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KINDERGARTEN STORY RETELL: CONSIDERING THE
INFLUENCE OF VOCABULARY ON QUALITY OF
PRODUCTION.

BY
SARAH HARDY

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN
PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

2016

DOCTOR OF PHILOSOPHY DISSERTATION

OF

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2016

ABSTRACT

The purpose of the present study was to examine kindergarten student performance on a story retell task across at-risk and typically achieving groups (Intervention, Control, Reference) and language status (English-only, English-language learners). Additionally, the current study examined the relationship between vocabulary knowledge and the quality of production on a Story Retell task. Kindergarten students ($n = 540$) from twenty-two schools across Rhode Island, Connecticut, and Oregon completed a vocabulary program approximately 20 weeks in duration, including an additional vocabulary intervention for students in the Intervention group. Each student was assessed on vocabulary knowledge measures before and after completion of the vocabulary program, using both standardized and experimenter-developed formats: PPVT-4, Receptive Target Word, and Expressive Target Word. In addition, a Story Retell measure was completed with all students at the end of the school year. Results showed that language status had no impact when considering Story Retell performance across different groups of students within the course of an academic program. The students in the Intervention group performed better on the Story Retell task than the students in the Control group and the students in the Reference group performed better than both Intervention and Control groups. Further, the current study demonstrated that all vocabulary measures were positively correlated with the Story Retell comprehension measure and that PPVT-4 growth accounted for more unique variance in Story Retell performance than initial PPVT-4 scores. It was also established that student performance on the Expressive Target Word measure was the best predictor of the quality of Story Retell.

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CHAPTER 1

INTRODUCTION

While the existence of an achievement gap is no longer contested, researchers have yet to identify how best to close or even prevent the gap. Recently, reading test results from the National Assessment of Educational Progress demonstrate the persistence of the achievement gap between white children or those coming from affluent homes compared to children living in poverty or coming from race- and language-minority groups (National Center for Education Statistics, 2011). This gap is present when children enter elementary schools, validating the need for prevention and early intervention efforts for children who may be at-risk for later academic failure (National Early Literacy Panel, 2009; National Reading Panel, 2000). Early literacy skills have direct influence on successful academic achievement (Scarborough, 2001; Whitehurst & Lonigan, 2003); literacy interventions targeting decoding skills, reading fluency, and vocabulary, for example, have been shown to improve early literacy skills (Justice & Kaderavek, 2004) and often lead to improvements in reading comprehension. There are a variety of approaches to improve early literacy skills in kindergarten students; among them, direct vocabulary instruction and intervention have been shown to improve literacy skills by increasing word knowledge, which often helps improve comprehension (Carlo et al., 2004). Few studies have examined the specific contribution of vocabulary instruction and intervention to story retell tasks.

Comprehension

Comprehension can be defined generally as “the act or action of grasping with intellect” (Merriam-Webster, n.d.), or the ability to understand. The term is most often related to language, including reading text or understanding spoken words. Comprehension is a creative, multifaceted process dependent upon four language skills: phonology, syntax, semantics, and pragmatics (Tompkins, 2011). Language comprehension is a general term that can be applied to understanding what other people say and write (Ylvisaker, 2008). Comprehending language involves a variety of capacities, skills, processes, knowledge, and dispositions that are used to derive meaning from language. In this broad sense, language comprehension encompasses all understanding of written, signed, or spoken words and messages.

Understanding written language requires reading comprehension, which can be defined as the level of understanding of a text or visual message. Reading comprehension typically begins to develop in kindergarten or 1st grade. At this point, the child's level of reading comprehension is far below listening comprehension due to limitations in decoding abilities (Biemiller, 2003). There is considerable evidence that for the majority of children, comprehension of printed language continues to lag behind comprehension of spoken language well past 3rd grade (Sticht & James, 1984).

Reading comprehension and vocabulary are inextricably linked; the ability to decode or identify and pronounce words is important, but knowing what the words mean has a major and direct effect on knowing what any specific passage means. Students with a smaller vocabulary than other students comprehend less of what they

read; it has been suggested that the most impactful way to improve comprehension is to improve vocabulary (Krings, 2013).

Similar to reading comprehension, listening comprehension refers to the ability to understand the spoken language of native speakers; it is a skill that processes sounds into purposeful input. Listening comprehension, also known as oral comprehension, is an active and conscious process in which the listener recognizes sounds as words and then constructs meaning using cues from both contextual information and existing knowledge (Mendelsohn, 1994; O'Malley, Chamot, & Kupper, 1989). The listening comprehension ability of the average child begins to develop around 12 months of age and continues to grow long after grade 6 (Biemiller, 2003). Notably, the distinction between listening and reading comprehension ceases to be important when children are able to understand language equally well when printed or spoken.

Listening comprehension grows especially quickly during the early elementary years. Generally, language can only grow through interaction with people and texts that introduce new vocabulary, concepts, and language structures. In grades 1 to 3, this growth cannot result mainly from reading experiences because most children are not reading content that is as advanced as their oral language; it therefore requires explicit instruction and regular and varied opportunities to practice. We often assume that children's reading experiences contribute much to their increasing ability to comprehend language (e.g., Nagy & Herman, 1987; Sternberg, 1987). However, for many children, most language growth throughout the elementary years continues to

come from non-print sources like parents and teachers, peers, story read-aloud, or television (Biemiller, 2003; Beck & McKeown, 2007).

Deriving meaning from spoken language involves much more than knowing the meaning of words and understanding what is intended when those words are put together in a certain way. Mendelsohn (1994) emphasizes that, in listening to spoken language, the ability to decipher the speaker's intention is required of a competent listener, in addition to other abilities such as understanding the whole message contained in the discourse and comprehending the message without understanding every word. Listeners must also know how to process and how to judge what the illocutionary force of an utterance is; that is, what this string of sounds is intended to mean in a particular setting, under a particular set of circumstances as an act of real communication (Mendelsohn, 1994).

For many children, increasing reading and school success will involve increasing oral language competence in the elementary years. Children just entering school at a kindergarten level often have varied proficiency (Biemiller, 2003); early reading and listening comprehension skills may be more developed in some students and less developed in others because reading skills develop on a continuum and often improve over time and with experience (Fountas & Pinnell, 1996; Mooney, 1998; Taberski, 2000). Some students may be "emergent" readers just beginning to recognize letters and language patterns while other students may be "early" or "transitional" readers who are able to read more fluently and understand what they are reading. Given the variability in kindergarten reading comprehension skills, one alternate approach to assess these skills involves measuring listening comprehension.

It is not the same as reading comprehension; however, listening comprehension is often used as an approximation of reading comprehension in the early grades before children can fluently read and connect text on their own (Perfetti, Landi, Oakhill, 2005). Listening comprehension is one reading skill component that is dependent on both vocabulary knowledge (Oakhill & Cain, 2007; Lepola, Lynch, Laakkonen, Silvén, & Niemi, 2012) and working memory, which offers cognitive resources for the comprehension process (Kyttala, Aunio, Lepola, & Hautamaki, 2014). In other words, listening comprehension involves both language ability and background knowledge (Moats, 2004), and is key to reading comprehension (Diakidoy, Stylianou, Karefillidou, & Papageorgiou, 2005; Hagtvet, 2003; Nation & Snowling, 2004). The current study therefore focuses on listening comprehension specifically, as it relates to reading comprehension; additional forms of comprehension are not addressed.

Vocabulary Knowledge and Development

As previously discussed, knowing what words mean has a direct and important effect on comprehending meaning. Vocabulary knowledge directly contributes to comprehension; however, this knowledge varies across individuals at different ages. Children come to school with vast differences in vocabulary knowledge as a result of their experiences and exposure to literacy activities and these differences tend to grow more discrepant over time. As early as kindergarten, “meaningful differences” exist between students’ vocabulary knowledge (Hart & Risley, 1995), with most vocabulary differences between children occurring before grade three. Further, children’s early vocabulary knowledge strongly predicts their later reading success (Cunningham & Stanovich, 1997; Senechal, 2006) as education quickly involves “reading to learn”

rather than “learning to read” (Chall & Jacobs, 2003). Therefore, it is imperative to find ways to increase vocabulary knowledge through whole-class instruction or smaller interventions as early in the schooling process as possible to aid in general comprehension and later academic performance; this is especially true for students who enter school with less literacy exposure and limited vocabulary knowledge, are English Language Learners (ELLs), or are at-risk for learning and reading difficulty.

One important aspect of word learning, or vocabulary development, is that knowledge of word meanings typically accrues gradually, over time, following multiple exposures to words in context (Nagy, Herman, & Anderson, 1987; Kuhn & Stahl, 2003) through a wide variety of environments: television, books, and conversations (Tompkins, 2011). A vocabulary development theory by Dale (1976) outlines various stages of learning that lead to complete word knowledge. Stage one is not knowing or hearing a word previously. Stage two is knowing that a word exists but having no knowledge of meaning. Stage three is having heard or seen the word and understanding associations or context, but being unable to define its meaning; this stage is often used to reflect partial word knowledge. Finally, stage four is knowing a word’s meaning and being able to recognize it in speech and text as well as use it appropriately. Therefore, the ability to use a word appropriately in written or spoken language reflects the deepest level of word knowledge that best reflects mastery of vocabulary as well as overall comprehension of a spoken or written word.

Given the importance of word knowledge in overall language comprehension and general communication, it is fundamental to establish how word meanings are acquired and measured. Word knowledge is often measured via receptive

(recognition) and expressive (production) language measures of target words from a select “corpus” or collection of high-frequency words used in language by age (Nation, 2010). Receptive measurement of word knowledge often involves visual supports like pictures (e.g., Receptive One Word Picture Vocabulary Test – II (ROWPVT-II), Brownell, 2000; Peabody Picture Vocabulary Test – IV (PPVT-IV), Dunn, Dunn & Dunn, 2007), while expressive measurement of word meaning involves response recording and subsequent coding or scaled scoring for accuracy (e.g., Frishkoff, Collins-Thompson, Perfetti, & Callan, 2008; Swanborn & de Glopper, 2002; Cain, Oakhill, & Lemmon, 2004). These methods of measuring word knowledge development are widely recognized and applied in educational, clinical, and research settings. It is important to examine the use of specific target words as an indication of a high level of knowledge of that word meaning as well as an ability to use and comprehend words in both written and spoken language.

Vocabulary Knowledge and Comprehension

One of the most enduring findings in reading research is the extent to which students’ vocabulary knowledge relates to their reading comprehension (Lehr, Osborn, & Hiebert, 2004). Essentially, knowing the meanings of the words in text or spoken language is necessary to understand the message being conveyed. There are two similar models that outline the link between vocabulary knowledge and reading comprehension: Simple View (Gough & Tunmer, 1986) and Convergent Skills (Vellutino, Tunmer, Jaccard, & Chen, 2007). Both models explain reading comprehension as a combination of word identification and either listening or language comprehension.

The Simple View model of reading specifically identifies word recognition and listening comprehension as the two components leading to reading comprehension; the model cites studies that demonstrate 65 to 85 percent of variance in reading comprehension being accounted for by these two components (Aaron, Joshi, & Williams, 1999; Catts, Hogan, & Adolf, 2005; Hoover & Gough, 1990). Further, a study by Catts et al. (2005) examined the longitudinal contribution of both word recognition and listening comprehension to reading comprehension; the study found that the significance of the contribution of word recognition decreases while listening comprehension increases from second to eighth grade. This suggests that decoding and listening comprehension abilities develop somewhat independently, but both make useful contributions to overall comprehension. When a student can decode and recognize a written or spoken word and also understand its meaning, their comprehension is directly and positively impacted.

Similarly, Vellutino and colleagues' (2007) Convergent Skills model explains reading comprehension as a combination of word identification and language comprehension. Research analysis of their model further established that language comprehension contributed significantly more variance to reading comprehension in middle school rather than in early grades (e.g., second or third). Findings also revealed that semantic, or vocabulary knowledge, and language comprehension were significant in both early and later grades; this suggests that vocabulary knowledge is an important aspect of language comprehension and reading comprehension at both early and later stages of reading development. Notably, however, there is no threshold of vocabulary knowledge necessary to dramatically increase comprehension; there is

simply a linear relationship between vocabulary word knowledge and degree of comprehension (Schmitt, Jiang, & Grabe, 2011). Additionally, vocabulary is not an important predictor of comprehension for details explicitly stated in text, but is for inference making; measures of vocabulary that assess individual word knowledge predicted unique variance in global coherence inferences (Oakhill & Cain, 2007).

Therefore, direct instruction focused on these components that contribute to comprehension, including vocabulary, is necessary to build strong foundational skills early in the development of reading abilities. Scarborough (2001) outlines how word recognition skills and language comprehension skills are essential to later academic success, citing best practice as simultaneously supporting word recognition and language comprehension skills through high quality, systematic, explicit instruction beginning in kindergarten. The pattern of findings support existing research demonstrating how measures of vocabulary breadth and depth are important predictors of reading comprehension. Their findings also identify why specific aspects of vocabulary knowledge may be important for higher-level comprehension skills. However, further research is required to identify effective instructional techniques for vocabulary and language comprehension early in the schooling process. Early vocabulary instruction is empirically supported as important for early reading success, and the Convergent Skills model suggests that this early instruction may also be important for later reading comprehension in middle school and into secondary education.

Early Comprehension and Story Retell Tasks

Oral language skills provide the foundation for early literacy development through listening comprehension and later reading comprehension (Cabell, Justice, Zucker, & Kilday, 2009; Van Kleeck, 1990; Whitehurst & Lonigan, 2003). The importance of oral language skills is empirically evident; research has established how early delays in oral language come to be reflected in low levels of reading comprehension, often leading to low levels of academic success (Biemiller, 2003).

Young children typically acquire reading comprehension skills through exposure to spoken language, especially listening to books read by adults, with minimal direct and explicit teaching (Justice & Kaderavek, 2004). Thus, early delays in oral language come to be reflected in low levels of reading comprehension, leading to low levels of academic success. If we are to increase children's ability to profit from education, we will have to enrich their oral language development during the early years of schooling. Although not all differences in language are due to differences in opportunity and learning, schools could do much more than they do now to foster the language development of less-advantaged children and children for whom English is a second language (Biemiller, 2003).

Before learning to read proficiently, oral language production through story retell tasks can provide a way to measure emerging skills. Skill with narratives, or story retells, in preschool and the early elementary years has been established as a helpful component in later reading comprehension of connected text (Anderson, Anderson, Lynch, & Shapiro, 2003; Scarborough, 2001; Senechal & LeFevre, 2002; Storch & Whitehurst, 2002; Tabors, Snow, & Dickinson, 2001; van Kleeck, 2007, 2008); narrative skills predict reading comprehension, fluency, and written narrative

skills across reading, writing, and math in both children with disabilities and those who are typically developing (Feagans & Appelbaum, 1986; Griffin, Hemphill, Camp, & Wolf, 2004; Reese, Suggtate, Long, & Schaughency, 2009; Snyder & Downey, 1991; Tabors et al., 2001; O'Neill Pearce, & Pick, 2004). Therefore, studying children's oral narratives can be one of the most comprehensive ways to examine early language development, particularly for linguistically and culturally diverse children (Gutierrez-Clellen, 2002). A study of Spanish-English bilingual children from kindergarten to grade 3 examined the quality of oral narrative retells of a wordless picture book; results supported that oral narratives were the best predictor of third grade reading comprehension (Miller, Heilman, Nockerts, Iglesias, Fabiano, & Francis, 2006). Further, narrative skills uniquely contribute to reading fluency even after controlling for receptive vocabulary and decoding skills (Reese et al., 2009).

The production of narratives provides children with a naturalistic means of organizing abstract thoughts, using complex language, and sequencing information that is needed in an academic arena (Petersen, 2011); children are often asked to simply repeat the story they hear using as much detail as possible. Children are expected to retell narratives they have heard and produce novel narratives in kindergarten as a part of the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Early narrative skills are one method of identifying early reading comprehension skills necessary for academic success; in fact, story retelling skills in kindergarten have been shown to be a greater predictor of literacy success in second

grade than vocabulary, grammar, rote memory, and morpheme learning (Fazio, Naremore, & Connell, 1996).

Narrative assessment is typically used as a means of evaluating discourse-level language skills before reading skills develop, which is often upon entry into school. Among other linguistic components, narrative skills are measured by participants' quality of retell; this often involves assessing the inclusion of story grammar components in story retells (Spencer & Slocum, 2010), use of target vocabulary words, sequencing of story elements (Carger, 1993; Morrow, 1985; Morrow, Sisco, & Smith, 1992), and the overall amount of information from the story that has been included (Serpell, Baker, & Sonnenschein, 2005). These components of narrative structure quality have strong concurrent and predictive associations with both spoken and written language comprehension (Terry et al, 2013; Pankratz, Plante, Vance, & Insalaco, 2007). However, in light of such findings linking early literacy and story retell skills to comprehension, there is surprisingly little research examining the role of vocabulary knowledge related to narrative production. It is possible that improving at-risk children's narrative language skills through vocabulary instruction and intervention could make an important contribution to the development of early literacy skills.

One common narrative assessment tool is the Bus Story Test (Renfrew, 1969), the only norm-referenced screening measure of young children's narrative abilities that spans preschool and kindergarten. This tool was originally developed in England and has a North American version, the RBS-NA. This measure includes a story read by the examiner about a bus that runs away from its driver. Then, while looking at the

12 accompanying pictures, students are asked to retell the story. The quality of retell structure is examined and total scores are presented along with specific indices. This popular narrative measure shares a number of parallels with the Story Retell measure developed and examined by the researchers in the current study; the Story Retell measure is administered and scored similarly, but minor administration and scoring details differ.

The Bus Story Test has been shown to have a strong relationship to later literacy (Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998); however, there are concerns that the RBS-NA may overidentify children in racial or ethnic minority groups as having poor narrative skills. Unfortunately, there is limited normative data with minority populations and socioeconomic status information is not provided in the norms. Further research and development of comparable measures is required to identify appropriate tools for assessing early language and literacy development across a variety of demographic populations. The current study aims to verify and expand the utility of listening comprehension measures similar to the Bus Story Test, across minority populations in early elementary school when reading skills are just emerging and varied.

Impact of Native Language on Early Literacy Skill Development

The United States is experiencing significant population growth for non-native English speakers, or English Language Learners (ELLs), currently. These individuals are classified by their struggle to communicate fluently and/or learn effectively in English, at any age, when compared to their English-only (EO) counterparts, who are native English speakers. According to the U.S. Department of Education, there are

approximately 5.5 million ELL students from kindergarten to twelfth grade in the United States, with two thirds (67%) of all ELL students in primary schools. Nearly 80 percent of those 5.5 million K-12 ELLs are Spanish-speaking Latinos (National Clearinghouse for English Language Acquisition and Language Instruction Educational Programs, 2007). As such, ELLs constitute the fastest-growing subgroup of students in the U.S. public schools with an annual increase of about 10 percent and nearly 72 percent overall increase between 1992 and 2002 (Keller-Allen, 2006). Contrary to popular belief, these students are actually native-born U.S. citizens; specifically, 76% of elementary school and 56% of secondary school ELL populations are second- or third-generation citizens (Capps, Fix, Murray, Ost, Passel, & Herwanto, 2005).

With increasing numbers of these children entering the U.S. educational system it is important to recognize the specific cognitive benefits of bilingualism, instead of focusing on the frustrating lack of academic success with English. It has been found that executive function strengths are related to bilingualism, and strong executive function performance is positively related to classroom success (Yoshida, 2008). Yoshida (2008) also identified supporting neuropsychological evidence of advanced cognitive development specific to bilingualism; adaptive cognitive skills related to executive control and knowledge transfer enable bilingual children to thrive in educational settings, which promotes academic success.

In contrast, it has also been well established empirically that the “ELL” label is associated with decreased vocabulary knowledge on standardized measures; this label also signifies students who then require more instructional supports and may not

respond similarly to instruction as their English-only peers (August, Carlo, Dressler, & Snow, 2005). Therefore, ELL students are at increased risk for delayed vocabulary development as well as lower performance on assessments and would likely benefit from specific interventions to improve vocabulary and related academic skills.

Beyond simply improving, interventions must accelerate vocabulary development in order to decrease the achievement gap in at-risk populations such as ELLs (Marulis & Neuman, 2010). There is evidence suggesting that the achievement gap can be closed through early and targeted intervention for students from a variety of backgrounds; students with lower initial performance on vocabulary measures have been found to exhibit as much or more word learning as higher-performing counterparts (Coyne et al., 2004; Elley, 1989; Justice, Meier, & Walpole, 2005). In a study by Silverman (2007), vocabulary growth between English-only and ELL kindergarten students following a 14-week intervention was evident; it was established that the ELL students “caught up” and matched the performance of their English-only peers. The ELL students showed greater growth in general vocabulary on both standardized and target word measures, closing the gap that existed at pre-test.

In contrast, several studies have found initial vocabulary levels to be predictive of a child’s response to instruction (Coyne, McCoach, & Kapp, 2007; Coyne, McCoach, Loftus, Zipoli, & Kapp, 2009; Hindman et al., 2012; Penno, Wilkinson, & Moore, 2002; Robbins & Ehri, 1994), where groups with higher initial vocabulary knowledge demonstrated stronger increases in word knowledge after an intervention than those with lower knowledge (Silverman, Crandell, & Carlis, 2013). Thus, the current research on vocabulary intervention related to the impact of intervention on

ELL and English-only students is mixed; intervention may widen the gap between students with high- and low-achieving abilities, or, it may close the gap, promoting significant gains for at-risk students, including ELLs, to “catch up” to peers with higher levels of vocabulary. It is, therefore, important to continue examining the impact of vocabulary interventions, specifically, across students with varying language abilities.

Vocabulary Instruction

Explicit vocabulary instruction is essential in terms of positive long-term educational outcomes for all students, regardless of language status (Moats, 2010). This builds word knowledge and can help expand oral language skills as well as reading and listening comprehension skills. Multi-tier systems of support offer great promise for enabling high levels of achievement for all students; through flexible grouping and quality instruction in particular, student learning is accelerated. This is especially true for those who are most at risk for experiencing learning difficulties (Gersten, Fuchs, Compton, Coyne, Greenwood, & Innocenti, 2005; Baker, Gersten, & Linan-Thompson, 2010), including English Language Learners. This framework provides early screenings, regular progress monitoring, and interventions for any student not making adequate academic progress (Burns, Jacob, & Wagner, 2008; Fletcher & Vaughn, 2009), especially for ELL students. However, current school practices typically have little effect on oral language development during the primary years. Because the level of language used is often limited to what the children can read and write, there are few opportunities for language development in primary classes (Biemiller, 2003).

English learners face double demands of learning academic material while also mastering a new language (Gersten, 1996). These students enter school knowing fewer English words, need instructional supports, and may not respond similarly to instruction as their EO peers (August et al., 2005). With 67% of ELL students requiring academic supports in elementary grades, (August & Shanahan, 2006), it has been recommended that schools provide extensive, high quality, language and vocabulary instruction to students, especially ELLs, beginning in kindergarten (Baker, Gersten, & Linan-Thompson, 2010). Vocabulary instruction specifically should be a key component of literacy instruction for English language learners throughout the sequence of literacy instruction for ELLs (August, et al., 2005; National Literacy Panel, 2006); these students can make the same progress learning to read as native English speakers when provided effective instruction (Gersten, Baker, Shanahan, Linan-Thompson, Collins, & Scarcella, 2007). August and colleagues (2005) recommend a variety of strategies proven to be most effective for English language learners, including (a) providing both definitions and contexts for word meaning, (b) actively engaging students in discussions about words including strategies such as analyzing and comparing word meanings, (c) providing multiple exposures to words and their meanings, and (d) teaching word-analysis strategies.

Throughout the education system, far less emphasis has been on such systematic vocabulary instruction to improve reading skills specifically, despite the empirical support tying vocabulary knowledge to later reading ability (Beck, McKeown, & Kucan, 2002; Biemiller, 2001) and a specific recommendation to do so (National Reading Panel, 2000). Vocabulary instruction should be more in-depth and

explicit with at-risk students; it should focus on teaching essential content words as well as the meanings of common words, phrases, and colloquial expressions (Baker, Gersten, & Linan-Thompson, 2010). For instance, if we could improve the word identification skills of children at the 25th percentile in reading comprehension, we would get some improvement—up to the child's listening comprehension level. But in many cases, we would still be looking at a child whose comprehension level is far below that of many peers. To bring a child to grade-level language comprehension means, at a minimum, that the child must acquire and use grade-level vocabulary plus some post-grade-level vocabulary. This does not mean merely memorizing more words, but rather understanding and using the words used by average peers (Biemiller, 2003). Expanded vocabulary knowledge will not guarantee success, but lack of vocabulary knowledge can ensure academic difficulty.

Multi-tier systems of support offer great promise for enabling high levels of achievement for all students; through flexible grouping and high quality instruction supports in particular, student learning is accelerated, especially for those who are most at risk for experiencing learning difficulties (Gersten et al., 2005; Baker, Gersten, & Linan-Thompson, 2010). Students with low levels of initial vocabulary knowledge require supplemental intervention in addition to classroom-based vocabulary instruction in order to make comparable gains to students with higher levels of initial vocabulary knowledge (Coyne, McCoach, & Knapp, 2007, Penno et al., 2002; Robbins & Ehri, 1994). ELL students can make the same progress learning to read as native English speakers when provided effective instruction (Gersten et al., 2007).

If we are to increase children's ability to benefit from education, efforts are required to enrich their oral language development during the early years of schooling. Although not all differences in language are due to differences in opportunity and learning, schools could do much more than they do now to foster the language development of less-advantaged children and children for whom English is a second language (Biemiller, 2003).

Effective vocabulary instruction includes teaching the meanings of words students are learning to decode, receiving extensive opportunities to practice using the words across several media (i.e., reading, listening, and speaking), and receiving instruction on words they are not yet able to read on their own (Gersten, Baker, et al., 2007; Pullen et al., 2010). High quality early vocabulary instruction is essential to all student populations because it has the potential to enhance reading comprehension (Carlo et al., 2004) and promote academic success overall when widespread across subjects throughout a school day.

Summary

Listening comprehension, also known as oral comprehension, is an active and conscious process in which the listener recognizes sounds as words and then constructs meaning using cues from both contextual information and existing knowledge (Mendelsohn, 1994; O'Malley, Chamot, & Kupper, 1989). Listening comprehension grows especially quickly during the early elementary years. For many children, increasing reading and school success will involve increasing oral language competence in the elementary years (Biemiller, 2003; Fountas & Pinnell, 1996; Mooney, 1998; Tabersky, 2000). Listening comprehension is often used as an

approximation of reading comprehension in the early grades before children can fluently read and connect text on their own (Perfetti, Landi, Oakhill, 2005).

Before learning to read proficiently, oral language production through narrative, or story retell, tasks can provide a way to measure emerging listening comprehension skills (J. Anderson, Anderson, Lynch, & Shapiro, 2003; Scarborough, 2001; Senechal & LeFevre, 2002; Storch & Whitehurst, 2002; Tabors, Snow, & Dickinson, 2001; van Kleeck, 2007, 2008). Early narrative skills are one method of identifying early reading comprehension skills necessary for academic success; in fact, story retelling skills in kindergarten have been shown to be a greater predictor of literacy success in second grade than vocabulary, grammar, rote memory, and morpheme learning (Fazio, Naremore, & Connell, 1996). Vocabulary knowledge directly contributes to all types of comprehension; however, this knowledge varies across individuals at different ages (Biemiller, 2003).

Direct instruction focused on these components that contribute to comprehension, including vocabulary, is necessary to build strong foundational skills early in the development of reading abilities (Scarborough, 2001). It is therefore imperative to find ways to increase vocabulary knowledge as early in the schooling process as possible; this is especially true for students who enter school with less literacy exposure and limited vocabulary knowledge, are English Language Learners (ELLs), or are at-risk for learning and reading difficulty (Gersten et al., 2005; Baker, Gersten, & Linan-Thompson, 2010). As such, the current study aims to establish the contribution of whole-class and small group direct vocabulary instruction on listening comprehension and narrative skills across students with varying language proficiency.

The main research questions include: 1. Does vocabulary intervention treatment condition or language impact the quality of a story retell task in kindergarten? 2.

Which vocabulary variable better predicts the quality of story retell in kindergarten, initial vocabulary knowledge, vocabulary knowledge growth (pre-test to post-test), or target word knowledge following an intervention?

CHAPTER 2

METHODOLOGY

Current Study

The proposed study examined selected secondary data from the Year 1 kindergarten-cohort collected within a larger US Department of Education funded vocabulary intervention study, Project Early Vocabulary Intervention. These data were collected over the course of the 2011-2012 school year across schools in Rhode Island, Connecticut, and Oregon.

Participants

Twenty-two schools across Rhode Island, Connecticut, and Oregon were recruited for participation based on the availability of full-day kindergarten programming. Students in all kindergarten classrooms within each of the participating schools were screened for receptive vocabulary skills using the Peabody Picture Vocabulary Test-Fourth Edition (PPVT-4), prior to the onset of instruction and intervention. Students whose standard scores fell between 75 and 93 were considered to be “at risk” for vocabulary and literacy difficulty and randomly assigned to one of two at-risk groups: Intervention (n = 180) and Control (n = 188). Students with standard scores between 100 and 105 were considered “typically achieving” and randomly selected for a third group: Reference peers (n = 172). This resulted in a total sample of 540 kindergarten students. Each group assignment represented

approximately 3 students per classroom, resulting in ten students on average identified in each classroom.

Table 1.

Demographic Information of Participants for the Study by Group

Group	<u>Gender</u>		<u>Race/Ethnicity</u>					<u>ELL</u>	
	M	F	White	Black	Hispanic	Asian	Multi	Yes	No
Intervention (n= 153)	83	64	38	14	65	1	21	25	121
Control (n= 160)	86	67	34	23	59	3	25	31	119
Reference (n= 148)	65	76	53	20	45	1	15	11	131
Total (n= 461)	234	207	125	57	169	5	61	67	371

Informed Consent

All parents were required to give their consent for their child's participation in the larger research study. This study proposes maximum benefits and minimal risk to all children; however, for the first year of the project, active consent was required by the IRB of the University of Rhode Island. The kindergarten teachers of each participating classroom sent home an active consent form to the parents of each student (Appendix A). This required parents to return the signed form if they wanted their child to participate. Kindergarten students who did not return signed consent forms did not have any assessments administered at any time and no demographic or other information about them was collected. The IRBs of the University of Connecticut and the University of Oregon allowed passive consent for study

participants at their respective locations; parents were asked to sign the consent form and return it if they did not want their child to participate in the study.

Description of the Classroom Program and Intervention

All participating kindergarten classroom teachers and interventionists completed a full-day training seminar with research staff to learn and practice implementing the classroom curriculum and intervention curriculum, respectively. Research assistants also conducted fidelity monitoring and provided feedback to teachers and interventionists periodically throughout the implementation of the curriculum; there were a minimum of three fidelity checks for all classrooms and intervention groups. After training, the classroom teachers implemented the Elements of Reading – Vocabulary curriculum (Beck & McKeown, 2002), a widely available evidence-based vocabulary program, to all students (including both at-risk groups: Intervention and Control, along with the typically achieving Reference students) during whole class instruction. This instruction lasted for approximately 20 minutes per day, five days per week, over the course of a school year (approximately 20-24 weeks). This curriculum introduced five different vocabulary words on the first day of each week, and then provided activities for students to employ and manipulate the words the next three days per week. The final day featured a five-question quiz to assess student comprehension via phrases that used the vocabulary terms; students chose “yes” or “no” for phrases such as “Is a bumblebee enormous?” and “Would you struggle to carry a horse?” This curriculum resulted in a total of 120 new words presented to all students over the course of the school year.

Additionally, students in the Intervention group received a supplemental small-group vocabulary intervention implemented by trained interventionists. These interventionists were often paraprofessionals or other school staff affiliated with classrooms, distinct from the classroom teacher. This intervention took place four days per week for approximately twenty-five minutes sometime in the school day following the whole class lesson. This intervention was also implemented over the course of the school year, in addition to and corresponding with the Elements of Reading – Vocabulary weekly lessons. Students in the classroom were often completing differentiated language arts activities at different centers during the time the Intervention students were pulled out for their small group instruction. However, it should be noted that the vocabulary words were not added anywhere else in school programming for the students in this study.

The vocabulary intervention program includes four lessons per week that provide extra activities focusing on three of the five weekly vocabulary words from the Elements of Reading – Vocabulary curriculum. The intervention provides structured instruction with standard wording to introduce activities, provide feedback to students, and solicit deeper thinking. The instruction also provides clear and consistent wording of definitions from the teacher, as well as teacher modeling, opportunities for student practice, reinforcing feedback, and scaffolding to expand and promote student learning. Over the course of four days each week, students are able to review the three vocabulary word definitions, identify examples and non-examples, and expand contextual knowledge through guided activities.

A sample week of the intervention includes the following:

Day 1: Interventionists reintroduce three of the target words from the earlier whole-class Elements of Reading – Vocabulary instruction and review each word definition. There are also picture activities where students identify picture cards as examples or non-examples of each of the words by putting their thumbs up or down as a group. Students then individually choose a picture at random and must decide whether it is an example or not and briefly explain why.

Day 2: Interventionists reintroduce the three target words and review the definition of each word. The students are then encouraged to each tell about an example picture based on the target word after the interventionist models the activity. Feedback and scaffolding are provided for student answers to promote using the target word and definition in explanations. Finally, there is also a picture sort activity where students choose an example picture and decide which of the target vocabulary words it matches.

Day 3: Interventionists reintroduce the three target words and review the definition of each word before introducing an activity that makes connections and builds word context through word webs and charts. The interventionist encourages students to think about the target word and name other things that can also be the same thing. For example, the target word “fleet” means fast, so students are asked to come up with other things that can be fast, like cars, trains, boats, animals, people, and so forth. Also, target words can be verbs, so context is also built through thinking about other ways things can move and students are encouraged to demonstrate the movements. The interventionist validates

correct student answers by writing it into the webs and charts or encouraging the group to mimic actions. Interventionists also guide students to correct responses through scaffolding scripted answers provided in the curriculum. At the end, the interventionist reviews the target word, definition, and examples the students provided.

Day 4: The final lesson of the week begins with a review activity that reminds students of word definitions, and then asks students to choose a picture from a pile and ask a fellow student to tell them about it. Also, there is a cumulative review activity that varies from telling about picture cards from the current lesson and past lessons to listening for target words in a story and then retelling parts from memory.

Assessment of Students

The Project EVI team assessed all students identified by the PPVT-4 for the three groups individually at the beginning of the school year, prior to beginning any vocabulary curriculum or intervention. The assessments included brief measures of receptive and expressive vocabulary knowledge. At the end of the school year, after approximately 24 weeks of the vocabulary program, students were re-assessed on the PPVT-4 and same receptive and expressive vocabulary measures. Finally, they were given an additional Story Retell measure. Student demographic information was also collected from the teachers at this point.

Standardized Measures

Peabody Picture Vocabulary Test-4 (PPVT-4, Dunn & Dunn, 2007).

The PPVT-4 is a norm-referenced, individually administered measure of receptive vocabulary. Students are presented with four pictures and are asked to point to the picture that best represents the word given by the examiner. Standardized scores (mean = 100; SD = 15) are computed based on number of items correct and the student's chronological age. Reported reliability of the PPVT-4 is satisfactory with alternate forms reliability coefficients ranging from .87 to .93 and test-retest reliability coefficients ranging from .92 to .96. Correlational studies between the PPVT-4 and other tests of verbal ability suggest high criterion validity of the PPVT-4 (Dunn & Dunn, 2007).

Experimenter-Developed Measures

The National Reading Panel (2000) concluded that specific vocabulary growth is best assessed through researcher-developed measures because these measures are more sensitive to gains achieved through instruction than are standardized tools. It should be noted that there are no overlapping terms between the PPVT-4 and target words featured within the experimenter developed vocabulary measures.

Measure of Target Word Knowledge (Appendix B)

This measure is a 26-item experimenter developed individual assessment that measures students' expressive knowledge of target word definitions. The student is asked, "What does the word ____ mean?" To detect full or partial word knowledge, responses are given two points for a complete response, one point for a partial, related response, and zero points for an unrelated response or no response. The maximum achievable score is 52. In the current study, the Cronbach alpha coefficient was .86.

Receptive Picture Vocabulary Measures of Target Words (Appendix C)

This measure is a 16-item experimenter developed individual assessment that measures students' receptive knowledge of target words. In the receptive vocabulary measure an examiner presents students with four pictures and asks them to point to the picture that corresponds with a spoken target word. Students are awarded one point for each correct answer. The maximum achievable score is 16. In the current study, the Cronbach alpha coefficient was .87.

Story Retell (Appendix D)

This measure is an experimenter developed individual assessment that measures students' ability to listen, comprehend, and retell four different stories. Each story is comprised of 3-6 sentences and features four target words for a total of 16 target words across four stories. These target words are the exact same 16 words used in the Receptive Picture Vocabulary Measure of Target Words.

The student is asked to listen to a story read by the examiner while looking at a single picture related to the story. When finished, the students are asked to immediately tell the story back to the examiner. The examiner then acknowledges the existing answer and prompts for more, using "What else happened?" or "Can you tell me anything more?" The complete story retell, including all four stories, is recorded within a single audio recording and is later transcribed in the secure EVI office by trained research assistants. Responses are then scored for quality of retell using a scoring rubric (Appendix E), specifically identifying the use of any target vocabulary words, character identification, and story sequencing of the key components. Each of the four stories begins with the identification of the character and then describes five subsequent key components, featuring four target vocabulary words.

Participants are awarded one point for each target word used and individual story component cited, including character identification. An additional point is awarded for maintaining the appropriate story sequence. This results in four possible scores per participant: target word use, story components, correct story sequencing, and total score. The maximum achievable score per story for target word use is four, inclusion of story components is six, story sequence is one; the maximum overall total score is 44. In the current study, the Cronbach alpha coefficient was .88.

Story Retell Inter-rater Reliability

Research assistants were utilized for the scoring of the Story Retell measure. They first completed CITI training to ensure appropriate background knowledge of human subjects research practices. Research assistants were then provided individual training that provided an orientation to the Story Retell measure itself, including a demonstration of the administration of the four stories and related components. Once research assistants were familiar with the measure, they were then trained on the scoring rubric. Research assistants were asked to review the scoring rubric and become familiar with the target words and story components involved in each story. All versions of acceptable answers were reviewed for each item on the measure, including synonyms for target words and key story events and phrasing to be identified in the retells. Research assistants were then walked through each story within one practice case and asked to score one component at a time; target word scores were verified, and then story components and finally sequence. Corrections and further explanations were provided for individual items that were discrepant from the model. A second practice case was then presented and the research assistants were

asked to independently score all four stories. All scores were compared to the model and corrected where necessary; further discussion was offered related to acceptable responses to score. If the research assistant volunteered for an additional practice case, a third was offered. After two to three practice cases and demonstrated proficiency, research assistants were asked to complete reliability scoring for 51 protocols. Individual item scores were reviewed and compared with the model for reliability. For the current study, inter-rater reliability was calculated for the principal investigator and a research assistant who coded the data. Fifty-one protocols were coded, resulting in 2,244 items for reliability comparison. Inter-rater scoring reliability was established as .96 between raters within the current study. When research assistants were at least 95% reliable with the model, they continued scoring protocols independently.

Story Retell Data Transcription and Scoring

The Story Retell measure was administered to all participants at the end of the school year. Individual student responses for each of four retells and the accompanying comprehension questions were recorded on an mp3 recorder in a single sitting during testing. Following data collection, trained research assistants later transferred each mp3 recording to an encrypted computer in the secure EVI office. The recordings were then directly transcribed into a final transcript of each student's story retell.

Within each transcript, the student retell of the four stories was scored for quality of retell across three areas: target words, story components, and correct sequencing. Students could accumulate points for the use of up to four target

vocabulary words, the inclusion of up to six key story components, and sequencing the story components correctly. The overall scores for target words used, story components used, sequenced correctly, and total retell scores were noted for each participant.

Research Questions and Hypotheses

1. Does vocabulary intervention impact the quality of a story retell task in kindergarten? Are there group differences by treatment condition (intervention, control, reference students)? Are there significant between group differences by language status (ELL, English-only) on the quality of a story retell task in kindergarten?
  - a. It is expected that there will be significant between group differences on story retells. The intervention group is expected to score higher (e.g., use more target words, maintain sequence of story) than control group and score similarly to the reference group. It is also expected that there will be significant differences by language status. English-learner students are expected to produce lower scores (e.g., fewer target words used, fewer key story components) than English-only students.
2. Which factor best predicts the quality of story retell in kindergarten: initial vocabulary knowledge, vocabulary knowledge growth (pre-test to post-test), or receptive and expressive target word knowledge following a vocabulary intervention? Is there a difference between the predictions of story retell quality from vocabulary knowledge pre-test as compared to a growth score?

How do the standardized measures compare to the experimenter-developed measures of vocabulary knowledge?

- a.* It is expected that all vocabulary knowledge measures (pre-test, post-test, and receptive and expressive target words) will positively correlate with and predict the quality of story retell produced by all kindergarten students. It is expected that vocabulary knowledge growth (post-test scores after controlling for pre-test) and knowledge of target words following the intervention will be more predictive of quality of story retell.

CHAPTER 3

FINDINGS

To best answer the questions of this study, a data screening process was first employed in the data analysis. First, when examining individual participants, there were 541 kindergarten students assigned to groups in this study. The data were checked for accuracy, normality and outliers, and missing values using SPSS 22. Students with missing data (individual measures) missing at either pre- or post-test were excluded from the analyses specific to the missing measure; participants with partial data were utilized in all applicable analyses. Students were fully excluded from analyses if they moved ($n = 22$) or were exited from participation due to educational limitations ($n = 2$), resulting in a total of 517 students included for analyses. Assumptions for normality, linearity, and homogeneity of variance were examined to ensure that all assumptions were met to perform the statistical tests. Means and standard deviations were examined through descriptive statistics; no extreme outliers were identified. The 5% trimmed means were similar to the means for each variable. The Kolmogorov-Smirnov statistic, a test of normality, was significant for the variables, which violates the assumption of normality; however, this is quite common in large samples (Tabachnick & Fidell, 2013), especially in the social sciences. Subsequent examination of the distribution of scores for each variable determined data to be reasonably “normal”; the Story Retell data were found to be slightly left skewed toward lower scores and mildly kurtotic (-0.36), suggesting a

flatter distribution with higher numbers of cases in the tails. However, the large sample size is expected to reduce the risk of underestimating the variance in scores for this measure (Tabachnick & Fidell, 2013) and all cases were included for analyses.

Exploratory factor analysis was utilized to establish the clusters of items on the Story Retell measure to ensure that any additional and independent factors within the retell measure were accounted for in subsequent analyses. To address the impact of treatment condition on quality of story retell, research question one was tested by a two-way ANOVA; post hoc Tukey HSD analyses were examined for values that were statistically significant. Research question two, regarding any differences in predicting the quality of story retell using vocabulary knowledge versus vocabulary knowledge growth, was tested by two Hierarchical Multiple Regression models. All of the analyses were conducted using SPSS 22.

Exploratory Analysis of Story Retell Measure

Two separate analyses were run on the items and subdomains of the Story Retell measure to identify the ideal structure. According to Tabachnick and Fidell (2013), a sample of at least 300 is ideal for a factor analysis; the current sample exceeds that number and is appropriate for this analysis. Additionally, the number of cases in the current study exceeds the recommended 10:1 ratio (Nunnally, 1978). The 44 items of the Story Retell measure were subjected to principal components analysis (PCA) because the primary purpose was to identify and compute composite story retell scores for any factors underlying the Story Retell measure. Prior to performing the PCA, the suitability of the data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of minimal coefficients of .3 and above. The

Kaiser-Meyer-Olkin measure of sampling adequacy value was .75, which is above the suggested minimum of .6 for a good factor analysis (Tabachnick & Fidell, 2013) and the Bartlett's test of sphericity was significant ($\chi^2(946) = 7280.92, p < .001$). The individual item analysis identified 16 components with eigenvalues exceeding 1, explaining 68.9% of the variance in total; however, further examination of the strength of the relationship between the factors revealed very low correlation values ($< .3$) between the factors. It was therefore determined that the analysis may be appropriate, but not ideal based on the minimal intercorrelations between items.

Thus, an additional principal components analysis was run using the 12 subdomains of the Story Retell measure instead of the individual items. The suitability of the data for factor analysis was assessed; the correlation matrix revealed the presence of correlations at or above .3 for the majority of subdomain comparisons. The Kaiser-Mayer-Olkin value was .80, suggesting a more adequate sample for the analysis. Bartlett's test of sphericity was significant ($\chi^2(66) = 2642.5, p < .001$), signifying a more suitable factor analysis with the twelve subdomains rather than the individual 44 items. The communalities were all above .3 (see Table 2), further confirming that each item shared some common variance with other items. Given these overall indicators, the factor analysis was conducted with all 12 subdomains; there is no evidence to support removing any items from the measure.

This PCA using the Kaiser criterion extracted four components with eigenvalues higher than 1; the first accounted for 43.9% of the variance, the second component accounted for 10.9%, the third had 9.2%, and fourth accounted for 8.6%. An inspection of the scree plot indicated a clear break after the first component

Table 2.

Factor Loadings and Communalities for Story Retell Subdomains

	Components				Communality
	1	2	3	4	
Story 1 Target Words	.695	.308	-.326		.700
Story 1 Story Components	.747	.462			.856
Story 1 Sequencing	.531	.612			.753
Story 2 Target Words	.603	-.454		-.319	.736
Story 2 Story Components	.774	-.368			.775
Story 2 Sequencing	.590				.441
Story 3 Target Words	.666		.421	-.410	.789
Story 3 Story Components	.777		.413		.828
Story 3 Sequencing	.551		.580		.716
Story 4 Target Words	.636				.499
Story 4 Story Components	.776			.384	.792
Story 4 Sequencing	.529			.710	.838

(Figure 1), which has previous theoretical support outlining the preference for factors before the plot levels off. Further, an examination of the loadings within the component matrix suggests all items load quite strongly (above .5) on the first component; just five items loaded onto the second component with moderate to strong loadings and very few items load on Components 3 and 4 (see Table 2). Using Catell's (1966) scree test along with the component matrix and variance results, it was decided to retain one factor that was identified to best fit these data and be utilized for

subsequent analyses of the Story Retell measure; the single component accounts for 43.9% of the variance and best represents the measure as a whole. The single factor was therefore labeled “Story Retell”. The single component solution, therefore, did not require rotation to aid in the interpretation of the results. The internal consistency for Story Retell was examined using Cronbach’s alpha; the alpha coefficient for the single-factor “Story Retell” measure is .88. In other words, the exploratory factor analysis employing PCA with the 44 individual items on the Story Retell identified a variety of components; however, this result was not ideal based on minimal intercorrelations. Therefore, the second PCA results using the Kaiser criterion on the twelve Story Retell subdomains indicated a more suitable sample for the analysis than Figure 1.

PCA Scree Plot for Story Retell Summary Score

the first PCA; a single-factor structure titled “Story Retell” was extracted, indicating moderate internal consistency, and was determined to best represent the Story Retell measure in this study.

A subsequent analysis of a modified version of the Story Retell measure that removed the target word domains from the scoring of each of the four stories was examined. The Kaiser-Mayer-Olkin value was .81 for the modified Story Retell, suggesting a similarly adequate sample for analysis when compared to the full Story Retell measure. Bartlett’s test of sphericity was significant ($\chi^2(378) = 2445.4, p < .001$), signifying a similarly suitable factor analysis with the 8 subdomains. Additionally, the internal consistency for the modified Story Retell measure was examined using Cronbach’s alpha; the alpha coefficient for the single-factor “Story Retell” measure is .84.

Student Story Retell by Group and Language Status

To examine the impact of group membership and language status on student retells, a two-way ANOVA was performed along with Tukey’s post-hoc tests to identify main effects. As outlined previously, participants were divided into three groups (Intervention, Control, Reference) according to their initial vocabulary ability as measured by the PPVT-4. ELL designation was recorded (ELL, English-only) on a student information sheet collected about each student. Partial eta squared (η^2) statistics are reported to provide an estimate of effect size and Cohen’s d values were calculated between groups. Mean performance on the Story Retell measure was examined by language status and by group (Table 3).

The two-way ANOVA revealed a significant between-subjects main effect for

Table 3.

Summary of Story Retell Performance by Group and Language Status

Group	Language Status	Mean	SD
Intervention	English-only	14.82	7.28
	ELL	15.96	8.51
Control	English-only	12.77	6.93
	ELL	11.52	6.80
Intervention	English-only	17.22	7.51
	ELL	19.00	5.82

group, but not for language status nor the group by language interaction (Table 4); there was a medium effect size (partial eta squared = .05). That is, group membership (Intervention, Control, Reference) affects story retell outcomes independently, but language status (ELL, English-only) and their combined effects (group and language) do not have a significant effect on the quality of story retell. Therefore, hypothesis one was partially confirmed; statistically significant differences were found between groups on the Story Retell measure.

There is a statistically significant difference between intervention, control, and reference groups on Story Retell. Post-hoc comparisons using Tukey's HSD test indicated that the mean score for the Intervention group was significantly different

Table 4.

Summary of ANOVA Results of Group and Language Status for Story Retell

Effect	<i>F</i>	<i>df</i>	<i>p</i>	η^2
Group	12.02*	(2, 451)	.000	.051
Language Status	0.31	(1, 451)	.577	.001
Group x Language	0.99	(2, 451)	.372	.004

* $p < 0.001$.

from both the Control and Reference groups; the Control group was also significantly different from the Reference group (Table 5). The Intervention group scored 2.5 points higher on the Story Retell than Control group; the Reference group scored nearly 5 points higher than the Control group and approximately 2 points higher than the Intervention group (Figure 2). Cohen's *d* was calculated between groups to provide a measure of effect on Story Retell scores; there were small effects produced by the group comparisons of both Intervention and Control (Cohen's *d* = .35) and Reference and Intervention (Cohen's *d* = .31), while a medium effect was found for the Reference by Control group comparison (Cohen's *d* = .69). Thus, hypothesis 1 is partially confirmed; there were significant differences between groups, but not by language status for the Story Retell measure. The intervention group did score higher than control group, but scored lower than the Reference group, with small to medium effects.

Table 5.
Summary of Story Retell Results by Group.

Group	Mean	SD
Intervention	14.96 ^a	7.6
Control	12.46 ^b	6.8
Reference	17.29 ^c	7.3
Comparisons	Mean Difference	Cohen's <i>d</i>
Intervention x Control	2.51	.35
Reference x Intervention	2.33	.31
Reference x Control	4.83	.69

a,b,c = significant difference; $p < .001$.

Figure 2.
Results of Story Retell by Group.

Predicting Quality of Story Retell by Vocabulary Knowledge vs. Vocabulary Growth

Initial Vocabulary Knowledge as the Predictor

To examine the ability of initial vocabulary knowledge to predict quality of Story Retell, a hierarchical multiple regression was run on a modified Story Retell score that removed Target Word knowledge from the total score, resulting in a total score for just story components featured and sequencing. On the first step, the demographic variables (gender, ethnicity, language) were entered into the model to control for any influence of student background factors such as language, gender, or

ethnicity. The PPVT-4 scores from the beginning of kindergarten were entered into step 2. End of kindergarten Receptive Target Word scores were entered at step 3 and Expressive Target Word scores were entered at step 4.

Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Pearson product-moment correlations controlling for ethnicity, language, and gender on Story Retell, revealed very small negative relationships between the variables; however, there were no significant correlations as outlined in Table 6. There is a medium positive relationship between overall Story Retell scores and all three vocabulary measures, initial PPVT-4, Receptive Target Word, and Expressive Target Word; this association suggests that higher scores on measures of vocabulary knowledge relate to higher scores on the Story Retell task. There are also small positive relationships between beginning of kindergarten PPVT-4 scores and both Receptive and Expressive Target Table 6.

Pearson Correlation Coefficients for Vocabulary, Demographics, and Story Retell

Measures	1	2	3	4	5	6	7
1. Story Retell							
2. Ethnicity	-.066						
3. Gender	-.028	-.103*					
4. Language	-.044	.186*	-.036				
5. PPVT-4 beginning of K	.300*	-.115*	.068	-.201*			
6. Receptive Target Word	.369*	-.087*	-.080*	-.081*	.218*		
7. Expressive Target Word	.456*	-.106*	-.020	-.028	.219*	.753*	

*. Correlation is significant at less than the 0.05 level (2-tailed)

Word measures, suggesting that as general vocabulary knowledge increases, so does knowledge of the specific words targeted in the current study. Additionally, there is a small negative relationship between ethnicity and gender, PPVT-4, and Receptive Target Word scores; this relationship indicates that students of color perform at slightly lower levels on vocabulary knowledge measures than white students, and that they are more likely to be male. There is a small positive relationship between ethnicity and language, suggesting that students of color are slightly more likely to be identified for ELL accommodations and services.

Student demographics, including gender, ethnicity, language, were entered at Step 1, explaining 0.7% of the variance in Story Retell; however, this contribution was not significant (Table 7). PPVT-4 scores from the beginning of kindergarten were entered at Step 2, explaining 8.8% of unique variance in Story Retell scores. Receptive Target Word scores were entered at Step 3 and explained 9.4% of unique variance, while the Expressive Target Word scores were entered at Step 4 and explained 6.3% of unique variance. The total variance explained by the model as a whole was 25.2%, $F(6, 389) = 21.81, p < .001$. The Receptive Target Word scores explained the most amount of variance in Story Retell, after controlling for demographic variables, R squared change = .094, F change $(1, 390) = 45.27, p < .001$. In the final model as a whole, however, the initial PPVT-4 scores and Expressive Target Word scores were statistically significant (PPVT-4 beginning of K: $\beta = .213, p < .001$; Expressive Target Word: $\beta = .386, p < .001$); indicating that Expressive Target Word knowledge is the strongest predictor of quality of Story Retell, more than any other measure of vocabulary knowledge or demographic information.

Table 7.

Summary of Hierarchical Regression Analysis for Demographic and Vocabulary Knowledge Variables Predicting Story Retell Quality

Variable	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Ethnicity	-.196	.160	-.063	-.125	.153	-.040	-.059	.145	-.019	-.009	.140	-.003
Gender	-.391	.559	-.035	-.570	.536	-.052	-.211	.510	-.019	-.354	.491	-.032
Language	-.520	.783	-.034	.338	.761	.022	.479	.722	.031	.166	.696	.011
PPVT-4 beginning of K				.170	.028	.303*	.133	.027	.236*	.120	.026	.213*
Receptive Target Word							.474	.070	.317*	.045	.101	.030
Expressive Target Word										.228	.040	.386*
R^2		.007			.094			.188			.252	
F for change in R^2		.875			37.78*			45.27*			32.92*	

*. Correlation is significant at less than the 0.01 level.

Vocabulary Growth as the Predictor

To examine the ability of vocabulary knowledge growth to predict quality of Story Retell, a second hierarchical multiple regression was run on a modified Story Retell score that removed Target Word knowledge from the total score, leaving a total score for just story components featured and sequencing. On the first step, the PPVT-4 scores from the beginning of kindergarten were entered into the model to control for existing vocabulary knowledge. The demographic variables (gender, ethnicity, language) were then entered into step 2 to control for any influence of student background factors such as language, gender, or ethnicity. The end of kindergarten PPVT-4 scores were entered at Step 3, Receptive Target Word scores at Step 4, and Expressive Target Word scores were entered into step 5.

Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Pearson product-moment correlations controlling for PPVT-4 scores at the beginning of kindergarten, ethnicity, language, and gender, produced the same results presented in the previous section for Story Retell. Further, as outlined in Table 8, there is a moderate positive relationship between Story Retell scores and the vocabulary variables: end of year PPVT-4 scores, Receptive Target Word, and Expressive Target Word. There is a medium positive relationship for both the Receptive and Expressive Target Word measures and end of kindergarten PPVT-4 scores. As expected, there is a large positive relationship between PPVT-4 scores at the beginning and end of kindergarten as well as between the Receptive and Expressive Target Word measures. Similar to the previously reported results, there is a very small negative relationship between

Table 8.

<i>Pearson Correlation Coefficients for Vocabulary Growth, Demographics, Story Retell</i>								
Measures	1	2	3	4	5	6	7	8
1. Story Retell								
2. PPVT-4 Beg. K	.300*							
3. Ethnicity	-.066	-.115*						
4. Gender	-.028	.068	-.103*					
5. Language	-.044	-.201*	.186*	-.036				
6. PPVT-4 End K	.386*	.683*	-.143*	.023	-.183*			
7. Rec. Target Word	.369*	.218*	-.087*	-.080*	-.081*	.364*		
8. Exp. Target Word	.456*	.219*	-.106*	-.020	-.090	.353*	.753*	

*. Correlation is significant at less than the 0.05 level (2-tailed)

ethnicity and gender, language, and all vocabulary knowledge scores. There is a small negative relationship between the end of kindergarten PPVT-4 scores and gender, which suggests males perform at higher rates on the vocabulary measure. There is also a very small negative relationship between language and the end of year PPVT-4 scores and Receptive Target Word measure, which suggests that students who are ELLs perform at slightly lower levels on receptive vocabulary measures.

PPVT-4 scores from the beginning of kindergarten were entered at Step 1, explaining 9% of unique variance in Story Retell scores. Student demographics, including gender, ethnicity, language, were entered at Step 2, explaining an additional 0.4% of unique variance in Story Retell; however, this contribution was not significant (Table 9). PPVT-4 end of kindergarten scores were entered at Step 3, explaining 6% of unique variance. Receptive Target Word scores were entered at Step 4 and

explained 6% of the variance, while the Expressive Target Word scores were entered at Step 5, explaining an additional 5.6% of unique variance. The total variance explained by the model as a whole was 27.1%, $F(7, 388) = 20.59, p < .001$. The end of kindergarten PPVT-4 scores and Receptive Target Word scores accounted for the most variance in Story Retell, after controlling for beginning of kindergarten vocabulary and demographic variables (PPVT-4: R squared change = .060, F change (1, 390) = 27.85, $p < .001$; Receptive Target Word: R squared change = .060, F change (1, 389) = 29.88). In the final model, however, the PPVT-4 end of kindergarten scores and Expressive Target Word scores were statistically significant (PPVT-4 end of K: $\beta = .200, p = .002$; Expressive Target Word: $\beta = .365, p < .001$); indicating that, again, Expressive Target Word knowledge accounted for the most variance in Story Retell, more than the end of kindergarten PPVT-4 or any other measure of vocabulary knowledge or demographic information.

Therefore, hypothesis 2 is confirmed; both PPVT-4 scores at the beginning of kindergarten and the pre-to-post-test growth were positively correlated with the Story Retell scores. Further, the PPVT-4 post-test scores and both Receptive and Expressive Target Word scores all accounted for similar amounts of variance within the model. Finally, the best and strongest overall predictor of Story Retell quality across both regression models is the Expressive Target Word measure; the Expressive Target Word measure accounted for the most variance in Story Retell. Notably, the PPVT-4 growth scores accounted for more variance than beginning of kindergarten scores.

Table 9.

Summary of Hierarchical Regression Analysis for Demographic, Target Word, and Vocabulary Growth Variables Predicting Story Retell Quality

Variable	Model 1			Model 2			Model 3			Model 4			Model 5		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
PPVT-4 Beg. K	.169	.027	.300*	.170	.028	.303*	.043	.036	.077	.051	.035	.090	.050	.034	.089
Ethnicity				-.125	.153	-.040	-.060	.149	-.019	-.024	.144	-.008	.017	.139	.006
Gender				-.570	.536	-.052	-.456	.519	-.041	-.191	.503	-.017	-.329	.486	-.030
Language				.338	.761	.022	.535	.738	.035	.593	.712	.039	.280	.689	.018
PPVT-4 end K							.170	.032	.338*	.118	.033	.234*	.101	.032	.200*
Rec. Target Word										.397	.073	.265*	.002	.101	.002
Exp. Target Word													.216	.040	.365*
R^2		.090			.094			.155			.215			.271	
F for change in R^2		39.01*			.588			27.85*			29.88*			29.81*	

*. Correlation is significant at less than the 0.01 level.

CHAPTER 4

DISCUSSION

The purpose of the current study was to present a preliminary analysis examining kindergarten student performance on a story retell task across intervention groups and language status. This study also examined the relationship between vocabulary knowledge and oral narrative production on a Story Retell task. Early literacy skills and interventions to improve them have demonstrated importance on academic achievement (Scarborough, 2001; Whitehurst & Lonigan, 2003; Justice & Kaderavek, 2004). Although a variety of factors contribute to overall comprehension, including word knowledge (Krings, 2013) and contextual information (O'Malley, Chamot, & Kupper, 1989), differences in reading and listening comprehension performance have been consistently documented across students of varying ages and backgrounds (Fountas & Pinnell, 1996; Mooney, 1998; Taberski, 2000; Perfetti, Landi, Oakhill, 2005; Moats, 2004; Diakidoy, Stylianou, Karefillidou, & Papageorgiou, 2005; Hagtvvet, 2003; Nation & Snowling, 2004). Research has not yet fully examined the effects of vocabulary instruction and intervention on student listening comprehension and narrative performance in early academic years. Accordingly, the primary objective was to examine whether students who are determined to be at risk for delayed vocabulary development have significant differences in story retell production from their typically achieving peers.

Student Story Retell by Group and Language Status

Overall, significant effects were found across groups of students on their performance on the Story Retell task, but neither by language nor the group by language interaction. In other words, group membership (Intervention, Control, Reference) affects story retell outcomes differently; however, when considered together, group and native language do not have a combined significant effect on story retell proficiency. The students in the Intervention group performed better on the Story Retell task than the students in the Control group, producing a small effect (Cohen's $d = .35$); the students in the Reference group performed better than both Intervention and Control groups, producing small effects for Reference by Intervention group comparisons (Cohen's $d = .31$) and a medium effect for Reference by Control (Cohen's $d = .69$). These findings support evidence outlining the positive impact a vocabulary intervention has on early literacy skills (Silverman, 2007; Coyne et al., 2004; Elley, 1989; Justice et al., 2005); the very small overall effect size for group ($\eta^2 = .05$) is acceptable when considering the myriad influences and contributions toward academic success that might overpower initial effects of vocabulary knowledge on listening comprehension and later early literacy skills. Such significant influences on later academic achievement include socioeconomic status, including more distal poverty effects and environmental influences, as well as parenting styles, for example (Burchinal et al., 2011; Burchinal et al., 2010; Sepanski et al., 2010; Brooks-Gunn & Markman, 2005; Goldstein, Davis-Kean, & Eccles, 2005). Through this preliminary analysis of a Story Retell task, group membership within the context of early intervention makes a small, but distinct contribution to listening comprehension and oral production as measured by the Story Retell measure.

There were no significant results by language status; however, a preliminary examination of descriptive means and standard deviations in the current study indicates differences similar to findings by Silverman (2007), where ELL students matched their English-only peers and showed enough growth to close the gap on standardized and target word measures following an intervention. Further, these non-significant results are consistent with existing evidence suggesting that native language is not the most influential contribution to later vocabulary, listening comprehension, and general literacy performance. A study by Crevecoeur and colleagues (2014) examined vocabulary and listening comprehension measures and established that language status was fully mediated by initial vocabulary knowledge on outcome measures; that is, there was no significant contribution of language beyond the influence of initial vocabulary knowledge on vocabulary and listening comprehension outcomes. The non-significant results of the current study are not consistent with the existing literature outlining decreased ELL student performance on standardized measures (August et al., 2005); the current results suggest that these students do benefit from early and targeted intervention (Silverman, 2007; Coyne et al., 2004; Elley, 1989; Justice et al., 2005). It is therefore possible that the method of vocabulary intervention used in the current study produced gains for ELL students that met or exceeded their peers, producing only differences by treatment groups. However, the results of the current study reflect a preliminary examination of oral production on the Story Retell task and additional in-depth study of the components of Story Retell production would better inform additional interpretation and application of student performance.

The lack of significance in the current study may also be related to the limited sample of ELL students enrolled in the current study. The limited representation of ELLs may be due to the reliance upon teacher reports of student language status based on educational accommodations. ELLs are typically served in bilingual education or English as a second language (ESL) program, which may provide separate, small group instruction in a native language, or students receive ESL support within general education classrooms (Vaughn, n.d.). As such, there may be a greater number of students in the sample, especially within the at-risk Intervention and Control groups, who come from households that speak languages other than English who are not identified for any language-specific educational accommodations. This potential underestimate of student language backgrounds could contribute to the lack of significant differences across student groups.

Effectiveness of Supplemental Instruction

The results of this study showed that, overall, the at-risk students who received the supplemental instruction (vocabulary intervention) performed better on the Story Retell task than the at-risk students who did not; however, their retell production remained lower than the average-achieving peer. Across student groups, the Expressive Target Word measure best related to and predicted performance on the Story Retell measure; this suggests that vocabulary instruction at a universal level may contribute to skills beyond word knowledge, like story reproduction and listening comprehension. Further, the results support that small group instruction may enhance not just the vocabulary knowledge, but also general improvements in understanding and retelling stories for students initially identified with low vocabulary skills, such as

the intervention students. While the preliminary results of current study cannot claim that improvements on the standardized vocabulary measure are directly related to the methods, the outcomes on the Target Word and Story Retell measures better outline the impact of the intervention program (National Reading Panel, 2000).

The results of student improvements across measures of vocabulary knowledge are in the context of classrooms in which students were receiving the recommended levels of instruction to best promote gains and success (August et al., 2005; National Literacy Panel, 2006; Gersten et al., 2007); students in the current study received high-quality whole-class read aloud instruction that incorporated direct and explicit vocabulary and comprehension instruction and practice. In other words, the small-group intervention effect on increased word knowledge for the at-risk Intervention group was an added value above and beyond the benefit of the whole-class instruction alone.

The results of the current study replicate previous findings related to the gains of at-risk students receiving supplemental instruction that approach the performance of their typically achieving peers receiving just whole-class instruction (Loftus et al., 2010). The findings of Loftus and colleagues (2010) have been replicated in the current study, where at-risk students in the Intervention group performed better than their Control counterparts and approached the performance of their typically achieving Reference group peers. Consistently, the intervention in the current study promoted large word-knowledge gains made by students receiving the supplemental instruction, which suggests the intervention may provide critical knowledge increases of target words to the students who began with lower vocabulary knowledge. The positive

effects of the intervention on target word learning in this study are consistent with evidence that direct vocabulary instruction can lead to gains in target vocabulary knowledge and listening comprehension as early as kindergarten (Krings, 2013; Oakhill & Cain, 2007; Lepola, Lynch, Laakkonen, Silvén, & Niemi, 2012; Beck & McKeown, 2007; Coyne et al., 2007; Ewers & Brownson, 1999).

Predicting Quality of Story Retell by Vocabulary Knowledge vs. Vocabulary Growth

Consistent with established evidence outlining the important contribution of vocabulary to comprehension (Krings, 2013; Oakhill & Cain, 2007; Lepola, Lynch, Laakkonen, Silvén, & Niemi, 2012), the current study demonstrated that all vocabulary measures were positively correlated with the Story Retell measure. Specifically, performance on the Receptive and Expressive Target Word measures were moderately positively correlated with production on the Story Retell measure; both the PPVT-4 scores at the beginning of kindergarten and the PPVT-4 growth scores were positively correlated with the Story Retell scores. This supports the association between vocabulary knowledge and listening comprehension (Krings, 2013); it also indicates that these preliminary findings may be expanded toward existing evidence that improvements in word knowledge lead to improvements in comprehension (Schmitt et al., 2011; Oakhill & Cain, 2007). The current results are similar to a recent study by Schmitt and colleagues (2011) that examined the percentage of vocabulary known in a text and level of comprehension of the same text; Schmitt found a linear relationship between percentage of words known and degree of reading comprehension. In the current study, although listening rather than reading

comprehension was utilized, a similar linear relationship was established; as scores on all the vocabulary measures increase, so do scores on the Story Retell measure, which suggests greater understanding of a story heard and retelling ability as word knowledge increases. This result was across the standardized vocabulary knowledge measures and experimenter-developed Target Word measures in the current study.

Despite just a moderate correlation between variables, the PPVT-4 growth model accounted for more variance in Story Retell performance than beginning of kindergarten PPVT-4 scores alone. This supports the use of repeated measures or growth scores, rather than a single outcome measurement of vocabulary knowledge, to best identify contributions to listening comprehension and narrative retell assessments. Vocabulary knowledge growth has proven more informative than a one-time examination of vocabulary at pre-test.

It is important to note that the total variance accounted for in the model using the PPVT-4 growth scores was approximately 27%, which is consistent with frequent findings within the Social Sciences field of values less than 50% when predicting human behavior (Frost, 2013); it suggests that variability in student performance on Story Retell can be attributed to myriad external factors than what is specifically captured by the chosen scoring method on the measure of story retell production.

Further, based on both regression analyses, the Expressive Target Word measure was the best predictor of the quality of a student's Story Retell, even after removing the target words from the Story Retell scoring. This is not surprising, considering the shared words between the two measures and the similar demands of the tasks; students are asked to generate responses without pictures or other external

supports on both the Expressive Target Word and Story Retell tasks. Even without the scoring of the target words within Story Retell, the inclusion of the same words on Expressive Target Word and Story Retell tasks reflects a student's vocabulary knowledge and its relationship to overall listening comprehension; as students improve their explicit word knowledge, their ability to understand such words within a story context improves as well.

The Story Retell measure shares all sixteen words with the Target Receptive measure; however, the receptive vocabulary measure accounted for less variance in Story Retell skills than other measures. This may be related to the visual prompts in the form of pictures on the Target Receptive measure that could potentially cue a student to a word meaning, whereas the Target Expressive measure requires student-generated responses to define words. Therefore, it is logical that these measures are better correlated than others included in the study; as student performance on the Expressive Target Word task increases, so does their performance on the Story Retell measure. Because a student must receptively understand a word by knowing the meaning before they can express it appropriately, the performance on these tasks, including use of synonyms, is a reflection of advancing literacy skills, including developing vocabulary knowledge and comprehension.

Study Limitations

The results of this study have limited generalizability; students were not selected to be representative of the entire United States, nor were they selected to be representative of the states in which they are located. Differences by gender, language status, or ethnicity, though controlled for, are not explicitly examined in the current

study and may also limit the generalizability of the findings; the results of the current study can only generalize to the populations examined: kindergarten students enrolled in school.

A significant limitation of the current study is the lack of a norm-referenced measure of listening comprehension. There is no measure for comparison with the experimenter-developed Story Retell measure. The structure of the Story Retell measure itself is modeled off of the Bus Story Test (Renfrew, 1969) – North American version; however, the Story Retell has not yet been compared to the Bus Story Test or other existing standardized and norm-referenced measures. Further, the Story Retell measure has not yet been fully validated. A brief examination of the internal structure of the measure itself was conducted in the current study; however, this is an initial examination of the measure with a select subset of participants in the Early Vocabulary Intervention study.

An additional limitation of the current study is the lack of pre-test for the Story Retell measure. Students were found to make gains in vocabulary knowledge, which is linked to improving literacy skills like comprehension (Krings, 2013; Oakhill & Cain, 2007; Lepola, Lynch, Laakkonen, Silvén, & Niemi, 2012; Beck & McKeown, 2007; Coyne et al., 2007; Ewers & Brownson, 1999); however, in the current study we cannot account for existing student skills related to listening comprehension and retell production. Without controlling for existing ability, student performance on the Story Retell measure within the current study cannot be directly attributed to the methods utilized.

A further limiting condition in the current preliminary study is the chosen method of scoring the Story Retell measure. This measure was not utilized as a general oral language measure, rather it is a measure of oral production for a story retell task that captures story retelling ability by story components and accurate sequencing; the current scoring procedure for the Story Retell measure does not capture additional language-based components. Such features to be considered for expanded scoring in the future include both micro- and macrostructure components as well as partial credit scoring for components and sequencing plot events. Structural components to include in future scoring would include the identification of characters, setting, and plot components, as well as utterance complexity as measured by total words and use of grammar, transitional language, and connective text (Hughes, McGillivray, & Schmidek, 1997). With increased emphasis on scoring language-based components, this Story Retell measure may begin to reflect the indices of narrative structure that tend to have strong concurrent and predictive associations with language and reading comprehension skills (Pankratz, et al., 2007). Improving the scoring of the Story Retell measure could better identify existing skills and predict later reading comprehension (Miller et al., 2006) and literacy success (Fazio, et al., 1996).

An additional limitation is the moderate correlation between the Target Word measures and the Story Retell measure. The Target Word and Story Retell measures are tools that were developed by the principal investigators of Project Early Vocabulary Intervention and are therefore measuring the same target vocabulary words taught by the intervention. Unfortunately, these measures are also not yet fully

validated because the study has just completed data collection and has moved into data analysis. These measures have been examined for internal reliability in the current study and all have demonstrated high reliability, with Cronbach's alpha coefficient above .85 on all experimenter developed tools; which is well above the recommended .7 (DeVellis, 2012). Future studies should provide an in-depth examination of these tools with the entire sample from the Early Vocabulary Intervention study to determine the validity as well as reliability for each measure.

Given the relationship between student demographic variables and academic success, particularly vocabulary and literacy development (Burchinal et al., 2011; Burchinal et al., 2010; Sepanski et al., 2010; Brooks-Gunn & Markman, 2005; Goldstein, Davis-Kean, & Eccles, 2005; Hart & Risley, 1995), another limitation of the current study is that there were no additional socioeconomic variables to consider across students. Individual student eligibility for free or reduced price lunch could be a helpful contributing variable to use as a proxy for socioeconomic status (Harwell & LeBeau, 2010). Additional factors including parental education levels, single- and dual-parent household status, verbal interactions with children (Entwisle & Astone 1994; Hauser, 1994; Strohschein, L., Tramonte, L. & Willms, J. D., 2009; Hart & Risley, 1995) are influential components not accounted for within the current study.

Further, overall sample size was large, but the participants identified as ELL were very limited. When broken into comparison groups (Intervention, Control, Reference), the English-only and ELL samples were unequal; therefore larger sample sizes are needed to provide clear further support for the reported results. Greater representation would better inform future research questions related to ELL student

performance on measures of listening comprehension and reproduction, such as the Story Retell measure. Thus, the present study may be seen as a pilot study that can stimulate a discussion on the research questions raised, and additional data is needed to shed further light on the issue.

Additionally, the effect sizes for significant results were very small to moderate; the eta squared value was barely greater than chance on the comparisons by group, claiming very little unique variance between groups, and Cohen's d suggested relatively small group differences on overall quality of Story Retell. This somewhat limits the significant findings that were found in the current study, especially related to Story Retell differences by group; the largest difference was between the Reference and Control groups (Cohen's $d = .69$), reflecting a near five point difference in scores on the Story Retell measure.

While differences in retell performance were found between groups, the small effect size suggests that vocabulary makes a small but distinct contribution to student performance on the Story Retell measure; likely myriad additional factors contribute to student performance on such a comprehension measure beyond the basic demographic variables controlled for in the current study (i.e. ethnicity, gender, language status). Extraneous factors may include any visually distracting materials, like posters or pictures on a wall, or noisy circumstances within the assessment environment, including other students nearby. Any of those peripheral variables may impact student output on a listening comprehension and oral production task and, therefore, total performance on measures. Efforts were made within the current study to minimize any distractions or interruptions when students were completing the Story

Retell measure; however, all possible influences could not be accounted for or prevented.

Implications For Future Research

Future studies should examine the influence of student word knowledge by utilizing multiple measures of listening comprehension during pre- and post-testing. Perhaps additional ratings of comprehension would provide a more accurate measure of student listening comprehension skills. Additionally, further examination is warranted to examine the internal validity of the Story Retell measure across cohorts of the study and reliability of scoring across additional raters.

An additional study is warranted to better examine the existing evidence that the narrative structure within a story retell task has strong concurrent and predictive associations with both spoken and written language comprehension (Terry, Mills, Bingham, Mansour, & Marencin, 2013; Pankratz, et al., 2007). This might include a more in-depth analysis of linguistic components within narrative production skills that have been established as important contributors to later skills (Spencer & Slocum, 2010; Carger, 1993; Morrow, 1985; Morrow et al., 1992; Serpell, Baker, & Sonnenschein, 2005); perhaps more critical analyses of participants' use of micro- and macrostructure components would better identify oral production skills through the Story Retell Task. Expanding the Story Retell scoring to include accurate grammar, use of target words or synonyms, length of utterance, and the overall amount of information from the story that has been included would better represent student performance and provide a comprehensive measure of skill. Specifically examining student use of target vocabulary words versus synonyms would be particularly

interesting. Using the underlying principles of the stages of word learning by Dale (1976), this research could examine student utterances on the Story Retell task in full detail, analyzing partial and full word knowledge as reflected in the use of target words or their synonyms. This examination would provide more explicit information linking student vocabulary knowledge and oral production performance in story retell tasks. Additional oral language components that were not investigated in the current study and that measure dimensions of story retell production beyond inclusion of story components would be critical to examine in the future. A future analysis of micro- and macrostructure components within the Story Retell task should include these comprehensive factors of partial and whole word knowledge along with language components that relate to literacy development (Griffin et al., 2004; Speece, Roth, Cooper, & De La Paz, 1999; Storch & Whitehurst, 2002) and better capture student oral production and greater language ability.

An additional future study should expand the results of the current study related to the limited participants identified as ELL students. Greater targeted enrollment and representation in future studies would better inform questions related to ELL student literacy performance. Future studies could specifically examine student performance on experimenter-developed measures of listening comprehension and reproduction, such as the Story Retell measure, in addition to standardized measures of listening comprehension, reading comprehension, and vocabulary knowledge.

It would also be interesting to consider additional influences beyond language status on vocabulary and comprehension outcomes, including ethnicity, gender,

socioeconomic status, parent education, and age. Longitudinal studies have documented the negative impacts of low family socioeconomic status and ethnic minority status on children's linguistic development (Dearing, McCartney, & Taylor, 2001; Elardo, Bradley, & Caldwell, 1977; Johnson, 2001; Siegel, 1982; Walker, Greenwood, Hart, & Carta, 1994). In many poor households, parental education is lower than in households with higher income levels, so resources beyond just finances, like quality interactions and time together, are limited (Feldman & Eidelman, 2009; Segawa, 2008); children are less likely to be read to by their parents or spoken to with high-quality exchanges (Coley, 2002; Hoff, 2003; Weizman & Snow, 2001; Hart & Risley, 1995). All of these factors contribute to student development of literacy skills like vocabulary and comprehension and may place a student at-risk if not studied and mitigated.

Future studies should also consider more longitudinal follow-up beyond the year of the intervention to examine whether vocabulary knowledge increases and listening comprehension skills were maintained through subsequent years of school. A one-time examination of vocabulary knowledge and comprehension outcomes is helpful in establishing increases in knowledge following a specific intervention program; however, it is important to also consider the long-term implications of such knowledge gains on comprehension skills. Specifically examining the long-term impact on comprehension skills would be particularly useful for populations that are determined to be at-risk for later academic difficulty, especially students coming from low socioeconomic backgrounds or those who are non-native English speakers.

Therefore, longitudinal follow-up would better identify the impact of early vocabulary intervention on later reading comprehension and literacy performance.

Finally, this study's findings begin to suggest this vocabulary intervention format is an effective way to supplement instruction with at-risk student populations without taxing the classroom teacher. The current study confirms the utility of an early vocabulary intervention initially established in previous studies (Loftus et al., 2010); however, a formal comparison between teacher-administered and trained lay-person-administered interventions has not been explored. Future studies comparing the individuals used to implement an intervention (teachers, non-teachers) could potentially replicate the current findings and support change in educational practice to include highly-trained, non-teacher staff; effective intervention from a trained lay-person could establish feasible means for delivering high-quality supplemental instruction to students without over-taxing both school financial and personnel resources.

Summary

The main goal of this study was to examine the effectiveness of vocabulary intervention on comprehension skills and to identify the best predictor of listening comprehension based on vocabulary knowledge and demographic variables. It was found that language status had no impact when considering Story Retell performance across different groups of students within the course of an academic program. Further, the current study demonstrated that all vocabulary measures were positively correlated with the Story Retell comprehension measure and that PPVT-4 growth accounted for more unique variance in Story Retell performance than beginning of kindergarten

PPVT-4 scores. The utility of measuring vocabulary growth is important to note; this study identified a better model fit using vocabulary growth over time to predict listening comprehension ability. Therefore, the findings from this study can be used to direct future consideration of the impact of vocabulary intervention on the development of complex literacy skills, like comprehension, most associated with academic success.

Appendix A: Consent Form

Consent Form for Participation in a Research Project University of Rhode Island

Principal Investigator: Dr. Susan M. Loftus

Study Title: Project EVI: Early Vocabulary Intervention

Your child is invited to participate in a kindergarten research study to help develop vocabulary and reading skills. Your child is invited to take part because your child's kindergarten class is participating in the project. The purpose of this project is to develop ways to help children increase vocabulary knowledge through listening to and talking about stories.

If you agree to participate, your child will be asked to take short language and literacy tests at the beginning and end of the project that will take approximately 30 minutes. Following the tests, your child may be placed in a group of two to four students to take part in reading activities. These activities will include listening to stories and talking about vocabulary words found in the stories. Activities will take place for 20 minutes per day, four days per week throughout the school year. Your child may also be randomly selected to take short language and literacy tests at the beginning and end of first and second grades.

We will try to keep classroom disruptions to a minimum. For example, all tests and reading activities will be scheduled at times so that your child will not miss the introduction of new material or special class activities. Benefits of participating in this project may include increased vocabulary knowledge and comprehension. There are no known risks to participating in this project.

Any information collected during this project that could identify your child will be kept confidential. Meaning, nobody outside of the project will be given information that could identify your child. The information will be stored in a locked cabinet, kept in the offices of Dr. Loftus at the University of Rhode Island, and will be available only to project staff. All information that could identify your child will be kept for three years and then destroyed. The information collected in this project may be shared with school administrators, published in professional journals or presented at professional conferences but no information that could identify your child will be included.

Your child does not have to be in this study if you do not want them to be. If you agree to have your child take part in the study, but later change your mind, you may drop out at any time. No one will be mad and your child will not suffer in any way if you decide that you do not want your child to participate. We will also ask your child's permission to participate. Only if both you and your child give permission will your child be included in the study.

We will be happy to answer any question you have about this study. If you have further questions about this project, or you are not happy with the way this study is performed, you may contact the principal investigator Susan Loftus at 401-874-4246. If you have any questions about your child's rights as a research subject, you may contact the Office of the Vice President for Research, 70 Lower College Road, Suite 2, University of Rhode Island, Kingston, Rhode Island, telephone: (401) 874-4328.

If you agree that your child can participate, please complete and sign this form, and return it to your child's classroom teacher as soon as possible.

Consent Form for Participation in a Research Project University of Rhode Island

Principal Investigator: Dr. Susan M. Loftus

Study Title: Project EVI: Early Vocabulary Intervention

Authorization:

I am the parent or legal guardian of _____. I give permission for my child to take part in the research project described above. Its general purposes and the particulars of involvement have been explained to my satisfaction. My signature also indicates that I have received a copy of this consent form.

_____

Signature/Date

Name of Student

_____

Printed Name

Please sign both consent forms, keeping one for yourself.

Appendix B: Measure of Target Word Knowledge

Early Vocabulary Intervention **EXPRESSIVE TARGET WORDS**

Name _____	Sex: ☐ F ☐ M
School _____	
Teacher _____	
Examiner _____	Date _____

DIRECTIONS:

I'm going to ask you about some words and I want you to tell me what they mean.

So if I said, "Tell me what the word cat means," you could say, "A cat is a furry animal that says meow."

Now you try: Tell me what the word dog means.

Question	Response (verbatim)
1. Tell me what the word <u>fleet</u> means.	
2. Tell me what the word <u>glimmer</u> means.	
3. Tell me what the word <u>drenched</u> means.	
4. Tell me what the word <u>peculiar</u> means.	
5. Tell me what the word	

<i><u>timid</u> means.</i>	

6. Tell me what the word <i><u>stumble</u></i> means.	
7. Tell me what the word <i><u>collide</u></i> means.	
8. Tell me what the word <i><u>narrow</u></i> means.	
9. Tell me what the word <i><u>active</u></i> means.	
10. Tell me what the word <i><u>ancient</u></i> means.	
11. Tell me what the word <i><u>mischievous</u></i> means.	
12. Tell me what the word <i><u>desire</u></i> means.	

13. Tell me what the word <u>option</u> means.	
14. Tell me what the word <u>request</u> means.	
15. Tell me what the word <u>nestle</u> means.	
16. Tell me what the word <u>perilous</u> means.	
17. Tell me what the word <u>enormous</u> means.	
18. Tell me what the word <u>startle</u> means.	
19. Tell me what the word <u>slumber</u> means.	

20. Tell me what the word <u>stalk</u> means.	
21. Tell me what the word <u>scraggly</u> means.	
22. Tell me what the word <u>prod</u> means.	
23. Tell me what the word <u>gather</u> means.	
24. Tell me what the word <u>hatch</u> means.	
25. Tell me what the word <u>beacon</u> means.	
26. Tell me what the word <u>labor</u> means.	

Appendix C: Receptive Picture Vocabulary Measures of Target Words

Receptive Target Word Measure

SAY: *Now I'm going to show you some pictures. I want you to point to the picture that shows the word I say.*

Question	Response	
<i>Point to the picture that shows <u>narrow</u>.</i> (show stimulus sheet 1)	1	narrow
	3	4
<i>Point to the picture that shows <u>gather</u>.</i> (show stimulus sheet 2)	1	2
	3	gather
<i>Point to <u>active</u>.</i> (show stimulus sheet 3)	1	active
	3	4
<i>Point to <u>enormous</u>.</i> (show stimulus sheet 4)	1	2
	3	enormous
<i>Point to <u>stalk</u>.</i> (show stimulus sheet 5)	stalk	2
	3	4
<i>Point to <u>fleet</u>.</i> (show stimulus sheet 6)	fleet	2
	3	4
<i>Point to <u>peculiar</u>.</i> (show stimulus sheet 7)	peculiar	2
	3	4
<i>Point to <u>startle</u>.</i> (show stimulus sheet 8)	1	2
	3	Startle

<i>Point to <u>perilous</u>.</i> (show stimulus sheet 9)	1	2
	3	perilous
<i>Point to <u>prod</u>.</i> (show stimulus sheet 10)	1	prod
	3	4
<i>Point to <u>slumber</u>.</i> (show stimulus sheet 11)	1	2
	slumber	4
<i>Point to <u>nestle</u>.</i> (show stimulus sheet 12)	1	2
	3	nestle
<i>Point to <u>scraggly</u>.</i> (show stimulus sheet 13)	1	2
	3	scraggly
<i>Point to <u>stumble</u>.</i> (show stimulus sheet 14)	1	2
	stumble	4
<i>Point to <u>ancient</u>.</i> (show stimulus sheet 15)	1	2
	3	ancient
<i>Point to <u>drenched</u>.</i> (show stimulus sheet 16)	1	2
	drenched	4

Appendix D: Story Retell

Directions:

Read each story aloud to student while displaying the picture corresponding to each story. When prompt for retell, turn page so picture is hidden.

SAY: I brought a picture to show you while I tell you a story. After I read the story to you, I will ask you to tell it back to me. I would like to hear anything you have to say about the story. I have a recorder here so that I can listen to what you say later.

Story 1: (cat picture)

*There once was a kitten named Muffy who liked to be very active.
One day Muffy found an enormous tree and tried to climb up it.
Half way up, she was startled by a baby bird, so she ran back home and nestled
with her mother.*

Prompt:

“Good listening! Now I want you to tell the story to me.”

Wait for student retell. After the child finishes, prompt for more using:

“Can you tell me anything more?” or “What else happened?”

Story 2: (cave picture)

*Riley was a scraggly dog who was very brave.
He liked to do perilous things.
One day Riley even went into a dark cave and prodded a big bear!
It was a good thing that the bear was slumbering.*

Prompt:

“Good listening! Now I want you to tell the story to me.”

Wait for student retell. After the child finishes, prompt for more using:

“Can you tell me anything more?” or “What else happened?”

Story 3: (butterfly picture)

*One day in the park, Jose and Sandra saw a butterfly and decided to stalk it.
The butterfly was so fleet that it was really hard to catch.
They were having fun trying to catch the butterfly until Jose stumbled and fell into
a puddle!
Sandra helped Jose up and laughed. “You are drenched!” she said.
They laughed and they ran off together through the park.*

Prompt:

“Good listening! Now I want you to tell the story to me.”

Wait for student retell. After the child finishes, prompt for more using:

“Can you tell me anything more?” or “What else happened?”

Story 4: (castle picture)

Jack and his crew of pirates went to look for treasure in an ancient castle.

They walked through a very narrow hallway, and found a room of gold!

They gathered up as much gold as they could carry.

Suddenly, Jack heard a peculiar sound. “Let’s get out of here,” he yelled, and they ran out to their ship and sailed away!

Prompt:

“Good listening! Now I want you to tell the story to me.”

Wait for student retell. After the child finishes, prompt for more using:

“Can you tell me anything more?” or “What else happened?”

Appendix E: Story Retell Scoring Rubric

Client ID:

Overall Score:

Total TW use: _____

Total components used: _____

Total sequenced correct: _____

Story 1:

Use of target word (synonym)	Score
1. Active (anything related to being active: move around, play, climb trees)	1 0
2. Enormous (big, plump, tall, large, huge, or anything related to being big)	1 0
3. Startle (scared, jumped, surprised)	1 0
4. Nestled (cuddled, hugged)	1 0

TW used: _____

Story sequence: Key components	Score
1. Character ID: Muffy (kitten/cat)	1 0
2. Character likes to be active	1 0
3. Find & climb tree	1 0
4. Started by baby bird	1 0
5. Ran back home	1 0
6. Nestled with mother	1 0

Sequence components used: _____

Story sequence in order? Yes = 1; No = 0	1 0

Total Score: _____

Story 2:

Use of target word (synonym)	Score
1. Scraggly (messy, fuzzy)	1 0
2. Perilous (dangerous, scary)	1 0
3. Prod (poke, touch)	1 0
4. Slumbering (sleeping, snoring, snoozing)	1 0

TW used: _____

Story sequence: Key components	Score
1. Character ID: Riley (dog)	1 0
2. Character is brave	1 0
3. Likes doing dangerous things	1 0
4. Goes into cave	1 0
5. Prodded big bear	1 0
6. Bear was sleeping	1 0

Sequence components used: _____

Story sequence in order? Yes = 1; No = 0	1 0

Total Score: _____

Story 3:

Use of target word (synonym)	Score
1. Stalk (following, sneaking up/behind)	1 0
2. Fleet (fast, speedy, quick)	1 0
3. Stumbled (tripped, fell, not looking where going)	1 0
4. Drenched (wet, soaked)	1 0

TW used: _____

Story sequence: Key components	Score
1. Character ID: Jose/Sandra, butterfly	1 0
2. Stalking butterfly	1 0
3. Butterfly was hard to catch/trying to catch it	1 0
4. Stumble into the puddle	1 0
5. Sandra laughs, "you're drenched" & helps Jose up	1 0
6. Run off through the park	1 0

Sequence components used: _____

Story sequence in order? Yes = 1; No = 0	1 0

Total Score: _____

Story 4:

Use of target word (synonym)	Score
1. Ancient (old)	1 0
2. Narrow (thin, skinny)	1 0
3. Gathered (collect, take/took)	1 0
4. Peculiar (strange, weird, odd)	1 0

TW used: _____

Story sequence: Key components	Score
1. Character ID: Jack & pirates	1 0
2. Look for treasure in the castle/they were at the castle	1 0
3. Hallway into room of gold	1 0
4. Found/take/gather the gold	1 0
5. Heard the sound and yelled to leave	1 0
6. Ran to ship and sailed away	1 0

Sequence components used: _____

Story sequence in order? Yes = 1; No = 0	1 0

Total Score: _____

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