72)	.16

Note. ^aPredictors: Centered pretest PPVT-III and language status. ^bPredictors: Centered pretest PPVT-III, language status, and centered pretest PPVT-III * language status.

Models represent treatment only participants.

Table 4.12

Contribution of Centered Pretest PPVT-III, Language Status, and Centered Pretest PPVT-III & Language Status Interaction Term Hierarchical Multiple Regression Results to the Prediction of Performance on Posttest TWKM

Models and Predictors	Unstandardized Coefficient b	SE	Standardized Coefficient β	t	Sig.
Model 1					
(Constant)	56.02	3.96	n/a	14.15	.000
Language Status	-9.70	6.47	-.13	-1.50	.138
Centered Pretest PPVT-III	1.46	.19	.67	7.93	.000
Model 2					
(Constant)	54.98	4.07	n/a	13.50	.000
Language Status	-9.96	6.47	-.13	-1.54	.128
Centered Pretest PPVT-III	1.63	.24	.75	6.79	.000
Centered Pretest PPVT-III * Language Status	-.40	.38	-.11	-1.06	.292

Note. Models represent treatment only participants. * $p = .05$

Table 4.13

Contribution of Centered Pretest PPVT-III, Language Status, and Centered Pretest PPVT-III & Language Status Interaction Term Hierarchical Multiple Regression Results to the Prediction of Performance on Posttest PPVT-III

Models and Predictors	Unstandardized Coefficient		Standardized Coefficient		
	b	SE	β	<i>t</i>	Sig.
Model 1					
(Constant)	98.19	1.21	n/a	81.11	.000
Language Status	-2.38	2.01	-.08	-1.18	.240
Centered Pretest PPVT-III	.66	.06	.79	11.19	.000
Model 2					
(Constant)	97.79	1.23	n/a	79.26	.000
Language Status	-2.53	2.00	-.09	-1.27	.210
Centered Pretest PPVT-III	.72	.07	.86	9.89	.000
Centered Pretest PPVT-III					
	-.17	.12	-.12	-1.42	.161
* Language Status					

Note. Models represent treatment only participants. * $p = .05$

In sum, the results of first series of hierarchical multiple regression analyses indicated that (a) language status and centered pretest PPVT-III (Dunn & Dunn, 1997) accounted for a statistically significant proportion of the variance in posttest scores and (b) interactions between language status and pretest PPVT-III were not evident for any dependent measure.

The second series of hierarchical multiple regression analyses investigated the relationship between predictor variables centered pretest PPVT-III (Dunn & Dunn, 1997), and language status on posttest dependent measures. First, multiple regression analyses were conducted using centered pretest PPVT-III as the predictor independent variable of posttest measures. Results indicated that centered pretest PPVT-III accounted for a statistically significant proportion of the variance in dependent measures TWKM, $R^2 = .51$, $F(1, 76) = 79.13$, $p < .001$ and PPVT-III, $R^2 = .67$, $F(1, 74) = 149.68$, $p < .001$. Second, language status was entered into the multiple regression equation to evaluate whether language status accounted for additional variance in posttest measures above and beyond pretest PPVT-III scores. Results indicated that language status did not account for a statistically significant proportion of the variance in dependent measures when pretest PPVT-III was in the model (see Tables 4.14-4.16), indicating that treatment only ELLs and EOLs with similar scores on centered pretest PPVT-III would have similar scores on dependent measures.

Table 4.14

*Centered Pretest PPVT-III and Language Status Hierarchical Multiple Regression**Results for the Prediction of Performance on Posttest TWKM and PPVT-III*

Models	R^2	$R^2\Delta$	$F\Delta(df_1, df_2)$	Sig. $F\Delta$
TWKM 1 ^a	.51	n/a	n/a	n/a
TWKM 2 ^b	.52	.01	2.24 (1, 75)	.14
PPVT-III 1 ^a	.67	n/a	n/a	n/a
PPVT-III 2 ^b	.68	.01	1.40 (1, 73)	.24

Note. ^aPredictor: Centered pretest PPVT-III. ^bPredictors: Centered pretest PPVT-III and Language Status. Models represent treatment only participants. $*p = .05$

Table 4.15

Contribution of Centered Pretest PPVT-III and Language Status Hierarchical Multiple Regression Results to the Prediction of Performance on Posttest TWKM

Models and Predictors	Unstandardized Coefficient		Standardized Coefficient	<i>t</i>	Sig.
	b	<i>SE</i>	β		
Model 1					
(Constant)	52.11	3.00	n/a	17.35	.000
Centered Pretest PPVT-III	1.56	.18	.71	8.90	.000
Model 2					
(Constant)	56.02	3.96	n/a	14.15	.000
Centered Pretest PPVT-III	1.46	.19	.67	7.93	.000
Language Status	-9.70	6.47	-.13	-1.50	.14

Note. Models represent treatment only participants. * $p = .05$

Table 4.16

Contribution of Centered Pretest PPVT-III and Language Status Hierarchical Multiple Regression Results to the Prediction of Performance on Posttest PPVT-III

Models and Predictors	Unstandardized Coefficient		Standardized Coefficient		
	b	SE	β	<i>t</i>	Sig.
Model 1					
(Constant)	97.26	.93	n/a	105.10	.000
Centered Pretest PPVT-III	.68	.06	.82	12.23	.000
Model 2					
(Constant)	98.19	1.21	n/a	81.11	.000
Centered Pretest PPVT-III	.66	.06	.79	11.19	.000
Language Status	-2.38	2.01	-.08	-1.18	.240

Note. Models represent treatment only participants. * $p = .05$

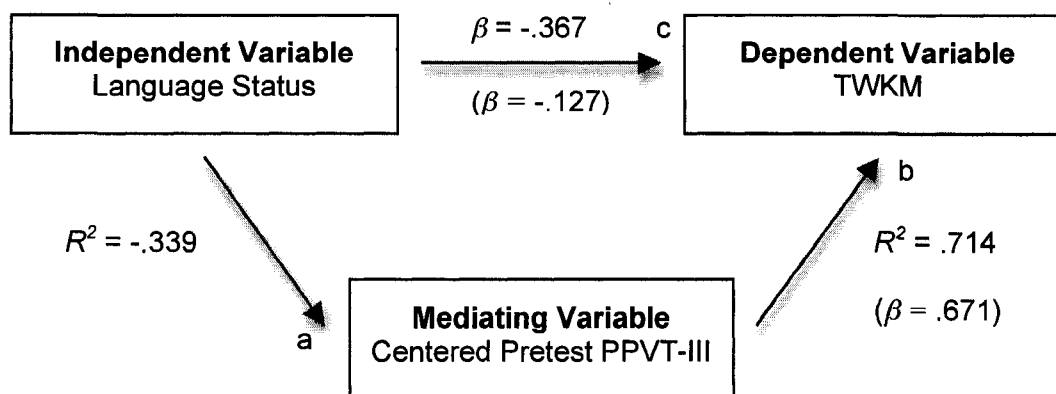
Mediation analyses. Mediation models were developed to help explain the degree to which the mediating variable, centered pretest PPVT-III (Dunn & Dunn, 1997), accounted for a significant amount of the shared variance with independent variable language status. The following four steps describe the process to determine a full mediation or whether the direct effect of the independent variable is partially mediated by centered pretest PPVT-III (Baron & Kenny, 1986). First, both TWKM and PPVT-III were entered separately as the dependent measure and language status as the independent variable in a simple linear regression (SLR) to establish that there is an effect that can be mediated for the first path (i.e., *c*; see Figures 4.3 and 4.4). Both SLRs for TWKM, $R^2 =$

.134, $F(1, 78) = 12.109$, $p = .001$, and PPVT-III, $R^2 = .115$, $F(1, 76) = 9.853$, $p = .002$, were statistically significant. The second path (i.e., a) involved entering language status as the independent variable and treating centered pretest PPVT-III as a dependent variable; this SLR is the second path for both dependent measures and was statistically significant, $R^2 = .115$, $F(1, 76) = 9.90$, $p = .002$. For the third path (i.e., b), language status and centered pretest PPVT-III were entered as independent variables in separate multiple regression analyses with either TWKM or PPVT-III as the dependent measure. In this case, path b originates from the mediating variable, centered pretest PPVT, and ends at the dependent variable, either TWKM or PPVT-III. Both multiple regression analyses for TWKM, $R^2 = .524$, $F(2, 75) = 41.335$, $p < .001$, and PPVT-III, $R^2 = .675$, $F(2, 73) = 75.946$, $p < .001$, were statistically significant. Last, to establish that the mediating variable, centered pretest PPVT-III, completely mediates the relationship between the independent and dependent variables, the effect of the independent variable on the dependent variable should not be statistically significantly different from zero.

Results for both meditational analyses for dependent measures TWKM and PPVT-III (Dunn & Dunn, 1997) indicated that there is evidence of a full mediation with centered pretest PPVT-III as the mediating variable. That is to say, the effect of language status on either dependent variable is not statistically significantly different from zero, which corroborates language status not accounting for a statistically significant proportion of the variance in both dependent measures in the hierarchical regression analyses.

Figure 4.3

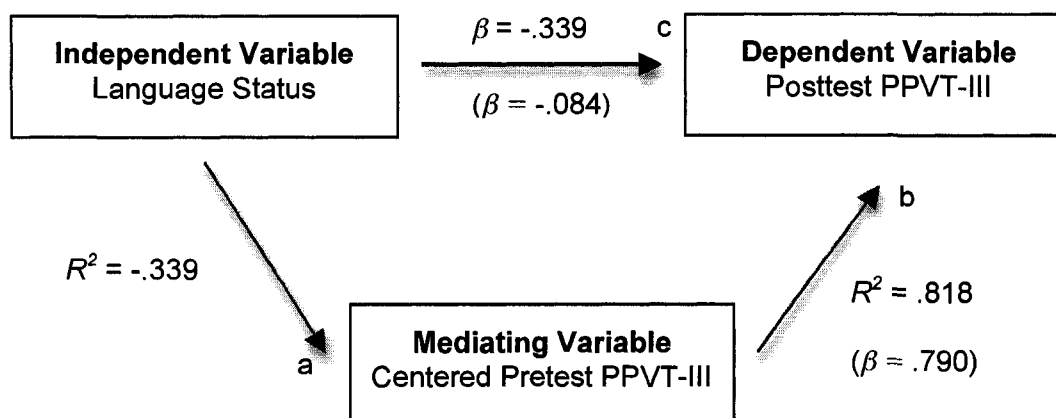
Full Mediation of Centered Pretest PPVT-III Predicting Scores on TWKM



Sobel z-value = -2.923, $p = .003$
 Standardized Coefficient of Language Status on TWKM:
 Direct = -.127
 Indirect = -.24

Figure 4.4

Full Mediation of Centered Pretest PPVT-III Predicting Scores on Posttest PPVT-III



Sobel z-value = -3.027, $p = .002$
 Standardized Coefficient of Language Status on PPVT-III:
 Direct = -.084
 Indirect = -.255

In sum, the results of the second series of hierarchical multiple regression analyses indicated that (a) centered pretest PPVT-III (Dunn & Dunn, 1997) accounted for a statistically significant proportion of the variance in posttest measures for participants in the treatment condition and (b) language status did not explain any additional variance in posttest measures above pretest PPVT-III. The results of the mediation analyses indicate that independent variable, language status, is not statistically significantly different from zero when centered pretest PPVT-III is the mediating variable for both dependent measures (i.e., TWKM and PPVT-III), resulting in a full mediation for each analysis. The results for both hierarchical multiple regression and mediation analyses indicate that treatment ELLs and treatment EOLs did equally well on posttest if they had similar initial general, receptive vocabulary knowledge on pretest PPVT-III.

CHAPTER V

DISCUSSION

The first section of this chapter briefly reviews the current ELL literature base. Second, the results of this dissertation study are discussed within the theoretical framework of SVR. Next, the implications, limitations and directions for future research are discussed followed by the conclusion.

The purpose of this dissertation study was to reanalyze data from an 18-week vocabulary intervention study with kindergarten students (Project VITAL: Vocabulary Instruction Targeting At-risk Learners) to determine how English-language learners (ELLs) responded to vocabulary intervention compared to English-only learners (EOLs). To help explain how ELLs and EOLs might theoretically respond to vocabulary intervention, Gough and Tunmer's (1986) theoretical framework, the simple view of reading (SVR), was used to examine quasi- or experimental vocabulary intervention studies that used English as the language of instruction. The SVR helps guide our understanding about how ELLs and EOLs respond to code-based and language- or meaning-based instruction. This dissertation study contributes to the field by addressing the problem of limited research on how ELLs respond to early vocabulary intervention compared to EOLs by investigating the effects Project VITAL on the word learning of primarily kindergarten Spanish-speaking ELLs and EOLs using the SVR as its theoretical framework.

English-Language Learner Vocabulary Literature Base

There is a critical need to conduct research on developing and testing vocabulary interventions for typical and at-risk English-language learners (ELLs; August, Carlo, Dressler, and Snow, 2005; National Literacy Panel [NLP], 2006; National Reading Panel [NRP], 2000; McCardle, Mele-McCarthy, & Leos, 2005; Vaughn, Mathes, Linan-Thompson, & Francis, 2005). The emphasis on vocabulary instruction is not often included in school curricula (Beck, McKeown, & Kucan, 2002; Biemiller, 2001), but, at the same time, a growing number of ELLs receive English instruction in United States schools (Hoffman & Sable, 2006; Kindler, 2002; Shin & Bruno, 2003; U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of the Assistant Secretary [USDoE], 2004). There is critical link between vocabulary knowledge and reading comprehension for English-only learners (EOLs) and a documented relationship between vocabulary knowledge and academic achievement in research (Anderson & Nagy, 1992; National Reading Panel; National Research Council, 1998), but the research on teaching ELLs is limited, especially in the area of teaching vocabulary directly (NLP, 2006).

The current literature base for ELLs on language- or meaning-based instruction is not as well established as code-based instruction. There is an emerging evidence base on the effects of code-based instruction for ELLs that indicates that ELLs and EOLs respond similarly to code-based instruction (e.g., Chiappe & Siegel, 2006; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Lindsey, Manis, & Bailey, 2003). The intervention research for typical and at-risk ELLs is limited, but due to national and school demographics there is an urgent need to (a) investigate how to improve reading outcomes for ELLs and (b) determine whether various types of instructional strategies have differential or parallel

effects on both ELLs and EOLs (NLP, 2006; USDoE, 2004). This dissertation study's intervention incorporated effective teaching strategies for students with learning disabilities and those with diverse learning needs, such as ELLs, who may be at risk for reading and academic failure (Coyne, Kame'enui, & Carnine, 2007; Gersten, Santoro, & Jiménez, 2007; Swanson & Hoskyn, 1998; Vaughn, Gersten, & Chard, 2000).

Project VITAL Outcomes via the Simple View of Reading

The data of Project VITAL was reanalyzed through primary and secondary analyses. Primary analyses included (a) two separate two-by-two analyses of variance (2 x 2 ANOVAs; instructional condition x language status) for each of two dependent variables and (b) *t*-tests on mean differences between treatment English-language learners (ELLs) and treatment English-only learners (EOLs) on dependent measures to determine word learning differences. Secondary analyses focused on whether general, receptive vocabulary knowledge measured at pretest (i.e., PPVT-III; Dunn & Dunn, 1997) predicted outcomes on dependent measures for both ELLs and EOLs using hierarchical multiple regression. The overall findings of primary and secondary analyses are discussed together in the following paragraphs.

The main effect of the treatment replicated the results of the main Project VITAL study--there were statistically significant differences between treatment participants and no-treatment participants, favoring treatment participants on both dependent measures (i.e., target-word knowledge measure [TWKM] and the Peabody Picture Vocabulary Test-III [PPVT-III], Dunn & Dunn, 1997). The focus of this dissertation study is on the effects of an English vocabulary intervention on ELL and EOL participants.

Using the simple view of reading (SVR; Gough & Tunmer, 1986) as the theoretical framework, the results from this dissertation study provided evidence on how ELLs and EOLs responded to meaning-based intervention. Preliminary analyses revealed that group means on pretest PPVT-III (Dunn & Dunn, 1997), a measure of C, were not statistically significantly different from each other for treatment and control or when examined by ELLs compared to ELLs or EOLs compared to EOLs. As would be expected for language status, however, there was a statistically significant difference at posttest between all ELLs compared to all EOLs, favoring EOLs on pretest PPVT-III, indicating EOLs knew more general, receptive English vocabulary than ELLs. For example, the mean difference between treatment ELLs and treatment EOLs on pretest PPVT-III was statistically significant and characterized by a large effect, $d = .71$.

Only three studies reported differences between ELLs and EOLs on measures administered at pretest. Gunn, Biglan, Smolkowski, and Ary (2000) found that EOLs scored significantly higher than ELLs on letter-word identification, word attack, and oral reading fluency at pretest, which are measures of D. Silverman (2007) also found that EOLs scored significantly higher than ELLs at pretest on picture vocabulary, oral vocabulary, and general vocabulary, which are measures of C. In general, the converse was found in Vaughn et al. (2003), ELLs' means were often higher than EOLs at pretest. ELLs scored higher than EOLs on nine out of 11 pretest measures, and on one measure ELLs and EOLs had approximately identical pretest scores. The results of this dissertation are discussed via the SVR in relation to the results of these three studies that included both ELLs and EOLs in their samples.

Primary analyses revealed that the main effects of vocabulary intervention consistently favored treatment EOLs compared to treatment ELLs on TWKM and PPVT-III (Dunn & Dunn, 1997), and that ELLs responded differentially worse than EOLs on the TWKM, which was evident in an interaction effect. The SVR prediction for this dissertation study holds that there would be no evidence of an interaction between treatment condition and type of learner on dependent measures of D, but there would be evidence of an interaction between treatment condition and type of learner on dependent measures of C (i.e., Analysis 3). Comments on measures of D will be limited in the discussion, since measures of C is the focus of this dissertation study.

The main effects for both instructional condition and language status in this dissertation study were statistically significant for TWKM and PPVT-III (Dunn & Dunn, 1997), which are both measures of C. On TWKM, treatment ELLs' means were lower than treatment EOLs' means, but were higher than both no-treatment EOLs and no-treatment ELLs. On PPVT-III, treatment ELLs' means were lower than treatment EOLs' means and were approximately the same as no-treatment EOLs, but higher than no-treatment ELLs. There was no interaction effect for PPVT-III, which suggested that the SVR did not hold true for general, receptive vocabulary knowledge, although there seemed to be a trend toward an interaction effect if the difference in means between treatment ELLs and no-treatment EOLs are examined.

There were no interaction effects in Gunn, Biglan, Smolkowski, and Ary (2000) on measures of C. The main effects for reading vocabulary and reading comprehension were statistically significant for instructional condition, and only language status was statistically significant for reading vocabulary. In Gunn, Biglan, Smolkowski, and Ary

the SVR did not hold true for the interaction effect on measures of D or C. In the Silverman (2007) study, ELLs and EOLs had similar posttest scores on the general vocabulary measure that assessed receptive, relational, and expressive vocabulary. In Silverman, EOLs' general vocabulary scores at pretest were significantly higher than ELLs, but ELLs learned general vocabulary words at a faster rate than EOLs, which resulted in a non-significant difference between ELLs and EOLs at posttest on a measure of general vocabulary knowledge. The Silverman study conducted linear growth modeling analyses that indicated that the SVR did not hold true for outcomes--EOLs and ELLs had similar scores on posttest and delayed posttest.

As for TWKM, there was an interaction effect, which suggested that EOLs received greater benefit from the intervention than did ELLs. The simple effect between treatment only EOLs and ELLs for TWKM was examined and resulted in a statistically significant difference, favoring EOLs ($d = .80$). The finding for TWKM held true--EOLs outperformed ELLs on measures of C, resulting in an interaction effect on TWKM. In the Silverman (2007) study, the researcher-developed measure of target-word knowledge included both a picture and oral vocabulary component. On the picture vocabulary component, ELLs learned target words at a faster rate than EOLs from pretest to posttest to delayed posttest. On the oral vocabulary component, ELLs learned target words at the same rate as EOLs from pretest to posttest to delayed posttest. Although EOLs knew more target words at pretest, outcomes scores were similar for both ELLs and EOLs. The SVR prediction for the Silverman (2007) study did not hold true--treatment EOLs did not perform better than treatment ELLs on measures of C--because the effect of the vocabulary intervention on measures of C was similar for both EOLs and ELLs.

Using hierarchical multiple regression (HMR), secondary analyses revealed that vocabulary intervention was equally effective for ELLs and EOLs in treatment if they had similar initial general, receptive vocabulary knowledge on PPVT-III (Dunn & Dunn, 1997). In the HMR analyses, pretest PPVT-III accounted for a statistically significant proportion of the variance in posttest measures for students in the treatment condition, but language status did not explain any additional variance in posttest measures above pretest PPVT-III. These results indicated that treatment ELLs and treatment EOLs did equally well on posttest if they had similar initial general, receptive vocabulary knowledge on pretest PPVT-III. Mediation models were developed to evaluate the relationship between the independent and dependent variables with the mediating variable. The mediation models evaluated the paths of the independent variable (i.e., language status), mediating variable (i.e., pretest PPVT-III), and dependent variables TWKM and posttest PPVT-III. The results of these mediation analyses confirmed that the direct path from language status to either TWKM or posttest PPVT-III was not statistically significantly different from zero, which indicated that pretest-PPVT-III completely mediated the model. In short, the effects of treatment were mediated by PPVT-III pretest scores, which indicated that knowing a participants' language status does not add additional predictive power over knowing their pretest PPVT-III scores, resulting in ELLs and EOLs responding similarly to vocabulary intervention if their initial general, receptive vocabulary knowledge were similar. In the literature review of this dissertation study, no other studies were found that conducted a mediation analysis.

In sum, there is limited research on how ELLs respond to early vocabulary intervention compared to EOLs and the evidence from these studies seems inconclusive

and mixed. The results of the dissertation study's primary and secondary analyses in combination with the findings of the studies from the literature review indicate that that caution should be exercised in generalizing the results from code-based studies to meaning-based studies. The following conclusions represent the major findings of this dissertation study and previous research that are consistent with the SVR (a) EOLs had higher pretest scores on measures of C compared to ELLs (Gunn, Biglan, Smolkowski, & Ary, 2000; Silverman, 2007), (b) EOLs and ELLs both responded favorably to intervention, (c) EOLs and ELLs did not differentially respond to instruction in D as evidenced by non-significant interactions effects (Gunn, Biglan, Smolkowski, & Ary, 2000), (d) EOLs had higher means on posttest reading vocabulary compared to ELLs (Gunn, Biglan, Smolkowski, & Ary, 2000), and (e) there was an interaction effect between instructional condition and language status on TWKM. The following conclusions represent findings from this study and previous research that are inconsistent with the SVR: (b) EOLs and ELLs did not differentially respond to instruction in C as evidenced by non-significant interaction effects on reading vocabulary and passage comprehension (Gunn, Biglan, Smolkowski, & Ary, 2000), (c) EOLs and ELLs had similar target and general vocabulary outcome scores (Silverman, 2007), and (d) there was a trend toward but no evidence of an interaction between instructional condition and language status on PPVT-III. The findings from this dissertation study and the findings from the literature review have similar and divergent findings, suggesting that the mechanism that affects ELL outcomes is still unknown.

Implications

This dissertation study examined how English-language learners (ELLs) and English-only learners (EOLs) responded to vocabulary instruction in school-based settings. The implications of this dissertation study can affect the practice of researchers, policy makers, and practitioners. The two major findings from this dissertation study are: (a) ELLs and EOLs in kindergarten respond similarly to direct vocabulary instruction after controlling for initial general, receptive vocabulary knowledge and (b) ELLs in kindergarten had significantly lower initial general, receptive vocabulary knowledge compared to EOLs.

Researchers

Findings from this dissertation study provide support for additional research on both ELLs and EOLs' response to direct vocabulary instruction (August, Carlo, Dressler, & Snow, 2005; McCardle, Mele-McCarthy, & Leos, 2005; USDoE, 2004). Using validated theoretical frameworks, such as the simple view of reading (SVR; Catts, Adlof, & Weismer, 2006; Gough & Tunmer, 1986; Velluntino, Tunmer, Jaccard, & Chen, 2007), would enable researchers to continue to examine why ELLs and EOLs respond similarly or differentially to various elements of vocabulary interventions. In this dissertation study, the SVR was used to categorize the independent and dependent variables from the literature review as D or C to help determine ELLs and EOLs' respond to vocabulary instruction. Researchers should consider the types of analyses and intervention designs that would allow them to (a) document ELLs and EOLs' response to vocabulary instruction, (b) document and monitor ELLs and EOLs' initial and outcome vocabulary scores, and (c) document the profiles of ELLs who have significantly lower initial general, receptive vocabulary knowledge.

Education Policy

The findings from this dissertation study have implications on how policy makers can improve vocabulary instruction in school settings. The value of knowing that ELLs and EOLs respond similarly to meaning-based instruction after controlling for initial general, receptive vocabulary knowledge should help policy makers establish policies and procedures that are designed to monitor and support teachers in (a) providing at least 20-30 minutes of direct vocabulary instruction twice per week, (b) integrating vocabulary words systematically within and across content, and (c) providing multiple opportunities for ELLs to engage in interactive discussions improve both target and general vocabulary knowledge. Essentially, by changing the behaviors of the adults, it is possible to change students' vocabulary outcomes.

Vocabulary has been linked to reading comprehension in research (National Reading Panel, 2000), but the emphasis on vocabulary instruction in school curricula is not a priority (Beck, McKeown, & Kucan, 2002; Biemiller, 2001). This dissertation study found that EOLs consistently had higher means on target and general vocabulary compared to ELLs. To close the gap in vocabulary knowledge between ELLs and EOLs it is critically important that policy makers implement policies that require a change in curricula emphasizing a focus on vocabulary instruction. Moreover, such change may not have long-term sustainable effects, if policy makers do not narrow the number of current ineffective programs they have in place and engage in effective, efficient, and systematic programs that are reinforcing to its constituents (Sugai et al., 1999).

Practitioners

The findings from this dissertation study indicated that ELLs and EOLs responded similarly to direct vocabulary instruction after controlling for initial general, receptive vocabulary knowledge, but what is needed is a prevention program designed to improve vocabulary knowledge. Prevention programs should assess ELLs and EOLs' initial vocabulary knowledge as soon as they enter school, because their initial scores will provide insight on how they will respond to direct vocabulary instruction. The findings of this dissertation also indicated that EOLs consistently had higher means on target and general vocabulary compared to ELLs. ELLs and at-risk students who score below a predetermined level (e.g., one standard deviation below the mean) should be provided additional supports, regardless of language status. Proactively screening and implementing carefully planned supports and interventions could follow a response to intervention model, which has potential benefits such as (a) identifying at-risk students, (b) closing the vocabulary gap between EOLs and ELLs, and (c) improving overall vocabulary knowledge (Haager, 2007).

Limitations

Although both English-language learners (ELLs) and English-only learners (EOLs) benefited from participating in the vocabulary intervention, the results of this dissertation study should be evaluated and interpreted with caution.

First, the database did not include or have complete demographics on ethnicity, gender, or free/reduce-priced lunch. Limited demographic data makes it difficult to generalize or compare intervention effects to other studies and their samples. The total percentage of ELLs in the final database accounted for 39% of the 122 confirmed

language status participants, which is identical to the percentage of ELLs to EOLs in the Silverman (2007) study that examined vocabulary knowledge between ELLs and EOLs.

Second, caution should be exercised in the assessment of ELLs and the generalization to other ELL and EOL populations, because there are a limited number of measures designed to measure ELLs' vocabulary knowledge. In this dissertation study, the focus was on participants' acquisition of target-word (i.e., target-word knowledge measure [TWKM]) and general receptive vocabulary knowledge (i.e., PPVT-III; Dunn & Dunn, 1997). The researcher-developed TWKM heavily relied on participants' expressive language skills, which may not have represented their full knowledge of the target words. Although the PPVT has been repeatedly utilized in research to measure generalized receptive vocabulary knowledge and is considered a reliable and valid assessment, it did not include ELLs in its standardization sample, therefore, its results for ELLs should be evaluated and interpreted with caution. Measures that examined gradual levels of skill for both language development and expressive language would have complimented the dissertation study.

Third, not administering a delayed posttest precluded the examination of maintenance and generalization effects for both ELLs and EOLs. The delayed posttest would have provided evidence about whether treatment participants maintained target word knowledge over time or used them in contexts not associated with the storybook readings.

Last, social validity was not addressed. Schwartz & Baer (1991) state that social validity assessments should be used to (a) represent an accurate characterization of the opinions of a representative sample of consumers and (b) sustain acceptable practices or

“effect changes in the program to enhance its viability in the community” (p. 190). A survey designed to provide evaluative feedback on the acceptability of the vocabulary intervention for both ELL and EOL participants could be used for future program planning, implementation, and evaluation. A survey focused on the behaviors of both implementers and participants would provide researchers valuable information.

Directions for Future Research

Although researchers have often included demographic data on participants, future research studies should include detailed profiles of ELLs and their ELL and EOL peers. As the evidence base for early vocabulary instruction for ELLs continues to develop, it will become increasingly important to know the effectiveness of English vocabulary interventions on students from various and related languages. For example, we cannot assume that students from various Spanish-speaking countries, although they share a related language, would respond to vocabulary instruction similarly. Researchers, policy-makers, and practitioners cannot assume that because students speak Spanish that their response to English intervention will be similar for all who are acquiring vocabulary and learning to read in English.

Second, given the theoretical importance of the simple view of reading (SVR; Gough & Tunmer, 1986) in this dissertation study, future investigations of ELL and EOL participants’ response to vocabulary intervention should incorporate validated theoretical frameworks to further define why ELLs and EOLs might respond similarly or differentially to interventions that include only D, only C, or a combination of D and C components in the development and testing of their intervention designs (e.g., McCardle, Mele-McCarthy, & Leos, 2005).

Third, future vocabulary interventions should investigate whether ELLs and EOLs respond similarly or differentially to type of target word (e.g., tier two words and beyond from Beck, McKeown, & Kucan, 2002) and each target word's syntactic function in sentences (i.e., adjective, noun, or verb). A replication of Project VITAL may want to include type of word, syntactic function, and use the *Living Word Vocabulary* (Dale & O'Rourke, 1981) in a systematic, mathematical process that further takes into consideration language development by gradually increasing the level of difficulty for the contextual and syntactical introduction of words.

Fourth, target-word vocabulary measures for ELLs and EOLs should be sensitive enough to capture their full knowledge of target words by asking participants to incrementally demonstrate their receptive and expressive abilities. The National Reading Panel (NRP; 2000) suggested that standardized and researcher-developed measures compliment each other; the NRP also demonstrated that far more researcher-developed measures were used than (a) both researcher-developed and standardized measures and (b) standardized measures only. Future research should develop and test both researcher-developed measures of target word knowledge and "standardized measures that are much more sensitive to the nuances and complexities involved in vocabulary acquisition" (NRP, 2000, p. 4-24).

Last, future studies should continue to investigate what variables might mediate or moderate the effects of interventions. Studies that have found trends toward significance or statistically significant findings have often noted that they cannot fully explain the mechanism involved in the outcome. The field is still developing an understanding of how ELLs develop literacy. There is a strong and developed knowledge base in the

development of reading in English (e.g., National Reading Panel, 2000), but what is needed is more information about what variables or individual differences unique to ELLs which contribute to reading development and/or response to instruction.

Conclusion

Project VITAL (Vocabulary Instruction Targeting At-risk Learners) was funded by the federal government to develop and evaluate the efficacy of direct vocabulary instruction with kindergarten students. Project VITAL focused on developing and refining vocabulary intervention strategies designed to increase target word knowledge. This dissertation study reanalyzed the year-three study of Project VITAL, which investigated the effectiveness of an extended implementation of the vocabulary intervention in both whole- and small-group settings. The purpose of this dissertation study was to investigate how English-language learners (ELLs) responded to vocabulary intervention and whether the intervention had differential effects that favored ELLs or English-only learners (EOLs), or whether ELL results paralleled those of EOLs using two-by-two analyses of variance (instructional condition x language status) and hierarchical multiple regression.

The results of this dissertation study yielded three major findings that suggest that it is possible to provide ELLs effective meaning-based instruction even though they often enter school with significantly lower vocabulary knowledge. For example, EOLs in this dissertation study entered kindergarten with larger English vocabularies and a better understanding of the English language than ELLs (Hart & Risley, 1995). The first major finding was that the simple view of reading (SVR; Gough & Tunmer, 1986) held true for this dissertation's independent variable and two dependent variables: (a) treatment

condition EOLs outperformed treatment condition ELLs on dependent measures of C; and (b) treatment condition EOLs and ELLs outperformed no-treatment EOLs and ELLs on dependent measures of C, and there was an interaction effect between treatment condition and type of learner on a dependent measure of C, TWKM, favoring EOLs. Next, although the intervention was effective for both EOLs and ELLs, intervention effects consistently favored EOLs over ELLs. The third major finding was that treatment ELLs and treatment EOLs did equally well on the posttest if they had similar initial general, receptive vocabulary knowledge on pretest PPVT-III (Dunn & Dunn, 1997). This dissertation study added insight on two important limitations that were found in the literature. First, the study examined word learning for both ELLs and EOLs and compared their results to no-treatment ELLs and EOLs. Second, the dissertation study evaluated the literature and its findings through the SVR, which helped conceptualize why ELLs and EOLs might respond differentially to meaning-based intervention.

The overall findings of this dissertation study contribute to the field by providing evidence on the direct teaching of vocabulary to ELLs and EOLs in kindergarten and supporting the use of the SVR to understand why ELLs and EOLs might respond differentially to meaning-based intervention.

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Appendix A

Permission Forms in English and Spanish

Permission Form: Parents or Guardians

Kindergarten classes at XXXX Elementary School are participating in a literacy project with researchers from the Neag School of Education at the University of Connecticut. This research project is designed to help children develop vocabulary knowledge through listening to and talking about stories. The purpose of this letter is to request permission for your child to participate in this project.

Some students may take part in the literacy activities during the fall and winter, while other may take part during the winter and spring. These activities will include listening to stories and discussing vocabulary words found in the stories. Activities will take place for 30 minutes per day, three days per week over the course of approximately four months. All children in the kindergarten classes will take part in literacy assessments during the fall and winter that will take approximately 30 minutes. Assessment information will only be accessible to you, your child's classroom teacher, and limited research staff at the University of Connecticut.

Every effort will be made to keep classroom disruptions to a minimum. For example, all assessments and literacy activities will be scheduled at times so that your child will not miss the introduction of new content or special class activities. Benefits of participating in this project may include increased vocabulary knowledge and comprehension.

All information collected during this project will be used for research purposes only. Your child's identity will be kept confidential by using a code number instead of real names. The only people who will have access to these code numbers are limited research staff at the University of Connecticut. The UConn Institutional Review Board (IRB) and the Office of Research Compliance may inspect study records. Your child does not have to take part in this study if you do not want him/her to. If you agree, but later change your mind, you may withdraw your child at any time without any impact on school activities or projects.

We will be happy to answer any question you have about this study. If you have further questions or concerns about this project, you may contact Professor Michael Coyne at the University of Connecticut at (860) 486-8326 or XXXX, your principal, at (XXX) XXX-XXXX. If you have any questions concerning your rights as a participant, you may contact the University of Connecticut Institutional Review Board (IRB) at 860-486-8802. An IRB is a group of people that reviews research studies and protects the rights of people involved in research.

Since involvement in this research study is voluntary, we need your permission for your child to participate. We will also verbally ask you child's permission to participate. Only if both you and your child give permission will your child be included in the study. If you agree that your child can participate, please complete and sign this form, and return it to you child's classroom teacher as soon as possible.

Sincerely,

Michael Coyne
Neag School of Education
University of Connecticut

XXXX
XXXX School

Authorization:

I am the parent or legal guardian of _____. I give permission for my child to take part in the research project described above. I understand that the purpose of this project is to develop vocabulary knowledge and that my child may participate in literacy assessments and activities conducted by researchers from the University of Connecticut. My signature also indicates that I have received a copy of this consent form.

Signature/Date

Name of Student

Printed Name

Autorización: Padres o Guardianes.

Las salas de clases de Kindergarten de la escuela XXXX están participando en un proyecto de alfabetización con investigadores de la Escuela de Educación Neag de la Universidad de Connecticut. Este proyecto de investigación fue diseñado con el propósito de ayudar a los niños en el desarrollo de su vocabulario a través de experiencias enfocadas en el escuchar y comentar historias.

Alguna de estas clases podría implementar estas actividades literarias durante el otoño e invierno, mientras otras podrían implementar las actividades en el invierno y primavera. Estas actividades literarias incluirán el escuchar historias y discutir las palabras seleccionadas del vocabulario encontrado en las historias. Las actividades tomarán un tiempo de 30 minutos al día, tres días a la semana en el transcurso aproximado de cuatro meses. Todos los niños de kindergarten tomarán parte en la evaluación durante el otoño, esta evaluación tomará aproximadamente 30 minutos. La información derivada de esta evaluación solo estará accesible a usted, al profesor o profesora de su niño o niña y a un número limitado de investigadores de la Universidad de Connecticut.

Se harán todos los esfuerzos para mantener las mínimas interrupciones posibles en las actividades normales de la sala de clases. Por ejemplo, las actividades de evaluación y alfabetización, serán programadas en horarios tales que su hijo no perderá las introducciones a actividades especiales o actividades que contengan nuevos conceptos. Alguno de los beneficios relacionados con la participación de su niño o niña en este proyecto podría incluir el aumento en su conocimiento del vocabulario y en su comprensión de lectura.

Toda la información coleccionada durante este proyecto será utilizada con propósitos de la investigación solamente. La identidad de su niño/niña será resguardada confidencialmente bajo el uso de un código numérico en reemplazo de su nombre real. Las únicas personas que tendrán acceso a estos códigos numéricos se limitarán al personal investigador de la Universidad de Connecticut. El *Institutional Review Board* (IRB) de la Universidad de Connecticut y la *Oficina de Cumplimiento de las Reglas de Procesos de Investigación* podrían inspeccionar los datos en estudio. Si usted no lo desea, su niño/niña no estará obligado a tomar parte en este estudio. Si en principio está de acuerdo pero luego cambia de parecer, usted podrá, en cualquier momento, retirar a su niño/niña del proyecto, sin que esto afecte las actividades del colegio o de la investigación.

Estaremos atentos a responder todas las preguntas que usted tenga en cualquier momento del transcurso de este programa. Para ello, podrá contactar al Profesor Michael Coyne de la Universidad de Connecticut en el teléfono (860) 486-8326 o a la Directora de la Escuela, XXXX, en el (XXX) XXX-XXXX. Si tiene alguna pregunta relacionada con sus derechos como participante usted puede contactar al *Institutional Review Board* (IRB) de la Universidad de Connecticut en el 860-486-8802. El *IRB* es un grupo de personas que revisa los estudios de investigación y protege los derechos de todos los individuos participantes en el proyecto.

Dado que la participación en este estudio de investigación es voluntaria, necesitamos su permiso para la intervención de su niño/niña. Nosotros también le preguntaremos verbalmente a su niño/niña por su participación. Solo si ambos, su niño/niña y usted están de acuerdo en esta autorización su niño/niña podrá ser incluido/incluida en el estudio. Si usted está de acuerdo con la participación de su niño/niña, por favor complete y firme esta forma, y devuélvala al profesor de su niño/niña tan pronto sea posible.

Atentamente,
Michael D. Coyne
Neag School of Education
University of Connecticut

XXXX
XXXX School

Autorización:

Yo soy el padre/madre o guardián legal de _____. Doy autorización para que mi niño/niña tome parte en el proyecto de investigación descrito mas arriba. Entiendo que el propósito de este proyecto se enfoca en el desarrollo del conocimiento del vocabulario y en la participación de mi niño/niña en evaluaciones y actividades de lectura y escritura conducidas por investigadores de la e Universidad de Connecticut. Mi firma indica también que yo he recibido copia de este formato de consentimiento.

Firma/Fecha

Nombre del Estudiante

Nombre Impreso

Appendix B

List of Storybooks

List of Storybooks

Author and Year	Storybook
Helen Lester (1990)	<i>Tacky the Penguin</i> . Boston: Houghton Mifflin.
Helen Lester (1989)	<i>A Porcupine Named Fluffy</i> . Boston: Houghton Mifflin.
James Marshall (1998)	<i>Goldilocks and the Three Bears</i> . New York: Puffin Books.
James Marshall (1996)	<i>The Three Little Pigs</i> . New York: Puffin Books.
Elizabeth Lane (2003)	<i>Anansi and the Seven Yam Hill</i> . Menlo Park, CA: Electronic Education.
Wendi J. Silvano (2003)	<i>Lorenzo's Llama</i> . Sunnyvale, CA: Electronic Education.
Ezra Jack Keats (1976)	<i>A Snowy Day</i> . New York: Puffin Books.
Rosemary Wells (2005)	<i>McDuff Moves In</i> . New York: Hyperion.
Rosemary Wells (2001)	<i>Yoko's Paper Cranes</i> . New York: Hyperion.
Maryn Roos (2000)	<i>The City Mouse and the Country Mouse</i> . Sunnyvale, CA: Electronic Education.
Faith Ringgold (1996)	<i>Tar Beach</i> . New York: Dragonfly Books.
Ho Baek Lee (2003)	<i>While We Were Out</i> . La Jolla, CA: Kane/Miller Book Publishers.
David Shannon (2002)	<i>Duck on a Bike</i> . New York: Blue Sky Press.
Rosemary Wells (2000)	<i>Bunny Cakes</i> . New York: Puffin Books.
Jill Murphy (1999)	<i>Five Minutes Peace</i> . New York: Penguin Putnam Books.
Sally Hunter (1999)	<i>Humphrey's Corner</i> . New York: Henry Holt and Company.
W. Nikola-Lisa (1991)	<i>Night is Coming</i> . New York: Scholastic Inc.
Laura Appleton-Smith (1997)	<i>The Sunset Pond</i> . Lyme, NH: Flyleaf Publishing.

Appendix C

Sample Vocabulary Lesson: First Reading of *GoldiLocks* with Introduction, Review, and Extended Activities of Vocabulary Words

GoldilocksWords Introduced: scalding, cycling, parlorWords Reviewed in Story: slender, peculiar, apexWords Reviewed in Postreading Activities: drenched, plummet**First Reading****Story Introduction**

1. Point to the title on the cover. *The title of this story is Goldilocks. The story was written by James Marshall, who also drew the pictures.*
2. *I want you all to be good listeners while I read the story. We'll talk about it after we finish. Listen to hear what happens with a little girl and a family of bears.*
3. *When I read this story, I am going to read and say a lot of words. I want you to listen for these magic words in the story. Here they are. scalding. Say it with me... scalding. cycling. Say it with me... cycling. parlor. Say it with me... parlor. When you hear these words in the story, raise your hand. You might also hear some of our other magic words, when you hear those magic words raise your hands.*

The Reading

Pause at the following breaks and ask these questions:

Slender: The first page.

Oh, good. Some of you raised your hands! What word did you hear? Yes, slender. "Once there was a little girl called Goldilocks, who liked to swing from a slender branch."

OR

I think I heard one of our magic words. Listen and raise your hands when you hear our magic word slender. "Once there was a little girl called Goldilocks, who liked to swing from a slender branch." What word did you hear? Yes, slender.

THEN ADD:

Slender means skinny. Now I'll say the sentence again with words that mean slender. "Once there was a little girl called Goldilocks, who liked to swing from a skinny branch." (Point to the picture). In the picture you can see that the branch is skinny, or slender. Everyone say slender.

Apex: The page with the bears' house.

*Oh, good. Some of you raised your hands! What word did you hear? Yes, apex.
"A chicken rested on the apex of the house."*

OR

I think I heard one of our magic words. Listen and raise your hands when you hear our magic word apex. "A chicken rested on the apex of the house." What word did you hear? Yes, apex.

THEN ADD:

Apex means the place at the very top of something. Now I'll say the sentence again with words that mean apex. "A chicken rested on the very top of the house." (Point to the picture). In the picture you can see that there is a chicken at the very top, or the apex, of the house. Everyone say apex.

Scalding: The page when the bears try the porridge.

Oh, good. Some of you raised your hands! What word did you hear? Yes, scalding. "This porridge is scalding! I've burned my tongue!"

OR

I think I heard one of our magic words. Listen and raise your hands when you hear our magic word scalding. "This porridge is scalding! I've burned my tongue!" What word did you hear? Yes, scalding.

THEN ADD:

Scalding means really hot. Now I'll say the sentence again with words that mean scalding. "This porridge is really hot! I've burned my tongue!" (Point to the picture). In the picture you can see that Papa Bear is putting his hand on his mouth because the porridge was so hot, or scalding that he burned his tongue. Everyone say scalding.

Cycling: The page with the bears on their bike.

Oh, good. Some of you raised your hands! What word did you hear? Yes, cycling. "So they left the house and went cycling."

OR

I think I heard one of our magic words. Listen and raise your hands when you

hear our magic word cycling. "So they left the house and went cycling." What word did you hear? Yes, cycling.

THEN ADD:

Cycling means riding a bike. Now I'll say the sentence again with words that mean cycling. "So they left the house and went riding their bike." (Point to the picture) In the picture you can see that the bears are riding a bike, or are cycling. Everyone say cycling.

Parlor: The page with Goldilocks in the parlor.

Oh, good. Some of you raised your hands! What word did you hear? Yes, parlor. "In the parlor there were three chairs."

OR

I think I heard one of our magic words. Listen and raise your hands when you hear our magic word parlor. "In the parlor there were three chairs." What word did you hear? Yes, parlor.

THEN ADD:

A parlor is a living room. Now I'll say the sentence again with words that mean parlor. "In the living room there were three chairs." (Point to the picture) In the picture you can see that Goldilocks is in the bears' living room, or their parlor. Everyone say parlor.

Peculiar: The page with Mama Bear lying in her bed.

Oh, good. Some of you raised your hands! What word did you hear? Yes, peculiar. "Egads!" cried Mama Bear, wearing a peculiar hat."

OR

I think I heard one of our magic words. Listen and raise your hands when you hear our magic word peculiar. "Egads!" cried Mama Bear, wearing a peculiar hat." What word did you hear? Yes, peculiar.

THEN ADD:

Peculiar means strange or different. Now I'll say the sentence again with words that mean peculiar. "Egads!" cried Mama Bear, wearing a hat that looked strange or different." (Point to the picture). In the picture you can see that Mama Bear's hat looks very strange and different, or peculiar. Everyone say peculiar.

Post Discussion

Scalding (Picture Activity)

Group Responses

One of the magic words we learned in the story was scalding. Everyone say scalding. Scalding means really hot (Show the anchor picture) “This porridge is scalding! I’ve burned my tongue!”

In the picture you can see that Papa Bear is putting his hand on his mouth because the porridge was so hot, or so scalding, that he burned his tongue.

Other things could be scalding too. A frying pan on a stove could be scalding or really hot. Fire is scalding or really hot. A sidewalk on a sunny day could be scalding or really hot.

(Show the anchor picture again) *Everyone, is Papa Bear’s porridge cold? (no) Is Papa Bear’s porridge scalding? Yes, that’s right! Papa Bear’s porridge is scalding or really hot.*

Let’s play a game about our magic word scalding. I’ll show you some pictures. If you think the picture shows something that is scalding, or really hot, put your thumbs up like this and whisper “That’s scalding”. If the picture doesn’t show something that is scalding, put your thumbs down like this and don’t say anything.

Show the following pictures to the group:

- Picture 1 (cups of coffee) *“Does this picture show something that is scalding?”*

If you put your thumb up like this, you’re right! The coffee in this picture is scalding, or really hot. “The scalding coffee was too hot to drink.”

- Picture 2 (campfire) *“Does this picture show something that is scalding?”*

If you put your thumb up like this, you’re right! The campfire in this picture is scalding, or really hot. “The scalding campfire kept everyone warm.”

- Picture 3 (Oreo cookies) *“Does this picture show something that is scalding?”*

If you put your thumb down like this, you’re right! The milk and cookies in this picture would not be scalding, or really hot. “The cookies tasted really good dipped in cold milk.”

- Picture 4 (kid taking bath) *“Does this picture show something that is scalding?”*

If you put your thumb down like this, you're right! The bath water in this picture would be warm, not scalding, or really hot. "The boy liked to play in the bathtub."

- Picture 5 (boiling water) *"Does this picture show something that is scalding?"*

If you put your thumb up like this, you're right! The water in this picture would be scalding, or really hot. "The girl's parents were boiling dinner in the scalding water."

Individual Turns

After going through all the pictures with the group, call on one or two individual students and show them one of the pictures. Call on students that may be having difficulty. Ask *"Does this picture show something that is scalding?"*

- If student answers correctly, say *"Yes, that's right! (and follow up) Why does/doesn't this picture show something that is scalding?"*
- If student answers incorrectly, say *"This picture does/doesn't show something that is scalding, because it does/doesn't show something that is really hot. Does this picture show something that is scalding?"*

Everyone say the magic word we've been talking about.

Cycling (Picture Activity)

Group Responses

One of the magic words we learned in the story was cycling. Everyone say cycling.

Cycling means riding a bike (Show the anchor picture) ***“So they left the house and went cycling.”***

In the picture you can see that the bears are riding a bike, or are cycling.

You could go cycling, or riding a bike too. Your friend might like to go cycling, or riding her bike, on a sunny day.

(Show the anchor picture again) ***Everyone, are the bears walking? (no) Are the bears cycling? Yes, that’s right! The bears are cycling, or riding their bike.***

Let’s play a game about our magic word cycling. I’ll show you some pictures. If you think the picture shows someone cycling, or riding a bike, put your thumbs up like this and whisper “That’s cycling”. If the picture doesn’t show someone cycling, put your thumbs down like this and don’t say anything.

Show the following pictures to the group:

- Picture 1 (family cycling) ***“Does this picture show someone cycling?”***

If you put your thumb up like this, you’re right! The family in this picture is cycling, or riding their bikes. “The family went cycling together around the lake.”

- Picture 2 (bike race) ***“Does this picture show someone cycling?”***

If you put your thumb up like this, you’re right! The man in this picture is cycling, or riding his bike. “The fans cheered for the man who was cycling in the race.”

- Picture 3 (girl rollerblading) ***“Does this picture show someone cycling?”***

If you put your thumb down like this, you’re right! The girl in this picture is not cycling, or riding a bike. She is rollerblading. “The girl loved to rollerblade around her neighborhood.”

- Picture 4 (bike) ***“Does this picture show someone cycling?”***

If you put your thumb down like this, you're right! There is a bike in this picture, but nobody is cycling, or riding the bike. "The boy left his bike outside."

- Picture 5 (girl cycling) ***"Does this picture show someone cycling?"***

If you put your thumb up like this, you're right. The girl in this picture is cycling, or riding her bike. "The girl went cycling with her family."

Individual Turns

After going through all the pictures with the group, call on one or two individual students and show them one of the pictures. Call on students that may be having difficulty. Ask ***"Does this picture show someone cycling?"***

- If student answers correctly, say ***"Yes, that's right! (and follow up) Why does/doesn't this picture show someone cycling?"***
- If student answers incorrectly, say ***"This picture does/doesn't show someone cycling, because it does/doesn't show someone riding a bike. Does this picture show someone cycling?"***

Everyone say the magic word we've been talking about.

Parlor (Picture Activity)

Group Responses

One of the magic words we learned in the story was parlor. Everyone say parlor.

*A parlor is a living room (Show the anchor picture). **"In the parlor there were three chairs."***

In the picture you can see that Goldilocks is in the bears' living room, or their parlor.

A parlor is a room in a house. In a parlor, or living room, people might sit and talk, or read, or watch TV. You might see a couch or some chairs in a parlor.

(Show the anchor picture again) *Everyone, is Goldilocks in her bedroom? (no) Is Goldilocks in a parlor? Yes, that's right! Goldilocks is in the bears' parlor, or their living room.*

Let's play a game about our magic word parlor. I'll show you some pictures. If you think the picture shows a parlor, or a living room, put your thumbs up like this and whisper "That's a parlor". If the picture doesn't show a parlor, put your thumbs down like this and don't say anything.

Show the following pictures to the group:

- Picture 1 (friends in parlor) *"Does this picture show a parlor?"*

*If you put your thumb up like this, you're right! This picture shows a parlor, or a living room. **"The friends sat and talked in the parlor."***

- Picture 2 (family in parlor) *"Does this picture show a parlor?"*

*If you put your thumb up like this, you're right! This picture shows a parlor, or a living room. **"The family played cards in the parlor."***

- Picture 3 (chair) *"Does this picture show a parlor?"*

*If you put your thumb down like this, you're right! This picture shows a couch, it **doesn't** show a parlor, or a living room. "Nobody was sitting in the big couch."*

- Picture 4 (girl in kitchen) *"Does this picture show a parlor?"*

*If you put your thumb down like this, you're right! This picture shows a kitchen, it **doesn't** show a parlor, or a living room. **"The girl sliced apples to make an apple pie."***

- Picture 5 (family in parlor) ***“Does this picture show a parlor?”***

If you put your thumb up like this, you’re right! This picture shows a parlor, or a living room. “The family watched TV together in the parlor.”

Individual Turns

After going through all the pictures with the group, call on one or two individual students and show them one of the pictures. Call on students that may be having difficulty. Ask ***“Does this picture show a parlor?”***

- If student answers correctly, say ***“Yes, that’s right! (and follow up) Why does/doesn’t this picture show a parlor?”***
- If student answers incorrectly, say ***“This picture does/doesn’t show a parlor, because it does/doesn’t show a living room. Does this picture show a parlor?”***

Everyone say the magic word we’ve been talking about.

Review Activity

Plummet, Drenched (review activity)

Plummet:

One of the magic words we learned in another book was plummet. Plummet means “to fall very fast.” (Point to the anchor picture). “Tacky the penguin liked to plummet in the water and do splashy cannonballs.” In the picture you can see that Tacky is falling very fast, or plummeting, into the water. Everyone say plummet.

Drenched:

One of the other magic words we learned in another book was drenched. Drenched means “really wet.” (Point to the anchor picture). “He became drenched.” In the picture you can see that Fluffy is really wet, or drenched. Everyone say drenched.

Recall in Sentences

We are going to play a game with these two magic words. I am going to say a sentence and you are going to tell me what magic word it makes you think of.

So I might say, “The dog was really wet after playing in the water.”

The sentence would make you think of our magic word drenched. It would make you think of drenched because the dog was really wet, or drenched.

Let’s try some more:

1. The pear dropped off the branch and fell to the ground.

Everyone, think in your head what magic word this makes you think of. Raise your hand when you know. (pause) Everyone, whisper the magic word together. If you said plummet, that’s right, plummet means to fall very fast.

“The pear dropped off the branch and plummeted to the ground.”

2. The bear was really when she came out of the lake.

Everyone, think in your head what magic word this makes you think of. Raise your hand when you know. (pause) Everyone, whisper the magic word together. If you said drenched, that’s right, drenched means really wet.

“The bear was drenched when she came out of the lake.”

3. The baseball fell back down toward the ground.

Everyone, think in your head what magic word this makes you think of. Raise your hand when you know. (pause) Everyone, whisper the magic word together. If you said plummet, that’s right, plummet means to fall very fast.

“The baseball plummeted toward the ground.”

4. My hair was really wet when I finished my shower.

Everyone, think in your head what magic word this makes you think of. Raise your hand when you know. (pause) Everyone, whisper the magic word together. If you said drenched, that’s right, drenched means really wet.

“My hair was drenched when I finished my shower.”

Lesson Closure

- Reinforce students for their listening, attention, participation, and engagement
- Tell them that listening to stories and learning new words will help them be smarter and better learners
- Tell students that they will get a chance to listen to another story and learn more words soon

Appendix D

Researcher-Developed Measure of Target Word Knowledge

Name: _____ School: _____
 Examiner: _____ Teacher: _____
 Date: _____ Revision Date: May 9, 2006

TARGET WORD MEASURE: PART I

DIRECTIONS: If the student does not respond to the first question in the set within 5 seconds, say “**Tell me anything that you can about the word _____, even if you’re not sure what it means.**” If the student does not respond after an additional 5 seconds, move to the next question in the set. If the student does not answer the second question after 5 seconds, move to the next set of questions. If a child just repeats the target word as the definition, say “*Can you tell me another word for _____?*”

Example 1. Teacher (EX1)

Tell me what the word dog means.

(If the student doesn’t know how to answer, model a definition for them by saying “Dog means -- *a furry animal with four legs that barks. Some people have dogs as pets.*” *What does dog mean?*)

Example 2. Fun (EX2)

Tell me what the word sad means.

(If the student doesn’t know how to answer, model a definition for them by saying “Sad means when you are unhappy. When you’re sad you might even cry.” *What does sad mean?*)

1. Halt (V1)

Tell me what the word halt means.

What would you be doing if you were halting?

2. Immense (A1)

Tell me what the word immense means.

What would an immense lamp be like?

3. Cavern (N1)

Tell me what the word cavern means.

If a boy went to a cavern, where would he be?

4. Grasp (V2)

Tell me what the word grasp means.

What would you be doing if you grasped a toy?

5. Minute (A2)

Tell me what the word minute means.

What would a minute bed be like?

6. Brook (N2)

Tell me what the word brook means.

If you went to a brook, where would you be?

7. Regretful (A3)

Tell me what the word regretful means.

If you felt regretful, how would you feel?

8. Apex (N3)

Tell me what the word apex means.

If a girl went to the apex, where would she be?

Name: _____ School: _____
 Examiner: _____ Teacher: _____

PART II

DIRECTIONS: If the student does not respond to the first question in the set within 5 seconds, say “tell me anything that you can about the word _____, even if you’re not sure what it means. If the student does not respond after an additional 5 seconds, move to the next question in the set. If the student does not answer the second question after 5 seconds, move to the next set of questions.

9. Stout (A4)

Tell me what the word stout means.

What would a stout person be like?

10. Devour (V5)

Tell me what the word devour means.

What would you be doing if you were devouring something?

11. Elated (A5)

Tell me what the word elated means.

How would an elated boy feel?

12. Stalk (V6)

Tell me what the word stalk means?

What would you be doing if you stalked something?

13. Furious (A6)

Tell me what the word furious means.

If you felt furious, how would you feel?

14. Metropolis (N4)

Tell me what the word metropolis means.

If a girl was in a metropolis, where would she be?

15. Plumment (V7)

Tell me what the word plummet means.

What would something be doing if it were plummeting?

16. Confused (A7)

Tell me what the word confused means.

How would a confused girl feel?

17. Exclaim (V8)

Tell me what the word exclaim means.

What would you be doing if you exclaimed something?

18. Terrified (A8)

Tell me what the word terrified means.

How would a terrified boy feel?

Name: _____
 Examiner: _____
 Date: _____

School: _____
 Teacher: _____
 Revision Date: May 9, 2006

TARGET WORD MEASURE: PART III

DIRECTIONS: If the student does not respond to the first question in the set within 5 seconds, say “tell me anything that you can about the word _____, even if you’re not sure what it means. If the student does not respond after an additional 5 seconds, move to the next question in the set. If the student does not answer the second question after 5 seconds, move to the next set of questions.

Example 1. Shirt (EX1)

Tell me what the word shirt means.

Example 2. Hot (EX2)

Tell me what the word hot means.

19. Terrace (N5)

Tell me what the word terrace means.

If you were on a terrace, where would you be?

20. Gaze (V9)

Tell me what the word gaze means.

What would a boy be doing if he were gazing?

21. Courageous (A9)

Tell me what the word courageous means.

How would a courageous girl feel?

22. Parlor (N6)

Tell me what the word parlor means.

If a girl were in a parlor, where would she be?

23. Weep (V10)

Tell me what the word weep means.

What would the girl be doing if she were weeping?

24. Considerate (A5)

Tell me what the word considerate means?

What would a considerate person be like?

25. Voyage (N7)

Tell me what the word voyage means?

If a man were on a voyage, where would he be?

26. Hoist (V11)

Tell me what the word hoist means.

What would you be doing if you hoisted something?

27. Drenched (A11)

Tell me what the word drenched means.

What would a drenched boy be like?

28. Crouch (V12)

Tell me what the word crouch means.

What would a girl be doing if she crouched?

Name: _____ School: _____
 Examiner: _____ Teacher: _____

PART IV

DIRECTIONS: If the student does not respond to the first question in the set within 5 seconds, say “tell me anything that you can about the word _____, even if you’re not sure what it means. If the student does not respond after an additional 5 seconds, move to the next question in the set. If the student does not answer the second question after 5 seconds, move to the next set of questions.

29. Slope (N8)

Tell me what the word slope means.

If you were on a slope, where would you be?

30. Weary (A12)

Tell me what the word weary means.

If you felt weary, how would you feel?

31. Glum (A13)

Tell me what the word glum means.

If you felt glum, how would you feel?

32. Residence (N9)

Tell me what the word residence means.

If you walked to your residence, where would you be going?

33. Ascend (V14)

Tell me what the word ascend means.

What would a boy be doing if he were ascending?

34. Peculiar (A14)

Tell me what the word peculiar means.

What would a peculiar person be like?

35. Meadow (N10)

Tell me what the word meadow means.

If a boy were in a meadow, where would he be?

36. Saunter (V15)

Tell me what the word saunter means.

What would a girl be doing if she were sauntering?

37. Irritated (A15)

Tell me what the word irritated means.

How would an irritated girl feel?

Appendix E

Fidelity of Implementation Measure

Fidelity of VITAL Implementation

Date: _____ School: _____

Instructor: _____ Start Time: _____

Observer: _____ Stop Time: _____

Book: _____ Reading: 1st 2nd

General Observations

Skill	No	Mostly Not	Mostly Yes	Yes
1. Are materials ready for each activity?	0	1	2	3
2. Does instructor deliver the lesson with enthusiasm	0	1	2	3
3. Does the instructor exhibit warmth toward the students?	0	1	2	3
4. Does the instructor make effective transitions?	0	1	2	3
5. Does the instructor encourage student effort and response?	0	1	2	3
6. Do students maintain appropriate behavior throughout the lesson?	0	1	2	3
7. Does the instructor maintain fluent delivery of the lesson?	0	1	2	3
8. Does the instructor maintain appropriate pacing throughout the lesson?	0	1	2	3
9. Teacher keeps extraneous discussion to a minimum.	0	1	2	3
10. Does the teacher elicit individual responses from students having difficulty with the task at hand?	0	1	2	3
11. Does the teacher complete the entire lesson (according to instructions within the protocol)?	0	1	2	3
12. Students appear engaged in the storybook reading.	0	1	2	3
13. Students appear engaged in the rich instruction activities.	0	1	2	3
14. Students appear engaged in review activities.	0	1	2	3

Notes and General Impressions:

Part I: Read Aloud

Opportunities to respond individually:

Start Time: _____

Stop Time: _____

Behaviors	No	SW	Yes
1. Teacher identifies target words.	0	1	2
2. Teacher has children pronounce 3 “magic words” prior to the reading of the story.	0	1	2
3. Teacher instructs students to raise their hands when they hear a magic word.	0	1	2
4. Teacher reads storybook according to protocol.	0	1	2
5. Teacher provides an explicit definition of each target word when it appears in the storybook	0	1	2
6. Teacher immediately reads definition of the target word back within the sentence in which the target word appears.	0	1	2
7. Teacher asks children to repeat the target word.	0	1	2
8. Teacher reads with enthusiasm.	0	1	2
9. Students appear engaged in the storybook reading.	0	1	2

Notes: _____

Part II: Rich Instruction

Opportunities to respond individually:

Start Time: _____

Stop Time: _____

Part III: Review

Opportunities to respond individually:

Start Time: _____

Stop Time: _____

Behaviors	No	SW	Yes
1. Teacher displays all pictures in the protocol to students.	0	1	2
2. Teacher asks all questions on the protocol to students.	0	1	2
3. Students engage in group response to questions about the target words.	0	1	2
4. Teacher conducts individual checks and allows students to respond individually to questions about the target words.	0	1	2
5. Teacher delivers activities with enthusiasm.	0	1	2
6. Teacher provides appropriate corrective feedback.	0	1	2
7. Fidelity of implementation of word 1 activities	0	1	2
8. Fidelity of implementation of word 2 activities	0	1	2
9. Fidelity of implementation of word 3 activities	0	1	2
10. Fidelity of implementation of review activities	0	1	2

Notes: _____

Appendix F

Control Teacher Observation Form

VITAL Control Teacher Observation

Date: _____ School: _____

Instructor: _____ Start Time: _____

Observer: _____ Stop Time: _____

Book: _____

General Observations

Skill	No	Mostly Not	Mostly Yes	Yes
1. Are materials ready for the reading (book, props, etc.)?	0	1	2	3
2. Does instructor deliver the lesson with enthusiasm?	0	1	2	3
3. Does the instructor exhibit warmth toward the students?	0	1	2	3
4. Does the instructor encourage student effort and response?	0	1	2	3
5. Do students maintain appropriate behavior throughout the lesson?	0	1	2	3
6. Does the instructor maintain fluent delivery of book reading?	0	1	2	3
7. Does the instructor maintain appropriate pacing throughout the reading?	0	1	2	3
8. Teacher keeps extraneous discussion to a minimum.	0	1	2	3
9. Students appear engaged in the storybook reading.	0	1	2	3
10. Students are provided with rich instruction activities.	0	1	2	3
11. Does the teacher provide review activities?	0	1	2	3

Summary of observation:

Notes and General Impressions:

Is there evidence of treatment diffusion? YES NO

If "yes" – please elaborate:

Question Types →

Book	Vocabulary	Behavioral	Other

Read Aloud Specifics

Opportunities to respond individually:	# Vocabulary Words
Words:	

Start Time: _____

Stop Time: _____

Behaviors	No	SW	Yes
1. Teacher identifies vocabulary words prior to reading.	0	1	2
2. Teacher has children pronounce vocabulary words prior to the reading of the story.	0	1	2
3. Teacher instructs students to raise their hands or otherwise identify when they hear a vocabulary word.	0	1	2
4. Teacher provides an explicit, student friendly definition of Tier 2 vocabulary word when it appears in the storybook	0	1	2
5. Teacher provides example of the use of the word in a familiar context (not the book)	0	1	2
6. Teacher provides concrete anchor for vocabulary words – pictures/objects	0	1	2
7. Teacher immediately reads definition of the target word back within the sentence in which the target word appears.	0	1	2
8. Teacher asks children to repeat the target word.	0	1	2
9. Teacher reads with enthusiasm.	0	1	2
10. Students appear engaged in the storybook reading.	0	1	2

Notes: _____

Part II: Post Reading

Opportunities to respond individually:

Start Time: _____

Stop Time: _____

Behaviors	No	SW	Yes
1. Teacher reviews words individually with students.	0	1	2
2. Teacher engages students in questions/activities involving story words.	0	1	2
3. Students engage in group response to questions about the story words.	0	1	2
4. Teacher conducts individual checks and allows students to respond individually to questions about the story words.	0	1	2
5. Teacher delivers instructional activities with enthusiasm.	0	1	2
6. Teacher provides appropriate corrective feedback.	0	1	2

Notes:

Appendix G

Sequence of Posttest Measures

Sequence of Posttest Measures

Day 1:

Attitude Survey (administered for a related study)

Peabody Picture Vocabulary Test–III (PPVT-III)

Day 2:

Researcher-Developed Measure of Target Word Knowledge (Questions 1 & 2; Numbers 1-8)

Researcher-Developed Measure of Target Word Knowledge (Questions 1 & 2; Numbers 9-18)

Day 3:

Researcher-Developed Measure of Target Word Knowledge (Questions 1 & 2; Numbers 19-28)

Word Use Fluency (WUF; administered for a related study)

Researcher-Developed Measure of Target Word Knowledge (Questions 1 & 2; Numbers 29-37)

Pilot Word Measure (piloted for future studies)

Researcher Developed Measure of Target Word Knowledge (Third Question Section; Part II)