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Determining the Differences between English Language Learners Who Exit Services and English Language Learners Who Become Long-Term ELLs: A Discriminant Analysis

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by
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Abstract

The purpose of this study was to find study differences between ELLs who exit ELLs services and ELLs who do not exit based on regularly collected demographic and standardized achievement data. The variables included: ACCESS scores for reading, writing, speaking, and listening, state CRT scores for reading and math, MAP benchmark scores for reading and math, initial English proficiency, IEP status, number of years in the US education system, and the following risk factors, attendance, suspension, transiency, and retention. The study was based on data related to ELLs in third, fifth, and ninth grade from one urban school district in the west during the 2013-14 school year. There were 1096 third grade cases, 591 fifth grade cases, and 261 ninth grade cases.

Six discriminant analyses were calculated to find the variables with the highest predictive power. One discriminant function was produced for each analysis at each grade level. The variables that had the highest predictive power in the third grade discriminant function were the ACCESS scale scores for reading, writing, and listening. The variables that had the highest predictive power in the fifth grade discriminant function were the ACCESS reading and writing scale scores. The variables that had the highest predictive power in the ninth grade discriminant function were the ACCESS comprehension composite score and the writing scale score.

In addition the graduation rates for seniors during the 2013-2014 school year who had been ELL at one time was different depending on when they exited ELL. Students who exited in third grade had an 82% graduation rate. Students who exited in fifth grade had a 72% pass rate, and students who exited in ninth grade had a 59% pass rate.

The findings in this study indicate English as a second language development and literacy development for ELLs who enter the US school system in kindergarten are inseparable.

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This dissertation is dedicated to my parents, Adelle Van, Colin Wilkins, and Allen Van. It was through your belief that I could do this that I found the courage, persistence and time

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Chapter One: Statement of the Problem and Research Question

Over the last 30 years in the United States, there has been a significant increase in the number of K-12 students whose first language is not English and who do not demonstrate expected results on standardized measures of achievement. From 1990 to 2005, the percentage of English language learners (ELLs) in public schools has increased by 152% nationally while the overall population has remained relatively stable. As a result, 10% of the current school-age population is designated ELL (Aud et al., 2012; National Center for Education Statistics, 2008, 2010). These students include first, second, and third generations. The distribution is different between elementary and secondary schools. There are more ELLs in elementary schools than in secondary schools. In PK to fifth grade, 24% of students are first generation, foreign-born; 59% of students are second generation, born to immigrants; and 18% are third generation plus, born to parents who were born in the United States. In sixth to twelfth grades, 44% of students are first generation, 27% are second generation, and 29% are third generation (Capps et al., 2005).

It appears that ELLs perform significantly lower than their monolingual English-speaking peers on standardized tests of achievement (National Center for Education Statistics, 2010). For example, ELLs score significantly lower than non-ELL students on the National Assessment of Educational Progress (NAEP). On the 2009 NAEP reading assessment for fourth grade, the ELL average scale score was 188 while the correspondent non-ELL average scale score was 223. The scale score for the NAEP ranges from 0 to 500. Twenty-nine percent of all ELLs scored at or above basic while 69% of non-ELLs scored at or above basic. For the NAEP, basic indicates a partial

mastery of knowledge and skills required for proficient work at the specified grade level. Only six percent of ELLs scored at or above proficient while thirty-four percent of non-ELLs scored at or above proficient. For the NAEP, proficient indicates solid academic performance for the specified grade level.

On the 2009 NAEP reading assessment for eight grade, the ELL average scale score was 219 while the non-ELL average scale score was 265. Twenty-five percent of ELLs scored at or above basic while sevent-six percent of non-ELLs scored at or above basic. Only three percent of ELLs scored at or above the proficienct mark while thirty-two percent of non-ELLs scored at or above the proficienct mark. NAEP has tracked ELL student achievement as a subgroup since 2003. The above example is illustrative of the results across the years, and it indicates that achievement for ELLs has consistently lagged behind non-ELL students. In addition, over 50% of ELLs in secondary schools are second- or third-generation plus, indicating that in spite of having all of their schooling in the United States, these individuals are not learning enough English to be re-designated English proficient (RFEP) by the time they reach middle school and are at a greater risk of dropping out of school (Capps et al., 2005; Menken & Kleyn, 2010; Short & Fitzsimmons, 2007).

There are steep costs for both the ELLs who drop out of high school and for society as a whole (Callahan, 2013). English learners are at greater risk of dropping out because they often belong to multiple at risk groups, including low socioeconomic, minority status, and academic risk groups. In general, labor market outcomes are dismal for students who drop out of school in terms of salary, unemployment experiences, tenure opportunities, and social or economic mobility. There are multiple costs to society

(National Dropout Prevention Center, 2015). Each year the cost of dropouts to the country is greater than $200 billion dollars in lost earnings and unrealized tax revenue. In addition, there is a link between crime and failure to graduate. The majority, 75%, of America's state prison inmates dropped out of high school. High school dropouts are 3.5 times more likely than high school graduates to be arrested. The high cost in the failure to adequately educate ELLs impacts individual students and the economic health of any community that includes ELLs.

Description of the Study

The study is an exploratory discriminant analysis designed to parsimoniously describe distinct differences between ELLs who exit ELL status in third, fifth, and ninth grade, and it is an analysis of ELLs who do not exit this status because of demographic information, risk factors, and state achievement and English language proficiency assessments. The data for each case were based on attributes that are regularly collected for all students in a large urban district in the Western United States. Discriminant analysis was used for this study because the data set and research question were appropriate for the method. One of the purposes of discriminant analysis is to describe group differences based on interval and categorical data. The question and data set matched both the purpose and the variable type parameters for the research method. For this study, two categorical groups were established: ELLs who exit and ELLs who do not exit. The predictor variables included both categorical and interval data. They were based on standardized scale scores on English language arts (ELA) and math achievement, English language proficiency scale scores, risk status, special education designation, and number of years in the U.S. school system.

The cases were taken from the ELL group who began the 2013-2014 school year in grades three, five, and nine. The cases were taken from the following sample: 1,378 ELLs from third grade, 765 ELLs from fifth grade, and 392 ELLs from ninth grade. The cases were grouped for analysis into a total of six groups. Group 1 was composed of third-grade students who met state exit criteria and were redesignated to non-ELL status. Redesignated ELLs are referred to as RFEP by the U.S. Department of Education. Group 2 was third-grade students who did not meet the exit criteria; these students entered into fourth grade with the ELL designation. Group 3 was composed of fifth-grade students who met state exit criteria and were redesignated to non-ELL status. Group 4 was fifth-grade students who did not meet the exit criteria; these students entered sixth grade with the ELL designation. Group 5 was composed of ninth-grade students who met the exit criteria and were redesignated to non-ELL status. Group 6 was composed of ninth-grade students who did not meet the exit criteria; these students entered tenth grade with the ELL designation.

The discriminant analysis was calculated multiple times for each grade level group. Three of the predictor variables were also criterion variables. Math achievement, ELA achievement, and English language proficiency scale scores were used to determine exit status criteria; therefore, these variables were different across groups. Discriminant analysis was computed without the criterion variables to better evaluate the influence of the other predictor variables. The final analysis used the hierarchical discriminant method of analysis, depending on the initial results.

Statement of the Problem

Nationally, Long-term English Language Learners (LTELLs) represent more than 40% of the secondary ELL population (Short & Fitzsimmons, 2007). LTELLs do not acquire English and language skills at expected rates, and these students do not perform well on standardized academic achievement tests. The prevalence of LTELLs in the school systems is a complicated situation, and the contributing factors are not well understood due to a lack of research and a lack of specificity in defining the subgroups of ELLs (Menken & Kleyn, 2009; Short & Fitzsimmons, 2007).

Within the population of ELL, there are distinct subgroups (Menken & Kleyn, 2012). ELLscan be short-term ELLs because they have been in the United States for a short period of time and require instruction in how English works as a language. This group of short-term ELLs, depending on the age they enter into school and their educational background, may also need instruction in early literacy skills.

LTELLs have been in the U.S. system of education for seven or more years, have not passed a basic English proficiency test, and are still considered ELLs (Menken & Kleyn, 2012). Within the long-term ELL population, there is diversity. Menken and Kleyn (2009, 2012) described three long-term ELL subgroups. The first is the group of LTELLs who have had inconsistent schooling in the United States and have moved between various types of program services. The second is the group of LTELLs who have moved between the U.S. and their country of origin and have had educational experiences in both countries. The third is the group of LTELLs who have had ELL instructional programs that were mismatched to their instructional needs. However, the

relationships between group characteristics and attaining achievement are not well understood.

Within the broad body of research on ELLs, many students who began as ELLs pass a state basic English proficiency test to become redesignated English language learners (RELL) and are no longer considered part of the ELL population. As a result, the relative success of these students may not be accounted for in analyses. However, beyond the scores on the English proficiency test, the characteristics of these students associated with this type of exit are not well understood.

Rarely are former ELLs included as a subgroup and even more rarely is the distinction made between the ELL subgroups to differntiate between short-term ELLs and LTELLs. This makes it challenging to interpret the results. ELL research is often conducted and interpreted separately by elementary research and secondary research rather than a being done as a continuum, making it difficult to see distinct differences between subgroups over time. Research focused on the characteristics of the various groups of ELLs is scarce (Kim & Hermann, 2008; Menken & Kleyn, 2010).

Research Question

The purpose of the current study was to use discriminant analysis to investigate the extent to which selected predictor variables are associated with successful exit from ELL programs. That is, to what extent can a selected set of predictor variables discriminate between students who successfully exit ELL programs and students who do not exit ELL programs? The study considered three groups of students in the third, fifth, and ninth grades. Specifically, the study addressed the following question:

How are ELLs who meet district-determined exit criteria different from and similar to ELLs who do not meet the district-determined exit criteria and keep the ELL designation?

The discriminant analysis was based on selected measures of student achievement and selected student demographic characteristics.

Definitions of Terms

In this section, the following definitions apply for the purpose of the current study. The definitions are taken from current literature related to ELLs.

Accommodation. This term can be assumed when appropriate modifications or changes to tests and testing procedures so that ELL content knowledge is more accurately measured takes place. Appropriate accommodations are used to facilitate the valid participation of ELLs in assessments without undermining the test construct (Bardack, 2010). Accommodations for ELLs are varied and widely used; however, there is some controversy around what constitutes effective modifications for ELLs (Abedi, 2002).

Annual measurable achievement objectives (AMAOs). AMAOs are state requirements or indicators for measuring ELL progress in learning English, measuring the attainment of English language proficiency, and checking the ELL annual yearly progress (AYP) in meeting state standards. Local education agencies that receive Title III funding under the Elementary and Secondary Education Act (ESEA) for ELL programming are held accountable for the achievement of ELLs (Bardack, 2010).

English language learner (ELL). An ELL is an individual who is in the process of actively acquiring English and whose primary language is one other than English. An ELL is also a national-origin-minority student who is LEP according to a state's English

language proficiency exam. This label affords students of this categorization access to specialized English language support services at public schools (Bardack, 2010; Office of Civil Rights, 2005).

English language proficiency assessment (ELPA). English language proficiency assessments are tests that measure the English language (speaking, listening, reading, and writing) skills of students who have limited English proficiency. Title III of the Elementary and Secondary Education Act (reauthorized as the No Child Left Behind Act of 2001) requires these tests for all students in schools served by the state educational agency (Bardack, 2010).

English only. English only refers to students who are monolingual in English. English is the language they use to communicate in both social and academic contexts.

English as a second language (ESL). ESL is a program of techniques, methodology, and special curricula that is designed to teach ELLs English language skills. These skills may include listening, speaking, reading, writing, study skills, content vocabulary, and cultural orientation (Office of Civil Rights, 2005).

First language, primary language, or home language. These terms have several possible meanings for ELLs. The term could refer to the first language learned, the stronger language, the native language, and or the language most frequently used (Bardack, 2010).

Fully (or fluent) English proficient (FEP). This is a term used by the U.S. Department of Education for students designated fluent (or fully) English proficient (FEP). This is typically a designation that is given on entrance to public schools and indicates that the language minority student is not eligible for ESL services because the

student has an adequate level of English proficiency for school (Bardack, 2010; Office of Civil Rights, 2005).

Heritage language. Heritage language is the language that ELLs consider to be their native, home, or ancestral language (Bardack, 2010).

L1. L1 is defined as an ELL's first language or native language. This term may be used to refer to persons who are speaking in their native language (Bardack, 2010).

L2. L2 is defined as an ELL's second language, often used in the context of "L2 student" to designate students who are nonnative speakers of a language (Bardack, 2010). In the United States, this would predominantly be English.

Language minority students. Students who come from homes in which a language other than English is spoken are language minority students (August & Shanahan, 2005). This is a broad category that includes students who are ELLs, bilingual, or redesignated fluent English proficient (RFEP; Kieffer, 2008).

Language proficiency. Language proficiency can be measured by the degree to which the student exhibits control over the use of language, including expressive and receptive language skill in the areas of phonology, syntax, vocabulary, and semantics and in the areas of pragmatics, or language use within various domains or social circumstances. Proficiency is judged independently and does not imply lack of proficiency in another language (Office of Civil Rights, 2005).

Limited English proficient (LEP). Students designated limited English proficient are referred to as LEP. This is typically a designation that is given on entrance into public schools and indicates that the language minority student is eligible for ESL

services because the student does not have an adequate level of English proficiency for school (Office of Civil Rights, 2005).

Literacy. Halliday (1993), Scarcella (2003), and Schleppegrell (2004) define literacy as not only reading and writing through the processes of decoding and encoding but also as higher order cognitive skills including conceptualizing, inferring, inventing, hypothesizing, and oral language development. Inherent in literacy is social interaction between language and content to create meaning.

Long-term English language learners (LTELLs). Long-term ELLs are defined as students who have been in the U.S. school system for seven or more years, have not passed the state-designated English proficiency assessment, and have limited academic literacy according to state measures of academic achievement (Menken, Kleyn, & Chae, 2012; Kim & Garcia, 2014).

Non-English proficient (NEP). Non-English proficient is a term used by the U.S. Department of Education for ELLs designated non-English proficient (NEP). This is typically a designation that is given on entrance to public schools and indicates that the language minority student is eligible for ESL services because the student is very limited in English proficiency. ELL often replaces this term (Office of Civil Rights, 2005).

Redesignated fluent English proficient (RFEP). This is a term used by the U.S. Department of Education for ELLs who are initially assessed as LEP but who have been reclassified after demonstrating fluent English skills (Bardack, 2010).

Title III. Title III of the No Child Left Behind Act of 2001 (NCLB) is a part of the legislation enacted to ensure LEP students, including immigrant children and youth,

develop English proficiency and meet the same academic content and achievement standards that other children are expected to meet (Bardack, 2010).

Contribution

This study can be seen as contributing to the broader body of ELL research in three ways. First, it describes the differences between ELLs who exit and ELLs who do not, and these differences are explored in the third, fifth, and ninth grades and are based on commonly collected data. Second, it identifies the need to clearly define the characteristics of various ELL subgroups that can be associated with exit status. Third, it identifies the need to develop longitudinal research in P-12 that is related to English development and literacy development for ELLs who come into the system in primary grades; this can help teachers and other researchers better understand and make educational decisions about ELLs.

Chapter Two: Literature Review

This literature review will focus on four key aspects of the ELL research as it relates to LTELL: LTELL research, ELLs and literacy development, standardized achievement measures, and instructional practice for ELLs. There is very limited research on LTELL. The research that exists will be discussed. At this time, there is no specific research on LTELLs and literacy; however, there is existing research that compares literacy development between monolingual English speakers and ELLs. There are indicators that LTELLs lack academic literacy; therefore, a comparison of literacy in this area may inform what ELLs need in literacy instruction to not become LTELLs. Standardized achievement measures are used for both school and district evaluations and for student placement. The strengths and limitations of the measures in relationship to language minority students, including ELLs and former ELLs, will be examined. Finally, research related to quality of instruction for ELLs will be discussed.

Research Related to Long-Term ELLs

Research that clearly defines LTELL and is focused specifically on questions related to LTELLs is scarce (Kim & Garcia, 2014; Menken, 2012). An extensive search using multiple search terms resulted three peer-reviewed studies focused on LTELLs. Journal articles that focused on LTELLs but were not empirical studies or were not peer-reviewed were not considered for this literature review.

There were three reports produced on ELLs in Nevada, California, and Texas; these reports were not peer-reviewed but did include specific data on LTELLS. The reports are included in this literature review because they provide both demographic data

and descriptive statistics on LTELLs for those states. However, the lack of peer review is a limitation for all three reports.

The first report was produced by the Migration Policy Institute and focused on longitudinal data that was collected by the University of Texas at Dallas Education Research Center. Both ELLs and non-ELLs were tracked from first grade through high school, and this tracking was based on the Texas state achievement math and reading tests. There were a total of 133,698 students, of who 24,566 had been identified as ELL at some point in their education (Flores, Batalova, & Fix, 2012).

The second report was produced by REL West's English Learner Alliance and focused on the characteristics of LTELLs and struggling RELLS. The data were obtained from the Nevada Department of Education. The data set included demographic and achievement data for three cohorts of ELLs across six years, 2006 and 2007 to 2011 and 2012. The cohorts were ELLs who were in kindergarten ($N = 6579$), third, grade ($N = 4956$), and sixth grade ($N = 2200$) during the 2006 to 2007 school year (Haas, Huang, & Tran, 2014).

The third report was produced by Californians Together and based on a survey data set that was conducted by Californians Together. District staff in 40 California school districts conducted the survey. There were 175,734 ELLs in grades six through twelve. Of the secondary ELLs, 59% of the ELLs in grades six through twelve were considered LTELLS. These students had been in the school system for at least six years and had not passed the federally mandated English proficiency test (Olsen, 2010).

Consistent in all three reports was the fact that LTELLs in middle and high school had higher incidences of retention, referral to special education, indicators of low socio-

economic status, and transiency (Haas et al., 2014; Olsen, 2010; Short & Fitzsimmons, 2007; Kim & Garcia, 2014).

There were three peer-reviewed empirical studies that focused on LTELLs. Two of the studies were qualitative and one was a mixed-methods study. The two qualitative studies were similar in their results. Kim and Garcia (2014) used the naturalistic inquiry approach to increase the understanding of the educational experience of 13 LTELLs in one school. Menken, Kleyn, and Chae (2012) used semistructured interviews and the descriptive approach to define the characteristics of LTELLs in New York City high schools; the researchers attempted to find the educational factors that contributed to the 29 students in three high schools becoming LTELLs.

In both studies, the researchers found that the students had inconsistent educational programming across their years in school. One type of inconsistent programming included movement between types of services. For example, the students moved between bilingual and English-only programs. Another type of movement was when students moved from language support services in elementary school that had an ESL staff person to a lack of language support services once students reached middle and high schools.

The participants in both studies lacked academic literacy (Menken et al., 2012; Kim & Garcia, 2014). Both academic achievement measures and course grades were used as indicators of students' academic literacy. The participants in both studies had low academic performance. This is consistent with the findings from other reports based on California survey data and data from the National Center for Education Statistics (Olsen, 2010; Short & Fitzsimmons, 2007). For some of the participants, this is in contrast with

student self-perception. The students frequently saw themselves as motivated, hardworking, and doing well, but they stated that school was challenging. The academic programming that was evaluated in both studies, including language support services, was not designed for the academic needs of LTELLs (Menken et al., 2012; Kim & Garcia, 2014). ELL programming in middle and high schools tends to focus on short-term ELLs who have entered the U.S. with adequate schooling in their native language; these programs tend to focus on the structure of learning English as opposed to academic language development in English. This is consistent with one of the findings in a report (Short & Fitzsimmons, 2007) that identified a lack of appropriate and flexible programming as one of the challenges for meeting the needs of adolescent ELLs.

The researchers in both studies contributed to further refining the definition of LTELLs (Menken et al., 2012; Kim & Garcia, 2014). In both studies, LTELLs were defined as students who had been in the U.S. school system for seven or more years, had not passed the state- designated English proficiency assessment, and had limited academic literacy according to state measures of academic achievement.

Literacy Development for Language Minority Students

The researchers who have completed studies on LTELLs point to inadequate literacy skills in English. The following section compares literacy development between monolingual English speakers and ELLs. Recognizing the similarities and differences between the two groups' literacy development provides a framework for analyzing literacy assessment results. In 2006, The National Literacy Panel published a comprehensive literature review on developing literacy in second-language learners (August & Shanahan, 2006). Second-language literacy development is complex, and the

components of literacy word-level skills, text-level skills, and oral language skills are highly interconnected. In that report, word-level skills, text-level skills, and oral language skills were separated and used as a way to organize the research (August & Shanahan, 2006). The researchers of the report provided a logical structure to delineate the components for clarity. This section of the literature review will have three parts: early literacy and word-level skills development of language minority students, text-level skills development of language minority students, and the relationship of second-language oral proficiency to second-language literacy.

Early Literacy and Word-Level Skills

A clear understanding of the differences between monolingual and language minority students in their development of word-level skills is a critical step toward developing systemic approaches to early literacy instructional decision-making in both the mainstream classroom and in additional support measures. The review of the research related to early literacy and word-level skills, text-level skills, and oral language skills compose the three parts of this section. Part one focuses on studies about similarities between language minority students and monolingual native English speaking students in their development of word-level skills and early literacy skills. Part two focuses on studies about differences between language minority students and monolingual English speaking students' development of word-level skills and early literacy skills. Part three summarizes the section.

Similarities in word-level skill development. According to a report (August & Shanahan, 2006), monolingual English users and language minority students are similar in word-level development. Word-level performance, skills such as phonological processing and concepts of print, predict later literacy development in language minority students, and are consistent with monolingual English users. Phonemic awareness, rapid naming, and phonological memory, assessed in the native language and English (as a second language), predict word identification skills in English (Lesaux & Geva, 2006). Research conducted since the report was published can be seen as confirming and extending the research utilized in the report.

Researchers of two studies confirmed the similarities between ELLs and monolingual English speakers' word-reading skill development in the primary grades. According to the first study, previous research that indicated that phonological awareness is an essential component of a child's ability to develop grapheme-phoneme correspondence skills and is also a predictor of word-reading skills was supported (Rinaldi, 2008). In the study, the researchers used rapid automatized naming (RAN) and phonological awareness tests as independent variables to predict later first-grade oral reading proficiency. At Time 1, RAN and phonological awareness accounted for 26% of the variance in native English speakers and 24% of the variance in ELLs. At Time 2, RAN and phonological awareness accounted for 27% of the variance in native English speakers and 29% of the variance in ELLs. The unique variance explained by RAN decreased over time; however, the unique variance explained by phonological awareness increased over time. According to the results, the underlying processes for both groups are similar.

In the second study, the researchers used beginning of kindergarten scores in English letter naming, vocabulary, and initial sound fluency to predict later first-grade initial oral reading proficiency. The monolingual English speakers and ELLs were similar in that alphabet knowledge and phonological awareness predicted early oral reading fluency (Yesil-Dagli, 2011). The results of this study are further evidence of the similarities between ELLs and monolingual English speakers in early literacy skills.

Differences in word-level skill development. This section will discuss studies with results indicating that even though there are similarities between monolingual English speakers and ELLs in their development of word-level reading skills in kindergarten through second grade**,** there are distinct differences. The differences include impacts of phonological awareness, vocabulary knowledge, and time to acquire early literacy skills.

Phonological awareness. According to the results of two studies, phonological awareness had a greater impact on word-reading skills for ELLs than for monolingual English speakers. Geva, Yaghoub-Zadeh, and Schuster (2000) found that phonological awareness in English for ELLs predicted eight to eighteen percent of the unique variance for predicting word recognition skills*,* whereas phonological awareness only predicted three to nine percent of the unique variance for monolingual English speakers. Yesil-Dagli (2011) found that kindergarten scores in English letter names, vocabulary skills, and initial sound fluency predicted first-grade oral reading proficiency. For native English speakers, the English letter name was the best predictor of later reading proficiency*,* and this was followed by initial sound fluency and then vocabulary. For ELLs, the best predictor was the English letter name*,* followed by vocabulary and then*,*

initial sound fluency. Although phonological awareness is important and necessary for all beginning readers, for ELLs the impacts are more significant.

Vocabulary knowledge. Vocabulary knowledge also plays a significant role in learning to read for ELLs. Consistently across research studies, ELLs in the primary grades score 1.5 to *2* grade levels lower on vocabulary measures. The gap between Monolingual English speakers and ELLs are not drawing closer in the primary grades (Burgoyne, Kelly, Whiteley, & Spooner, 2009; Hutchinson, Whiteley, Smith, & Conners, 2003; Yesil-Dagli, 2011). The relative similarity in development of word-level skills, in spite of the underlying differences in receptive and expressive vocabulary, provides more evidence that prerequisite reading skills for monolingual English speakers and ELLs are different.

Time to acquire language. Even though ELLs differ from native English speakers in English proficiency, there is evidence that ELLs do not differ in their development in word recognition skills and reading accuracy. In addition, ELLs require more time in the primary grades to meet reading benchmarks (Hutchinson et al., 2003; Geva et al., 2000).

A researcher from one study assessed 332 ELL kindergarten students with the PALS-K, an instrument used to evaluate reading readiness, in the fall and spring (Gouleta, 2002). There was a difference of 46 points between fall and spring benchmark scores. The mean gain score for ELLs was 47.8 points but only 42% of the ELLs passed the spring benchmark score. The researchers concluded that the results of the study provide evidence that ELLs need more time to meet standardized assessment benchmarks that are related to early reading skills because the ELLs had comparable growth to

English-only students, but they frequently started with fewer skills than the English-only students.

In grades kindergarten through second, a significant amount of the reading instruction is focused on teaching students the process of how to read written language. As a result, kindergarten through second grade reading skills development is highly related to phonological awareness; this is especially true for ELLs. Third grade is typically a transition year; reading instruction shifts the emphasis from learning the code of the language to using reading to learn for all students (August & Shanahan, 2006).

Swanson, Rosston, Gerber, and Solari (2008) conducted a study to compare the role of oral language, syntax, and vocabulary to phonological measures that may contribute to variance in third-grade reading skills for ELLs. The researchers used regression analysis to predict reading ability and reading comprehension. Both syntax and phonological skills account for unique variance and are predictors of third-grade reading ability; however, syntax is a better predictor of third-grade comprehension skills when compared to phonological awareness for ELLs in contrast to English only students.

Summary of Word-Level Skills

The evidence above was about how monolingual English speakers and ELLs are similar in their development of word-level English reading skills. Phonological awareness, memory, and vocabulary play roles in development of early reading skills. These four studies indicate that despite some similarities, there is a difference in the underlying processes for development of reading skills for monolingual English speakers and ELLs. According to the studies, there are two important concepts related to ELLs' reading development. First, if an ELL is significantly struggling to develop word-level

skills, causes other than limited English should be considered to provide effective educational support (Geva et al., 2000). These students are at risk for under-identification for special education services because a lack of progress is interpreted as the result of a lack of English instead of as an indicator of specialized need. Second, in the primary grades, the emphasis on word-level skills that are dependent on phonological awareness can result in reading problems being identified as decoding problems. ELLs who are at risk of comprehension difficulties may be overlooked until instruction places an emphasis on comprehension, which occurs in the third grade (Burgoyne et al., 2009; Hutchinson et al., 2003; Yesil-Dagli, 2011). ELLs who are at risk of comprehension difficulties are likely, also, to be at risk of becoming LTELLs.

Text-Level Skills

In this section, research on text-level skills of literacy development for ELLs is discussed. There are three parts in this section. Part one defines text-level skills. Part two focuses on studies that examine relationships between vocabulary knowledge and reading comprehension. Part three focuses on studies that examine the relationship between oral language and reading comprehension.

Definition of text-level skills. Text-level skills include fluency, writing skills, and comprehension (August & Shanahan, 2006). Fluency is translating words into sounds and doing so in an accurate and efficient manner. Writing skills are word-level skills such as letter forming and spelling. It is also a text-level process that incorporates cognitive abilities, working memory, linguistic awareness, and higher-order skills. Most of the research is on text comprehension and will be the focus of this section.

Text comprehension is complex and requires multiple types of knowledge. The types of knowledge include lexical knowledge, semantic knowledge, syntactic knowledge, and background textual knowledge. Lexical knowledge refers to how the morphology or form of a word works. Semantic knowledge refers to the meaning of words. Word meaning is influenced by the context in which a word is used. Syntactic knowledge refers to language structure and an understanding of how words and punctuation work together to create specific meaning. Background textual knowledge refers to how the underlying structure of the text and individuals' background contribute to their understanding of the text. Comprehension is impacted by reader knowledge and skill, text presentation, and associated factors (August & Shanahan, 2006).

Researchers have established the achievement gap between ELLs and monolingual English speakers on standardized reading assessments (Short & Fitzsimmons, 2007). Researchers completing follow-up research have focused on vocabulary development, oral language proficiency, and student factors in an attempt to determine root causes for the differences in achievement between ELLs and monolingual English speakers (August & Shanahan, 2006). Text comprehension development and achievement is not similar between monolingual English users and language minority students.

Vocabulary and reading comprehension. The field of research encompassing vocabulary is large; however, the vocabulary research that focuses on vocabulary and its impact on reading comprehension for ELLs is limited. Only a limited number of studies are on language minority students and ELLs, and the subgroups of ELLs are not clearly defined, as discussed earlier. Similar to the early literacy research, there is evidence that

the vital role that vocabulary knowledge plays in reading comprehension for ELLs is somewhat different than it is for monolingual English speakers (Burgoyne et al., 2009; Burgoyne et al., 2011; Hutchinson et al., 2003; Swanson et al., 2008; Yesil-Dagli, 2011). The research provides the following categories for discussion: vocabulary as a predictor for early oral reading ability and level of English skills, the unique predictive roles of receptive and expressive vocabulary, and how limited vocabulary, as opposed to decoding skills, plays a larger role in reading comprehension difficulties for ELLs.

Yesil-Dagli (2011) examined the predictive value of beginning kindergarten assessment scores for the English letter name, vocabulary skills, and initial sound fluency to predict first grade oral reading fluency. The sample was 2,481 ELLs from high-poverty, low-achieving schools in Florida, and the population was using reading first as the reading curriculum. For both the ELL and the English only groups, the English letter name was the best first predictor of first grade reading fluency. However, vocabulary as opposed to initial sound fluency was the second best predictor for ELLs. This may indicate that English vocabulary skills reflect overall English skills.

Three studies used three different tests for receptive and expressive vocabulary: the expressive and receptive one-word picture vocabulary tests, the test of word knowledge, and the Peabody picture vocabulary test–III. Across all three studies, ELLs scored significantly lower in receptive and expressive vocabulary.

Burgoyne, Whiteley, and Hutchinson (2009) focused on the raw scores for expressive and receptive vocabulary on the expressive and receptive one-word picture vocabulary test for ELLs and English only students in years three and four in a British school system. The researchers compared the results and found a significant main effect

of language in favor of English only students (Expressive: $F(1, 88) = 24.650$, $p < .001$, $\eta^2 = .219$; Receptive: $F(1, 88) = 15.822$, $p < .001$, $\eta^2 = .152$). There was a mean difference of 13.85 favoring English only students in expressive vocabulary and a 10.15 mean difference favoring English only students in receptive vocabulary.

Yesil-Dagli (2011) evaluated vocabulary knowledge by the Peabody picture vocabulary test–III. ELLs were well below grade level in kindergarten ($M = 81.64$, $SD = 12.74$ 10th percentile). Hutchinson et al. (2003), ELLs assessed vocabulary using the test of word knowledge from school year two to year four in the British school system. At each point in time, EOs scored higher than ELLs. There was a final mean difference between ELLs and English only students of 14.79 on receptive vocabulary and 12.95 on expressive vocabulary. Across the studies and beginning in the first year of schooling, ELLs scored significantly below English only students on measures of vocabulary knowledge.

In two of the studies, there was a correlation between vocabulary scores and reading comprehension measures. Burgoyne et al. (2009), asked students to read passages and answer comprehension questions. The ELLs had higher mean scores on measures of reading accuracy when compared to English only students; however, when comprehension was assessed on the same reading passages that were scored for accuracy, ELLs did not perform as well as English only students, indicating that challenges in reading for ELLs stem more from vocabulary than decoding. Hutchinson et al.'s (2009) analysis indicated that for ELLs, expressive vocabulary made a unique contribution to variance in reading comprehension (*Beta* = 0.30, $t = 2.45$, $p = 0.02$).

Burgoyne, Whiteley, and Hutchinson (2011) conducted another study that was a continuation of the previous study; the researchers used hierarchical multiple regressions to determine the predictive role of listening comprehension and vocabulary knowledge in reading comprehension beyond reading accuracy. For ELLs only, vocabulary is a significant predictor of Year 4 reading comprehension. The N size of this study, 39 ELLs and 39 English only students, was a limitation and the results should be interpreted with caution.

According to the results across numerous studies, ELLs do not typically have difficulty decoding text (Burgoyne et al., 2009; Hutchinson et al., 2003; Yesil-Dagli, 2011). ELLs score significantly below native English speakers on measures of vocabulary knowledge, and this begins in the first year of schooling (Burgoyne et al., 2009; Burgoyne et al., 2011; Hutchinson et al., 2003; Yesil-Dagli, 2011). Vocabulary plays a key role in reading comprehension for ELLs, and limited vocabulary negatively impacts reading comprehension (Burgoyne et al., 2009; Yesli-Dagli, 2011). Expressive vocabulary in particular impacts ELLs' reading comprehension. This may be because tests of reading comprehension require children to create and express answers to questions. The ability to retrieve appropriate language to express understanding is likely to contribute to performance on comprehension tasks and impact ELL status (Burgoyne et al., 2009; Burgoyne et al., 2011).

Swanson et al. (2008) supported the previously mentioned research. The researchers found that oral language, syntax, and vocabulary, when compared to phonological measures, contributed a significant amount of variance to third-grade reading skills.

Differences exist between monolingual English speakers and ELLs in reading

vocabulary knowledge that correlates to reading comprehension. A vocabulary

differential between monolingual English speakers and ELLs and student understanding

of syntax play a contributing role in that difference. Evidence exists to support instruction

in targeted vocabulary that is of high utility and polysemous in nature; direct instruction

on specific academic language syntactical structures and exposing ELLs to a rich and

wide variety of topics and texts are also important (Burgoyne et al., 2009; Burgoyne et

al., 2011; Hutchinson et al., 2003; Yesil-Dagli, 2011).

Oral Language and Reading Comprehension

Oral language proficiency also impacts reading comprehension. In this section,

studies that focused on the relationship between oral proficiency in English and reading

comprehension are reviewed. There are three parts in this section. Part one defines oral

language. Part two focuses on studies that examine three components of oral proficiency:

listening comprehension, expressive language, and passive language and its relationship

to text-level literacy skills. Part three summarizes the section on oral language.

Definition of oral language. Oral language is the combination of the skills used

in speaking and listening (August & Shanahan, 2006). Oral language proficiency is

defined as the use and knowledge of specific aspects of oral language. To

comprehensively interact in the spoken form of language, a person uses the phonological

and morphological rules of a language. Knowing the sounds of a language and how they

typically work together is a basic part of oral proficiency. Knowledge and use of

vocabulary, grammar, and discourse domains work together as a more complex part of

oral proficiency that leads to a person's listening comprehension and oral expression abilities.

Components of oral proficiency. Typically, in the research regarding ELLs, oral language is used as an overarching concept that includes both receptive and expressive language. Listening comprehension refers to a person's understanding of spoken language that the individual hears. Expressive language is language that a person is able to produce independently in specific contexts; it requires the speaker to pull from existing knowledge of language in the mind (August & Shanahan, 2006).

There is consistency in the research regarding oral language and ELLs. Oral language is a significant predictor for reading comprehension and becomes more important as children become more efficient decoders (August & Shanahan, 2006; Burgoyne et al., 2009; Burgoyne et al., 2011; Hutchinson et al., 2003; Nakamoto, Lindsey, & Manis, 2008; Swanson et al., 2008; Yesil-Dagli, 2011). In addition, oral language skills are essential for higher-order reasoning and reflection (Burgoyne et al., 2011).

Listening comprehension. Burgoyne et al. (2011) studied seventy-eight monolingual English speakers and ELLs in northwest England over school years three and four and compared them using regression analysis to examine the concurrent and predictive contributions of reading accuracy, vocabulary, and listening comprehension when compared to reading comprehension. Listening comprehension is a predictor of reading comprehension in year four for both monolingual English speakers and ELLs and explains significant variance beyond the effect of reading accuracy (R^2 = .668, R^2 change = .066, p = < .05). In this same study, ELLs consistently had lower listening

comprehension, vocabulary, and reading comprehension. The researchers concluded that well-developed oral language skills are essential for higher-order skills of reflection, understanding, and reasoning. These same skills are essential for comprehension and, as a result, a focus on oral language development at an earlier time for ELLs is necessary. The sample size of this study was a limitation. However, the results of this study are consistent with other studies in that listening comprehension impacts reading comprehension.

Hutchinson et al. (2003) examined reading comprehension, reading accuracy, listening comprehension, receptive and expressive vocabulary, and the reception of grammar on a sample of 86 children (43 monolingual and 43 learning English) in years two through four in northwest England; the researchers discovered results similar to the Burgoyne et al. (2011) studies. Monolingual English speakers outperformed ELLs in listening and reading comprehension at all three assessments points in the study. The researchers concluded that reading measures used for students prior to about nine years of age might not adequately identify comprehension difficulties for ELLs.

Expressive language. Expressive language requires retrieving appropriate language and is related to reading and listening skills because the ability to access various language aspects contributes to comprehension tasks (Burgoyne et al., 2011). Hutchinson et al. (2003), in a unique study, examined year two expressive vocabulary and found that it made a significant unique contribution to the variance for ELLs in year four reading comprehension (*Beta* = 0.30, t = 2.45, Sig t = 0.02). Overall, ELLs had a two-year developmental lag in vocabulary. ELLs had year-to-year growth similar to native English

speakers and, as a result, they did not catch up to native English speakers. This is the single study of its kind that could be found and has limits in its application.

Summary of Text-Level Skills

Beginning with the literature review in a report that focused on ELLs and continuing on to more recent research, there is consensus in the research that oral proficiency in English is associated with reading comprehension skills in English for ELLs (August & Shanahan, 2006). Oral language skills in a language that is being learned and is not the native language (L2) are significant in predicting L2 reading skills (Swanson, Rosston, Gerber, & Solari, 2008). Oral language skills become more important predictors of reading comprehension as children become more efficient decoders because in grades beyond the third grade, reading skills are more related to oral language abilities (Nakamoto et al., 2008). Vocabulary knowledge, especially expressive vocabulary, and syntax play a larger role in reading comprehension for ELLs. The lag in vocabulary and syntax may contribute to low achievement on standardized academic achievement measures. The studies reviewed above considered ELL as one group and did not distinguish ELL subgroups, which is a limitation of those studies.

Standardized Assessment

Under federal NCLB guidelines, ELLs are assessed for academic achievement on state standardized-large scale tests in English, math, and science, and they are also tested yearly for English language proficiency in reading, writing, speaking, and listening. ELL achievement scores are included in adequate yearly progress (AYP) designations. In addition, the English language proficiency scores are tracked by state education agencies

and used in annual measurable achievement objectives (AMAO). This is a state accountability system similar to AYP, but it is solely for ELLs (Ramsey & O'Day, 2010).

The assessment results are used for multiple purposes. They are used for state accountability, and the results can be used to inform school ratings. Results on both tests are used by state education agencies to designate districts' AMAO status. Schools frequently use the results to make placement decisions (Wolf et al., 2008). The results on these assessments are used to make impactful educational decisions. At both the national level on the NAEP and at the state level on state accountability tests, ELLs are significantly underperforming on achievement tests (Short & Fitzsimmons, 2007; August & Shanahan, 2006). However, the education agencies do not include former ELLs in accountability measures and do not separate the ELLs into short-term and long-term ELL groups. As a result, it is not possible to determine the larger context of ELLs and standardized achievement.

Because NCLB requirements became law, there has been controversy regarding the reliability and validity of the large-scale standardized assessments (Abedi, 2002). A failure in the reliability and validity of large-scale standardized achievement tests could result in negative consequences given by the state to schools and districts in terms of accountability and to ELLs in terms of educational opportunity, such as being misplaced in interventions or courses based on assessment results (The Education Trust, 2003).

There are eight parts in this section. Part one focuses on studies that examine the relationship between student English proficiency levels and the subject area of academic achievement test results. Part two focuses on studies that examine the relationship between the language complexity of the English proficiency test and the academic

content tests. Part three focuses on studies that examine the impact of test language complexity on achievement scores. Part four extends to include students who have been REP and focuses on studies that examine the reliability and validity of content achievement tests for multiple subgroups of language minority students. Part five focuses on the impacts of accommodations on large-scale assessments for ELLs. Part six focuses on the achievement results for ELLs who exit ELL before the fourth grade. Part seven focuses on the initial English proficiency of students and how that impacts growth trajectories. Part eight summarizes standardized assessments and ELLs.

English proficiency related to achievement test results. English language proficiency assessments and standardized tests of academic achievement serve different purposes and measure different content. English language proficiency assessments focus on four language skills: reading, writing, speaking, and listening. However, academic achievement tests are designed to evaluate student content knowledge for reading and math (Kenyon, 2006). In addition, English language proficiency exams assess the English proficiency levels of the students, and the test accounts for the English proficiency of the test taker from the lowest levels of proficiency to the most advanced levels of proficiency. In contrast, standardized academic achievement tests typically account for differences in English proficiency levels through the use of accommodations (Kieffer et al., 2009).

Researchers of the two research studies examined student English proficiency status's impact on content achievement tests. In the first study, Kim and Herman (2008) used hierarchical modeling that controlled for free and reduced lunch (FRL) status and school to determine the impact of English proficiency on achievement scores. In the

second study, Parker, Louie, and O'Dwyer (2009) used states' ELP assessment components to predict achievement on the state's reading, writing, and math accountability tests. The states used the assessing comprehension and communication in English state-to-state (ACCESS) test to assess student English language proficiency and the NACEP to determine content and proficiency. The researchers found that the reading, writing, and to a lesser extent, the speaking scores on the ACCESS significantly and positively predicted reading, writing, and math achievement levels. For example, in the fifth grade, 15.5% of reading scores, 20.5% of the writing scores, and 13% of the math scores were explained by the ACCESS results. In the eighth grade, 26.8% of reading scores, 28.2% of writing scores, and 28.3% of math scores' variance was explained by ACCESS scores. The researchers in both studies concluded that an increase in English language proficiency resulted in an increase in achievement. In addition, the researchers found students had to have a certain level of proficiency in English to benefit from their academic achievement.

However, both studies were limited in generalizability to the wider ELL population because the sample only reflected a sample of five states, and the state achievement tests did not assess the exact same content nor have the same test construction. In addition, the ELP tests were not the same across the sample sizes; as a result, English proficiency levels may have not been defined consistently across the samples. But according to both studies, students' English proficiency levels are related to their achievement levels in math, reading, and writing.

Test language complexity for both test types. Wolf et al. (2008) compared the language of the grade level ELP test with the content accountability tests of two states'

math and science accountability tests. The comparisons were made for grades five and eight for State A and grades four, seven, and eight for State B. The researchers found that item-level language demand was similar for both assessments. The content assessments tested more academic words, and there were fewer nominalizations in the ELP test. The math and science language had three prominent features. Simple and complex were the most common sentence structures. Lexical cohesion was prevalent, and vocabulary was the most prominent academic feature. The ELP test was analyzed by item for each of the four sections of the test: reading, writing, speaking, and listening. At the item level, there were few academic language features present. The reading, writing, and listening sections had academic vocabulary, but there was little academic vocabulary in listening. Passages and prompts in the ELP test had a variety of grammatical features, various academic words, and used more cohesive devices than the state content tests. The listening and speaking sections had few linguistic forms. The researchers concluded that there was more general academic language on the achievement tests than there were on the ELP tests.

Text complexity and achievement scores. The performance gap is greater for high language demand content than for content with less language demand. Reading and writing have a bigger performance gap than science and math. The performance gap is larger for science than for math (Abedi, 2002), and the gap increases in higher grades. In addition, there is evidence that language demand and linguistic complexity of test items in addition to individual and school factors impact achievement scores. Researchers of three studies examined ELL and non-ELL performance on state math and or science accountability tests, and they found some consistency within the results.

In the first study from the Center for Research on Evaluation Standards and Student Testing (CRESST), the researchers used differential item functioning (DIF) using IRT-LR (item response theory likelihood-ratio) to find if ELLs in similar achievement groups of non-ELLs scored differently on test items. Ability was determined based on the total assessment score for items taken from state math and science tests. Students with learning disabilities were not included in the analysis. In Sample 1, ELLs were matched with non-ELLs. The ELL group was the focal group. In Sample 2, ELLs were grouped by reading proficiency level, and the lower proficiency group was the focal group. The sample size was over 500. The researchers found more variation across states, not across grade level or subject matter. There was 39 DIF items found for Sample 1: ELL and non-ELL, an average of three per test. There were fewer DIF on math tests than science tests. In general, DIF items against ELLs contained more features of academic language. The features of academic language analyzed included higher number of total words, unique content words, and a larger number of cohesive devices. There were more general academic words but not more technical words or more complex grammatical features (Abedi, Leon, Wolf, & Farnsworth, 2008).

In another study, Abedi (2002) found results that are consistent to the previous study. Four locations across the U.S. provided item-level standardized achievement data in reading, writing, math, and science. One of the questions of the study asked if the linguistic complexity of items was a possible source of measurement error that would influence the reliability of the assessment. The researcher compared ELL and non-ELL mean normal curve equivalents using analysis of variance and t-tests. Non-bilingual students outperformed bilingual students; however, the results indicated that the

magnitude of the differential index depends to a greater extent on the language demands of the questions. Another question in the study examined whether the linguistic complexity of test items was a possible source of construct-irrelevant variance that could, in turn, influence the validity of the assessment. The researcher used the multigroup factor analysis structural equation approach. The gap in latent factor correlations between ELLs and non-ELLs was especially large when there was more of a language demand. In addition, the correlations from the model were lower for ELLs, suggesting that language factors may be a source of construct-irrelevant variance. Martiniello (2009) evaluated differential item functioning (DIF) on math achievement tests. The researcher used the unidimensional item response theory model. DIF measures were estimated as the difference between the difficulty parameter estimates of the studied item for ELLs (focal group) and non-ELLs (reference group). The parameter estimates of ELL and non-ELL fourth graders were compared for items of varying linguistic complexity and pictorial or schematic support. Items correlated significantly with measures of DIF ($r = .58, p <$ .001). Items with greater linguistic complexity tended to show positive DIF, respectively favoring the non-ELLs. Items with schematic representations were associated with negative DIF, favoring ELLs over non-ELLs. There were no significant correlations among measures of the items linguistic complexity, schematic representations, format, and p value. The extent of the impact of linguistic complexity on conditional difficulty for ELLs varied according to whether the item had schematic representations. The regression line for the effect of linguistic complexity was significantly less steep for items with schematic representations than for those without schematic representations.

Martiniello (2009) with the results of the study was able to claim that linguistic complexity is a source of construct that is irrelevant difficulty for ELLs.

Vocabulary and syntax are related to reading comprehension. According to the results of the above studies, standardized achievement tests had higher vocabulary demands and more complicated syntax than English language proficiency tests. Consistent across these studies is evidence that the English proficiency level of the ELL and the linguistic complexity of the test items have an impact on the ELLs' achievement scores. There is evidence to question the reliability and validity of standardized academic achievement measure results for ELLs at the lowest levels of proficiency. However, it is not clear for LTELLs if the negative impact from a higher level of academic language, including more academic vocabulary and more complicated syntax, results from a lack of understanding about how the English language works or if it is from gaps in academic literacy.

Redesignated ELLs and achievement results. ELLs who exit ELL status have obtained a state designated level of English proficiency and a state-designated level of achievement on standardized tests. ELL exit criteria are intended to remove ELLs when English language proficiency is no longer the primary barrier to student achievement (Ramsey & O'Day, 2010). Ramsey & O'Day (2010) provided evidence for the reliability and validity of standardized test results for RFEPs and IFEPs. Language minority students do not always enter the U.S. school system with an ELL designation. Some language minority students pass an initial English proficiency test and are designated as English-proficient when they enter U.S. schools. These students are typically referred to as IFEP (Kieffer, 2008). Comparing the achievement of these three language minority

groups provides more information. The achievement results of IFEPs and RFEPs were examined in one study. Young et al. (2010) compared math and science standards-based assessment results for native English speakers, ELLs, IFEPs, and RFEPs. The researchers compared the results of fifth and eighth grade state math and science tests. Subjects were categorized into the following groups: IFEPs, RFEPs, native English speakers, and ELLs. The language minority groups had between 13,000 and 111,000 participants. The native English speaker group had between 106,000 and 231,000 participants. The mean scores for IFEPs and RFEPs were similar to those of native English speakers. ELLs scored lower. However, a lower magnitude value for RFEPs may indicate some construct-irrelevant variance due to lower English proficiency levels. Weak factorial variance was observed for IFEPs, RFEPs, and native English speakers, indicating that similar patterns of factor loadings were observed for the three groups. A DIF detection method indicated that there were no items with substantial DIF for IFEPs, RFEPs, and native English speakers. According to the he results of this study, there could be evidence for the reliability and validity of standardized test results for RFEPs and IFEPs (Young et al., 2010).

The impacts of accommodations on large-scale standardized tests for ELLs. The purpose of accommodations is to mitigate extraneous factors that affect test scores of students and to do this without changing either the underlying constructs of the assessment or the content being assessed (Wolf et al., 2008). Accommodations for ELLs should provide direct or indirect linguistic support to minimize the potentially negative impact of irrelevant language demands in assessments (Kieffer et al., 2009). Studies that examined the impact on achievement results for ELLs who take the tests with

accommodations have had inconsistent results, and trends that emerge from meta-analysis indicate that accommodations do not decrease the achievement gap as intended (Kieffer, Lesaux, Rivera, & Francis, 2009).

Kieffer et al. (2009) conducted a recent meta-analysis that included 11 studies that evaluated the achievement gap decrease in achievement between English speakers and ELLs. The following accommodations were the focus of the studies: simplified English, English dictionaries or glossaries, bilingual dictionaries or glossaries, extra time, achievement tests in Spanish, dual-language questions, and a dual-language booklets. The N size was 23,999, of which 17,445 were native English speakers, and 6,554 were ELLs. There were eight true experimental designs and three quasi-experimental studies. Kieffer et al. (2009) found that there is a lack of overall evidence for the effectiveness of test accommodations for ELLs. Thirty-four tests were at the fourth and eighth grade levels, and four tests were at the fifth and sixth grade levels. Seventeen used math test results as an outcome measure and twenty used science test results as an outcome measure. One outcome measure was a reading test. Kieffer et al. (2009) found that there is a lack of overall evidence for the effectiveness of test accommodations for ELLs (mean $g^u = 0.04$, $SE = 0.03$, $Z = 1.48$, $p < .139$). The ratio of variation between studies to variation within studies indicates that about 27% of the total variability in the effect sizes is between accommodations. In this study, only one accommodation, English dictionaries and glossaries, had a positive and significant impact on reducing the achievement gap for ELLs. The effect sizes varied across studies, indicating that it might be effective for some ELL's and not others (Keiffer et al., 2009).

Kopriva, Emick, Hipolito-Delgado, and Cameron (2007) examined in a contrasting study whether there was a difference in achievement based on whether ELLs had the recommended accommodations, partial accommodations, the wrong accommodations, or no accommodations at all. The researchers used a computerized taxonomy to recommend appropriate accommodations based on students' English and first language proficiencies in reading, writing, speaking, and listening, the time students had been in U.S. schools, attendance, schooling consistency, and classroom needs and experiences. A math test was developed based on the South Carolina fourth and fifth grade achievement tests. The main analysis was an ANOVA between three groups (recommended, partial or not recommended, and no accommodations) and resulted in the following: no accommodation: $N = 33$, mean = 15, $SE = .891$; recommended: $N = 94$, mean = 16.904, $SE = .387$; across three groups: $F (2,269) = 5.989$, $p = .003$. This shows significant differences between the three groups. The recommended and no accommodations mean difference are as follows: 1.904, $SE = .958$, effect size = 1.987, sig. = 048, $p < .05$.

The recommended and incomplete and not recommended groups mean difference are as follows: 2.125, standard error = .626, effect size = 3.395; significance <.001. There were significant differences between recommended and both no accommodations and incomplete or wrong accommodations. According to the study, students who are provided with accommodations that match their needs as determined by the taxonomy outperform students who receive partial accommodations or accommodations that were not recommended or no accommodations. Evaluating the most appropriate accommodation for the specific ELL's needs, as opposed to a specific accommodation, is

preferable. The differing results of these two studies can support the idea that ELLs are a diverse population and that defining ELLs as a heterogeneous population or sample is important to interpreting the results.

ELLs who exit early. Researchers of two studies examined achievement patterns for RELLs and defined subgroups by when students exited from ELL status. Flores et al. (2012) examined a cohort of students in Texas. The cohort was a group of students ($N =$ 133,698) who began school in Texas in the first grade in 1995 and reached the twelfth grade on time in 2006. Ever-ELLs ($N = 24,566$) were defined as students who had been labeled ELL. Non-ELLs ($N = 109,132$) were students who had never had the ELL designation. The ever-ELL group as a whole had lower state academic achievement test pass rates in reading and math every year from grades three through elven. However, ever-ELLs who exited from an ELL program after three years had higher pass rates on the Texas tests of academic achievement than the non-ELL group. For example, in eleventh grade, 88% of non-ELLs passed the test, and 94% of ELLs who had exited ELL after three years passed the test. The story changes for ELLs who exited ELL after five to seven years or more. Both groups had pass rates well under non-ELL pass rates. In the eleventh grade, the ELLs who exited after five years had a 59% pass rate, and ELLs who exited after seven years had a 44% pass rate.

Jong and Howard (2009) examined the achievement pattern of RELLs on fourth and eighth grade state reading, math, and science achievement tests in a medium-sized school district in the northeastern U.S. RELL cases were excluded if parents had refused ELL services or if students had IEPs. There were 38 fourth-grade cases and 56 eighth-grade cases. Cases were grouped by exit time: Kindergarten to second, third to fifth, and

sixth to eight. Jong and Howard (2009) found that on the fourth grade reading and science test, the lower the grade the student had exited, the higher the score. In eighth grade, the lower the exit grade, the higher the score on the science test only. This study was limited by its sample size. Both of the researchers of these studies provide evidence that the RELL and ELL populations are heterogeneous and showed a need to more precisely define a study ELL population to better pinpoint the contributing factors to an ELL becoming a LTELL.

Initial English proficiency and reading growth trajectories. Kieffer (2008), in a landmark study, examined the growth trajectories for reading achievement for English-only and language minority students. Language minority students were further broken into students who entered the school system IFEP and students who entered the school system ILEP, and these designations were based on language assessment scales (LAS) results. The LAS is an English proficiency assessment that assesses proficiency in reading, writing, speaking, and listening. Demographic risk factors, including socioeconomic status (SES) and school characteristics, were controlled for in the analysis. The data set used for the study was taken from the Early Childhood Longitudinal Program for children who were in kindergarten from the 1998 to 1999 school year (ECLS-K), and this was taken from a study conducted by the National Center for Education Statistics (NCES). A multistage probability sampling design resulted in a nationally representative sample of students entering kindergarten in the 1998 to 1999 school year. The children were from a wide variety of SES, ethnic, and linguistic backgrounds, attending public, private, or parochial schools. The *N* size for the study was 17,385. Kieffer (2008) discovered that language minority students who entered the U.S.

school system in kindergarten fully English proficient had growth trajectories similar to English-only students. Language minority students who entered the U.S. school system in kindergarten with LEP had growth trajectories different from English-only students. In addition, there were large differences in fifth-grade achievement between these two groups. However, controlling for demographic risk factors, including SES, reduces the effect of initial English proficiency from large to moderate, and these differences narrow over time. Poverty had the largest effect on student growth trajectories, with a negative impact on fifth grade predictive status. There were smaller differences between the two groups in high-poverty schools and greater differences in low-poverty schools. In addition, students of color from lower SES backgrounds had fitted growth trajectories at substantially lower elevation, comparatively. Once poverty was taken into account, concentration of students of color did not have a significant effect on final status or LEP status. Final results indicated that IFEP students had growth trajectories higher in elevation than those of demographically similar peers who attended similar schools. ILEP had growth trajectories only moderately lower in elevation than those of demographically similar peers who attended similar schools.

Summary of standardized testing. According to the studies included in this literature review, large-scale standardized assessments have questionable reliability and validity for ELLs because these tests may not reflect content ability for these students (Abella, 2005). ELLs at lower levels of English proficiency test differently than ELLs at higher levels of proficiency (Parker et al., 2010). In the constructs of the state standardized achievement tests, there is more general academic vocabulary and construct-irrelevant language. In addition, there is high linguistic complexity used in texts and test

questions, and culture-specific knowledge is required to understand some questions. The role of elevated academic language and its impact on LTELLs is not possible to determine from the studies because ELLs were put into a single group. However, these constructs closely match the areas discussed in the text level section of this literature review and may provide some explanation for why LTELLs have lower passing rates on standardized academic achievement tests.

In addition, accommodations provided to ELLs do not clearly mitigate impacts of lower language proficiency on standardized test achievement (Kopriva et al., 2007). Students who enter the school system with an English proficient status test differently than students who enter the school system with an LEP designation. Both FRL designation and an individual students' socioeconomic (SES) status impact student achievement results (Kieffer, 2008).

Teacher approach to instruction of ELLs. Quality of instruction plays a direct role in student learning and informs the need for further research for LTELLs. Researchers of three studies addressed the impact of the teachers' approach to instruction for ELLs and found consistent results when compared with previous studies. As part of the survey in the Karabenick and Clemens (2004) study, the researchers asked teachers questions about their approach to teaching and whether it was a mastery approach or a performance approach. Teachers with a more positive attitude toward ELLs were more likely to report instructional approaches consistent with mastery teaching. ELLs are more likely to thrive in a more mastery-based environment.

Yoon (2007), in one qualitative study, contrasted the impact of the instructional approach on student engagement. The researcher interviewed and observed two middle

school teachers of reading language arts and two ELLs in each classroom. The ELLs in Teacher A's room had low interaction with teacher and peers. Teacher A's instructional approach included U.S. and popular culture themes; Teacher A seemed unaware of ELL cultural and social needs. Students were grouped using open group strategies, which often left ELLs out, and students were only helped if they sought out help. ELLs were seldom called on to share. Teacher A also did not indicate that teaching ELLs was his responsibility. As a result, non-ELLs had hidden power that ELLs did not. The ELLs in Teacher A's class indicated that they were often frustrated in the classroom environment. However, Yoon (2007) discovered that the ELLs in Teacher B's class had high levels of interaction with both the teacher and the other students. Teacher B's instructional approach greatly contrasted with Teacher A's approach. Teacher B engaged in multicultural approaches and adjusted for cultural and linguistic differences. She called on students, including ELLs, to share experiences and responded with engagement strategies. She intentionally grouped students with supportive peers. As a result, mainstream students encouraged and accepted ELLs. Mainstream students did not have hidden power. Teacher B also indicated that she worked for all students and had a responsibility to the ELL students (Yoon, 2007). According to the interviews with the student ELLs in Teacher B's classroom, the ELLs felt they were an accepted part of the class and got help when they needed it.

With his study, Yoon (2007) provided some evidence for the influence of the teacher instructional approach on ELL engagement. The classroom environment each teacher created through his or her instructional approach resulted in two very different

outcomes for the two sets of ELLs. A classroom environment's impact on student

engagement is only one aspect of instruction.

Echevarria (2011) in a similar study evaluated how the use of the sheltered

instruction observation protocol (SIOP) features impacted science and science academic

language achievement. Echevarria (2011) used the SIOP when observing teachers during

science instruction. The SIOP contains eight components that have been found

consistently in classrooms where ELLs have had greater access to the curriculum

(Echevarria, 2004). Teachers who were considered high achievers averaged at least three

on a four-point scale of the features. The study found the difference between high-

implementing and low-implementing teachers was not about whether a specific feature

had been implemented or not. The frequency and the degree to which the feature was

implemented determined the difference between high and low implementers. Teachers

with the highest scores on the SIOP also had the students with the most growth on

average in the science and science academic language pretests and posttests. Echevarria

(2011) moved beyond examining teacher attitude and approach to instruction to clearly

define instructional practices that promote achievement and language development.

Discriminant Analysis

Discriminant analysis is a statistical method that is used to predict group

membership and is based on selected variables and a method for studying group

differences on several variables simultaneously (Pedhazur, 1997). Discriminant analysis

provides discriminant functions that represent the uncorrelated linear combinations of the

independent variables (Mertler & Vannatta, 2010). For each case in the discriminant

analysis, there must be scores on one or more quantitative variables, and there must be a

value of a classification variable that indicates group membership (Green & Salkind,

2008). In discriminant analysis, the quantitative variables are generally called the

independent variables, and the group membership variable is called the dependent or

grouping variable (Green & Salkind, 2008; Mertler & Vannatta, 2010). The predictor

variables can include both categorical and interval data. The grouping variables are

categorical. There are two purposes for discriminant analysis: predictive discriminant

analysis and descriptive discriminant analysis (Pedhazur, 1997). Mathematically,

discriminant analysis and multivariate analysis of variance provide the same results

(Mertler & Vannatta, 2010). The analysis describes major differences among groups.

(Mertler & Vannatta, 2010). That is, uncorrelated linear combinations of the original

variables are developed. These are called discriminant functions (Green & Salkind, 2008;

Mertler & Vannatta, 2010). Discriminant analysis is used to determine if a set of

variables can predict group membership. To some extent, discriminant analysis is similar

to regression analysis; both provide an equation for prediction. With regression analysis,

the equation provides an estimate of the criterion variable; however, with discriminant

analysis, the equation provides prediction of group membership (Mertler & Vannatta,

2010).

     The discriminant analysis provides a discriminate function that is composed of

function value, a weight for each variable, and a constant. The function is computed to

maximize the difference between the group means in n-space, where n is the number of

significant predictor variables in the function. An individual weight is computed for each

significant predictor variable. Thus, the function provides maximum separation between

the groups. The general goal of discriminant analysis is to develop a function that will

maximize the difference between groups. The number of discriminate functions is one less than the number of groups (Green & Salkind, 2008; Mertler & Vannatta, 2010; Pedhazur, 1997).

The discriminant analysis develops a function such that the differences between groups are maximized based on the selected set of predictor variables (Green & Salkind, 2008). The discriminate function has the general form seen in the following:

$$D = d_1\, V_1 + d_2\, V_2 + d_3\, V_3 + \ldots\ldots + d_n\, V_n$$

Where *D* is the computed value from the discriminate function,

d's are the weighted coefficients (structure coefficients);

V's are the values of the significant predictor variables; and

n is the number of significant predictor variables.

For each case, a value is computed based on the discriminate function, and this predicts group membership.

Discriminant analysis involves a series of steps. The first step is to analyze the preliminary results that provide information related to the overall discriminant analysis results (Mertler & Vannatta, 2010). The computed statistics include means and standard deviations for each predictor group variable, ANOVA for test of group differences among the predictor variables, and the covariance matrices. These statistics are used to evaluate the discriminate function and the relative impacts of each predictor variable.

The test of significance for discriminant functions is the Wilks Lambda (Mertler & Vannatta, 2010). The significance for prediction of group membership is tested by using the chi-square criteria. Statistical significance indicates that the function discriminates between the established groups, and this is based on the selected predicator

variables (Mertler & Vannatta, 2010). Discriminant analysis produces an eigenvalue for each discriminant function. The ratio of the between-groups sums of the squares to the within-group sums of the squares for an ANOVA has groups as levels of a factor and the discriminant function as the dependent variable (Green & Salkind, 2008). An eigenvalue can be any number equal to or greater than zero. There is no upward limit, which makes it difficult to interpret. To obtain an index value that ranges from zero to one, the canonical correlation must be used. It is a function of the eigenvalue: $\lambda/(1 + \lambda)$. The square root of this index is the canonical correlation. It is the correlation between the groups and the function. It shows the proportion of variance in the continuous variables that is accounted for by the classification variable. The canonical correlation squared is equivalent to the eta-squared (η^2) and is used to determine effect size. Cohen's rule of thumb is used to interpret the effect sizes. For η^2 .02 is a small effect size, .13 is a medium effect size, and .26 is a large effect size.

The stepwise method of discriminant analysis enters variables in descending order, with the highest F values entered first. Variables are added until there are no variables left that meet the Wilks Lambda criteria, or there are not variables left that do not have F values higher than critical F (Tabachnick & Fidell, 1983).

Discriminant functions are used to determine unstandardized, standardized, and structure coefficients that need to be interpreted (Mertler & Vannatta, 2010). Unstandardized or raw coefficients are used as the basis for discriminant scores. The unstandardized coefficients represent weights assigned to the original variables in the analysis. The raw scores on each original variable are multiplied by the corresponding unstandardized coefficient weight. Then, computed values are summed to obtain the

discriminant scores. Raw coefficient scores are difficult to interpret because they are based on the varying quantitative scales of the original variables (Mertler & Vannatta, 2010; Pedhazur, 1997).

Discriminant scores are used to calculate the standardized scores. The weights from the unstandardized coefficients are converted into a standardized form so that the weight of the variables can be compared. Standardized coefficients determine the relative contribution of each variable to the discriminant function (Mertler & Vannatta, 2010; Pedhazur, 1997). The standard coefficients represent the relative magnitude or relative contribution of the variable in the discriminate function. That is, these coefficients represent the relative contribution of each variable when distinguishing between the two groups (Pedhazur, 1997).

Structure coefficients are used to interpret discriminant functions (Pedhazur, 1997). Structure coefficients are the correlations of the original variables but with discriminant function scores. Structure coefficients are primarily useful for determining the nature of the function(s) or the dimension(s) on which groups are discriminated. Structure coefficients of $\geq .3$ are treated as meaningful. The meaning of the function is inferred from the pattern of correlations or loadings between the function and the predictor variables (Pedhazur, 1997).

Next, the accuracy of the discriminant function is assessed by classifying cases into appropriate groups; that is, the computer provides a predicted group membership for each case. The table of classification results are used for this step (Mertler & Vannatta, 2010). The table provides the original and predicted frequency and percentage of cases within each group. A comparison between cases that are accurately predicted and cases

that are incorrectly classified provides insight into serviceability of the discriminant function. The final step is to analyze the extent to which the results of the discriminate function identify group differences. The function score means of the various groups are considered (Mertler & Vannatta, 2010).

The first discriminant function maximizes the difference among groups (Green & Salkind, 2008). Additional discriminant functions may be extracted, and they may help to maximize the differences among groups but with the constraint that they are uncorrelated with previous discriminant functions. However, as noted earlier, the number of discriminant functions is one less than the number of groups.

Discriminant analysis is commonly used in education research (Whitaker, 1997). Two educational studies that used discriminant analysis will be discussed below to illustrate that discriminant analysis was an appropriate method for this study.

Edl, Jones, and Estell (2008) used discriminant analysis to determine if teacher perceptions of students' social and academic skills could be used to predict group membership. The researchers defined the groups as follows: group one was composed of European-Americans in regular education settings; group two was composed of Latino students in regular education settings; and group three was Latino students in bilingual programs. Through discriminant analysis, the researchers identified several predictor variables that could be used to place students correctly into groups. Edl, Jones, and Estell (2008) found that teachers had the perception that Latinos in bilingual programs were socially and academically less capable while both European-American students and Latino students in regular education settings were viewed as more capable.

Vandamme, Meskens, and Superby (2007) used discriminant analysis in conjunction with other analytical methods to predict college students' risk of failing out of college. The groups were low risk, medium risk, and high risk. The researchers used a total of nine variables based on a combination of achievement data, self-perception data, and personal study habits as predictor variables. The study design was more complex than the current study.

Both studies had similarities to the study conducted in the current dissertation. Group membership was clearly defined, and a variety of types of predictor variables were used, including ordinal and scale data. Although the focus of the studies was on prediction, the researchers expanded upon the variables with the highest predictive power and analyzed them, matching the intent of the current dissertation study.

In addition, there is some controversy related to overuse of stepwise discriminant analysis in educational research (Whitaker, 1997). Whitaker (1997) stated that there is risk in missing the most predictive variables or misinterpreting the results of stepwise discriminant analysis due to the way that it is computed. However, Whitaker (1997) also indicated that stepwise discriminant analysis appears to be more appropriate in descriptive studies where the focus is on group separation. The purpose of the current exploratory study is to examine the differences between ELLs who exit ELL status and ELLs who do not exit ELL status in grades three, five, and nine. Discriminant analysis provides a method for identification of the independent variables that most contribute to exiting and nonexiting for ELLs.

Summary

This literature review focused on four key aspects of the ELL research as they relate to LTELLs. The topics were LTELL research, ELLs and literacy development, ELLs and standardized achievement measures, and instructional practices for ELLs. This literature review was limited by a lack of research on LTELLs and by the limitations of current ELL research that treats the ELL population as homogeneous and frequently does not address former ELLs. However, the research in this literature review provides foundational definitions of LTELLs and a lens for examining ELL literature that can lead to more precise studies.

Chapter 3: Methodology of the Study

This chapter describes the methodology used to conduct the current study. The current study used discriminant analysis to investigate possible differences among groups of students and did this by using selected variables. The groups were students who successfully exited ELL status in the third, fifth, and ninth grades and students who did not successfully exit ELL status in the third, fifth, and ninth grades. Thus, the researcher conducted three separate discriminate analyses, one for each grade level. There are three sections in this chapter. Section one describes the design of the study. Section two describes the data, case characteristics, and the variables. Section three describes the performed analysis.

Design of the Study

The goal of the current study was to investigate possible differences between the groups of students. The researcher used discriminant analysis to study the possible differences between ELLs who exit in third, fifth, and ninth grade and ELLs who do not exit. The data for each case were based on attributes that are regularly collected for all students in a large urban district in the western United States. An existing data was the base of the current study. All of the data related to one student are referred to as a case. There were no active participants in this study, as each case is part of an existing data set. There are approximately 10,000 ELLs in the school district used for the current study. Historically, the number of ELLs decreases at each grade level, and only a small number of ninth-grade students have exited.

The researcher followed all University of Nevada (UNR) IRB and school district procedures. The IRB and the school district both have standard procedures to follow

when conducting research. The researcher made request for exemption to UNR IRB through IRBNet because the data are an existing data set in the ELL department of the school district. The school district process requires UNR IRB be completed and submitted either before or simultaneously to the school district. The researcher requested the data with all personal identification removed in order to comply with UNR IRB-exempt requirements. After the UNR IRB and the school district granted permission, the researcher obtained, coded, and analyzed the data set.

Description of Cases

The researcher utilized an existing data set from a large urban school district in the western United States. According to the District 2014 Accountability Report, the district served approximately 63,000 students. ELLs made up 15.02% of the student population, or 10,028 students. The researcher considered the ELL cases who began the 2013 to 2014 school year in grades three, five, or nine. There were 1,378 ELLs in third grade. Of those cases, 290 obtained exit status, and 1,088 cases did not meet the exit criteria. There were 765 ELLs in fifth grade. Of those cases, 212 obtained exit status, and 553 cases did not meet the exit criteria. There were 392 ELLs in ninth grade. Of those cases, 76 met the exit criteria, and 316 did not meet the exit criteria. The researcher chose grades three, five, and nine because at least 19% of cases obtained exit status. Table 1 summarizes the number of cases of exiting and nonexiting ELLs for each grade level. The frequencies of cases by group by grade are summarized.

Table 1

Summary of Exiting and Nonexiting ELLs in Third, Fifth, and Ninth Grades

Level	ELLs who exit	ELLs who do not exit	Total ELLs
3	Group 1 (290)	Group 2 (1,088)	1,378
5	Group 3 (212)	Group 4 (553)	765
9	Group 5 (76)	Group 6 (316)	392

There were six groups: two for each grade level studied. The third-grade groups were Group 1 and Group 2. Group 1 was composed of third-grade students who met state exit criteria and were redesignated to non-ELL status. There were 290 students in Group 1. RELLs are referred to as RFEP by the U.S. Department of Education. Group 2 was third-grade students who did not meet the exit criteria. There were 1,088 students in Group 2. There were 1,378 total ELLs in third grade.

The fifth-grade groups were Group 3 and Group 4. Group 3 was composed of fifth-grade students who met state exit criteria and were re-designated to non-ELL status. There were 212 students in Group 3. Group 4 was fifth-grade students who did not meet the exit criteria. There were 553 students in Group 4. There were 765 total ELLs in fifth grade.

The ninth-grade groups were Group 5 and Group 6. Group 5 was composed of ninth-grade students who met the exit criteria and were redesignated to non-ELL status. There were 76 students in Group 5. Group 6 was composed of ninth grade students who did not meet the exit criteria. There were 316 students in Group 6. There were 392 total ELLs in ninth grade.

Variables

The predictor variables included standardized ELA and math achievement, English language proficiency, risk status, socioeconomic status, special education designation, and the number of years in the U.S. school system. The grouping variables were ELLs who exited ELL services in third, fifth, and ninth grade and ELLs who did not exit in third, fifth and ninth grade during the 2013 to 2014 school year.

Achievement. Within public education, standardized achievement scores in ELA and mathematics are used for multiple educational purposes and impact student-level and systems-level decisions (Abedi, 2002; Abedi & Gandara, 2006; The Education Trust, 2003). For example, achievement scores are used to label students as low, adequate, or high achieving. A low achievement score results in students being flagged for possible remediation. Adequate and high achieving scores are frequently used for course placement. Student placement into either remediation or advanced courses can significantly impact student education. In addition, standardized achievement scores are used to evaluate school performance for state accountability purposes. The tests are high stakes for both students and educators (The Education Trust, 2003).

The ELA and mathematics achievement scores were components of the current exploratory study. ELLs consistently perform lower than non-ELLs on standardized achievement tests (Abedi, 2002). However, the achievement gaps between assessments of reading and writing are greater than corresponding scores for math. These gaps tend to be smaller in the lower grades and larger in the higher grades because, in part, the language complexity of the assessments increases (Abedi, 2002). Both reading and math achievement measures potentially provided unique information for the current study.

Initially, the researcher considered both state criterion referenced tests (CRT) and measures of academic progress (MAP) scores for math and reading.

The Nevada CRT reports a scale score with a range of 100 to 500 and places students into one of four levels: emergent or developing; approaches standard; meets standard; or exceeds standard (Nevada Department of Education, 2014). Students placed in the emergent or developing group are considered to need extensive remediation because they have not demonstrated adequate grade level skills. Students placed in approaches standard are considered to require targeted remediation because they inconsistently or incompletely apply skills. Students placed in meets standards consistently apply grade-level skills and strategies and do not require remediation. Students placed in exceeds standards apply skills and strategies comprehensively in a variety of situations (Nevada Legislature Research Division, 2013). ELLs must be labeled as approaches standards in both math and ELA to be eligible to exit ELL status.

The measure of academic progress (MAP) test is a computer-adaptive assessment for reading and math that correlates with the Nevada accountability assessment (Washoe County School District, 2014). It is a nationally norm-referenced test (Northwest Evaluation Association, 2014). Results are reported as Rasch unit (RIT) scale scores. The 2011 normative study conducted by the Northwest Evaluation Association (NWEA) can be used to compare students to the average grade-level scale score for all students who took the assessment (Northwest Evaluation Association, 2011). In math, the beginning of kindergarten RIT average scale score average is 143.7, and the end of eleventh grade average RIT scale score is 238.2. In reading, the beginning of kindergarten RIT average scale score is 142.5, and the end of eleventh grade average RIT scale score is 232.7. The

possible range scale scores for math and ELA were not provided on the NWEA MAP website. The MAP data was collected three times a year in the study school district and is used as an interim benchmark assessment (Washoe County School District, 2014).

English language proficiency. English language proficiency assessments provide measures of students' abilities in reading, writing, listening, speaking, oral language, literacy, comprehension, and an overall score from a second language acquisition perspective (Ramsey & O'Day, 2010). English language proficiency (ELP) achievement was a predictor variable in the current study. The assessments evaluate each language skill separately and in conjunction with the other language skills. The results may provide granular information on student language development achievement (Kenyon, 2006). In addition, the assessment is a requirement associated with federal funding and state accountability. The results of the assessing comprehension and communication in English state-to-state (ACCESS) test were used because it meets the criterion of being a component of state accountability measure for English language proficiency achievement.

ACCESS results are reported in four ways: raw scores, scale scores, proficiency level scores, and composite scores. Individual scores are reported for reading, writing, listening, and speaking. In addition, there are composite scores for literacy, oral language, comprehension, and an overall score (WIDA Consortium, 2014).

The researcher used scale scores and composite scores in this study. The scale scores provide a standardized measure for scores to be compared across grade and tier levels on a single vertical scale. By design, scale scores provide a method to track student

growth over time and across grade levels. The scale score range is 100 to 600 (Kenyon, 2006).

The composite scores also range from 100 to 600. The composite scores are compensatory in nature; a high or low score in one area can impact the composite scores. The composite scores are weighted. The literacy composite score is based on 50% reading and 50% writing. The oral language composite score is based on 50% listening and 50% speaking. The comprehension composite score is based on 30% listening and 70% reading. The overall composite score is based on 15% listening, 15% speaking, 35% writing, and 35% reading. The weights were chosen to place an emphasis on the academic language skills students will need in classrooms (WIDA Consortium, 2014). Initially, the researcher used both the individual scale scores for reading, writing, speaking, and listening and the composite scores for literacy, oral language, comprehension, and overall skills, though some variables may be eliminated in the analysis due to a high correlation between the variables (Mertler & Vannatta, 2010).

Risk factors. The researcher assessed risk factors for each student in the district. These include attendance, math achievement results, ELA achievement results, retention, suspension, and transiency. The risk index serves as an early warning index score to identify students who are at risk of academic failure, and this is based on previous performance and attendance disruptions (Washoe County School District, 2014). These indicators provide a method to identify students who may be at academic risk. Each case has an overall score and individual scores for each of the risk categories. The researcher will use the following risk indicator scores: attendance, retention, suspension, and transiency. For each risk factor, cases receive a score from zero to two. A score of zero is

no risk; a score of one is some risk; and a score of two is a moderate to high risk. Each risk variable provides information related to ELLs.

The number of absences determines attendance risk. The possible score ranges from zero to two. A case with a risk factor of zero will have less than 9.5 days absent. A case with a risk factor of one will have greater than 9.5 days absent. A case with a risk of two will have more than 17.5 days absent, and this is based on the previous year's attendance totals.

Whether or not a case has been retained in a previous grade determines retention risk. The possible score range is zero to two. A case with a risk of zero has never been retained and expected age is true. A case with a risk factor of one is not of an expected age. A case with a risk factor of two has a documented retention. This can be determined from retention history and student age.

The number of suspensions determines suspension risk. The possible range is zero to one. A case with a risk factor of zero has never been suspended. A case with a risk factor of one has been suspended at least once. This variable reflects the previous year's discipline records.

Two possible criteria determine transiency risk. The first is the number of times a case has moved schools, an event of transiency. The second is that the child is designated as a child in transition (CIT), meaning the student does not have a permanent home with his or her guardians (Washoe County School District, 2014). The possible range is zero to two. A case with a risk score of zero has no events of transiency. A case with a risk factor of one has one event of transiency or is a child in transition. A case with a risk factor of

two has at least one or more events of transiency and or is a child in transition. This is based on the previous year's enrollment history.

Number of years in U.S. school system. The number of years a student has been in the U.S. school system provided unique and essential information to the study. There are two main reasons to include this variable in the study. First, there is some evidence that language minority children who begin kindergarten in the U.S. school system with LEP are likely to become LTELLs (Kieffer, 2008; Short & Fitzsimmons, 2007). Second, the time to acquire a second language at a high level of proficiency, including academic language, is five to seven years of age (Cummins, 1981).

The range for this variable is one to twelve. The variable indicates the number of years the student has been in school in the U.S. school system. The count includes the 2013 to 2014 school year. For example, a third-grade student can have a range of one to five years. At fifth grade, there is a possible range of one to seven, and at ninth grade, there is a possible range of one to twelve. The original entry date of the students will determine the number of years. Each case has this demographic information.

Special education status. Special education status is often used as an independent variable in research regarding ELLs. This variable predicts reading difficulties for Spanish-speaking bilingual students. It is difficult to separate attributes related to second language learning and challenges related to learning disability. The researched used a dummy code in regards to this variable. Students without an individual education plan (IEP) were labeled zero, and student with IEPs were labeled one. Special education status was considered as a predictor variable in this study.

Initial English proficiency. Initial English proficiency is a variable that has been used in multiple studies. Kieffer (2008) used the variable to examine the impact of initial English proficiency on kindergarten to fifth grade reading growth trajectories. The variable was also used in a study examining the validity of standardized achievement tests. It is included in the current study because based on previous research; it has potential predictive validity for exiting ELL students.

Group variables. The grouping variables were exit or nonexit status for ELLs. The ELLs who achieved a minimum composite scale score on the ACCESS that indicates students can exit from ELL status are considered RFEP status (Abedi, 2004).

Analysis

The researcher used discriminant analysis, following procedures as outlined by Mertler and Vannatta (2010). First, the researcher coded the data and entered into an Excel spreadsheet that can be pasted into SPSS. Next, the researcher ran descriptive statistics to check for missing data, to determine measures of central tendency, to check variability, and to determine relationship. Finally, the researcher ran a series of discriminant analyses tests to develop discriminant functions for each grade level considered. The researcher interpreted each discriminant analysis. There were four considerations for interpretation: (a) preliminary statistics that describe group differences and co-variances; (b) strength of relationship and significance tests for the discriminant function; (c) discriminant function coefficients; and (d) group classification. The first three considerations were interpreted for all eighteen discriminant functions generated (six for each grade level). The fourth, group classification, was only interpreted for the final discriminant function generated for each grade level (three total).

Coding. The researched obtained the existing data set from the district's ELL department once IRB and the district gave approval to use it. The researcher created a codebook that described the characteristics of each variable. Data related to one student was considered a case. Each de-identified case was given a unique ID number. Each case was identified by grade level and by exit status; these variables were the grouping variables. Pedhazur (1997) recommended the use of dummy variables because they are the simplest way to code categorical variables. The researcher used dummy coding for special education status. The variable was coded one or zero (Yes = 1, No = 0) to indicate if the student had an IEP.

There were several ordinal variables, which included attendance, retention, suspension, and transiency. They were coded zero to two. No risk = 0. Some risk = 1. Moderate to high risk = 2.

The remaining variables, math achievement, ELA achievement, English proficiency achievement, initial English proficiency, and number of years in the U.S. school system, were interval variables. For the purposes of this study, the researcher treated these variables as continuous variables, and parametric statistics applied. The values for the achievement and English proficiency measures are correspondent to the standardized score.

The researcher used all cases with complete variable sets in the study; that is, cases with missing information were included in the study. The researcher expected that less than 10% of cases would have missing data. Cases who did not attend the district during the 2012 to 2013 school year were excluded from the study. In addition, cases who did not have MAP, CRT, and ELPA scores were few because those measures are

closely tied to state and federal accountability, and grade-level participation in those

assessments averages 93% to 99% (Nevada Department of Education, 2014). The

researcher reviewed excluded cases to verify that there was not a consistent pattern for

the missing information. The researcher coded all the data as described above.

Descriptive statistics. After the data are put into SPSS, the researcher computed

the descriptive statistics. Descriptive statistics were used to screen and check the data

cases. The categorical and ordinal predictor variables and the interval predictor variables

were calculated separately.

The categorical and ordinal predictor variables were attendance, suspension,

transiency, retention, special education status, initial English proficiency, ELLs who exit,

and ELLs who do not exit. For these variables, the researcher computed frequency and

range. The correct number of cases and that all variables are within their possible range

were confirmed. The researcher noted distribution between the categorical variables.

The interval categorical variables were ELA and math achievement CRT and

MAP scale scores, the English language proficiency scale scores for reading, writing,

speaking, and listening, the composite scores for literacy, comprehension, oral language,

and overall initial English proficiency and number of years in the U.S. school system. For

the interval predictor variables, the researcher checked frequency and range to confirm

that the number of cases was correct and all the variables were in their possible range.

The researcher also noted the means and standard deviations.

Tests of assumptions. Discriminant analysis is sensitive to normality (Mertler & Vannatta, 2010); therefore, the researcher will assess normality of distributions for each variable by analyzing bivariate scatterplots. Because this was an exploratory study, any variables that did not meet the criteria for normality were not transformed or eliminated. However, the researcher noted the characteristics of the distribution.

Discriminant analysis is also sensitive to inter-correlations among predictor variables. The researcher eliminated variables that were highly correlated (Mertler & Vannatta, 2010). The researcher expected that the CRT and MAP scale scores would be highly correlated. In addition, the researcher expected the English language proficiency individual scores for reading, writing, speaking, and listening to be highly correlated with the English language proficiency composite scores for literacy, comprehension, and oral language.

Discriminant analysis. For each grade level, there were five SPSS output reports to analyze to determine the final set of predictor variables. The goal of the analysis was to create a parsimonious variable set that distinguishes between the ELLs who exit and the ELLs who do not exit. To identify the final set of variables, the researcher computed five discriminant function analyses.

The preliminary statistics provided in the output included the table of means and standard deviations for each predictor variable group; the test of differences among predictor variables; the covariance matrices; and the Box M test that the researcher used to help determine how the groups differed with each final predictor variable. The researcher checked the preliminary statistics to make sure that there were significant group differences between the variables.

The next step was to interpret the significance tests and the strength of relationships test for each of the six discriminant functions (Mertler & Vannatta, 2010). The significance test, the Wilks Lambda, determined if there was statistical significance between the groups accounted for. The eigenvalue table contains the eigenvalue, percentage of variance, and canonical correlation for the discriminant functions. The researcher used the canonical correlation to calculate the effect size.

The significance and strength of relationship tests help determine the number of functions to interpret (Mertler & Vannatta, 2010). Only functions that have significant group differences were further analyzed. The researcher examined the functions for how well they discriminated between the exiting and nonexiting groups. The researcher used the standardized canonical discriminant function coefficients table and the structure matrix to do this analysis.

Finally, the researcher examined the accuracy of the functions in applying cases to the appropriate group only for the sixth discriminant function for each grade level (Mertler & Vannatta, 2010). The researcher used the table of classification results for this purpose. The extent to which group differences support the functions generated was determined by reviewing the group means for each function.

Discriminant analysis process. The researcher conducted the discriminant analysis by grade level five times to identify the variables with the strongest weights and to eliminate variables that had inter-correlations (Tabachnick & Fidell, 1983). The English language proficiency scores were also criterion variables. The researcher used the scale for both to designate the cases into one of the two groups: exit or nonexit. The researcher removed the groups from the analysis to examine how well non-criterion

variables distinguished between the groups. Then they were reentered into the analysis using stepwise methodology. Because this was an exploratory study and the intent was to define the variables that best distinguished the groups, the researcher ran the analysis five times for each grade level with varying combinations of predictor variables to finalize the predictor variable set for final analysis.

Analysis 1. The researcher calculated a basic discriminant analysis for each grade level. The following variables were used: attendance, suspension, transiency, retention, number of years in U.S. system, initial English proficiency, and special education status. Based on this analysis, the researcher screened variables. Only the variables that had a high predictive validity and did not have inter-correlation with the other variables were used in the subsequent calculations. At this point, the researcher ran the analysis again with the restricted set of variables.

Analysis 2. The researcher calculated stepwise discriminant analysis for all three grade levels. Variables identified in Analysis 1 became Group 1 variables. Additional variables were considered and became Group 2 variables. The following variables will be used and added in the following order for Analysis 2:

- Group 1: The variables identified in Analysis 1.
- Group 2: English proficiency scale scores for reading, writing, speaking, and listening, English language proficiency composite scores for literacy, comprehension, oral language, and overall skills.

Analysis 3. The researched calculated stepwise discriminant analysis for all three grade levels. The following variables were used and added in the following order:

- Group 1: The variables identified in Analysis 1.

- Group 2: English proficiency scale scores for reading, writing, speaking, and listening.

Analysis 4. The researched calculated stepwise discriminant analysis for all three grade levels. The following variables were used and added in the following order:

- Group 1: The variables identified in Analysis 1.

- Group 2: English language proficiency composite scores for literacy, comprehension, oral language, and overall.

The researcher expected the English language proficiency scale scores and composite scores to be highly intercorrelated because they were based on the same raw scores. After Analysis 4, the variable or variables with the highest predictive validity and least intercorrelation with each other were identifiable and were used in the final analysis. The English proficiency scores that did not have high predictive validity and or are highly correlated with another variable were removed. At this point, the researcher ran the analysis again with the restricted variable set.

Analysis 5. The researched calculated stepwise discriminant analysis for all three grade levels. The following variables were used and added in the following order:

- Group 1: The variables identified in Analysis 1.

- Group 2: CRT math, CRT reading, MAP math, MAP reading.

The researcher expected the achievement scale scores to be highly intercorrelated. After Analysis 5, the variable or variables with the highest predictive validity and least intercorrelation with each other were identifiable and were used in the final analysis. The achievement scores that did not have high predictive validity and or were highly

correlated with another variable were removed. At this point, the researcher ran the analysis again with the restricted variable set.

Analysis 6. The researcher computed a sixth discriminant analysis for third, fifth, and ninth grade by using only the final variables. The purpose of this analysis was to find the final discriminant function. For the final analysis, the researched used the stepwise method of discriminant analysis. The criterion predictor variables that remain were added last so that the contribution of each variable could be analyzed (Tabachnick & Fidell, 1983). Again, the researcher analyzed the results of the discriminant analysis in detail.

Summary

The researcher conducted discriminant analysis several times to identify a set of variables that provided the best discriminate function. Some variables were eliminated because of high inter-correlations and or lack of predictive validity (Tabachnick & Fidell, 1983). The overall goal was to establish the best discriminate function based on the selected variables (Mertler & Vannatta, 2010). It is important to note that the above discussion provides a possible series of discriminant analyses. The actual series of discriminant analyses may have been different if it were based in part on the results of correlation, actual discriminant analysis at each step, and other related data.

Thus, for each grade level, there is a series of discriminant analyses and a final discriminate function. The goal of the analysis was to identify a parsimonious variable set that distinguishes between the ELLs who exit and the ELLs who do not exit. The criterion predictor variables that remain were added last, so that the amount of contribution of each variable could be analyzed (Tabachnick & Fidell, 1983). The stepwise mode of discriminant analysis was used. The last two variables added were the

achievement scale scores and the English language proficiency scores that remained in

place to assess the predictive power gained by adding a variable set to a set of prior

variables (Tabachnick & Fidell, 1983).

Chapter Four: Results and Analysis

As outlined in Chapter 3, the researcher ran six discriminant analyses for each grade level, using a grouping variable and various combinations of predictor variables to determine the most parsimonious variable set that established the greatest difference between ELLs who exit an ELL program and ELLs who do not exit. The researcher conducted analyses for each grade level using the same process.

The researcher calculated descriptive statistics and analyzed for missing data, range, and minimum and maximum values for each case to check the data for accuracy. Cases with missing data were removed from the data set. The researcher calculated means, standard deviations, and correlation coefficients for all interval variables, and the researcher noted variables with high levels of correlation. The researcher calculated Mahalanobis distance to determine the number of outliers, and bivariate scatterplots were produced to examine normality and linearity. Again, the researcher calculated six discriminant analyses for each grade level.

The researcher grouped variables by characteristics so that the contribution of each could be analyzed separately. Also, some variables had to be removed from the analyses due to high correlations. The process of grouping the variables separately and calculating the analysis brought out the strongest predictors from each group. The discussions of the results of the analyses follow.

Correlations among Variables

There are high correlations among the English proficiency variables, among the achievement variables, and between the English proficiency variables and the achievement variables (see Appendix A). The amount of correlation between the

variables varied across grade levels. In third grade, the variables with the highest correlations were the reading scale score and the comprehension composite score (.965); the literacy composite score and the overall composite score (.956); and the writing scale score and the literacy composite score (.916). The variables with the smallest correlations in the third grade were the speaking scale score and the CRT math scale score (.361); the speaking scale score and the reading scale score (.384); and the listening scale score and the speaking scale score (.382). In fifth grade, the variables with the highest correlations were the comprehension composite score and the overall composite score (.947); the reading scale score and the literacy composite score (.915); and the speaking scale score and oral proficiency composite score (.891). The variables with the smallest correlations in the fifth grade were the speaking scale score and the MAP spring math score (.265); the speaking scale score and CRT math scale score (.268); and the speaking scale score and the MAP winter math score (.319). In ninth grade, the variables with the highest correlations were the reading scale score and the comprehension composite score (.962); the literacy composite score and the overall composite score; and the reading scale score and the literacy composite score (.860). In the ninth grade the variables with the smallest correlations were the speaking scale score and the CRT math (.162); the speaking scale score and the MAP winter math (.181); and the speaking scale score and the CRT reading (.190).

Third Grade

Prior to conducting the discriminant analyses, the researcher screened the data for missing data, outliers, normality, and linearity. Frequency statistics indicated that for the variables, MAP fall reading and MAP fall math, no cases had information for those

variables; therefore, these variables were removed, leaving 22 predictor variables. The original third grade data set had 1377 cases. There were 214 cases removed from the original 1377 cases because of other missing data. This resulted in 1163 cases that the researcher used in the analyses. There was no pattern found for the missing data. Mahalanobis distance results indicated that there were 53 outliers. They were not removed from the current exploratory study and will be accounted for as a possible limitation. The bivariate scatterplots indicated normal distribution for the interval variables. As expected, correlation coefficients indicated a high level of correlations among the English proficiency scale scores and composite scores and indicated a high level of correlations among the measures of student achievement. Based on the above, the number of cases removed was 214. The final number of cases was 1163. The number of cases that exited was 263, and the number of cases that did not exit was 900.

Frequency statistics. The frequency statistics for the third grade sample are for the number of years in the school system, initial English proficiency, IEP status, school Title I status, and the risk factors of attendance risk, retention risk, transiency risk, and suspension risk. The majority of cases, 87% ($N = 1013$), have been in the school system for four years and four percent ($N = 48$) have been in the school system for five years. Four percent ($N = 50$) of cases who had been retained. After checking the original data set, the majority of the cases that had been in the system for five years had been retained. Most cases, 93% ($N = 1076$), came into the school system with the lowest level of English proficiency. Only 12% ($N = 139$) of cases had IEP status. School Title I status was high at 73% ($N = 843$). The attendance risk factor was the highest of the risk factors; 26% ($N = 300$) of cases had some to moderate attendance risk while 74% ($N = 1113$) of

cases had no risk. For the suspension risk factor, 99% ($N = 1152$) of cases had no risk, and for the transiency risk factor, 94% ($N = 1090$) of cases had no risk, and five percent ($N = 73$) had some risk for transiency. The frequency statistics indicate that the majority of ELLs begin school in kindergarten with a very low level of proficiency in English in Title I schools. In summary, a very low percentage of the cases have other risk factors including IEP status, retention risk, suspension risk, and transiency risk.

The researcher computed the discriminant analysis on the data set by grade level six times in order to identify the variables with the strongest weights and eliminate any remaining variables that had high levels of correlation (Tabachnick & Fidell, 1983). The English language proficiency scores are also criterion variables. The scale scores and composite scores can designate the cases into one of the two groups: exit or nonexit. These variables were removed from the analysis to examine how well non-criterion variables distinguish between the groups. Then the researcher re-entered them into the analysis using stepwise methodology. Because this was an exploratory study and the intent was to define the variables that best distinguish the groups, the researcher ran the analysis six times for each grade level with varying combinations of predictor variables in order to establish the predictor variable set for final analysis.

Analysis 1. The researcher conducted the first discriminant analysis to determine which of the eight noncriterion categorical and ordinal predictor variables had the greatest predictive power and created the maximum discrimination between ELLs who exit and ELLs who do not. The variables were number of years in the system, initial English proficiency, IEP status, school Title I status, attendance risk, retention risk, suspension risk, and transiency risk. One function appeared, and it was significant, $\Lambda =$

.925, χ^2 (8, $N = 1163$) = 90.52, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The researcher used the canonical correlation to determine effect size. The canonical correlation was .274. The square of the canonical correlation is equivalent to eta-squared and was .075, indicating that effect size was small to medium. Thus, eight percent of the variance in exit status was accounted for by the discriminant function composed of the eight variables. The following predictor variables were significant: initial English proficiency, IEP status, school Title I status, attendance risk, and retention risk. Standardized function coefficients and correlation coefficients (see Table 2) indicated that the variables of special education status, the school's Title 1 status, and student retention risk were most associated with the function. Based on significant variables, the researcher labeled the function as *third grade risk indicators*.

Table 2 has three columns. Column one describes the predictor variables that were significant in the analysis. Column two is labeled "Correlation Coefficients with Discriminant Function" and represents the results from the structure matrix output table. These results can be used to interpret the discriminant function. These values are a correlation between the original variable with the discriminant function score. Correlation coefficients that are $\geq .3$ are considered meaningful and are interpreted. In Analysis 1, entry level English proficiency, IEP status, school Title I status, and attendance risk all had correlation coefficients $\geq .3$. However, retention risk is not significant. Column three is labeled "Standardized Function Coefficients" and represents the results from the standardized canonical discriminant function coefficients. These results have standardized weights and represent the relative contribution of each variable to the

distinction between the two groups. That is, these values represent the relative

contribution of each variable to the discriminant function. In this analysis, IEP status had

a high positive weight (.563) and initial English proficiency had a high negative weight (-

.733). Attendance risk (.270) and school Title I status (.365) also had positive

contributions to the separation of the two groups.

Table 2

Correlation Coefficients and Standardized Function Coefficients for Analysis 1-Third Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Initial English Proficiency	-.477	-.733
IEP Status	.549	.563
School Title I Status	.367	.365
Student Retention Risk	.247	.318
Student Attendance Risk	.300	.270

The classification results table indicates the number and percentage of cases that

were correctly predicted into group membership. Classification results revealed that eight

percent ($N = 21$) of the cases that exited were correctly classified, and 98% ($N = 886$) of

the cases that did not exit were correctly classified. This indicates that the predictor

variables had a high level of predictive power for the cases that did not exit but not for

the cases that did exit. For the overall sample, 78% ($N = 907$) of the cases were correctly

classified. The discriminant function distinguished between the two groups and was

based on the predictor variables. Exit cases had a function mean of -.527 while nonexit

cases had a mean of .154.

Analysis 2. The second analysis was the first of three stepwise analyses to

determine which of the English proficiency variables have the greatest predictive power

to distinguish between ELLs who exit and ELLs who do not. The stepwise method of discriminant analysis enters variables in descending order with the variable with the highest *F* values entered first. Variables are added to the discriminant function until there is not a variable that can meet the Wilks' Lambda criteria. That is, no variables are added that do not meet critical *F*.

The variables in the analysis included the significant variables from the first analysis: initial English proficiency, IEP status, school Title I status, attendance risk, and retention risk. The added variables for English proficiency were listening scale score, speaking scale score, reading scale score, writing scale score, comprehension composite score, oral proficiency composite score, literacy composite scores, and overall English proficiency composite score.

The researcher's analysis determined that four variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: comprehension composite scores for reading and listening scale score, writing scale score, listening scale score, and IEP status. The variables of initial English proficiency, school Title I status, attendance risk, retention risk, speaking scale score, reading scale score, oral proficiency composite score for speaking and listening scale score, literacy composite score for reading and writing, and the overall English proficiency composite score were excluded.

One function appeared, and it was significant, $\Lambda = .416$, χ^2 (4, $N = 1163$) = 1015.87, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The researcher used the canonical correlation to determine effect size. The canonical correlation was .764. The square of the canonical

correlation was .58, indicating that effect size was large. Thus, 58% of the variance in exit status was accounted for by the discriminant function composed of the four variables. The standardized function coefficients (see Table 3) revealed the relative importance of each variable: listening, comprehension, writing, and IEP status. The standardized coefficient for comprehension was the highest. Listening and writing were smaller. IEP status was the smallest at .130 and did not have a discriminant function correlation coefficient greater than .3. Based on the significant variables, the function was labeled as *third grade English proficiency scale and composite.*

Table 3 has the same structure as Table 2; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are three correlation coefficients that are ≥ .3: listening scale score, writing scale score, and comprehension scale score. All of the standardized function coefficients were positive. The comprehension composite score and the writing scale score are the largest.

Table 3

Correlation Coefficients and Standardized Function Coefficients for Analysis 2-Third Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Comprehension Score	.955	.683
Writing Scale Score	.620	.317
Listening Scale Score	.821	.206
IEP Status	-.132	.130

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 76% ($N = 201$) of the exit cases were correctly classified, and 99% ($N = 895$) of the nonexit

cases were correctly classified. For the overall sample, 94% ($N = 1096$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.189 while nonexit cases had a mean of -.640.

Analysis 3. The third analysis was the second of three stepwise analyses to determine which of the English proficiency variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The variables included the significant variables from the first analysis as follows: initial English proficiency, IEP status, school Title I status, attendance risk, and retention risk. The added variables for English proficiency were listening scale score, speaking scale score, reading scale score, and writing scale score.

The researcher's analyses determined that four variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: reading scale score, listening scale score, writing scale score, and IEP status. The variables of initial English proficiency, school Title I status, attendance risk, and retention risk were excluded.

One function appeared, and it was significant, $\Lambda = .414$, χ^2 (4, $N = 1163$) = 1021.78, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .765. The square of the canonical correlation was .585, indicating that the effect was large. Thus, 59% of the variance in exit status was accounted for by the discriminant function composed of the four variables.

The standardized coefficients (see Table 4) revealed the relative importance of each variable: reading, listening, writing, and IEP status. Listening and reading were approximately equal. Writing was smaller. IEP status was the smallest at .129 and did not have a discriminant function correlation coefficient greater than .3. Based on the significant variables, the function was labeled as *third grade English proficiency scale scores*.

Table 4 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are three correlation coefficients that are ≥ .3: reading scale score, listening scale score, and writing scale score. All of the standardized function coefficients were positive. The listening scale score and the reading scale score are the largest.

Table 4

Correlation Coefficients and Standardized Function Coefficients for Analysis 3-Third Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Reading Scale Score	.850	.495
Listening Scale Score	.817	.493
Writing Scale Score	.617	.314
IEP Status	-.132	.129

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 77% ($N = 202$) of the exit cases were correctly classified, and 99% ($N = 895$) of the nonexit cases were correctly classified. For the overall sample, 94% ($N = 1097$) of the cases were

correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.198 while nonexit cases had a mean of -.642.

Analysis 4. The fourth analysis was the third of three stepwise analyses to determine which of the English proficiency variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The variables included the significant variables from the first analysis: initial English proficiency, IEP status, school Title I status, attendance risk, and retention risk. The added variables for English proficiency were comprehension composite score, oral proficiency composite score, literacy composite scores, and overall English proficiency composite score.

The researcher's analysis determined that three variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: comprehension, literacy, and IEP status. The variables of initial English proficiency, school Title I status, attendance risk, retention risk, oral proficiency composite scores for speaking and listening scale score, and the overall English proficiency composite scores were excluded.

One function appeared, and it was significant, $\Lambda = .424$, $\chi^2 (3, N = 1163) = 993.894$, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .759. The square of the canonical correlation was .576, indicating that effect size was large. Thus, 58% of the variance in exit status was accounted for by the discriminant function composed of the three variables.

The standardized function coefficients (see Table 5) revealed the relative importance of each variable: comprehension, literacy, and IEP status. Comprehension was the highest, followed closely by literacy. IEP status was the smallest at .112 and did not have a discriminant function correlation coefficient greater than .3. Based on the significant variables, the function was labeled as *third grade English proficiency composite.*

Table 5 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are two correlation coefficients that are ≥ .3: the literacy composite score and the comprehension composite score. All of the standardized function coefficients were positive. The comprehension composite score and the literacy composite score are the largest.

Table 5

Correlation Coefficients and Standardized Function Coefficients for Analysis 4-Third Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Comprehension Score	.971	.697
Literacy Score	.883	.383
IEP Status	-.135	.112

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 75% ($N = 196$) of the exit cases were correctly classified, and 100% ($N = 899$) of the nonexit cases were correctly classified. For the overall sample, 94% ($N = 1095$) of the cases were

correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.153 while nonexit cases had a mean of -.629.

English proficiency variables. At this point, the researcher chose the English proficiency variables for the final discriminant analysis. They were the reading scale score, the listening scale score, and the writing scale score. The researcher chose them because they had the highest weights, lowest correlation values, and potentially provided unique information. For example, reading and writing had a correlation of .651, a fairly high correlation because there are common underlying skills. However, the skills that are unique to each and assessed through the English proficiency exam have the potential to inform interpretation.

The relative weights in the discriminant functions for each variable for each analysis were as follows. In Analysis 2, the comprehension composite score (.683), writing scale score (.317), and the listening scale (.206) had the highest predictive weights. In Analysis 3, the reading scale score (.494), the listening scale score (.493), and the writing scale score (.315) had the highest predictive weights. In Analysis 4, the comprehension composite score (.697) and the literacy composite score (.383) had the highest weights. The reading scale score was used to calculate both the literacy and comprehension scores. Literacy also included a writing score, and comprehension also included the listening scale score.

There was high correlation between the comprehension composite score and the reading and listening scale score (Appendix A). The correlation between the comprehension composite score and reading scale score was .965. The correlation

between the comprehension composite score and the listening scale score was .898. The correlation between the literacy composite score and the reading scale score was .900. The correlation between the literacy composite score and the writing scale score was .916.

There was less correlation between the scale scores (see Appendix A). The correlation between the listening scale score and the reading scale score was .751 and between the listening scale score and the writing scale score was .584. The researcher chose the three English proficiency variables for the following three reasons: (a) There was a high correlation between the literacy and comprehension composite scores and the listening scale score, reading, and writing scale scores; (b) there was less correlation between the scale listening scale score, reading, and writing scores; and (c) even though there is significant correlation between the scale scores, each could potentially provide unique English proficiency level information.

Analysis 5. The fifth analysis was to determine which of the achievement variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The variables included the significant variables from the first analysis: initial English proficiency, IEP status, school Title I status, attendance risk, and retention risk. The added variables for achievement were CRT reading scale score, CRT math scale score, MAP winter reading score, MAP spring reading score, MAP winter math score, and MAP spring math score.

The researcher's analysis determined that four variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: MAP winter reading, CRT reading, CRT math, and initial English proficiency. The variables of school

Title I status, attendance risk, retention risk, MAP spring math, MAP winter math, and MAP spring reading were excluded.

One function appeared, and it was significant, $\Lambda = .735$, χ^2 (4, $N = 1163$) = 356.378, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .514. The square of the canonical correlation was .264, indicating that effect size was large. Thus, 26% of the variance in exit status was accounted for by the discriminant function composed of the four variables. The standardized function coefficients (see Table 6) revealed the relative importance of each variable: MAP winter reading, CRT reading, CRT math, and initial English proficiency. MAP winter reading and CRT reading were approximately equal. CRT math was slightly smaller. The smallest was initial English proficiency at .194 and did not have a discriminant function correlation coefficient greater than .3. Based on the significant variables, the function was labeled as *third grade achievement measures*. Table 6 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are three correlation coefficients that are $\geq .3$: MAP winter reading, CRT reading, and CRT math. All of the standardized function coefficients were positive. The MAP winter reading, CRT reading, and CRT math are the largest.

Table 6

Correlation Coefficients and Standardized Function Coefficients for Analysis 5-Third Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
MAP Winter Reading	.884	.409
CRT Reading	.875	.355
CRT Math	.811	.350
Initial English Proficiency	.227	.194

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 38% ($N = 100$) of the exit cases were correctly classified, and 94% ($N = 843$) of the nonexit cases were correctly classified. For the overall sample, 81% ($N = 943$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 1.109 while nonexit cases had a mean of -.324.

Achievement variables. At this point, the researcher chose the achievement variables for the final discriminant analysis. They were the MAP winter reading score (MAPWREAD) and the CRT math scale score (CRTMATH). The researcher chose them because they had the highest weights and the highest potential to provided unique content-specific information.

There was a high correlation between the CRT reading scale scores and the MAP winter reading scores (.794; see Appendix A). There was less correlation between MAP winter reading and CRT math (.670). Even though there is significant correlation between the MAP winter reading and the CRT math scores, each variable could still provide unique content area achievement information.

Analysis 6. The sixth analysis was to determine the variables that have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The variables included the significant variables from the first analysis: initial English proficiency, IEP status, school Title I status, attendance risk, and retention risk. The added variables for English proficiency were listening scale score, reading scale score, and writing scale score. The added variables for achievement were CRT math scale score and MAP winter reading score.

The researcher's analysis determined that five variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: reading, listening, writing, MAP winter reading, and IEP status. The variables of initial English proficiency, school Title I status, attendance risk, retention risk, and CRT math scale score were excluded.

One function appeared, and it was significant, $\Lambda = .407$, χ^2 (5, $N = 1163$) = 1040.014, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .770. The square of the canonical correlation was .593, indicating that effect size was large. Thus, 59% of the variance in the exit status was accounted for by the discriminant function composed of the five variables.

The standardized function coefficients (see Table 7) revealed the relative importance of each variable: reading scale scores, listening scale score, and writing scale scores, MAP winter and reading, and IEP status. Listening and reading were almost equal, and writing was slightly smaller. IEP was small at .099 and did not have a discriminant function correlation coefficient greater than .3. MAP winter reading had a negative weight of -

.231. Based on the significant variables, the function was labeled as *third grade final variables.*

Table 7 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are four correlation coefficients that are $\geq .3$: reading scale scores, listening scale score, writing scale scores, and MAP winter reading. The standardized function coefficients that were positive are IEP status, listening scale score, reading scale scores, and writing scale scores. The reading scale scores, listening scale score, and writing scale scores are the largest.

Table 7

Correlation Coefficients and Standardized Function Coefficients for Analysis 6 – Third Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Reading Scale Score	.839	.552
Listening Scale Score	.806	.491
Writing Scale Score	.608	.421
IEP Status	-.130	.099
MAP Winter Reading	.440	-.231

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 77% ($N = 203$) of the exit cases were correctly classified, and 100% ($N = 896$) of the nonexit cases were correctly classified. For the overall sample, 95% ($N = 1099$) of the cases were correctly classified. The discriminant function distinguished between the two groups and

was based on the predictor variables. Exit cases had a function mean of 2.229 while nonexit cases had a mean of -.651.

Summary. Table 8 summarizes the percentage of the third grade cases that were correctly predicted into the exit and nonexit groups for each discriminant analysis. The third analysis that used IEP status, listening scale scores, reading scale scores, and writing scale scores produced the discriminant function that most accurately predicted group membership overall. For each analysis, over 90% of the nonexit cases were correctly predicted. However, the predictive accuracy for cases that exited was much lower, ranging from eight to seventy-seven percent. The first analysis with the district risk indicators, IEP status, school Title I status, number of years in the U.S. system, and initial English proficiency only predicted eight percent of the exit cases. The highest prediction rate for cases that exit was the sixth analysis, and this analysis included the significant predictor variables from prior analyses.

Table 8

Percentage of Third-Grade Cases Correctly Predicted into Group Membership

	Exit Cases = 263			Nonexit Cases = 900
Analysis	Exit (N)	Nonexit (N)	Total N	Initial Variables in the Analysis
1	8% (21)	98% (886)	1163	8 Non-Criterion Variables: IEP Status, School Title I Status, Risk Factors, initial English proficiency, years in the US system
2	76% (201)	99% (895)	1163	7 English Proficiency Variables: Scale Scores and Composite Scores + School Title I Status, Attendance Risk, IEP Status
3	77% (202)	99% (895)	1163	4 ELPA Scale Scores: Reading, Writing, Speaking, and Listening + School Title I Status, Attendance Risk, IEP Status
4	75% (196)	100% (899)	1163	3 ELPA Composite Scores: Comprehension, Literacy, and Overall+ School Title I Status, Attendance Risk, IEP Status
5	38% (100)	94% (843)	1163	6 Achievement scores: MAP and CRT for reading and math + School Title I Status, Attendance Risk, IEP Status
6	77% (203)	94% (896)	1163	8 strongest predictor variables: Reading, Writing, Listening Scale scores, MAP winter reading, CRT Math + School Title I Status, Attendance Risk, IEP Status

Fifth Grade

Prior to conducting the discriminant analyses, the researcher screened data for missing data, outliers, normality, and linearity. Frequency statistics indicated that for the variables MAP fall reading and MAP fall math, no cases had information; therefore, they were removed, leaving 22 predictor variables. The original third grade data set had 764 cases. There were 173 cases removed from the original 764 cases because of other

missing data. This resulted in 591 cases being used in the analyses. There was no pattern found for the missing data. Mahalanobis distance results indicated that there were 26 outliers. They were not removed from this exploratory study and will be accounted for as a possible limitation. The bivariate scatterplots indicated normal distribution for the interval variables. As expected, correlation coefficients indicated a high level of correlations among the English proficiency scale scores and composite scores and a high level of correlations among the measures of student achievement. Based on the above, the number of cases removed was 173. The final number of cases was 591. The number of cases that exited was 161, and the number of cases that did not exit was 430.

Frequency statistics. The frequency statistics for the fifth grade are summarized for the number of years in the school system, initial English proficiency, IEP status, school Title I status, and the risk factors of attendance risk, retention risk, transiency risk, and suspension risk. The majority of cases, 81% ($N = 479$), had been in the school system for six years, and four percent ($N = 21$) had been in the school system for seven years. There were four percent ($N = 22$) of cases who had been retained. After checking the original data set, the researcher found that the majority of the cases that had been in the system for seven years had been retained. Most cases, 90% ($N = 531$), came into the school system with the lowest level of English proficiency. There was an increase in the percentage of cases with IEP from the 12% of third grade cases to 20% ($N = 117$) of fifth-grade cases with IEP status. School Title I status was high at 71% ($N = 422$). The attendance risk factor also increased slightly from the third grade's 26% to 30% ($N = 180$) in fifth grade. It was the risk factor with the highest percentage of cases, with some to moderate risk. For the suspension risk factor, 98% ($N = 581$) of cases had no risk, and

for the transiency risk factor, 94% ($N = 555$) of cases had no risk, 5% ($N = 33$) had some risk, and .5% ($N = 3$) had moderate risk. The frequency statistics indicate that the majority of ELLs began school in kindergarten with a very low level of proficiency in English in Title I schools. In summary, the data indicated that a very low percentage of the cases have other risk factors, including retention risk, suspension risk, and transiency risk. However, there was an eight percent increase in cases that had IEP status.

Analysis 1. The researcher conducted the first discriminant analysis to determine which of the eight non-criterion categorical and ordinal predictor variables have the greatest predictive power and create the maximum discrimination between ELLs who exit and ELLs who do not. The variables were number of years in the system, initial English proficiency, IEP status, school Title I status, attendance risk, retention risk, suspension risk, and transiency risk. One function appeared, and it was significant, $\Lambda =$ .910, χ^2 (8, $N = 591$) = 55.372, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .301. The square of the canonical correlation was .090, indicating that the effect size was small to medium. Thus, nine percent of the variance in exit status was accounted for by the discriminant function composed of the eight variables.

The following predictor variables were significant: IEP status and retention risk. Standardized function coefficients and correlation coefficients (see Table 9) revealed that the variable of special education status was most associated with the function. Based on the significant variables, the function was labeled as *fifth grade risk indicators.*

Table 9 has three columns. Column one describes the predictor variables that were significant in the analysis. Column two is labeled "Correlation Coefficients with Discriminant Function" and represents the results from the structure matrix output table. These results are used to interpret the discriminant function. They are a correlation between the original variable that had a discriminant function score. Correlation coefficients that are $\geq .3$ are considered meaningful and are interpreted. In Analysis 1, IEP status is l $\geq .3$. However, retention risk is not at this level. Column three is labeled "Standardized Function Coefficients" and represents the results from the standardized canonical discriminant function coefficients. These results have standardized weights and represent the relative contribution of each variable to the distinction between the two groups. In this analysis, IEP status has a high positive weight.

Table 9

Correlation Coefficients and Standardized Function Coefficients for Analysis 1-Fifth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
IEP Status	.909	.950
Retention Risk	.233	.144

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that two percent ($N = 3$) of the cases that exited were correctly classified, and 100% ($N = 429$) of the cases that did not exit were correctly classified. This indicates that the predictor variables had a high level of predictive power for the cases that did not exit but not for the cases that did exit. For the overall sample, 73% (432) of the cases were correctly classified. The discriminant function distinguished between the two groups and was

based on the predictor variables. Exit cases had a function mean of -.514 while nonexit cases had a mean of .192.

Analysis 2. The second analysis was the first of three stepwise analyses to determine which of the English proficiency variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The only significant variable from Analysis 1, IEP, was included. The added variables for English proficiency were listening scale scores, speaking scale score, reading scale score, writing scale score, comprehension composite score, oral proficiency composite score, literacy composite scores, and overall English proficiency composite score.

The researcher's analysis determined that two variables met the Wilks Lambda, criteria and the researcher entered them into the discriminant function: reading scale scores and writing scale scores. The variables IEP status, listening scale score, speaking scale scores, oral proficiency composite score, literacy composite score, and the overall English proficiency composite scores were excluded.

One function appeared, and it was significant, $\Lambda = .551$, $\chi^2 (2, N = 591) = 350.303$, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .670. The square of the canonical correlation was .449, indicating that effect size was large. Thus, 45% of the variance in the exit status was accounted for by the discriminant function that was composed of the two variables. The standardized function coefficients (see Table 10) revealed the relative importance of each variable: reading scale scores and writing scale scores. The reading scale score was the highest, followed by the writing scale score. Based on the significant variables, the

function was labeled as *fifth grade English proficiency scale and composite.*

Table 10 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are two correlation coefficients that are $\geq$ .3: reading scale scores and writing scale scores. All of the standardized function coefficients were positive. The reading scale scores and the writing scale scores are the largest.

Table 10

Correlation Coefficients and Standardized Function Coefficients for Analysis 2 – Fifth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Reading Scale Score	.982	.884
Writing Scale Score	.617	.214

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 75% ($N = 120$) of the exit cases were correctly classified, and 98% ($N = 423$) of the nonexit cases were correctly classified. For the overall sample, 92% (543) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 1.472 while nonexit cases had a mean of -.551.

Analysis 3. The third analysis was the second of three stepwise analyses to determine which of the English proficiency variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The only significant variable from Analysis 1, IEP status, was included. The added variables for English proficiency were listening scale score, speaking scale score, reading scale score, and writing scale score.

The researcher's analysis determined that two variables met the Wilks Lambda, criteria and the researcher entered them into the reading scale score and writing scale score. The variables of IEP status, listening scale scores, and speaking scale scores were excluded.

One function appeared, and it was significant, $\Lambda = .551$, χ^2 (2, $N = 591$) = 350.304, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .670. The square of the canonical correlation was .449, indicating that effect size was large. Thus, 45% of the variance in the exit status was accounted for by the discriminant function composed of the two variables.

The standardized function coefficients (see Table 11) revealed the relative importance of each variable: reading scale score and writing scale score. The reading scale score was the highest, followed by the writing scale score. Based on the significant variables, the function was labeled as *fifth grade English proficiency scale scores.*

Table 11 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are two correlation coefficients that are $\geq .3$. They are the reading scale score and the writing scale score. The standardized function coefficients were positive. The reading scale is the largest.

Table 11

Correlation Coefficients and Standardized Function Coefficients for Analysis 3 – Fifth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Reading Scale Score	.982	.884
Writing Scale Score	.617	.214

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 75%

($N = 120$) of the exit cases were correctly classified, and 98% ($N = 423$) of the nonexit

cases were correctly classified. For the overall sample, 92% ($N = 543$) of the cases were

correctly classified. The discriminant function distinguished between the two groups and

was based on the predictor variables. Exit cases had a function mean of 1.472 while

nonexit cases had a mean of -.551.

Analysis 4. The fourth analysis was the third of three stepwise analyses to

determine which of the English proficiency variables have the greatest predictive power

to distinguish between ELLs who exit and ELLs who do not. The only significant

variable from Analysis 1, IEP status, was included. The added variables for English

proficiency were comprehension composite score, oral proficiency composite score,

literacy composite scores, and overall English proficiency composite score.

The researcher's analysis determined that three variables met the Wilks Lambda,

criteria and the researcher entered them into the discriminant function: comprehension

composite scores, literacy composite scores, and the overall composite score. The

variables of IEP status and the oral composite score were excluded.

One function appeared, and it was significant, $\Lambda = .552$, χ^2 (3, $N = 591$) $= 349.586$, $p <$

.001. The discriminant function significantly differentiated between ELLs who exit and

ELLs who do not. The canonical correlation was used to determine effect size. The

canonical correlation was .670. The square of the canonical correlation was .449,

indicating that effect size was large. Thus, 45% of the variance in the exit status was

accounted for by the discriminant function composed of the three variables.

The standardized function coefficients (see Table 12) revealed the relative importance

of each variable: comprehension, literacy, and the overall composite score.

Comprehension and literacy were both high positive, and the overall composite score was a high negative. Based on the significant variables, the function was labeled as *fifth grade English proficiency composite.*

Table 12 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients that have the discriminant function, and column three shows the standardized function coefficients. There are three correlation coefficients that are $\geq .3$: the literacy composite score, the comprehension composite score, and the overall composite score. The comprehension composite score and the literacy composite score standardized function coefficients had a positive weight. The overall composite score had a negative weight. The comprehension composite score and the literacy composite score are the largest scores.

Table 12

Correlation Coefficients and Standardized Function Coefficients for Analysis 4- Fifth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Comprehension Score	.766	.938
Literacy Score	.934	.859
Overall Score	.674	-.722

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 71% ($N = 114$) of the exit cases were correctly classified, and 99% ($N = 424$) of the nonexit cases were correctly classified. For the overall sample, 91% ($N = 538$) of the cases were correctly classified. The discriminant function distinguished between the two groups and

was based on the predictor variables. Exit cases had a function mean of 1.471 while nonexit cases had a mean of -.551.

English proficiency variables. At this point, the researcher chose the English proficiency variables for the final discriminant analysis. They were the comprehension composite score and the writing scale score. The researcher chose these variables because they had the highest weights and lower correlation values and potentially provided unique information.

The relative weights in the discriminant functions for each variable for each analysis were as follows. In Analysis 2, the writing scale score (.214) and the reading scale score (.884) had the highest predictive weights. In Analysis 3, the reading scale score (.884) and the writing scale score (.214) had the highest predictive weights. In Analysis 4, the comprehension composite score (.938) and the literacy composite score (.859) had the highest weights. The reading scale score was used to calculate both the literacy and comprehension scores. Literacy also included a writing score, and comprehension also included the listening scale score.

There was high correlation among the comprehension composite score and the literacy composite scores (.764; see Appendix A). The correlation between the comprehension composite score and the reading score was .802. The correlation between the literacy composite score and the reading scale score was .915. The high correlation among the comprehension, reading, and literacy scores made using all three scores unnecessary. In Analysis 4, the comprehension composite score had the highest standardized function coefficients at .938. The comprehension composite score does not

have the writing scale score as being part of it. In addition, the correlation between the comprehension composite score and the writing scale score was .557.

The researcher chose the comprehension composite score and writing scale score for the following three reasons: (a) There was a high correlation between the reading scale scores, the literacy composite scores, and comprehension composite scores; (b) the comprehension scale score had the highest standardized function coefficient; and (c) even though there was significant correlation between the comprehension composite scores and the writing scores, each still provided unique English proficiency level information.

Analysis 5. The fifth analysis was to determine which of the achievement variables have the greatest predictive power to indicate the greatest distinction between ELLs who exit and ELLs who do not. The only significant variable from Analysis 1, IEP status, was included. The added variables for achievement were CRT reading scale score, CRT math scale score, MAP winter reading score, MAP spring reading score, MAP winter math, and MAP spring math.

The researcher's analysis determined that three variables met the Wilks Lambda, criteria and the researcher entered them into the discriminant function: CRT reading scores, MAP spring math scores, and MAP winter reading scores. The variables of MAP spring reading, MAP winter math, and CRT math were excluded.

One function appeared, and it was significant, $\Lambda = .703$, $\chi^2 (4, N = 591) = 207.201$, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .545. The square of the canonical correlation was

.297, indicating that effect size was large. Thus, 30% of the variance in the exit status was

accounted for by the discriminant function that was composed of the three variables.

The standardized function coefficients (see Table 13) revealed the relative importance of

each variable: CRT reading, MAP spring math, and MAP winter reading. CRT reading

was the highest, followed by MAP spring math, and the MAP winter reading was the

lowest score. Based on the significant variables, the function was labeled as *fifth grade*

achievement measures.

Table 13 has the same structure as the previous tables in the analysis section; column

one is the description of the variable, column two indicates the correlation coefficients

that have the discriminant function, and column three shows the standardized function

coefficients. There are three correlation coefficients that are $\geq .3$: MAP winter reading,

CRT reading, and MAP spring math. All of the standardized function coefficients were

positive. The MAP winter reading, CRT reading, and MAP spring math are the largest.

Table 13

Correlation Coefficients and Standardized Function Coefficients for Analysis 5 – Fifth
Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
CRT Reading	.927	.615
MAP Spring Math	.730	.300
MAP Winter Reading	.825	.254

The classification results table indicates the number and percentage of cases that

were correctly predicted into group membership. Classification results revealed that

51.6% ($N = 83$) of the exit cases were correctly classified, and 92% ($N = 396$) of the

nonexit cases were correctly classified. For the overall sample, 81% ($N = 479$) of the

cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 1.061 while nonexit cases had a mean of -.397.

Achievement variables. At this point, the researcher chose the achievement variables for the final discriminant analysis. The variables chosen were the CRT reading scale scores (CRTREAD) and the MAP spring math scores (MSMATH). The researcher chose these variables because they had the highest weights. The MAP winter reading score was eliminated; it had a .746 correlation to the CRT reading scale scores.

The relative weights in the discriminant functions for each variable and analysis is as follows. In Analysis 5, the CRT reading scale scores (.615), MAP spring math scores (.300), and the MAP winter reading (.254) had the highest predictive weights.

There was a high correlation between the CRT reading scale scores and the MAP winter reading scores (.746; see Appendix A). There was less correlation between CRT reading scale scores and MAP spring math (.545). Even though there is significant correlation between the MAP winter reading and the CRT math scores, each variable could potential provide unique content area achievement information.

Analysis 6. The sixth analysis was to determine the variables that have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The only significant variable from Analysis 1, IEP status, was included. The added variables for English proficiency were comprehension composite score and writing scale score. The added variables for achievement were CRT reading and MAP spring math.

The researcher's analysis determined that four variables met the Wilks Lambda, criteria and the researcher entered them into the discriminant function: the comprehension

composite score, CRT reading scale score, writing scale score, and MAP spring math. The IEP variable was excluded.

One function appeared, and it was significant, $\Lambda = .604$, χ^2 (4, $N = 591$) = 295.478, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .629. The square of the canonical correlation was .396, indicating that effect size was large. Thus, 40% of the variance in the exit status was accounted for by the discriminant function composed of the four variables.

The standardized function coefficients (see Table 14) revealed the relative importance of each variable: comprehension composite score, CRT reading, writing scale score, and MAP spring math. The comprehension composite score had the highest weight, followed by the reading scale score and the writing scale score. MAP spring math was the smallest. Based on the significant variables, the function was labeled as *fifth grade final variables.*

Table 14 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients that have the discriminant function, and column three shows the standardized function coefficients. There are four correlation coefficients that are $\geq .3$: comprehension composite scores, CRT reading scale scores, writing scale scores, and MAP spring math. The standardized function coefficients that show positive weights and are the largest are CRT reading scale scores, writing scale scores, and MAP spring math.

Table 14

Correlation Coefficients and Standardized Function Coefficients for Analysis 6 – Fifth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Comprehension	.854	.572
CRT Reading	.746	.316
Writing Scale Score	.689	.263
MAP Spring Math	.587	.162

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 68% ($N = 109$) of the exit cases were correctly classified, and 98% ($N = 421$) of the nonexit cases were correctly classified. For the overall sample, 90% (530) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 1.320 while nonexit cases had a mean of -.494.

Summary. Table 15 summarizes the percentage of the fifth-grade cases that were correctly predicted into the exit and nonexit groups for each discriminant analysis. The third analysis that used IEP status, listening scale scores, reading scale scores, and writing scale scores produced the discriminant function that most accurately predicted group membership overall. For each analysis, over 90% of the nonexit cases were correctly predicted. However, the predictive accuracy for cases that exit was much lower, ranging from two to seventy-five percent. The first analysis with the district risk indicators, IEP status, school Title I status, number of years in the U.S. system, and initial English proficiency only predicted two percent of the exit cases. The highest prediction rate for

cases that exit was the third analysis, which included the English proficiency scale scores

for reading, writing, speaking, and listening.

Table 15

Percentage of Fifth Grade Cases Correctly Predicted into Group Membership

	Exit Cases = 161			Nonexit Cases = 430
Analysis	Exit (N)	Nonexit (N)	Total N	Initial Variables in the Analysis
1	2% (3)	100% (429)	591	8 Non-Criterion Variables: IEP Status, School Title I Status, Risk Factors, Initial English proficiency, number of years in the US system
2	75% (120)	92% (423)	591	7 English Proficiency Variables: Scale Scores and Composite Scores + IEP Status, Retention Risk
3	75% (120)	98% (423)	591	4 ELPA Scale Scores: Reading, Writing, Speaking, and Listening + IEP Status, Retention Risk
4	71% (114)	99% (424)	591	3 ELPA Composite Scores: Comprehension, Literacy, and Overall + IEP Status, Retention Risk
5	52% (83)	92% (396)	591	6 Achievement scores: MAP and CRT for reading and math + IEP Status, Retention Risk
6	68% (109)	98% (421)	591	8 strongest predictor variables: Comprehension Composite Score, Writing Scale Score, CRT Reading, MAP Spring Math + IEP Status, Retention Risk

Ninth Grade

Prior to conducting the discriminant analyses, the researcher screened data for missing data, outliers, normality, and linearity. Frequency statistics indicated that for the variables MAP spring reading score and MAP spring math, there were few cases that had information for those variables, so the researcher removed them. School Title I status was also removed because only one high school in the district has a Title I status. This left 21 predictor variables. The original ninth grade data set had 392 cases. There were 131 cases removed from the original 392 cases because of other missing data. This resulted in 261 cases being used in the analyses. There was no pattern found for the missing data.

Mahalanobis distance results indicated that there were 13 outliers. They were not removed from the current exploratory study and will be accounted for as a possible limitation. The bivariate scatterplots indicated normal distribution for the interval variables. As expected, correlation coefficients indicated a high level of correlations among the English proficiency scale scores and composite scores and indicated a high level of correlations among the measures of student achievement; however, the correlations were not as high as the correlations in both third and fifth grades. Based on the above, the number of cases removed was 131. The final number of cases was 261. The number of cases that exited was 54, and the number of cases that did not exit was 207.

Frequency statistics.

The frequency statistics for the ninth grade sample are for the number of years in the school system, initial English proficiency, IEP status, and the risk factors of attendance risk, retention risk, transiency risk, and suspension risk. The majority of cases, 63% ($N = 165$), have been in the school system for 10 years, and 10% ($N = 27$) have been in the school system for 11 years, and another one percent ($N = 2$) has been in the system for 12 years. Thirteen percent ($N = 34$) of the cases had been retained. After checking the original data set, the researcher found that the majority of the cases that had been in the system for 10 to 12 years had been retained. Most cases, 85% ($N = 222$), came into the school system with the lowest level of English proficiency. From the third to ninth grade, there was an increase in percentage of cases that have IEP status. In third grade, 12% of cases had IEP status, in fifth grade, 20% of cases had IEP status, and in ninth grade, 44% ($N = 114$) of cases had IEP status. The attendance risk factor also increased from the third

grade's 26% to the fifth grade's 30%, and finally to the ninth grade's 50% ($N = 125$); cases in ninth grade had some to moderate attendance risk. It is the risk factor that had the highest number of cases with some to moderate risk. There was also an increase in the suspension risk factor; 80% ($N = 211$) of cases had no risk, but 19% ($N = 50$) of ninth grade cases had some risk. This was an 18% increase from the other grades. The transiency risk factor remained low; 96% ($N = 252$) of cases had no risk, 3.1% ($N = 8$) had some risk, and .4% ($N = 1$) had moderate risk. In summary, the frequency data indicated that the majority of ELLs began school in kindergarten with a very low level of proficiency in English. They also indicated that the cases in ninth grade have a higher percentage of cases that have higher levels of risk factors, especially for IEP status, attendance risk, retention risk, and suspension risk. However, there was a 24% increase in cases that had IEP status when compared to the fifth grade.

Analysis 1. The researcher conducted the first discriminant analysis to determine which of the eight noncriterion categorical and ordinal predictor variables had the greatest predictive power and created the maximum discrimination between ELLs who exit and ELLs who do not. The variables were number of years in the system, initial English proficiency, IEP status, attendance risk, retention risk, suspension risk, and transiency risk. One function appeared, and it was significant, $\Lambda = .819$, χ^2 (7, N = 261) = 50.887, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .425. The square of the canonical correlation was .180, indicating that effect size was medium. Thus, 18% of the variance in the exit status was accounted for by the discriminant function composed of the eight variables.

The following predictor variables were significant: IEP status, number of years in the system, initial English proficiency, and attendance risk. Standardized function coefficients and correlation coefficients (see Table 16) revealed that the variables of number of years in the system and initial English proficiency were most associated with the function. Based on the significant variables, the function was labeled as *ninth grade risk indicators.*

Table 16 has three columns. Column one describes the predictor variables that were significant in the analysis. Column two is labeled "Correlation Coefficients with Discriminant Function" and represents the results from the structure matrix output table. These results are used to interpret the discriminant function. They are a correlation between the original variable with the discriminant function score. Correlation coefficients that are $\geq .3$ are considered meaningful and are interpreted. In Analysis 1, there are two variables at $\geq .3$. They are IEP status and initial English proficiency. Column three is labeled "Standardized Function Coefficients" and represents the results from the standardized canonical discriminant function coefficients. These results have standardized weights and represent the relative contribution of each variable in regards to the distinction between the two groups. In this analysis, number of years in the system and IEP have high positive weights.

Table 16

Correlation Coefficients and Standardized Function Coefficients for Analysis 1-Ninth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Number of Years in System	.909	.282
Initial English Proficiency	.233	.637
IEP Status	-.710	-.769
Attendance risk	-.285	-.260

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 28% ($N = 15$) of the cases that exited were correctly classified, and 96% ($N = 199$) of the cases that did not exit were correctly classified. This indicates that the predictor variables had a high level of predictive power for the cases that did not exit but not for the cases that did exit. For the overall sample, 82% ($N = 214$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of .916 while nonexit cases had a mean of -.239.

Analysis 2. The second analysis was the first of three stepwise analyses to determine which of the English proficiency variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The significant variables from Analysis 1, number of years in the system, initial English proficiency, attendance risk, and IEP status, were included. The added variables for English proficiency were listening scale score, speaking scale score, reading scale score, writing scale score,

comprehension composite score, oral proficiency composite score, literacy composite

scores, and overall English proficiency composite score.

The researcher's analysis determined that two variables met the Wilks Lambda,

criteria and the researcher entered them into the discriminant function: reading scale scores

and the overall composite scores. The variables IEP status, number of years in the

system, initial English proficiency, attendance risk, listening scale scores, speaking scale

scores, writing scale scores, comprehension composite scores, oral proficiency composite

scores, and literacy composite scores were excluded.

One function appeared, and it was significant, $\Lambda = .430$, χ^2 (2, $N = 261$) =

218.044, $p < .001$. The discriminant function significantly differentiated between ELLs

who exit and ELLs who do not. The canonical correlation was used to determine effect

size. The canonical correlation was .755. The square of the canonical correlation was

.570, indicating that effect size was large. Thus, 57% of the variance in the exit status was

accounted for by the discriminant function that was composed of the two variables.

The standardized function coefficients (see Table 17) revealed the relative importance

of each variable: reading scale scores and the overall composite scores. The reading scale

score was the highest, followed by the overall composite score. Based on the significant

variables, the function was labeled as *ninth grade English proficiency scale and

composite.*

Table 17 has the same structure as the previous tables in the analysis section; column

one is the description of the variable, column two indicates the correlation coefficients

that has the discriminant function, and column three shows the standardized function

coefficients. There are two correlation coefficients that are $\geq .3$: reading scale scores and

overall composite scores. All of the standardized function coefficients were positive. The reading scale scores and the overall composite scores were the largest.

Table 17

Correlation Coefficients and Standardized Function Coefficients for Analysis 2 – Ninth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Reading Scale Score	.944	.650
Overall Composite Score	.874	.443

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 74% ($N = 40$) of the exit cases were correctly classified, and 100% ($N = 206$) of the nonexit cases were correctly classified. For the overall sample, 94% ($N = 246$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.248 while nonexit cases had a mean of -.586.

Analysis 3. The third analysis was the second of three stepwise analyses to determine which of the English proficiency variables had the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The significant variables from Analysis 1, number of years in the system, initial English proficiency, attendance risk, and IEP status, were included. The added variables for English proficiency were listening scale scores, speaking scale score, reading scale score, and writing scale score.

The researcher's analysis determined that two variables met the Wilks Lambda, criteria and the researcher entered them into the discriminant function: reading scale score and writing scale score. The variables of IEP status, listening scale scores, speaking scale

scores, attendance risk, number of years in the system, and initial English proficiency were excluded.

One function appeared, and it was significant, $\Lambda = .437$, χ^2 (2, $N = 261$) = 213.718, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .750. The square of the canonical correlation was .563, indicating that effect size was large. Thus, 56% of the variance in the exit status was accounted for by the discriminant function that was composed of the two variables.

The standardized function coefficients (see Table 18) revealed the relative importance of each variable: reading scale score and writing scale score. The reading scale score was the highest. Based on the significant variables, the function was labeled as *ninth grade English proficiency scale scores.*

Table 18 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are two correlation coefficients that are $\geq .3$. They are the reading scale score and the writing scale score. The standardized function coefficients were positive. The reading scale is the largest.

Table 18

Correlation Coefficients and Standardized Function Coefficients for Analysis 3 – Ninth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Reading Scale Score	.958	.915
Writing Scale Score	.427	.291

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 74% ($N = 40$) of the exit cases were correctly classified, and 100% ($N = 206$) of the nonexit cases were correctly classified. For the overall sample, 94% ($N = 246$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.215 while nonexit cases had a mean of -.578.

Analysis 4. The fourth analysis was the third of three stepwise analyses used to determine which of the English proficiency variables had the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The significant variables from Analysis 1, number of years in the system, initial English proficiency, attendance risk, and IEP status, were included. The added variables for English proficiency were comprehension composite score, oral proficiency composite score, literacy composite scores, and overall English proficiency composite score.

The researcher's analysis determined that two variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: comprehension composite scores and literacy composite scores. The variables of IEP status, number of

years in the system, initial English proficiency, attendance risk, oral composite score, and the overall composite score were excluded.

One function appeared, and it was significant, $\Lambda = .437$, χ^2 (2, $N = 261$) = 213.783, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .751. The square of the canonical correlation was .564, indicating that effect size was large. Thus, 56% of the variance in exit status was accounted for by the discriminant function composed of the two variables.

The standardized function coefficients (see Table 19) revealed the relative importance of each variable: comprehension composite score and literacy composite score. The comprehension composite score was the highest. Based on the significant variables, the function was labeled as *ninth grade English proficiency composite.*

Table 19 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are two correlation coefficients that are $\geq .3$: the literacy composite score and the comprehension composite score. The comprehension composite score and the literacy composite score standardized function coefficients had a positive weight. The comprehension composite score and the literacy composite score are the largest.

Table 19

Correlation Coefficients and Standardized Function Coefficients for Analysis 4- Ninth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Comprehension Score	.943	.639
Literacy Score	.882	.450

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 76% of ($N = 41$) the exit cases were correctly classified, and 99% ($N = 205$) of the nonexit cases were correctly classified. For the overall sample, 94% ($N = 246$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.215 while nonexit cases had a mean of -.578.

English proficiency variables. At this point, the researcher chose the English proficiency variables for the final discriminant analysis. They were the comprehension composite score and the writing scale score. The researcher chose them because they had the highest weights, lower correlation values, and potentially provided unique information.

The relative weights in the discriminant functions for each variable and analysis were as follows. In Analysis 2, the reading scale score (.650) had the highest predictive weight. In Analysis 3, the reading scale score (.915) and the writing scale score (.291) had the highest predictive weights. In Analysis 4, the comprehension composite score (.639) and the literacy composite score (.450) had the highest weights. The researcher used the reading scale score to calculate both the literacy and comprehension scores.

Literacy also included a writing score, and comprehension also included the listening scale score.

There was a high correlation among the comprehension composite score and the literacy composite scores (.843; see Appendix A). The correlation between the comprehension composite score and reading was .962. The correlation between the literacy composite score and the reading scale score was .860. The high correlation among the comprehension, reading, and literacy scores made using all three scores unnecessary. Even though the reading scale score had the highest standardized function coefficients at .915, it is accounted for in both the comprehension and literacy composite scores. The comprehension composite score does not have the writing scale score as part of it. In addition, the correlation between the comprehension composite score and the writing scale score was .425.

The researcher chose the comprehension composite score and the writing scale score for the following two reasons: (a) There was a high correlation between the reading scale scores, the literacy composite scores, and the comprehension composite scores, and (b) even though there is significant correlation between the comprehension composite scores and the writing scores, each still provided unique English proficiency level information.

Analysis 5. The fifth analysis was to determine which of the achievement variables have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The significant variables from Analysis 1, number of years in the system, initial English proficiency, attendance risk, and IEP status, were included. The added variables for achievement were CRT reading scale score, CRT math scale score,

MAP winter reading score, MAP spring reading score, MAP winter math, and MAP spring math.

The researcher's analysis determined that four variables were entered into the discriminant function: MAP winter math scale scores, MAP winter reading scores, initial English proficiency, and CRT reading scores. The variables of number of years in the system, IEP status, attendance risk, MAP fall reading, MAP fall math, and CRT math were excluded.

One function appeared, and it was significant, $\Lambda = .642$, χ^2 $(4, N = 261) =$ 113.435, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .598. The square of the canonical correlation was .358, indicating that effect size was large. Thus, 36% of the variance in the exit status was accounted for by the discriminant function that was composed of the four variables.

The standardized function coefficients (see Table 20) revealed the relative importance of each variable: MAP winter math scale scores, MAP winter reading scores, initial English proficiency, and CRT reading scores. MAP winter math and MAP winter reading were the highest. Initial English proficiency and CRT reading had smaller weights. However, all of the variables were close in their weights. Based on the significant variables, the function was labeled as *ninth grade achievement measures.*

Table 20 has the same structure as previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are four correlation coefficients that are $\geq .3$: Initial English proficiency, MAP

winter reading, CRT reading, and MAP winter math. All of the standardized function

coefficients were positive. The MAP winter reading, initial English proficiency, and

MAP winter math were the largest.

Table 20

Correlation Coefficients and Standardized Function Coefficients for Analysis 5 – Ninth
Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
MAP Winter Math	.724	.481
MAP Winter Reading	.751	.407
Initial English Proficiency	.348	.394
CRT Reading	.636	.329

The classification results table indicates the number and percentage of cases that

were correctly predicted into group membership. Classification results revealed that 50%

($N = 27$) of the exit cases were correctly classified, and 96% ($N = 199$) of the nonexit

cases were correctly classified. For the overall sample, 87% ($N = 226$) of the cases were

correctly classified. The discriminant function distinguished between the two groups and

was based on the predictor variables. Exit cases had a function mean of 1.453 while

nonexit cases had a mean of -.381.

Achievement variables. At this point, the researcher chose the achievement

variables for the final discriminant analysis. They were the MAP winter math scores

(MWMATH) and the MAP winter reading scores (MWREAD). The researcher chose

these scores because they had the highest weights. The CRT reading score was

eliminated; it had a .573 correlation to the MAP winter reading scores.

Analysis 6. The sixth analysis was to determine the variables that have the greatest predictive power to distinguish between ELLs who exit and ELLs who do not. The significant variables from Analysis 1, number of years in the system, initial English proficiency, attendance risk, and IEP status, were included. The added variables for English proficiency were comprehension composite score and writing scale score. The added variables for achievement were MAP winter reading and MAP winter math.

The researcher's analysis determined that three variables met the Wilks Lambda criteria, and the researcher entered them into the discriminant function: comprehension composite score, writing scale score, and initial English proficiency. The following variables were excluded: IEP status, number of years in the system, attendance risk, MAP winter reading, and MAP winter math.

One function appeared, and it was significant, $\Lambda = .439$, χ^2 (3, $N = 261$) = 211.800, $p < .001$. The discriminant function significantly differentiated between ELLs who exit and ELLs who do not. The canonical correlation was used to determine effect size. The canonical correlation was .749. The square of the canonical correlation was .561, indicating that the effect size was large. Thus, 56% of the variance in the exit status was accounted for by the discriminant function composed of the three variables.

The standardized function coefficients (see Table 21) revealed the relative importance of each variable: comprehension composite score, writing scale score, and initial English proficiency. Comprehension was the highest. The writing scale score and initial English proficiency were much smaller. Based on the significant variables, the function was labeled *ninth grade final variables.*

Table 21 has the same structure as the previous tables in the analysis section; column one is the description of the variable, column two indicates the correlation coefficients with the discriminant function, and column three shows the standardized function coefficients. There are two correlation coefficients that are $\geq .3$: comprehension composite scores and writing scale scores. The standardized function coefficients have positive weights. The variables with the largest weights are comprehension composite scores, writing scale scores, and initial English proficiency.

Table 21

Correlation Coefficients and Standardized Function Coefficients for Analysis 6 – Ninth Grade

	Correlation Coefficients with Discriminant Function	Standardized Function Coefficients
Comprehension	.949	.892
Writing Scale Score	.429	.269
Initial English Proficiency	.230	.168

The classification results table indicates the number and percentage of cases that were correctly predicted into group membership. Classification results revealed that 74% ($N = 40$) of the exit cases were correctly classified, and 99% ($N = 205$) of the nonexit cases were correctly classified. For the overall sample, 90% ($N = 245$) of the cases were correctly classified. The discriminant function distinguished between the two groups and was based on the predictor variables. Exit cases had a function mean of 2.203 while nonexit cases had a mean of -.575.

Summary. Table 22 (Appendix B) summarizes the percentage of the ninth-grade cases that were correctly predicted into the exit and nonexit groups for each discriminant analysis. The sixth analysis, which used IEP status, number of years in the system, initial

English proficiency, attendance risk, comprehension composite score, writing scale score, MAP winter math score, and MAP winter reading score, produced the discriminant function that most accurately predicted group membership overall. For each analysis, over 90% of the nonexit cases were correctly predicted. However, the predictive accuracy for cases that exit was much lower, ranging from 28% to 75%. The first analysis with the district risk indicators, IEP status, school Title I status, number of years in the U.S. system, and initial English proficiency only predicted 28% of exit cases. This is higher than it was for either third or fifth grade. The highest prediction rate for cases that exit was the fourth analysis, which included the English proficiency composite scores.

Achievement Test Proficiency and Graduation Rates

The researcher obtained the following data unpublished report produced by the Office of Accountability, Research, and School Improvement in the district that is the focus of the current study (2014). District proficiency rates and graduation rates for ELLs and former ELLs during the 2013 to 2014 school year provided a larger context for the results of the current study. Included are the proficiency pass rates for ELLS in the third, fifth, and eighth grades, and the graduation rate of current and former ELLs who were seniors in the 2013 to 2014 school year.

ELLS who exit ELL status prior to third grade have higher proficiency rates than the district average proficiency rate. ELLS exit from the program at the end of the school year based on their results on the English proficiency exam. Therefore, the ELLs who exited at the end of third grade are part of the LEP group and not the former LEP group. The proficiency pass rates were as follows for the 2013 to 2014 CRT reading test for third grade cases. The district average pass rate was 63%. Cases categorized as LEP had a

39% proficiency pass rate. Cases categorized as former LEP had a 96% pass rate. The proficiency pass rates were as follows for the 2013 to 2014 CRT math test for third grade cases. The district average pass rate was 71%. Cases that were categorized as LEP had a 54% pass rate. Cases that were categorized as former LEP had a 100% pass rate.

ELLS who exit ELL status prior to fifth grade have higher proficiency rates than the district average proficiency rate. ELLs who exited at the end of fifth grade are part of the LEP group and not the former LEP group. The proficiency pass rates were as follows for the 2013 to 2014 CRT reading test for fifth grade cases. The district average pass rate was 72%. Cases categorized as LEP had a 28% proficiency pass rate. Cases categorized as former LEP had an 84% pass rate. The proficiency pass rates were as follows for the 2013 to 2014 CRT math test for fifth grade cases. The district average pass rate was 73%. Cases that were categorized as LEP had a 39% pass rate. Cases that were categorized as former LEP had an 84% pass rate.

ELLS who exit ELL status prior to eighth grade as a whole have a slightly higher proficiency rate than the district average for the CRT reading test; however, for the math CRT, former ELLs have lower proficiency rates than the district average proficiency rate. ELLs who exited at the end of eighth grade are part of the LEP group and not the former LEP group. The proficiency pass rates were as follows for the 2013 to 2014 CRT reading test eighth grade cases. The district average pass rate was 58%. Cases categorized as LEP had a nine percent proficiency pass rate. Cases categorized as former LEP had a 59% pass rate. The cases that exited in earlier grades had higher proficiency rates.

The proficiency pass rates were as follows for the 2013 to 2014 CRT math test for eighth grade cases. Eighth grade CRT results are reported because there are no CRT tests

given in the ninth grade. The district average pass rate was 69%. Cases that were categorized as LEP had an eight percent pass rate. Cases that were categorized as former LEP had a 32% pass rate. The cases that exited in earlier grades had higher proficiency rates.

The following are the graduation rates for ELLs and former ELLs that were seniors during the 2013 to 2014 school year. The overall district graduation rate for the 2013 to 2014 school year was 73%. Former ELL cases that exited English as a second language (ESL) at the end of third grade had an 82% graduation rate, nine percent higher than the district average. Former ELL cases that exited ESL at the end of fifth grade had a 72% graduation rate, one percent lower than the district average. Former ELL cases that exited ESL at the end of eighth grade had a 39% graduation rate, 34% lower than the district average. Former ELL cases that exited ESL at the end of ninth grade had a graduation rate of 59%, 12% lower than the district average.

According the proficiency pass rates and graduation rates for ELLs and former ELLs for the 2013 to 2014 school year, ELLS that exit ESL by fifth grade outperform the district average in CRT reading and CRT math. In addition, English language learners that exit ELL before fifth grade have a higher than district average graduation rate. ELLs that exit ESL in fifth grade are within one percent of the district graduation rate. However, ELLs that exit in later grades perform below district averages.

Overall Results

Each grade level was different in the distribution of non-criterion categorical and ordinal variables according to the frequency statistics, and this is especially true of the risk factors. The third grade cases had low percentages of risk while the ninth grade had

higher percentages of risk (see Table 23). All of the discriminant analyses were

significant and distinguished between the cases that exit and the cases that do not. The

noncriterion predictor variables explained a smaller percentage of the variance. Of the

criterion predictor variables, the English proficiency scores had the highest prediction

power. In all analyses, the nonexit cases were correctly classified into groups at a higher

percentage rate than cases that exit. The CRT proficiency results by grade cases exited

and the graduation rates by grade cases exited showed that students who exit the ESL

program earlier perform better on standardized measures and graduate at a higher rate

than ELLs who exit later and, in some cases, are higher than the district average.

Table 22

Risk Factors by Grade

Risk Factor	Third Grade		Fifth Grade		Ninth Grade	
IEP	12%		19.8%		43.7%	
	No Risk	Some Risk	No Risk	Some Risk	No Risk	Some Risk
Attendance	74%	26%	70%	30 %	52%	48%
Retention	96%	4%	96%	4%	87%	13%
Suspension	99%	1%	98%	2%	80%	20%
Transiency	94%	6%	94%	6%	96%	4%

Chapter Five: Findings and Recommendations

This chapter includes a summary of the study, an interpretation of the findings, discussion, limitations, and suggestions for future research. The summary section describes the research question, how the researcher chose, collected, and analyzed the data and the major findings of the study. The interpretation of the findings section includes a discussion of the four major findings of the study. Limitations of the data, analysis, and generalizability of the results are described and suggestions for further research put forth.

Summary of the Study

The study addressed the following general question: How are ELLs who meet exit criteria different and similar to ELLs who do not meet exit criteria? The researcher used an existing data set collected by the district included a combination of risk factors, achievement results, and English proficiency results. Specifically, the initial variables included CRT math and reading scale scores, measure of academic progress (MAP) scores for math and reading, English proficiency scale scores for reading, writing, speaking, and listening, English proficiency composite scores for literacy, comprehension, and overall scores, IEP status, school Title I status, number of years in the U.S. school system, initial English proficiency, attendance risk, suspension risk, transiency risk, and retention risk. The researcher obtained the data set from the district ESL department after IRB granted exempt status and the district gave permission to use it.

The study was an exploratory discriminant analysis designed to parsimoniously describe distinct differences between ELLs who exit ELL status in third, fifth, and ninth

grades and ELLs who do not exit. The cases were ELL students who began the 2013 to 2014 school year in grades three, five, and nine. There were 1163 cases in third grade, 591 cases in fifth grade, and 261 ELLs in ninth grade. The researcher grouped the cases for analysis into a total of six groups. Each grade level had two groups: cases that exited ELL and cases that did not exit ELL and retained the ELL designation. For each grade level, the researcher calculated six discriminant analyses to eliminate variables with high levels of correlation and to eliminate variables with low predictive power. The exploratory discriminant analysis was designed to identify the variables that would provide a discriminant function that would distinguish between the two groups.

Major Findings

For third-grade cases, the majority of cases had been in the school system for four or five years (91%) and entered with the lowest level of English proficiency (93%). Cases at Title I schools were 73%, and 12% of these cases had IEPs. The attendance risk factor was the highest at 26%. For those students, the other risk factor percentages were very low: suspension was a one percent risk, transiency was a six percent risk, and retention risk was a four percent risk. The third discriminant analysis, which used IEP status, listening scale scores, reading scale scores, and writing scale scores, produced the discriminant function that most accurately predicted group membership. With that discriminant function, 77% of cases that exited and 99% of cases that did not exit were correctly categorized into group membership.

For fifth-grade cases, the majority of cases had been in the school system for six or seven years (85%) and entered with the lowest level of English proficiency (90%). Cases at Title I schools were 71 %, and 20% of these cases had IEPs. This was an eight

percent increase over third grade. The attendance risk factor was the highest at 30%. For those students, the other risk factor percentages were very low: suspension was a two percent risk, transiency was a six percent risk, and retention risk was a four percent risk. The third discriminant analysis, which used IEP status, listening scale scores, reading scale scores, writing scale scores, and retention risk, produced the discriminant function that most accurately predicted group membership. With that discriminant function, 75% of cases that exited and 99% of cases that did not exit were correctly categorized into group membership.

For ninth-grade cases, the majority of cases had been in the school system for ten or eleven years (74%) and entered with the lowest level of English proficiency (85%). School Title I status was not used because only one high school had a Title I status. At this grade level, 44% of cases had IEPs. This was a 24% increase from fifth grade and a 32% increase from third grade. The attendance risk factor was the highest at 48%. The other risk factor percentages also increased: suspension was a 19% risk and retention risk was a 13% risk. Transiency risk was low at six percent. The sixth discriminant analysis, which used IEP status, initial English proficiency, attendance risk, comprehension composite score, and writing scale scores, MAP winter math, and MAP winter reading, produced the discriminant function that most accurately predicted group membership. With this discriminant function, 74% of cases that exited and 99% of cases that did not exit were correctly categorized into group membership.

Achievement Pass Rates and Graduation Rates

According to the 2013 to 2014 SY Assessment Scores of Students who were Formerly Categorized as LEP Students Report, ELLs who exit ELL before fifth grade

pass the CRT math and CRT reading achievement tests at a higher than district average. In addition, ELLs who exit ELL before fifth grade have a higher graduation rate than the district average. In contrast, ELLs who exit ELL after fifth grade have CRT math and CRT reading pass rates lower than the district average and also have lower than district average graduation rates.

Interpretation of Findings

The results of this study indicated that cases that exit by the end of fifth grade do not become LTELLs, have higher proficiency pass rates on standardized academic measures when compared with district averages, and graduate at rates above or close to the district average. In contrast, cases that exit later than the fifth grade are more likely to become LTELLs, have lower pass rates on standardized academic measures, and graduate at rates significantly lower than district averages. In the district, approximately 50% of ELLs become LTELLs by the end of eighth grade (Haas et al., 2014).

The majority of cases entered the education system in kindergarten and had the lowest level of English proficiency. These results are consistent with research that indicates that the majority of ELLs have been born in the United States and come into the system with limited English proficiency (Short & Fitzsimmons, 2007; Kieffer, 2008).

The risk factors of attendance, transiency, retention, and school Title I status were statistically significant in the first discriminant analyses. However, these variables did not have high predictive power when the researcher added measures of English language proficiency variables to the analysis. That is, for ELLS, these risk factors have some impact but are not significant in defining the difference between ELLs who exit ELL and ELLs who become LTELLs. Kieffer (2008) supported this conclusion. Kieffer (2008)

examined the impact of poverty and initial English proficiency on reading achievement for ELLs who had entered the U.S. school system in kindergarten. Kieffer (2008) analyzed language minority students who had come into the U.S. system in kindergarten with limited English proficiency, ones who were designated free and reduced lunch (FRL), had fifth-grade reading achievement below that of redesignated ELLs, and English-only students who were not designated FRL and were at schools with a low concentration of poverty. However, the ELLs performed higher on the reading measures than the English-only students who had FRL status and attended schools with a high concentration of poverty. At this time, more research is needed, specifically research that identifies language minority students and the subgroups of ELLs, RELLs, LTELLs, and initially English proficiency bilinguals to draw strong conclusions on the impact of risk factors such as poverty, transiency risk, and attendance risk (Stephens, 2005).

According to the ACCESS test, the results indicated that the two groups were significantly different in reading comprehension proficiency and writing proficiency. The ACCESS test evaluates comprehension through a combination of listening skills proficiency and reading skills proficiency. Writing on the ACCESS test evaluates students' linguistic complexity, language forms and conventions, and vocabulary usage. The greatest difference between cases that exit and cases that do not exit was a function of reading comprehension and writing skills evaluated by the English language proficiency assessment. Second language acquisition and literacy development cannot be separated for ELLs who begin their schooling in the U.S. system with limited English proficiency.

Discussion

It is more difficult to predict ELLs who exit than ELLs who do not exit based on the set of variables in the current study. The researcher chose the variables in the current study based on two criteria. First, each of the variables was grounded in research in regard to ELLs and had been variables in other studies. Second, the selected variables were regularly collected by the district on which the current study is based. The intent was to identify the variables that best separate the two groups, ones that could be found to be significant in the research and that currently exist in databases. The discriminant functions that resulted from the analysis were able to correctly predict nonexit for more than 90% of the cases, consistently, across analyses (see Tables 8, 15, and 22). However, it was only the discriminant functions that were produced from the analyses with the English language proficiency assessment (ELPA) variables that were able to predict more than 70% of the variance. In third grade and fifth grade, Analysis 3, using the ELPA scale scores for reading, writing, speaking, and listening, produced the discriminant function that best predicted exit. It was only in ninth grade that the sixth discriminant analysis, using all of the variables with the strongest predictive power from all of the previous analyses, best predicted exit. The results indicate that the factors that lead to exit are much more complicated than what was captured in the data; however, there may be one exception. ELLs who exit have met a threshold for listening and reading comprehension and writing skills.

Even though it is difficult to predict which ELLs will exit, it is clear that there are differences in outcomes for ELLs depending on when they exit. ELLs who exit ELL programs in the third grade tend to perform better than district averages on both

standardized tests of academic achievement and have higher graduation rates than district averages. In contrast, ELLs who exit after fifth grade do not perform as well as on standardized measures of academic achievement and have lower graduation rates than district averages (Flores et al., 2012; Haas et al., 2014). ELLs who maintain the ELL status, fail to pass a basic English proficiency test, and perform lower on standardized measures of academic achievement have much lower graduation rates, and there is a greater percentage of the group that has risk factors.

The researchers of the three studies published on LTELLs examined risk factors such as socioeconomic status, referral for special education, ESL instructional programs students participated in, and academic achievement measures (Kim & Herman, 2008; Menken et al., 2009; Menken et al., 2012). The researchers of the three studies concluded that the LTELLs had inconsistent academic programming and an unusually high level of referral to special education. There was not any information on the general education literacy instruction for those students.

Literacy and language acquisition are intertwined for ELLs who enter the school system in kindergarten and first grade (August & Shanahan, 2006; Kieffer, 2008; Short & Fitzsimmons, 2007). Students are taught the process of how to read in the primary grades in the U.S. Approximately 50% of ELLs become LTELLs. LTELLs do not have high enough English proficiency or academic literacy skills (Haas et al., 2014; Short & Fitzsimmons, 2007). Factors such as SES, retention, and IEP status are illusive in determining their impact on LTELLs. As discussed in the literature review, research on ELLs in general indicates that early literacy skills are developed similarly to monolingual English speakers but with the following differences. Expressive vocabulary and syntax

play a more prominent role in ELL literacy development, and ELLs require more time in the beginning to acquire these skills. Later literacy development for ELLs is heavily impacted by expressive vocabulary and syntax. Yet no studies that examined general education early literacy instruction in conjunction with ESL instruction across primary, intermediate, and secondary could be found.

Approximately 50% of ELLs who enter the system in kindergarten or first grade with low levels of English proficiency exit ESL status and perform adequately on measures of standardized achievement and go on to graduate from high school; approximately 50% do not and become LTELLs. It is outside the scope of the current research to draw a conclusion as to why that is. The purpose of the current study was to identify the differences between ELLs who exit and ELLs who become LTELLs. However, there are three clear questions that have emerged as a result of the literature review and this study:

1. What is the impact of academic programming on the academic achievement of ELLs (academic programming specifically regarding the content and structure of ESL services but also of the general education literacy instruction)?

2. What are the impacts of risk factors such as SES status, retention, attendance, IEP status, and transiency once the impact of ESL and literacy academic programming has been accounted for?

3. What are the characteristics of high-quality academic programming for ELLs at risk of becoming LTELLs (the academic programming for both ESL services and literacy instruction)?

The costs of not adequately addressing the early literacy needs of ELLs who come into the system in the primary grades at the lowest levels of English proficiency are staggering for the students as well as society (Callahan, 2013; National Dropout Prevention Center, 2015). However, the academic achievement data related to ELLs who exit ELL status before the fifth grade provides evidence that ELLs are capable of high achievement. The instructional and systemic factors that act as barriers to exit for ELLs must be identified and removed. The instructional and systemic factors that propel ELLs toward earlier exit must be identified and promoted. The results of the current study indicate that relationships between literacy development and second language acquisition for early entry ELLs must be further researched beyond the comparison of ELLs and monolingual English speakers.

Limitations

The limitations of the current study are as follows: The cases for this study are only in one school district in one part of a state, limiting the applicability of the study across context; the study cannot necessarily be generalized to all educational settings; and the cases were from one district with an ELL program structure that may or not be similar to other ELL programs. The data collected for each case may not be the same in all educational contexts.

The variables used in this study do not account for sociocultural influences in all cases. Each case in this study is representative of a child who is much more than a mere set of assessment results and demographics. The current study, in fact no study, can fully account for the complexity and combination of variables that composes each person.

However, to gain a more comprehensive picture of ELLs in educational settings, the current study was meant to focus on a small number of the overall variables.

Not all of the assumptions for discriminant analysis were met. However, the *N* size was large enough that the impact on overall results was minimal (Finch, 2010).

Suggestions for Future Research

There are two parts to this section. First, there are three recommendations to extend the research on the current data set. Second, there are two recommendations for further research for LTELLs in general.

The data set used in the current study still has potential for further analysis. With the addition of former ELL cases to the data set and the schools that the cases attend, further analysis could be done. This analysis should include the impact of school placement on exit status. If school placement had strong predictive power, that would offer the opportunity to research both instructional strategies and teachers' attitudes at sites where more ELLs successfully exited ELL status and did not become LTELLs. In addition, longitudinal data on ELPA comprehension composite scores and writing scale scores could be analyzed for growth rates so that the differences between ELLs who exit and ELLs who become LTELLs could be analyzed. In addition, IEP status did have high predictive power in this study; however, it was significant in all first analyses. Further exploration of the data with a focus on the cases that had IEP status might provide valuable insight on ELLs who also have learning disabilities.

Recommendations for further research in the field echoes a call for researchers to more clearly define language minority participants in studies by distinguishing results for

language minority students who are IEP, ELLs who have been in the system for less than seven years, LTELLs, and RELLs (Stephens, 2014).

ELLs are learning an additional language and how to read in a language that is not their first language. Although there are similarities between how ELLs and monolinguals learn to read, there are significant differences; further research, not only on defining the differences but also how to interpret assessment results to account for those differences, is essential. In addition, delineation in the research is needed for differences between language minority subgroups (ELL, RELL, etc.) and English-only students and between the different aspects of learning to read, separating early literacy, word-level development, and text level development for each group and subgroup.

Currently, there is a national focus on aligning education P-16 (pre-kindergarten through the end of a bachelors' degree). Part of the national focus on a P-16 education system is P-3, prekindergarten through third grade (Takanishi & Kauerz, 2015). Because the majority of ELLs come into the system in kindergarten with the lowest levels of English proficiency, they are a significant component to consider in P-3 education and research. Incorporating ELLs into the research is essential for understanding how early literacy instruction impacts ELLs who exit and ELLs who become long-term ELLs.

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Appendix A:

Appendix A: Correlation Tables for Interval Variables

Table 1A

Third Grade Interval Variable Correlations

	List	Speak	Read	Write	Comp	Oral	Liter	Overall	CRTRead	CRTMath	MWRead	MSRead	MWMath	MSMath
List	1	.382	.751	.584	.898	.789	.732	.815	.474	.477	.530	.512	.533	.519
Speak		1	.384	.419	.408	.869	.443	.651	.436	.361	.452	.444	.429	.391
Read			1	.651	.965	.657	.900	.876	.567	.535	.645	.644	.611	.583
Write				1	.667	.592	.916	.861	.662	.600	.735	.731	.662	.641
Comp					1	.753	.892	.909	.567	.547	.642	.634	.621	.596
Oral						1	.687	.869	.543	.495	.584	.569	.571	.538
Liter							1	.956	.677	.625	.759	.757	.701	.674
Overall								1	.679	.625	.752	.744	.707	.675
CRTRead									1	.693	.794	.799	.727	.714
CRTMath										1	.670	.682	.814	.830
MWRead											1	.880	.774	.739
MSRead												1	.762	.763
MWMath													1	.873
MSMath														1

Table 2A

Fifth Grade Interval Variable Correlations

	List	Speak	Read	Write	Comp	Oral	Liter	Overall	CRTRead	CRTMath	MWRead	MSRead	MWMath	MSMath
List	1	.580	.582	.497	.882	.886	.602	.843	.495	.411	.538	.535	.455	.427
Speak		1	.384	.445	.602	.891	.458	.757	.377	.268	.419	.420	.319	.265
Read			1	.621	.802	.542	.915	.701	.656	.504	.715	.692	.560	.543
Write				1	.557	.529	.884	.692	.584	.480	.677	.671	.503	.514
Comp					1	.833	.764	.947	.584	.445	.628	.615	.506	.469
Oral						1	.595	.899	.490	.381	.538	.537	.434	.389
Liter							1	.774	.691	.546	.774	.758	.592	.588
Overall								1	.578	.439	.633	.625	.494	.457
CRTRead									1	.551	.746	.751	.578	.590
CRTMath										1	.545	.556	.795	.812
MWRead											1	.816	.649	.632
MSRead												1	.624	.643
MWMath													1	.851
MSMath														1

Table 3A

Ninth Grade Interval Variable Correlations

	List	Speak	Read	Write	Comp	Oral	Liter	Overall	CRTRead	CRTMath	MFRead	MWRead	MFMath	MWMath
List	1	.247	.573	.326	.775	.724	.543	.695	.428	.401	.501	.486	.465	.474
Speak		1	.215	.126	.249	.848	.206	.482	.190	.162	.268	.301	.252	.181
Read			1	.412	.962	.467	.860	.839	.543	.464	.585	.604	.527	.596
Write				1	.425	.268	.819	.734	.336	.317	.374	.351	.363	.360
Comp					1	.602	.843	.879	.561	.491	.618	.628	.561	.617
Oral						1	.444	.724	.370	.336	.466	.481	.434	.388
Liter							1	.939	.529	.470	.578	.576	.536	.577
Overall								1	.548	.490	.623	.628	.578	.593
CRTRead									1	.322	.581	.573	.387	.427
CRTMath										1	.429	.347	.625	.607
MFRead											1	.691	.540	.559
MWRead												1	.491	.557
MFMath													1	.833
MWMath														1

Appendix B

Table 1 B

Percentage of Ninth Grade Cases Correctly Predicted Into Group Membership

Analysis	Exit (N)	Non-Exit (N)	Total N	Initial Variables in the Analysis
	Exit Cases = 54			Non-Exit Cases = 207
1	28% (15)	96% (199)	207261	8 Non-Criterion Variables: IEP Status, School Title I Status, Risk Factors, Initial English proficiency, Number of years in the US system
2	74% (40)	94% (206)	207261	7 English Proficiency Variables: Scale Scores and Composite Scores + IEP Status, Number of Years in the System, Initial English Proficiency, Attendance Risk
3	74% (40)	94% (206)	207261	4 ELPA Scale Scores: Reading, Writing, Speaking, and Listening + IEP Status, Number of Years in the System, Initial English Proficiency, Attendance Risk
4	75% (41)	94% (205)	207261	3 ELPA Composite Scores: Comprehension, Literacy, and Overall + IEP Status, Number of Years in the System, Initial English Proficiency, Attendance Risk
5	50% (27)	96% (199)	207261	6 Achievement scores: MAP and CRT for reading and math + IEP Status, Number of Years in the System, Initial English Proficiency, Attendance Risk
6	74% (40)	99% (205)	207261	8 strongest predictor variables: Comprehension Composite Score, Writing Scale Score, CRT Reading, MAP Spring Math + IEP Status, Number of Years in the System, Initial English Proficiency, Attendance Risk