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PREDICTIVE EFFECTS OF POVERTY, GENDER, NATIVE LANGUAGE SPOKEN,  
AND ELPA21 PROFICIENCY ON READING PERFORMANCE

by

Carrie Bradow

Dissertation

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in

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by

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Dissertation

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“The difference between stumbling blocks and stepping stones is how you use them.” (Unknown) This quote is a suitable fit for the continuous journey of learning I have traveled to complete my dissertation. Thank you to the many individuals who have given me stepping stones throughout my life, career, and this journey. To all, I share my deepest thanks and am humbled by God’s blessings.

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## **ABSTRACT**

by  
Carrie Bradow  
Harding University  
December 2022

Title: Predictive Effects of Poverty, Gender, Native Language Spoken, and ELPA21 Proficiency on Reading Performance (Under the direction of Dr. Kimberly Flowers)

The purpose of this dissertation was to determine the predictive effects of poverty, gender, native language spoken, and English Language Proficiency Assessment for the 21st Century (ELPA21) proficiency on reading performance measured by the ACT Aspire Summative Reading Assessment for Grades 4, 7, and 10 English language learners in a Northwest Arkansas school district. Through Bronfenbrenner's ecological systems theory, the influence of poverty, gender, native language spoken, and ELPA21 proficiency were studied for influences on reading performance. Through a multiple regression analysis I examined the Spring 2019 state assessment and demographic data collected from over 20,000 student records. The findings revealed a significance in gender and ELPA21 proficiency in determining reading performance for Grades 4 and 7, with native language spoken and ELPA21 proficiency having significance in Grade 10. ELPA21 proficiency had the most significance in determining reading performance with a large effect size in Grades 4 (24.4%), 7 (21.6%), and 10 (23.4%). The large effect demonstrated the understanding of language comprehension as a key to literacy. Based on the findings, language instruction should be a base for literacy development and

support educators in focusing professional development efforts toward examining the need for language development as a key to foundational literacy.

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## **CHAPTER I**

### **INTRODUCTION**

All learners bring unique life experiences to the classroom that may affect learning and literacy skill development. According to the National Center for Educational Statistics (2020), English learners (ELs) are currently the fastest-growing demographic group in the United States. Between 2000-2017, the EL population grew by over 28%, with 43 states increasing their EL student enrollment (Office of English Language Acquisition, 2020). ELs have various economic levels, linguistic backgrounds, and literacy levels as they enter schools in the United States. Learning to read while learning the English language can be complicated, and knowing the best practices to help ELs can help educators make instructional decisions (Goldenberg, 2020). Identifying the factors that can support ELs' reading proficiency can lead to a deeper understanding of this complicated process. Learning and literacy skill development may be affected by the unique experience of ELs.

The various life experiences of students can affect reading skill development in different ways, specifically for ELs. According to Cummins (1979), most language learners successfully acquire an additional language if they have a strong foundation in the first language introduced at an early age. Bronfenbrenner (1979) theorized that many factors could have different levels of influence on a child. Based on this evidence, native language and language proficiency may affect students' reading proficiency. Economic

levels in the home and a student's gender may also determine EL reading proficiency. Jensen (2009) shared that poverty can cause learning gaps early. Knowing the various life experiences of ELs can help identify if reading skill development could be affected.

### **Statement of the Problem**

First, the purpose of this study was to determine predictive effects among poverty, gender, native language spoken, and English Language Proficiency Assessment for the 21st Century (ELPA21) proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 4 ELs in a Northwest Arkansas school district. Second, the purpose was to determine predictive effects among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 7 ELs in a Northwest Arkansas school district. Third, the purpose was to determine predictive effects among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment on Grade 10 ELs in a Northwest Arkansas school district.

### **Background**

#### **Theoretical Framework: Bronfenbrenner's Ecological Systems Theory**

Bronfenbrenner's ecological systems theory considers the multiple systems of influence on children's development. In Bronfenbrenner's ecological systems theory, five systems influence children: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem (Bronfenbrenner, 1979). The multiple systems within this framework can represent relationships connecting the predictive effects of poverty, gender, native language spoken, and ELPA21 proficiency on reading

performance as measured by the ACT Aspire Summative Reading Assessment. The effects can be placed in several systems of the ecological systems theory. For example, the variable of native language connects directly to the macrosystem of children's development. These multiple systems of influence on students are directly connected to the outcomes of this study.

### **History of English or Second Language Learning**

The history of the education of ELs is complex. According to Kibler and Valdes (2016), insight into the approaches to English language learning can be connected to the concept of English language acquisition and the understanding of language development over time. Kibler and Valdes suggested that theoretical understanding of English language learning, and the students identified as ELs, reflects a deeper understanding of policymakers over time. This understanding evolved and was reflected in the decisions made regarding identifying ELs and teaching ELs over time. In the early 1900s, students who did not speak English were placed in schools without support for their language needs. According to Bybee et al. (2014), students with multilingual backgrounds were placed in *sink-or-swim* educational settings due to the conversation about a national language and the influx of new immigrants into the United States. Bybee et al. stated that students often remained in grade levels until they could demonstrate English proficiency because the assessments were used on large student groups and were administered in English (McClean, 1995). Systematically, policies on ELs from the 1920s through the 1960s did not support learning English as an additional language (Bybee et al., 2014). These examples indicated the presence of systematic barriers to understanding and

assessing the needs of ELs. The complicated history of ELs in the United States has continued to evolve.

### **English or Second Language Learning**

Second language acquisition is a growing area of study in the current educational system. The fastest-growing demographic group in schools today is ELs or students learning English as an additional language (National Center for Educational Statistics, 2020). Goldenberg (2013) published specific ways to support ELs that focus on dedicated explicit instruction in the English language forms, functions, and structure by connecting the layers of a second language with an understanding of English. Layered approaches to teaching second language learners have emphasized that various factors influence second language literacy development. These factors vary from phonological and cognitive to cultural and socioeconomic as multilingual students age and pass from one context to another (August et al., 2009). Understanding the factors that could exist and influence second language learning leads to a deeper understanding of what opportunities may enhance literacy growth and development for second language learning.

### **Native Language**

Students' linguistic backgrounds have been studied to affect additional language acquisition. Cummins (1979) hypothesized that linguistic development in students' first language could help facilitate acquiring an additional language through the linguistic interdependence hypothesis. Kim and Piper (2019) agreed that language development in students' first language could facilitate learning in an additional language. The development of linguistic skills, including the syntax, structure, and organization of a

language, helps develop a mastery of a language. Understanding the level of mastery in students' first language may help predict linguistic development in a second language.

### **Poverty**

Poverty may affect literacy learning and achievement. Jensen (2009) outlined three critical principles of student learning and development related to learning: Prolonged exposure to poverty can have detrimental effects on student development, the brains of children from poverty can adapt and grow to experience success, and some specific methods and strategies can be implemented for students from poverty to support student learning. By identifying these fundamental principles, poverty may be a factor in reading achievement. Bronfenbrenner's ecological systems theory connects to these principles by identifying layers of influence from the exosystem and microsystem. Targeting student support to overcome the detrimental effects of poverty adds another layer to distinguishing if socioeconomics can predict literacy achievement. Literacy learning and achievement may be affected by the socioeconomic status of students.

### **Gender**

Gender has been studied as a factor in literacy achievement. Girls from low and middle socioeconomic families have an advantage in reading compared to their male counterparts (Cobb-Clark & Moschion, 2017). The difference in early childhood achievement may link to gender. Gender is a complex social and cognitive characteristic that affects reading and writing based on observational and perceptual data (Peterson & Parr, 2012). Gender and the effects on literacy achievement displayed mixed results connected to literacy achievement. Connections between gender and literacy achievement may lead to a deeper understanding of literacy development and instruction.

## **Measuring Language Proficiency**

The ELPA21 measures English language proficiency for students needing English language services. The assessment is currently used in Arkansas, Florida, Iowa, Kansas, Louisiana, Nebraska, Ohio, Oregon, South Carolina, Washington, and West Virginia (American Institute for Research, 2018). The ELPA21 consists of four tests focusing on reading, writing, listening, and speaking, with designated grade-level bands for scoring. The American Institute for Research (2018) claimed a valid and reliable English language proficiency assessment, separated into scoring bands instead of scoring on a whole scale to include all levels. This assessment and the construction measure each area of linguistic development and proficiency for ELs. The scoring by grade band allows for linguistic development and complexity of the language to be considered for learners at each grade band. Using an assessment that allows for grade-level and language proficiency supports the understanding that language and literacy are connected. Using the ELPA21 to assess Arkansas ELs allows the same measure across the state and, in comparison, to other states to determine language proficiency.

## **Reading Performance**

Reading proficiency can be described and assessed differently, but reading has specific underlying foundations. The National Reading Panel (1999) published the research-based best practices for literacy instruction and reintroduced the discussion of reading pillars and how foundational reading is built. The comprehensive report details the five pillars of reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension (National Reading Panel, 1999). The panel explained that each skill is needed for a student to become a proficient reader. Identifying the skills as pillars shows

the significance and need to solidify each skill to demonstrate reading proficiency. The underlying foundations of reading can be assessed in various ways to identify reading proficiency.

Foundational literacy skills are needed to demonstrate reading proficiency. According to Hanford (2018), children's brains are not wired for reading. Hanford shared that students need to learn to read by first connecting sounds, not to the visual of a letter on a page. Decades of research are available to support teachers in starting with the sounds of the language to build a strong foundation for reading (Hanford, 2018). Hanford's insights aligned with the National Reading Panel's (1999) findings that phonemic awareness, the ability to identify phonemes and the language's sounds, is a foundational skill for a student to become a proficient reader. Foundational literacy skills need to be in place to demonstrate proficiency.

Reading competency can be connected to language knowledge. According to the simple view of reading theory, reading competency is built by understanding decoding and language comprehension (Gough & Tunmer, 1986). The study of language comprehension focuses on understanding a language's form, function, structure, and syntax. Sousa (2010) shared that for an EL to read competently, the student must understand the structure of the language. Awareness of the underlying skills needed to process language knowledge can assist in understanding the need to connect the explicit practice of a language to support reading. Language knowledge can be a contributing factor to reading competency.

## Hypotheses

1. No predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 4 English language learners in a Northwest Arkansas school district.
2. No predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 7 English language learners in a Northwest Arkansas school district.
3. No predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 10 English language learners in a Northwest Arkansas school district.

## Description of Terms

**ACT Aspire Summative Reading Assessment.** The ACT Aspire Summative Reading Assessment is the end-of-year summative assessment conducted in Arkansas. This standardized test is administered in Grades 3-10 and consists of English, reading, writing, mathematics, and science assessments (Arkansas Division of Elementary and Secondary Education, 2021).

**English Language Proficiency Assessment for the 21st Century (ELPA21).** The ELPA21 is administered annually to currently identified ELs in Arkansas. Language proficiency has an overall descriptor of emerging, progressing, or proficient. The assessment consists of four domains: reading, writing, listening, and speaking, and

determines a student's English language proficiency level (American Institute for Research, 2018).

**English Learner (EL).** EL is a term used to describe students in the United States who do not have the skills to participate fully in academic settings where all the instruction is in English. ELs may require additional support to participate fully in the classroom. In addition, they may be students who have formerly needed additional support to participate fully in academic settings where all the instruction is in English (Arkansas Division of Elementary and Secondary Education, 2021).

**Native Language Spoken.** The native language spoken is the language other than English that the parent or guardian has identified when enrolling students in a public school. Upon initial enrollment in any public school, this language is identified on the Home Language Usage Survey (Arkansas Division of Elementary and Secondary Education, 2021).

**Lunch Status.** Lunch status is a data code used in the Arkansas educational database system to determine students' lunch status. The designation determines if students are in the lunch program as a student that fully pays, a student that pays a reduced amount, or a student that receives a free lunch. The lunch status of students helps schools determine their free and reduced-price lunch participation (Arkansas Department of Human Services, 2021). This study used *lunch status* as the operational definition.

**Poverty.** The United States Census Bureau (2021) identifies poverty based on the income amount brought into a family and the overall family size. The thresholds calculated based on family size and income level determine if a family is in poverty. Poverty definitions include income before taxes and do not include capital gains or

noncash benefits (public housing, food stamps, or Medicaid). For this study, *poverty* was used as a conceptual definition.

## **Significance**

### **Research Gaps**

This study of multiple factors on literacy achievement scores is connected to many other studies focused on literacy achievement. However, this study focuses on literacy achievement measured by the ACT Aspire Summative Reading Assessment. Arkansas is the only state that currently administers the ACT Aspire Summative Reading Assessment as an annual summative assessment for reading (Office of Elementary and Secondary Education, 2021). How various factors (poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance) can predict the outcome of literacy achievement may have been explored previously with other assessments. This study will extend the knowledge base using national standardized assessments to learn how these factors can predict the outcome of literacy achievement for students.

### **Possible Implications for Practice**

Literacy achievement is a focus of Arkansas through the recent Reading Initiative for Student Excellence (Arkansas Division of Elementary and Secondary Education, 2021). With the growing population of ELs, having a model to predict literacy achievement for students may help better understand what is needed to determine success in literacy. Specifically, examining the various factors related to literacy achievement that focus on ELs can help districts make instructional decisions for students. According to Goldenberg (2013), “Little research exists on the millions of ELs that can assist in practice recommendations to support educators” (Goldenberg, 2013, p. 4). Examining

these data could help schools develop systems to predict literacy achievement success, which could help support instructional decisions affecting Arkansas's ELs. In addition, examining the data and developing systems to predict literacy success can lead to other implications. The results can help support teacher training and professional learning, target supports and strategies for parents of ELs, and assist in their learning as they continue their learning journey through higher education and careers.

### **Process to Accomplish**

#### **Design**

A regression strategy was used in this study for Hypotheses 1-3. The predictor variables for the three hypotheses were poverty, gender, native language spoken, and ELPA21 proficiency status. The criterion variable for Hypotheses 1-3 was reading performance measured by the ACT Aspire Summative Reading Assessment. Each predictor variable was dichotomized: poverty by lunch status (free and reduced-price lunch or paid lunch), gender (male or female), native language spoken (Spanish or all other ELs), and ELPA21 proficiency status (emerging and progressing or proficient). Each hypothesis included a grade level (i.e., Grades 4, 7, and 10).

#### **Sample**

The sample was scores from Grades 4, 7, and 10 ELs in a Northwest Arkansas school district of approximately 20,000 students. The scores were sent from the district's assessment and accountability office. The data was de-identified except for the variables needed to process the regression analysis. Scores were selected because reading performance was measured using the ACT Aspire Summative Reading Assessment. This Northwest Arkansas school district population consisted of 70% free and reduced-price

lunch status. According to the Arkansas Department of Education Data Center (2021), the Northwest Arkansas school district population consisted of 51.8% male students and 48.2% female students, with 38% currently placed in EL services. All EL students' reading performance scores, including EL students receiving special education services, were collected and coded by lunch status, gender, native language spoken, and ELPA21 proficiency status.

### **Instrumentation**

In the Spring 2019, students in a Northwest Arkansas school district took the ACT Aspire Summative Reading Assessment. According to the *ACT Aspire Technical Manual* (ACT, 2019), the reading assessment was included in this administration. The ACT Aspire Summative Reading Assessment consists of multiple-choice, constructed-response, and technology-enhanced items. The ACT Aspire Summative Reading Assessment assesses reading and reports scores into three categories: key ideas and details, craft and structure, and integration of knowledge and ideas. The ACT Aspire Summative Reading Assessment contains literary narratives, social science, and natural science text types. The reading scaled scores range from the lowest obtainable scale score of 400 to the highest obtainable scale score of 442. The score range for Grades 3 through 5 is 400-434, for Grades 6 through 8 is 400-440, and for Grades 9 and 10 is 400-442. The reading test reliability ranges from .81-.87, depending on the grade-level assessment.

The predictor variables were collected from the district's assessment and accountability office using a combination of data stored in the eSchool database system, the ELPA21 assessment data, and the ACT Aspire Summative Reading Assessment data released by the Arkansas Division of Elementary and Secondary Education (2019a). The

district assessment and accountability office collected and shared the data on an Excel sheet with the identifiable data removed.

### **Data Analysis**

A multiple regression was calculated to address the three hypotheses. The predictor variables of poverty by lunch status (free and reduced-price lunch or paid lunch), gender (male or female), native language spoken (Spanish or all other ELs), and ELPA21 proficiency status (emerging and progressing or proficient) were analyzed to determine whether these predicted the ACT Aspire Summative Reading Assessment performance. The first analysis for each hypothesis examined whether the model as a whole was significant. The second analysis examined each predictor variable's contribution to the model. A two-tailed test with a .05 level of significance was used to test the null hypotheses.

### **Summary**

Reading proficiency can be identified using specific foundational skills. The National Reading Panel (1999) named vocabulary and comprehension two of the five pillars of reading. The foundational reading skills are essential for reading proficiency (National Reading Panel, 1999). The various experiences of ELs, such as poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance, may also affect student reading proficiency. According to Goldenberg (2013), little research supports ELs in learning, and most instructional decisions are based on theory. Examining the factors that affect reading proficiency in ELs could help fill the current gaps. Chapter II will review the related literature connecting the reading factors unique to ELs.

## CHAPTER II

### REVIEW OF THE RELATED LITERATURE

Reading proficiency can measure academic success and level of achievement in education and life-long learning. An individual's ability to read proficiently helps society and is essential to health, civic engagement, and economic growth (Echevarria et al., 2015). To become a proficient reader, an individual may have many factors to support or deter the process of becoming literate. Bronfenbrenner's (1979) ecological systems theory identifies five layers of influence on a learner; these five layers connect to several factors that can affect a student's progress in developing proficient reading skills. Identifying relationships through multiple factors may help educators determine factors that may predict success in reading proficiency. Reading proficiency can be measured to determine academic success and achievement.

Establishing potential factors for reading proficiency can support educators in determining how to support students in their learning. Poverty, gender, native language spoken, and language proficiency may affect reading proficiency. Jensen (2009) identified that poverty could cause learning gaps early because of less home literacy exposure, less time engaged in conversation, and traumatic events in a child's life. Gender may affect how reading proficiency is determined due to test question types (Reardon et al., 2018). Cummins (1979) identified the strength of developing native language skills to facilitate second language transfer. Language learning and literacy are

connected and necessary for proficient reading (Chomsky, 2014). Predicting the effects of poverty, gender, native language spoken, and language proficiency can lead to a deeper understanding of the development of reading skills to build proficiency. Educators may determine how to support students if reading proficiency factors are established.

The essential skills to develop reading proficiency are layered. The National Reading Panel (1999) identified five critical skills to develop reading proficiency: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Gough and Tunmer (1986) developed the simple view of reading that established the need for decoding words and language comprehension to create meaning through print. Applying this understanding of the five pillars of reading and the simple view of reading can help educators assess and determine instructional supports to help students grow into proficient readers. This chapter reviewed the literature on the essential skills to develop reading and factors that may predict reading proficiency.

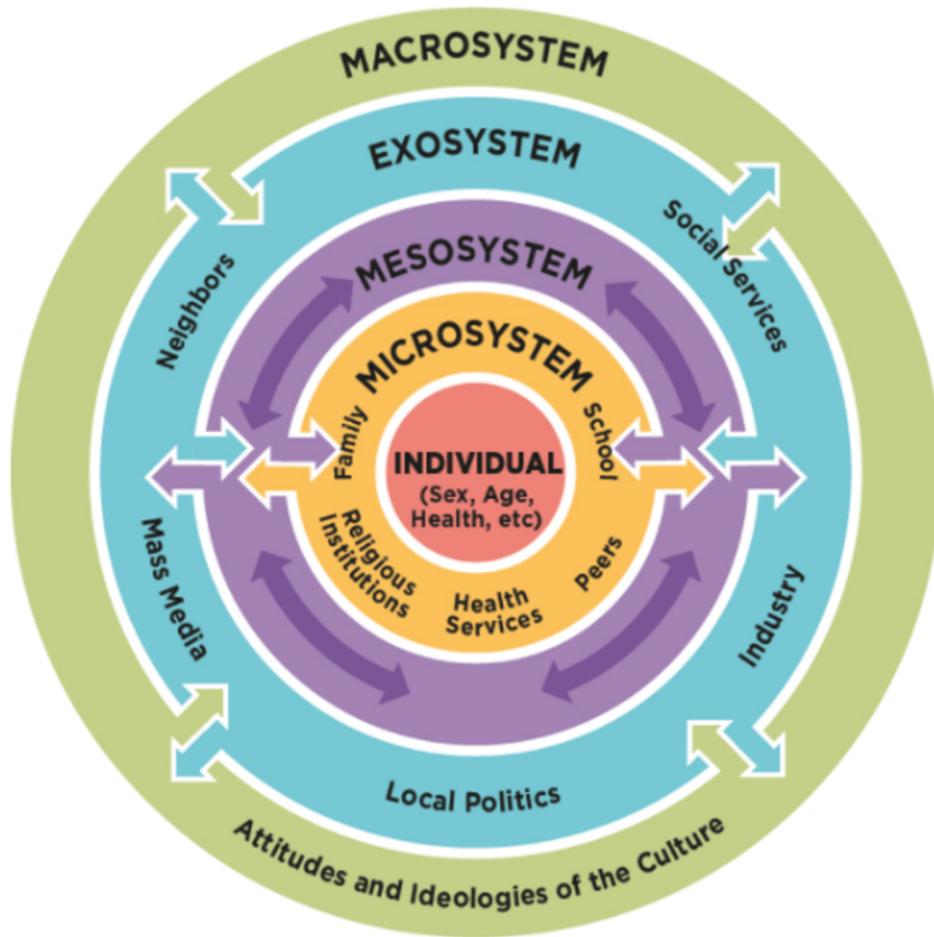
### **Theoretical Framework: Bronfenbrenner's Ecological Systems Theory**

Urie Bronfenbrenner was a Russian-born American developmental psychologist who wanted to observe children outside a lab setting to understand how they interacted with the world around them. He developed his ecological systems theory to help organize the layers of influence children's environments could have on their development (Bronfenbrenner, 1979). Bronfenbrenner worked at Cornell University, and his findings helped establish the Head Start Program (Shelton, 2018). In Bronfenbrenner's (1979) ecological systems theory, five systems influence children: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. The five systems

are organized to identify each layer of the five systems of influence. Each system has a different level of influence on children and their development.

Figure 1

*Ecological systems theory diagram*



*Note.* Ecological systems diagram republished with permission of The National Academies Press. From *Preventing bullying through science, policy, and practice*, by F. Rivara & S. Le Menestrel (Eds.), 2016, p. 73 (<https://doi.org/10.17226/23482>).

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The five systems of ecological influence each have a different level of effect on children and their development. The microsystem comprises people in direct contact with children, those individuals and influences closest to them (Bronfenbrenner, 1979). The next level of influence, the mesosystem, consists of the relationships between groups and individuals in the microsystem. The exosystem consists of outside indirect influences on children's lives, but these influences do not directly contact them. The macrosystem contains the cultural influences that affect children. The chronosystem is the timing or stage of life one is going through. These systems interact and relate to each other to have multiple layers of influence on children's lives.

The ecological systems theory connects to the variables and the effects on literacy achievement. The multiple layers of ecological systems surrounding individuals can identify the factors that affect student reading achievement (Bronfenbrenner, 1979). Each layer affects the individual; however, as each layer is removed from the individual, additional variables can lessen the effect of the layer. For example, the native language spoken may have a more significant effect on a student's literacy achievement than the student's time in United States schools since the native language spoken is considered in the microsystem and an individual's school experience is considered in the exosystem. Applying the system's layers and the effects on literacy achievement may lead to insights into overall achievement as determined by these factors.

Theoretically, every individual will have different layers of influence to determine their choices and overall outcomes in life. Several systems affect everyone, and understanding these relationships is key to knowing why individuals perform differently (Bronfenbrenner, 1979). Understanding the relationships of each layer in

Bronfenbrenner's theory can lead to a more profound knowledge of learning. The interconnectedness of the layers can reveal the need to identify which layers have the most significant effect on student learning and achievement and how to support the growth and development of the layers of support. Studying the effects of multiple variables on the individual and their previous achievements leads to a deeper understanding of learning. Individuals and their experiences can be seen through the layers of Bronfenbrenner's system and used to determine a student's overall learning progress and achievement.

### **History of English or Second Language Learning**

Understanding and assessing the needs of English language learners has changed throughout the history of education. The Bilingual Education Act of 1968 was adopted to support English language learner education (Bybee et al., 2014). This legislation from the 1960s developed a federal funding source to promote and support the education of English language learners. According to Mclean (1995), *Diana v. California State Board of Education* was a 1970 landmark case in bilingual education that challenged the assessment of English language learners. The case determined that the identification of special needs could not be based on linguistic proficiency in English, and students should be tested using various assessments that included non-verbal tests. The challenge in the courts connected to assessments for ELs was a growth in understanding the complexity of educating students with multilingual backgrounds. Assessing the needs of ELs has continued to evolve and change.

Court cases connected to ELs' education have helped shape the current education system. In 1974, *Lau v. Nichols* changed how schools educated students with multilingual

backgrounds (Bybee et al., 2014). This case mandated that every school have an English language learner program for students identified. The programs had to include the regular curriculum (Bybee et al., 2014). In 1981, *Castaneda v. Pickard*, a foundational case for ELs, set a standard for all EL education programs to be research-based, implemented effectively, and regularly evaluated (Bybee et al., 2014). The need for English language learning strategies and research grew after these court cases, and education shifted to focus on the inclusion of ELs in programming and assessments. The challenges in the court cases helped to adjust the education system.

Shifts in assessment have also occurred based on the challenges in the court system. By the 1980s, several professional associations, such as the American Psychological Association and the American Council on Measurements, included guidance when considering assessments for English language learners (Mclean, 1995). These guidelines can help educators understand if language is a factor in the assessments' results. Understanding the factors connected to assessment and language can lead to a deeper understanding of student knowledge, not their ability to communicate in English. The changes in assessments support the educational shifts over the past few decades.

Historically, English language learners have helped shape our education system as educators have discovered tools to assess learning and language development. Kibler and Valdes (2016) stated that educators labeled students as *beginning* or *proficient language learners*. These labels were also connected to language proficiency exams and used in education placement decisions (Kibler & Valdes, 2016). Mclean (1995) supported this idea by stating that assessors should be aware of students' cultural and linguistic backgrounds when conducting assessments. Educators who assess student language

proficiency through various assessments can better support student learning. Supporting student learning can include understanding students' backgrounds, including language and culture. The education system and assessment approaches have been adapted and shaped by ELs.

Current education practices have evolved to reflect the needs of ELs; however, policies are continuously developing to support the needs of ELs. According to Bybee et al. (2014), the educational policies of No Child Left Behind, enacted in 2001, had a focus on ELs from a deficit mindset, as though language learning is a problem. The deficit mindset may connect schools' accountability formulas aligned to state assessments. The Arkansas Division of Elementary and Secondary Education (2019a) had an accountability plan approved under the Every Student Succeeds Act (ESSA), enacted in 2015, that details student growth calculations for students in language and content area assessments. Focusing on student growth allows student learning to be accounted for and included in state accountability reporting. This focus demonstrates a shift to an asset-based mindset for ELs. Policies are continuously developing to support ELs' needs, and educational practices are evolving to reflect the changes.

Based on the evolution of service to ELs, a need for states to make policy decisions that support ELs is necessary. According to Lopez et al. (2015), specific considerations should be examined when making decisions about ELs. Language instructional educational programs and the legal decisions that form states' current policies and practices should be a focus (Lopez et al., 2015). State-level decisions about language instructional educational programs have a more significant effect on ELs than local educational decisions. Identification and placement decisions should be equitable.

Umansky and Porter (2020) identified that an EL's ethnicity may be the basis for reclassification and exiting services. The identification process, the language instructional educational program and services offered, and reclassification and exit procedures should be equitably established by states.

ESSA includes current policy and guidance on ELs and accountability measures. Lyons et al. (2017) reviewed the current ESSA policies that target ELs, requiring this group to be assessed more than other groups due to new accountability standards. Through the lens of equity, including one group in more assessments than others may not be seen as the best practice; however, language growth and proficiency measures are needed to determine student needs and supports. In addition, valid and reliable measures of oral language proficiency should be used for an accurate picture of the language acquisition of ELs (Wolf & Faulkner-Bond, 2016). This balance between assessing students more than others to gain information about their specific needs is a point of reflection for the current ESSA policies. Accountability measures and guidance focused on ELs included in ESSA is a shift from the past.

ESSA also includes guidance for state-level assessment and accountability measures for annual assessments that are required. Through the lens of equity for ELs, several states only offer state assessments in English (Office of Elementary and Secondary Education, 2021). ELs are required to take state-level assessments, and valid measures in language and content assessments should be examined (Lyons et al., 2017; Wolf & Faulkner-Bond, 2016). An equitable assessment system for state accountability should include the needs of ELs and their language development and acquisition. The

requirements of ESSA for states to assess all students annually may lead to systemic inequities for ELs.

Equitable assessments are needed to support the language learning of ELs. Cavazos and Ortiz (2020) researched how schools assess students' oral language development when considering response to intervention and multi-tiered systems of support. The research findings included adding an oral language assessment to the response to intervention and multi-tiered systems of support process to help schools no longer overidentify ELs for these services. Understanding ELs' specific learning needs can help schools decide how to assess students and when to place students in additional programming for support. Equitable assessments are needed to support ELS.

Standards alignment, curricular decisions, and teacher training are areas to reflect upon when making equitable decisions for ELs. Aligning English language programming and supports is connected to the microsystem of Bronfenbrenner's ecological systems theory, where the schools directly influence the child. Fenner and Segota (2012) argued that distinct standards from English Language Proficiency Standards and the alignment to the state standards for content learning could determine areas of need and future planning areas of focus. Kim and Piper (2019) focused on the need for future planning to support teachers to ensure an attempt at assessment equity. The article focuses on the need for teachers to be prepared to meet the needs of ELs as this demographic continues to grow. Teachers trained in how to support ELs, align curriculum to fit language acquisition needs, and align standards to support language and content learning are layers of equitable decisions for public schools. Equitable decisions about standards, curriculum, and teacher training are focus areas to support ELs.

## **English or Second Language Learning**

Studies in language development and second language acquisition reveal layers when building a student's ability to communicate in another language. Language learning over the decades has shifted continuously, and the areas of second language learning continue to focus on ever-changing curricular decisions (Kibler & Valdes, 2016).

Educational approaches to second language learning have evolved over the decades and adjusted to meet students learning English as an additional language. Bronfenbrenner's (1979) ecological systems theory identifies the mesosystem as the relationship between the microsystem and the exosystem. The interaction between the student's home language and language learning in the school is an example of the exchange in the mesosystem. This exchange in language development studies reveals the layers of second language acquisition.

Language learning and literacy are directly connected, as language is necessary for proficient reading to occur. According to Chomsky (2014), each individual has a system for developing language, including language usage and syntax complexities. Understanding the syntax of a language is foundational to building literacy and comprehending a language. Understanding the language is necessary for students to develop the skills for literacy. Language learning and literacy involve layers of learning and the transfer of knowledge.

Literacy and language have layers that connect and build on each other, affecting second language learning and literacy acquisition. The factors associated with second language learning may reveal a more profound understanding of what can affect second language learners' language acquisition (August et al., 2009). In addition, Echevarria et

al. (2015) highlighted the interconnectedness of literacy and language. Each educator's instructional decision should focus on language or literacy in each lesson design to support second language learning. Knowing the layers and interconnectedness of language and literacy helps when studying the complexities of language and acknowledges that second language learning has various effects on literacy. Second language acquisition and literacy development share connections and multiple layers.

While developing a deeper understanding of second language acquisition, educators have created resources that help practitioners understand the English language. Krashen (2003) identified an initial early benchmark for language acquisition theory and understanding. Krashen's work was a critical text in linguistic theory. The acquisition-learning hypothesis and applying this theory are vital to understanding language acquisition. Krashen's acquisition-learning hypothesis discusses the distinction between students naturally acquiring language by being immersed in the language verse learning the specific, explicit parts of a language. His theory also describes the monitor hypothesis, centered on students growing in their knowledge of the language's form, function, and structure. The theory also describes the natural order hypothesis, which supports learning a language in a fixed and universal way; the input (comprehension) hypothesis, which focuses on learning language through experiences; and the affective filter hypothesis, which highlights the need for students to have a sense of safety in their learning environment for learning to occur. The theories are based on Krashen's work with language acquisition. Krashen's examination of language acquisition began the current understanding of how a second language develops. Educators have created resources that help practitioners understand the English language.

## **Native Language Spoken**

Other studies have examined students' language backgrounds, supporting the linguistic interdependence hypothesis. Merz et al. (2020) examined the relationship between a student's first language and literacy development while evaluating the effects of oral language in the home and on students' literacy skills. The participants included students and their parents, and the data consisted of brain scans to determine linguistic processes, recordings of conversations in the home, and reading levels measured through a standardized measure. A significant difference was identified in students who had more conversations in the home than those who did not interact. The language spoken in the home can potentially affect literacy development. The native language spoken is part of a student's microsystem in Bronfenbrenner's ecological systems theory. Connecting the interaction of the students and their native language spoken is a core layer of influence on a children's development. Examining the language backgrounds of students can indicate a level of literacy development.

The language spoken in the home in a student's linguistic development may indicate literacy skills. Sultana et al. (2020) evaluated the effects of language development in students from different socioeconomic backgrounds. They looked at the language input for students at home and indicated a significant difference in language input for students from higher socioeconomic level homes compared to peers from low socioeconomic households. Sultana et al.'s recommendation indicated a need for parents to understand the quality of language inputs for students when developing language skills to support language development. The idea is that language in the home is instrumental to

students' linguistic development. Knowing language development may be a factor in determining a student's literacy level.

Language development may be an indicator of literacy development. Language development and the home environment could affect second language acquisition, and obtaining morphological awareness may be vital to understanding a language (Kahn-Horwitz & Saba, 2018). Kahn-Horwitz and Saba (2018) examined explicitly students that spoke Arabic and were learning English as a foreign language, noting that if the students had a strong understanding of phonological awareness, orthographic mapping, morphological awareness, and understanding of their first languages, they were more able to identify words in English. A direct connection existed between the level of language development in a student's first language and the connection to word-level comprehension in English. Identifying the depth of language understanding in a student's first language can indicate English language understanding. Literacy may be predicted when examining language development.

The linguistic development of students may look differently based on several factors. Merz et al. (2020) and Sultana et al. (2020) examined the significance of socioeconomics and language usage in the home and determined that students from lower socioeconomic levels had less language use. In addition, Cummins (1979) argued that second language acquisition would not be as easy to accomplish without the command and depth of knowledge in a native language spoken. The use of language in different cultures can also affect the student's linguistic development. Several factors may affect the linguistic development of students.

Understanding the phonological principles, orthographic knowledge, and morphological depth of a language may predict language and literacy proficiency. Kahn-Horwitz and Saba (2018), on the level of language transfer based on native language proficiency, revealed that three key areas of language could determine language knowledge: phonological awareness, orthographic knowledge, and derivational morphological awareness. The depth of understanding in these areas connected with the frequency of language in the home, as indicated by Sultana et al. (2020), supported that the layers of language knowledge should be coupled with practice and immersion to facilitate language proficiency. Knowing the language spoken in the home, identifying the language use, and assessing the depth of native language knowledge may help predict language and literacy proficiency.

Knowing a student's native language spoken can contribute to determining literacy proficiency. Cummins (1979) shared that the success of second language acquisition is connected to the literacy level of the native language. Looking at the native language spoken may determine second language acquisition and literacy proficiency. Understanding students' native languages spoken may help predict their literacy proficiency levels.

As second language learning expanded, educators developed additional resources to understand the complexity of the English language. Focusing on the orthographic depth hypothesis, Geva and Ramirez (2015) claimed that cross-linguistic transfer is a complex process with specific areas to understand. The cross-linguistic transfer should acknowledge that these specific areas support second language literacy acquisition. The orthographic depth hypothesis illustrated that language comprehension could range in

depth from transparent to opaque. A language with a shallow depth or high transparency has a consistent one-to-one correspondence with letters and phonemes or the sounds the letters make. An example of a shallow-depth language is Spanish. A language with far less consistent correspondence between letters and the sounds the letters make is called a deep or opaque language. English is an example of a deep language (Geva & Ramirez, 2015). By knowing the orthographic depth hypothesis and its application to second language acquisition, educators can understand the cross-linguistic transfer to the English language. Expanding these studies and analyzing the findings from theories can help identify the complexities of English and how to support second language acquisition.

### **Poverty**

Poverty can be among the factors associated with literacy achievement. Jensen's (2009) work with brain development and the effects of poverty on learning helps educators deepen collective understanding. By identifying the factors associated with poverty and how these affect student learning, Jensen provided specific definitions of the complexity of the nature of poverty and the connection to student learning and achievement. Poverty can cause learning gaps from an early age due to less exposure to literacy in the home, less time engaged in conversation, and traumatic events in a child's life. Poverty is one of the risk factors for adverse childhood experiences (Centers for Disease Control, 2021). Adverse childhood experiences can affect brain development and learning. Understanding the risk factors for poverty and how the brain responds to poverty has helped educators support student literacy learning and achievement. Literacy learning examined through the lens of poverty deepens the knowledge of the layers of literacy achievement.

As part of Bronfenbrenner's ecological systems theory's exosystem, poverty can affect students and their learning. McGown and Slate (2019) conducted a 3-year study on the reading performance of third graders in Texas schools. The measure of the reading performance was the State of Texas Assessments of Academic Readiness reading assessment. In addition, the results were further analyzed to determine if the results would indicate overall reading performance as measured by the Final Satisfactory Performance Standard of the State of Texas Assessments of Academic Readiness STAAR reading assessment. The participants were divided into groups (extremely poor, moderately poor, and not economically disadvantaged) based on socioeconomic status, as identified by the Texas Education Agency. A significant difference in reading performance for students in the extremely poor (free lunch recipient) category was revealed compared to those not economically disadvantaged (McGown & Slate, 2019). Jensen (2009) explained how the continued poverty of students can be detrimental to brain development, supporting the findings of McGown and Slate's research. Understanding how poverty can affect student reading performance may add another layer of understanding to Bronfenbrenner's connection to the exosystem.

As Jensen identified, students can overcome the effects of poverty. Kennedy (2018) focused on students living in high poverty and the connection between engagement and achievement in literacy. Kennedy revealed that engagement was higher for students in high-poverty situations if students were placed in mixed-ability groupings and had engagement and motivation to support cognitive development. Kennedy focused on high-poverty students and what may be solutions to raising literacy achievement, indicating motivation did not precede engagement, and both were needed in addition to

cognitive development for students to grow in literacy. Students' engagement was not the only factor in learning. The combination of engagement, motivation, and cognitive development supported Jensen's (2009) principle that students can overcome the effects of poverty and use specific strategies to support student learning. Bronfenbrenner's (1979) ecological systems theory identified schools in the microsystem, two layers closer to the student at the system's center. Schools in the microsystem can significantly affect student learning more than poverty in the exosystem. Jensen's work aligns with the ecological systems theory by using the principle that students can overcome poverty by using specific methods and strategies to support student learning.

### **Gender**

Gender in assessment type may be another item to note. Reardon et al. (2018) closely examined the gender gap in test results based on the test question type used in an assessment. The focus was on identifying the differences in males' or females' test scores based on multiple-choice or constructed-response test items. In Grades 4 and 8, females scored significantly higher on constructed-response tests than their male peers (Reardon et al., 2018). Constructing assessments with a balance of multiple-choice and constructed response questions is a balanced approach to assessing both genders. The assessment question type could affect how one gender can perform at a higher level than another.

Gender gaps in verbal performance can also exist. Peterson and Parr (2012) observed that females outperformed males in verbal performance on state assessments. This meta-analysis targeted millions of students' verbal performance assessment results in multiple states, indicating significantly higher scores in verbal performance for females than males. In addition, after examining specific test subjects connected to verbal

performance, females performed significantly higher on writing assessments (Peterson & Parr, 2012). Examining the gender differences, specifically in verbal performance, could connect the effects of gender on literacy achievement. The focus on verbal performance through a meta-analysis of multiple state-level assessments identified a strong connection between gender and verbal performance.

Gaps may exist in phonological processing between males and females.

Wilsenach and Makaure (2018) researched the gaps between males and females in Grade 3 who were learning English in South Africa. The students in the study participated in phonological processing and reading measurement assessments. The females scored significantly higher on the reading assessments and performed higher than their male peers in some phonological processing assessments (Wilsenach & Makaure, 2018). These data connect to Bronfenbrenner's (1979) ecological systems theory by having the school, located in the microsystem, influence students' learning. This influence may differ for males and females based on the learning opportunities for students. Understanding the gender gaps in phonological processing and reading between males and females may help inform instruction and assessment.

Males and females may also have differences in literacy learning. Nalipay et al. (2020) found that female students are more likely to perform at higher levels in reading due to parental influences based on parental emotions toward reading. Nalipay et al. concluded that parents of female students had a higher indirect effect on their reading enjoyment and achievement than their male peers. Bronfenbrenner (1979) supported the concept that parents and families directly influence the child. Bronfenbrenner's ecological systems theory identified the influence of parents and family on a child

through the microsystem of influence closest to the child. Nalipay et al. (2020) corroborated this thinking. The gender of the child may influence the parental interactions with reading at home and the literacy learning that takes place outside of school. Literacy learning can be different for males and females.

Gender can be a factor in literacy learning and acquisition. Young et al. (2020) examined why males do not grow in literacy as quickly as their female peers. One of the areas highlighted was engagement. Males who participated in an oral reading instructional practice called *Reader's Theatre* had a higher level of engagement with reading practice, and the results showed an increase in their literacy learning (Young et al., 2020). Identifying the difference by gender in literacy learning and acquisition can help when reflecting on adjusting educational practices to close the achievement gap. Literacy learning may be affected by gender.

### **Measuring Language Proficiency**

Measuring language proficiency is multifaceted and complex. In 2016, Arkansas adopted the ELPA21 to measure English language proficiency (Arkansas Division of Elementary and Secondary Education, 2019a). The ELPA21 measures language proficiency through four domains: reading, writing, listening, and speaking, as well as an overall composite score to determine proficiency. With the adoption of the ELPA21, student proficiency levels grew from 9% to 19% across Arkansas (Bureau of Legislative Research, 2019). This change in the definition of proficiency with a new assessment and additional exit criteria adopted by the state led to more students meeting the exit criteria and no longer receiving EL services. Students that met exit criteria were monitored for 4 years through state testing and other progress monitoring data points collected to

determine if the student was progressing with non-EL peers. Understanding how language proficiency is measured and identifying the progress markers for continued proficiency helps evaluate student growth.

Student progress in language development is measured each year. As part of ESSA, the federal legislation guiding public school policy decisions passed in 2015 (Office of Elementary and Secondary Education, 2021). Each state identified how student progress and growth would be measured as part of ESSA (Office of Elementary and Secondary Education, 2021). Arkansas chose the ELPA21 to measure yearly growth for ELs. Student growth is calculated through overall performance and growth scores under each domain (Arkansas Division of Elementary and Secondary Education, 2017). The average time spent in EL services in Arkansas is 5 to 7 years (Arkansas Division of Elementary and Secondary Education, 2019b). The student growth is tracked to determine if the learner is on target for the average timeline to proficiency. Identifying the target goals for English language proficiency can help educators determine program effectiveness and make instructional decisions. Knowing the growth of students in language development is part of the student progress measured each year.

The growth and progress of English language development and learning have various measures. Liu et al. (2018) conducted a 10-year literature review and analytical study focused on the assessment measures and research conducted to determine the growth and progress of ELs. The review focused on the different methodologies to determine EL's language growth and progress. Lui et al. concluded that the different methodologies behind the growth calculations varied in their evidence of language growth for students. According to the review, the overall scores of student language

proficiency were more reliable to calculate than domain-specific scores due to the lack of vertical alignment with the domain scores across all grades (Lui et al., 2018). The ELPA21 measures overall language proficiency and domain scores (Arkansas Division of Elementary and Secondary Education, 2019a). Knowing the higher reliability of Lui et al.'s (2018) findings, the overall proficiency results are used to measure ELPA21 proficiency and growth over the domain-specific scores of ELs. Identifying if an EL is proficient on the ELPA21 is critical to indicate if a student has met English language proficiency. The ELPA21 measures overall language proficiency as emerging, progressing, or proficient.

Other factors are needed to reclassify dismissal from EL services and programming. The growth and progress of English language learning can be measured in various ways. Assessment development and the protocols to administer assessments may affect students' achievement scores. Keh (2019) focused on literacy achievement through three assessments and compared the results of ELs to their non-EL peers, revealing that the overall performance on the literacy assessments indicated different results for ELs compared to their non-EL peers. Identifying that ELs scored at different levels on an assessment as non-EL peers indicated a connection between language proficiency and ELs' achievement levels. If non-EL peers scored higher on an assessment, this score could indicate that the assessment requires language proficiency to achieve at or on grade level. Understanding the connection between language proficiency and literacy achievement could predict literacy achievement. Knowing assessment protocols and administration requirements could help identify the effects on students' achievement scores.

Standardized assessment developers conduct reliability studies to determine reliability among different assessment groups. Moore et al. (2020) explained in the ACT technical brief the reliability of the ACT scoring of ELs. The overview explained that the data revealed that ELs scored lower on the ACT than non-EL groups. Since the assessment developed testing items in the context of the English language, this technical brief directly checks for the reliability of the ACT scoring of ELLs.

Additional reliability studies may be needed to determine if any group participating in an assessment can demonstrate reliable results. According to Moore et al. (2020), participants identified as ELs scored differently than non-EL peers, which revealed that the reliability of the ACT subtest for reading was .95 for non-ELs, and the reliability dropped to .90 for ELs. Moore et al. revealed the same drops in reliability for the ACT subtests for mathematics and science. Knowing that the reliability of the assessment was adjusted to a lower percentage due to the participants identifying as ELs helps ensure the results accurately reflect the participants' achievement in any demographic assessment group. Having the data to support an assessment's reliability helps determine how the results can be analyzed. Assessments conduct reliability studies to support the use of the instrument and the results.

The development of assessments includes supports and accommodations for accounting for various learners participating in the assessments. Moore et al. (2018) focused on the testing supports for ELs and gave an understanding of the development and implementation of testing supports for ELs. Participants identified as ELs can have these allowable accommodations based on individual needs (Moore et al., 2018). These testing supports assisted participants identified as ELs in completing the assessments at a

higher reliability rate. The use of testing supports could offer participants the needed accommodations, such as extended time or text-to-speech support, to perform at higher levels. Understanding the development of the testing supports and the relation to the development of language proficiency connects how achievement tests can reveal reliable results for ELs. Various learners participating in assessments have testing supports developed and available to assist them in completing the assessment.

Literacy achievement, language placement, and proficiency may not have correlative effects. Onda and Seyler (2020) found no connection between the literacy achievement of students in language programming and those who exited the program. Students' placement connected to their academic achievement on state testing was observed to determine if the services and the reclassification had any connection. The reclassification process had little to no effect on the students' literacy achievement and did not support the possibility of proficiency in the language as a contributing factor to literacy achievement (Onda & Seyer, 2020). Literacy learning theories support the identification of language proficiency as a predictor of literacy achievement (Scarborough, 2001), although this study did not see a connection. Language and literacy can develop at different levels and may have interconnectedness. No connections could exist between literacy achievement, language placement, and proficiency.

### **Reading Performance**

Multiple factors can contribute to reading performance as measured by standardized assessments. Poverty can cause adverse childhood experiences resulting in learning delays (Centers for Disease Control, 2021). The organization and type of questions used in assessments may result in a gap in performance by gender (Reardon et

al., 2018). In addition, native language spoken and the development of English language skills should be considered when identifying possible contributors to reading performance. Scarborough (2001) shared in her research that language comprehension is the key to reading comprehension. Illustrated in the Scarborough's robe visual, language comprehension is a foundational piece to overall reading comprehension. The multiple factors contributing to reading performance should be considered when examining reading assessments.

The underlying foundations of reading can be assessed in various ways to identify reading proficiency. Understanding the sounds of a language through phonemic awareness connects to reading proficiency (National Reading Panel, 1999). Grant et al. (2007) reviewed the National Reading Panel findings by Diane August and Timothy Shanahan and identified that language and literacy form an open system of meaning. A student must make meaning to become a proficient reader, and knowing the language's sounds helps build that foundational skill. Reading proficiency is connected to the skill of phonemic awareness.

The five pillars of reading proficiency are based on the findings of multiple research studies; however, gaps may exist that support ELs and reading proficiency. The National Reading Panel (1999) identified the five pillars of reading; however, additional reviews of the National Reading Panel have identified areas for more in-depth research, specifically regarding ELs and second language reading proficiency. Pray and Jiménez (2009) published a literature review of the National Reading Panel recommendations for literacy, specifically for EL literacy acquisition. August et al. (2009) provided policymakers with recommendations concerning literacy and ELs, including a word of

caution that the recommendations were based on a limited number of studies. The National Literacy Panel conducted fewer studies for Language Minority Children and Youth than the National Reading Panel. The review also focused on the bias that led to the National Reading Panel recommendations (August et al., 2009). Identifying the gaps in research to support the recommendations of the National Reading Panel indicated that prospective areas concerning ELs and literacy acquisition were not explored. Although many research studies were included in the National Reading Panel recommendations for literacy acquisition, gaps may exist in supporting ELs.

Phonemic awareness and phonics are skills that are foundational to reading proficiency. As Hanford (2018) and Grant et al. (2007) identified, the sounds of the language are needed to make meaning. Phonics, connecting sounds to print, is another pillar of reading identified in the National Reading Panel (2000) report. Recently, the Department of Elementary and Secondary Education in Arkansas has shifted to instruction focusing on phonemic awareness and phonics, known as the science of reading (AETN, 2018). Shifting the focus to phonemic awareness and phonics is based on the findings of the National Reading Panel. Looking at phonemic awareness and phonics development allows for a deeper understanding of reading foundations that lead to comprehension. These foundational skills are needed to become a proficient reader.

Understanding the science of reading and making meaning of the language is necessary when discussing reading proficiency. Goldenberg (2020) researched the effects of the shift to the science of reading instruction and foundational literacy skills through the lens of ELs. He reviewed several approaches to literacy instruction for ELs and specifically identified the areas of need to support reading proficiency for ELs. He

concluded that ELs and their non-EL peers benefit from explicit phonemic awareness and phonics instruction; however, ELs need the additional support of explicit language instruction to build meaning in the language (Goldenberg, 2020). Howard et al. (2018) recommended that teaching English literacy to students who are not yet proficient in English should focus on oral language development and meaning-based phonetic work rather than isolation. Without the meaning of the language, learning sounds and the printed symbols that align with the sounds do not facilitate meaning. Making meaning is necessary to build reading proficiency.

The combination of making meaning of language and decoding skills can build proficiency in reading. Gough and Tunmer (1986) shared their theory of the simple view of reading. This theory identified that reading combines decoding through phonemic awareness and phonics with language comprehension. This theory aligns with the National Reading Panel's (1999) findings on the five pillars of reading. Phonemic awareness, phonics, and fluency are connected to decoding, while vocabulary and comprehension are connected to language comprehension. Understanding the language and connecting linguistic knowledge with decoding skills can produce proficient reading.

Reading proficiency reveals layers of understanding. Brain development is a critical factor in literacy learning and achievement. Sousa (2014) explained the theory and science of brain development in children relating to developing literacy skills through stages of oral language, connecting sounds to print, and the comprehension process connected to reading. Sousa focused on how the brain identified and built connections and processed information within the literacy development process. The layers overlap with language learning and second language acquisition, specifically in oral language and

comprehension processing. Identifying the connections between language and reading has been a research focus. Layers of understanding reveal the factors related to reading proficiency.

Reading performance and motivations can be connected to culture and social experiences. Bronfenbrenner's theory highlights the influence of the macrosystem, which focuses on the cultural attitudes and ideologies, that can affect a child (Bronfenbrenner, 1979). Ratminingsih et al. (2020) found a significant effect in examining how culture-based stories may affect reading competency. With a medium effect size, cultural-based stories helped support higher reading competence (Ratminingsih et al., 2020). Having cultural-based stories aligns with Bronfenbrenner's theory of the influence of the macrosystem on the child. Looking specifically at ELs, culture-based materials may be vital to promoting reading motivation and competency. Connecting reading performance and motivations to social experience and culture is another way to measure reading performance.

The ACT Aspire Summative Reading Assessment measures reading proficiency in different categories. According to ACT (2019), the ACT Aspire Summative Reading Assessment measures key ideas and details, craft and structure, and integrating knowledge and ideas. Key ideas and details relate to students' abilities to identify main ideas and supporting evidence, summarize concepts, and understand various relationships within a set of texts. Craft and structure relate to students' understanding of the word and phrase meanings and an understanding of text structure and purpose. Integration of knowledge and ideas relates to students' ability to connect texts and understand the construction of an argument (ACT, 2019). The categories identified in the interpretive

scoring guide show the layers of all five pillars of reading identified in the National Reading Panel (1999) report and align with the simple view of reading (Gough & Tunmer, 1986). The ACT Aspire Summative Reading Assessment determines reading proficiency by connecting the various skills and supporting sub-skills, including word decoding as identified through phonemic awareness and phonics and language comprehension, as evidenced by fluency, vocabulary, and comprehension. The ACT Aspire Summative Reading Assessment measures reading proficiency by combining these different categories.

### **Summary**

Identifying the knowledge of the skills and predicting factors of proficient reading can help educators determine support for students. Phonemic awareness, phonics, fluency, vocabulary, and comprehension are the five pillars of reading (National Reading Panel, 1999). The literature review revealed the layers of learning and skills connected to the pillars of reading, including other contributing factors. Poverty, as measured by lunch status, gender, native language spoken, and language proficiency, may predict a student's reading proficiency. Chapter III includes the research methodology, design, sample, instrumentation, collection procedures, analytical methods, and limitations.

## **CHAPTER III**

### **METHODOLOGY**

The literature review reveals connections between poverty, gender, native language spoken, and ELPA proficiency to determine reading performance in ELs. Bronfenbrenner's theory of ecological systems illustrates the various levels of influence on the child relating to each of the connections. However, a gap exists relating specifically to ELs and research on reading performance (August et al., 2009). The current research has focused on language development and proficiency in reading performance, while the majority does not specify ELs and their unique linguistic development, including the possible effects of native language spoken on reading performance. Additional studies highlighting the possible connections are needed to help inform educational approaches to supporting ELs.

This study builds on the existing research to determine the possible predictive effects of poverty, gender, native language spoken, and ELPA proficiency on reading performance as measured by the ACT Aspire Summative Reading Assessment. This chapter aims to identify and explain the research methodology for analyzing the possible predictive effects of the predictor variables on the criterion variable through multiple regression analysis. The study's hypotheses include determining the predictive effects of poverty, gender, native language spoken, and ELPA proficiency on reading performance

for ELs in Grades 4, 7, and 10. The research design, sample, instrumentation, data collection procedures, and analytical methods are included.

The following null hypotheses were formulated:

1. No predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 4 English language learners in a Northwest Arkansas school district.
2. No predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 7 English language learners in a Northwest Arkansas school district.
3. No predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 10 English language learners in a Northwest Arkansas school district.

### **Research Design**

A quantitative, multiple regression was used in this non-experimental study. The predictor variables for Hypotheses 1-3 are poverty, gender, native language spoken, and ELPA21 proficiency status. The criterion variable is student reading performance measured by the ACT Aspire Summative Reading Assessment for Grades 4, 7, and 10 in a suburban Northwest Arkansas school district. Each predictor variable was dichotomized: poverty by lunch status (free and reduced-price lunch or paid lunch), gender (male or female), native language spoken (Spanish or all other ELs), and ELPA21

proficiency status (emerging and progressing or proficient). Each hypothesis specified one grade level (Grade 4, Grade 7, or Grade 10).

### **Sample**

The sample included scores collected from Grades 4, 7, and 10 ELs in a Northwest Arkansas school district of approximately 20,000 students. The scores were sent from the district's assessment and accountability office. The data were de-identified except for the variables needed to process the regression analysis. Scores were selected because reading performance was measured using the ACT Aspire Summative Reading Assessment. This Northwest Arkansas school district population had a 70% free and reduced-price lunch status. According to the Arkansas Division of Elementary and Secondary Education (2021), the Northwest Arkansas school district population consisted of 52% male and 48% female students, with 38% currently placed in EL services. All EL students' reading performance scores, including EL students receiving special education services, were collected and coded by lunch status, gender, native language spoken, and ELPA21 proficiency status.

### **Instrumentation**

In the Spring 2019, students in a Northwest Arkansas school district were administered the ACT Aspire Summative Reading Assessment. According to the *ACT Aspire Technical Manual* (ACT, 2019), the ACT Aspire Summative Reading Assessment consists of multiple-choice, constructed-response, and technology-enhanced items. The ACT Aspire Summative Reading Assessment contains literary narratives, social science, and natural science text types. The construction of the multiple test items supports the findings of Reardon et al. (2018), showing that males tended to answer multiple-choice

items at higher accuracy and that females scored higher on constructed-response items. Having both types of test items aids in accurately measuring reading performance. Including multiple test types in the ACT Aspire Summative Reading Assessment allows students in male and female groups to demonstrate reading skills and knowledge.

The ACT Aspire Summative Reading Assessment assesses reading and reports scores in three categories: key ideas and details, craft and structure, and integration of knowledge and ideas. The specific scoring of each of the categories supports the research of Scarborough (2001) that identified reading comprehension as a complex process connecting multiple underlying word decoding and language comprehension skill sets. Scoring reading performance based on key ideas and details demonstrates the student's literal understanding of a piece of text connected to word decoding. Scoring on craft and structure shows the student's understanding of language comprehension. Scoring the integration of knowledge and ideas and scoring this section separately indicates the student's level of overall reading comprehension, aligned to the research in the simple view of reading (Gough & Tunmer, 1986). Individual scoring results on each skill can show a student's literacy skill level and overall understanding of the reading process. Assessing reading using the three components of key ideas and details, craft and structure, and integration of knowledge and ideas provides a multidimensional score of reading performance.

The ACT Aspire Summative Reading Assessment allows for accommodations for ELs. According to the *ACT Aspire Technical Manual* (ACT, 2019), ELs are allowed accommodations that include extended time, small group testing, and directions in a language other than English. According to the Arkansas Division of Elementary and

Secondary Education (2019b) English Learning Services guidance, ELs identified in the school database system with a completed language placement assessment committee plan can take the assessment with the provided accommodations. Each language placement assessment committee decides the accommodations needed for each student prior to the administration of the assessment based on multiple data points focused on the student's language development needs. The allowable accommodations for ELs consider using additional time to process and transfer thinking and processing between languages.

The ACT Aspire Summative Reading Assessment uses scaled scoring to determine reading performance. According to the *ACT Aspire Technical Manual* (ACT, 2019), the reading scaled scores range from the lowest obtainable scale score of 400 to the highest obtainable scale score of 442. The score range for Grades 3 through 5 is 400-434, for Grades 6 through 8 is 400-440, and for Grades 9 and 10 is 400-442. The reading test reliability ranges from .81-.87, depending on the grade-level assessment. The multiple regression analysis used these scaled scores as the criterion variable.

### **Data Collection Procedures**

After receiving approval from the Institutional Research Board in the Spring 2022, the director of assessment and accountability from the participating district was contacted. The data file was created from existing state-level testing data stored in the district's internal database systems in Google Drive. The data file was shared within 3 weeks via Google Drive in a secure link Google Sheets file. The data file was then downloaded into a Microsoft Excel spreadsheet file in a secured location.

## **Analytical Methods**

Multiple regression was calculated to address the three hypotheses. The formatted and coded data sheet was uploaded into IBM SPSS Statistics, Version 27. The predictor variables were coded as follows: poverty by lunch status (free and reduced-price lunch = 0 or paid lunch = 1), gender (male = 0 or female = 1), native language spoken (Spanish = 0 or all other languages = 1), and ELPA21 proficiency status (emerging/progressing = 0 or proficient = 1). Data were analyzed to determine whether these variables predicted the ACT Aspire Summative Reading Assessment performance. The first analysis for each hypothesis examined whether the model as a whole was significant. The second analysis examined each predictor variable's contribution to the model. A two-tailed test with a .05 level of significance was used to test the null hypotheses.

## **Limitations**

As with any research study, limitations were identified to assist in interpreting the results. First, the analysis used 2019 scores, data from the last year before the COVID-19 pandemic in the Spring 2020. The data set from 2019 included ELPA21 summative scores and ACT Aspire Summative Reading Assessment scores. Both assessments were administered in the Spring 2019. Due to the COVID-19 pandemic, the sample was chosen from the last assessment data collected before the occurrence to allow as clear a historical view of the assessment data as possible. Disruptions to test administration occurred in the Spring 2020, with the United States Department of Education waiver allowing for a cancellation of the ACT Aspire Summative Assessment (ADE Commissioner's Memo, 2020). In addition, data collected from the 2020 school year would have outside variables such as loss of instruction, shifts to remote learning, and

other academic, social-emotional, and medical disruptions that could affect the outcome of the analysis (United States Government Accountability Office, 2022). The disruptions and breaks in assessments due to the COVID-19 pandemic have many additional environmental variables that could affect results from most recent years. The use of 2019 scores was the last year of assessment and data collection before the pandemic and the many variables associated with the results.

Second, the sample of this study was limited to scores from one Northwest Arkansas school district and focused solely on Grades 4, 7, and 10. The data set for this study represented over 25% of the overall population of ELs in Arkansas (Arkansas Division of Elementary and Secondary Education, 2019a). Collecting multiple data sets from various school districts in various demographic areas may reveal different findings. Little research currently exists on ELs and reading performance (August et al., 2009; Goldenberg, 2013). By adding a more significant sample of the comprehensive data collected, more information and predictors could be identified.

Third, the study included dichotomous coding of predictor variables due to the multiple regression analysis. A deeper analysis of the data may reveal additional reading performance predictors. According to Geva and Ramirez (2015), the Orthographic Depth Hypothesis supports that language acquisition in transparent languages may be faster than in opaque languages. According to the Orthographic Depth Hypothesis, English is opaque, while Spanish is a transparent language. Identifying the predictor of native language spoken through a dichotomous code limits the identification of other language transfer as a possible predictor of reading performance outside of Spanish. The

limitations of dichotomous coding for native language spoken may not reveal a deep analysis of native language spoken and additional language acquisition.

Fourth, other factors were not included in the analysis that may predict the reading performance of ELs. Manning et al. (2006) supported the need to diversify instructional approaches for ELs and use multiple approaches to support literacy acquisition. The multiple program types and instructional approaches to supporting language and literacy for ELs were not included in this study. Giambo (2010) discussed the possibility of time in United States schools as a determining factor in supporting student literacy learning. Time in United States schools was not included in this study. Instructional approaches, time in United States schools, and other educational factors may affect ELs' reading performance.

### **Summary**

Existing EL research and the possible variables that may predict reading performance are limited. Goldenberg (2013) identified that more research is needed to support ELs' learning. The research field to help identify predictors for reading performance would support ELs in learning language and literacy skills. Scarborough's (2001) research and reading model identified language comprehension as a key component of foundational reading. The study's multiple regression analysis may help identify the possible predictors for reading performance as measured by the ACT Aspire Summative Reading Assessment. The limitations of student participants from one school district, dichotomous coding of native language spoken, and the omission of other possible factors that may predict reading performance should be considered in interpreting the study's results.

This study's inclusion of poverty, gender, native language spoken, and ELPA proficiency could provide a deeper insight into the possible variables that may predict reading performance. Examining each predictor variable and the individual potential to help predict reading performance can support researchers and educators in identifying valuable information to grow students and aid in their achievement on state reading assessments. The construction of the ACT Aspire Summative Reading Assessment uses a balance of multiple item types and text structures that support the findings of Reardon et al. (2018), the allowance of accommodations for ELs as identified by the Arkansas Division of Elementary and Secondary Education (2019b) for Learning Services connect to the technical accommodations outlined in the *ACT Aspire Technical Manual* (ACT, 2019). The data collected to possibly determine predictors of reading performance are included to help identify and build on the currently limited research. Chapter III explained the research methods of this study. Chapter IV includes an overview of the analytical methods and results for Hypotheses 1-3.

## **CHAPTER IV**

### **RESULTS**

This study explored the predictive effects of poverty, gender, native language spoken, and ELPA proficiency on students' ACT Aspire Summative Reading Assessment scores in one public school district in Northwest Arkansas. Poverty (measured by free and reduced or paid lunch), gender (male and female), native language spoken (Spanish and other languages), and ELPA21 proficiency (emerging/progressing and proficient) served as independent variables. ACT Aspire Summative Reading Assessment scores served as the dependent variable in the study for Grades 4, 7, and 10. The results of these analyses are presented in this chapter.

#### **Hypothesis 1**

The first hypothesis stated that no predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 4 English language learners in a Northwest Arkansas school district. Before conducting a regression analysis, the data were examined to determine that assumptions for multiple regression were met. Scatterplots of the correlation between the predictor variables and the outcome variable did not reveal a clear violation of linear relationship. An examination of the intercorrelation table indicated no variables in the new model had a strong correlation with each other, and no tolerance was lower than  $1 - R^2$ . Therefore, multicollinearity was

not considered a problem with the model. Table 1 shows the means, standard deviations, and intercorrelations for reading performance for Grade 4 students.

Table 1

*Means, Standard Deviations, and Intercorrelations for ACT Aspire Summative Reading Assessment and Predictor Variables for Grade 4 (N = 658)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
Reading Perf	410.81	4.25	-.026	.119**	-.047	.491***
Pred Variable						
1. Poverty	0.09	0.28	1.000	-.036	.018	-.003
2. Gender	0.41	0.49		1.000	.031	.076
3. Native Lang	0.28	0.45			1.000	-.056
4. ELPA Prof	0.25	0.44				1.000

*Note.* Reading Perf. = Reading Performance; Pred Variable = Predictor Variable; Native Lang = Native Language Spoken; ELPA Prof = ELPA Proficiency Level.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

To examine the fit of the regression model for predicting ACT Aspire Summative Reading Assessment scores, casewise diagnostics, and tests for influential cases were conducted. These diagnostics revealed no significant outliers, with no cases identified as exerting significant influence in the model. After testing all the relevant assumptions and model fit diagnostics, a standard multiple regression analysis was then conducted to determine the degree to which poverty, gender, native language spoken, and ELPA proficiency predicted academic achievement performance measured by the ACT Aspire Summative Reading Assessment. These results are displayed in Table 2.

Table 2

*Simultaneous Multiple Regression Analysis for Predicting ACT Aspire Summative Reading Assessment for Grade 4*

Model	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Regression	2955.13	4	738.78	54.07	< .001
Residual	8921.51	653	13.66		
Total	11876.63	657			

Regression results indicated that the overall model significantly predicts ACT Aspire Summative Reading Assessment scores,  $R^2 = .249$ ,  $R^2_{adj} = .244$ ,  $F(4, 658) = 54.07$ ,  $p < .001$ . These results indicate that this model is a better predictor of ACT Aspire Summative Reading Assessment performance when compared to just the grand mean, and hence the null hypothesis was rejected. The model also accounted for approximately 24.4% of the variance in ACT Aspire Summative Reading Assessment performance, which was a large effect size (Cohen, 1988). A summary of the unstandardized and standardized regression coefficients for this model (Table 3).

Table 3

*Unstandardized and Standardized Coefficients for Predictors of ACT Aspire Summative Reading Assessment Performance for Grade 4*

Model	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>	Collinearity Statistics	
1(Constant)	409.41	0.23		1806.24	.000	Tolerance	VIF
Poverty	-0.33	0.52	-0.02	-0.64	.525	.998	1.002
Gender	0.71	0.29	0.08	2.40	.017	.992	1.008
Native Lang	-0.21	0.32	-0.02	-0.65	.519	.995	1.005
ELPA Prof	4.72	0.33	0.48	14.19	.000	.991	1.009

*Note.* Native Lang = Native Language Spoken; ELPA Prof = ELPA Proficiency Level.

Results from the coefficient table indicate that poverty and native language spoken did not significantly contribute to the model, but gender ( $p = .017$ ) and ELPA proficiency level ( $p < .001$ ) significantly predicted reading performance measured by the ACT Aspire Summative Reading Assessment, with ELPA proficiency level being the most important predictor. An examination of the beta weights for gender indicates that females have a 0.71-point advantage over males in this model regarding reading performance. Similarly, proficient ELPA21 students have a 4.72-point advantage over emerging or progressing ELPA21 students. Results revealed the equation for predicting ACT Aspire Summative Reading Assessment performance as follows: ACT Aspire Summative Reading Assessment performance (predicted) = 409.41 - 0.33(Poverty) + 0.71(Gender) - 0.21(Native Language Spoken) + 4.72(ELPA Proficiency Level).

## Hypothesis 2

The second hypothesis stated that no predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 7 English language learners in a Northwest Arkansas school district. Before conducting a regression analysis, the data were examined to determine that assumptions for multiple regression were met. Scatterplots of the correlation between the predictor variables and the outcome variable did not reveal a clear violation of linear relationship. An examination of the intercorrelation table indicated no variables in the new model had a strong correlation with each other, and no tolerance was lower than  $1 - R^2$ . Therefore, multicollinearity was not considered a problem with the model. Table 4 shows the means, standard deviations, and intercorrelations for reading performance for Grade 7 students.

Table 4

*Means, Standard Deviations, and Intercorrelations for ACT Aspire Summative Reading Assessment and Predictor Variables for Grade 7 (N = 487)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
Reading Perf	414.66	4.96	-.005	.128**	-.125**	.455**
Pred Variable						
1. Poverty	0.13	0.33	1.000	-.020	-.005	-.012
2. Gender	0.37	0.48		1.000	.025	.067
3. Native Lang	0.35	0.48			1.000	-.109*
4. ELPA Prof	0.19	0.40				1.000

*Note.* Reading Perf. = Reading Performance; Pred Variable = Predictor Variable; Native Lang = Native Language Spoken; ELPA Prof = ELPA Proficiency Level.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

To examine the fit of the regression model for predicting ACT Aspire Summative Reading Assessment scores, casewise diagnostics, and tests for influential cases were conducted. These diagnostics revealed no significant outliers, with no cases identified as exerting significant influence in the model. After testing all the relevant assumptions and model fit diagnostics, a standard multiple regression analysis was then conducted to determine the degree to which poverty, gender, native language spoken, and ELPA proficiency predicted academic achievement performance measured by the ACT Aspire Summative Reading Assessment. These results are displayed in Table 5.

Table 5

*Simultaneous Multiple Regression Analysis for Predicting ACT Aspire Summative Reading Assessment for Grade 7*

Model	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Regression	2661.07	4	665.27	34.56	< .001
Residual	9278.67	482	19.25		
Total	11939.73	486			

Regression results indicated that the overall model significantly predicts ACT Aspire Summative Reading Assessment scores,  $R^2 = .223$ ,  $R^2_{adj} = .216$ ,  $F(4, 487) = 34.56$ ,  $p < .001$ . These results indicate that this model is a better predictor of ACT Aspire Reading Assessment performance when compared to just the grand mean, and hence the null hypothesis was rejected. The model also accounted for approximately 21.6% of the variance in ACT Aspire Summative Reading Assessment performance, which is a large effect size (Cohen, 1988). A summary of the unstandardized and standardized regression coefficients for this model (Table 6).

Table 6

*Unstandardized and Standardized Coefficients for Predictors of ACT Aspire Summative Reading Assessment Performance for Grade 7*

Model	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>	Collinearity Statistics	
1(Constant)	413.50	0.32		1306.42	.000	Tolerance	VIF
Poverty	0.03	0.60	0.00	0.05	.964	.999	1.001
Gender	1.03	0.41	0.10	2.49	.013	.994	1.006
Native Lang	-0.82	0.42	-0.08	-1.96	.051	.987	1.013
ELPA Prof	5.52	0.51	0.44	10.86	.000	.983	1.017

*Note.* Native Lang = Native Language Spoken; ELPA Prof = ELPA Proficiency Level.

Results from the coefficient table indicate that poverty and native language spoken did not significantly contribute to the model, but gender ( $p = .013$ ) and ELPA proficiency level ( $p < .001$ ) significantly predicted reading performance measured by the ACT Aspire Summative Reading Assessment, with ELPA proficiency level being the most important predictor. An examination of the beta weights for gender indicates that females have a 1.03-point advantage over males in this model regarding reading performance. Similarly, proficient ELPA21 students have a 5.52-point advantage over emerging or progressing ELPA21 students. Results revealed the equation for predicting ACT Aspire Summative Reading Assessment performance as follows: ACT Aspire Summative Reading Assessment performance (predicted) = 413.50 + 0.03(Poverty) + 1.03(Gender) - 0.82(Native Language Spoken) + 5.52(ELPA Proficiency Level).

### **Hypothesis 3**

The third hypothesis stated that no predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 10 English language learners in a Northwest Arkansas school district. Before conducting a regression analysis, the data were examined to determine that assumptions for multiple regression were met. Scatterplots of the correlation between the predictor variables and the outcome variable did not reveal a clear violation of linear relationship. An examination of the intercorrelation table indicated no variables in the new model had a strong correlation with each other, and no tolerance was lower than  $1 - R^2$ . Therefore, multicollinearity was not considered a problem with the model. Table 7 shows the means, standard deviations, and intercorrelations for reading performance for Grade 10 students.

Table 7

*Means, Standard Deviations, and Intercorrelations for ACT Aspire Summative Reading Assessment and Predictor Variables for Grade 10 (N = 609)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
Reading Perf	417.33	6.47	.073	.090*	-.156**	.474**
Pred Variable						
1. Poverty	0.13	0.34	1.000	.073	-.031	.062
2. Gender	0.44	0.50		1.000	-.008	.037
3. Native Lang	0.29	0.45			1.000	-.141**
4. ELPA Prof	0.15	0.35				1.000

*Note.* Reading Perf. = Reading Performance; Pred Variable = Predictor Variable; Native Lang = Native Language Spoken; ELPA Prof = ELPA Proficiency Level.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

To examine the fit of the regression model for predicting ACT Aspire Summative Reading Assessment scores, casewise diagnostics, and tests for influential cases were conducted. These diagnostics revealed no significant outliers, with no cases identified as exerting significant influence in the model. After testing all the relevant assumptions and model fit diagnostics, a standard multiple regression analysis was then conducted to determine the degree to which poverty, gender, native language spoken, and ELPA proficiency predicted academic achievement performance measured by the ACT Aspire Summative Reading Assessment. These results are displayed in Table 8.

Table 8

*Simultaneous Multiple Regression Analysis for Predicting ACT Aspire Summative Reading Assessment for Grade 10*

Model	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Regression	6093.77	4	1523.44	47.47	< .001
Residual	19383.57	604	32.09		
Total	25477.33	608			

Regression results indicated that the overall model significantly predicts ACT Aspire Summative Reading Assessment scores,  $R^2 = .239$ ,  $R^2_{adj} = .234$ ,  $F(4, 609) = 47.47$ ,  $p < .001$ . These results indicate that this model is a better predictor of ACT Aspire Summative Reading Assessment performance when compared to just the grand mean, and hence the null hypothesis was rejected. The model also accounted for approximately 23.4% of the variance in ACT Aspire Summative Reading Assessment performance, which is a large effect size (Cohen, 1988). A summary of the unstandardized and standardized regression coefficients for this model (Table 9).

Table 9

*Unstandardized and Standardized Coefficients for Predictors of ACT Aspire Summative Reading Performance for Grade 10*

Model	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>	Collinearity Statistics	
1(Constant)	416.00	0.37		1140.69	.000	Tolerance	VIF
Poverty	0.72	0.69	0.04	1.04	.298	.991	1.009
Gender	0.90	0.46	0.07	1.94	.053	.994	1.006
Native Lang	-1.29	0.51	-0.09	-2.51	.012	.980	1.021
ELPA Prof	8.36	0.66	0.46	12.70	.000	.976	1.025

*Note.* Native Lang = Native Language Spoken; ELPA Prof = ELPA Proficiency Level.

Results from the coefficient table indicate that poverty and gender did not significantly contribute to the model, but native language spoken ( $p = .012$ ) and ELPA proficiency level ( $p < .001$ ) significantly predicted reading performance measured by the ACT Aspire Summative Reading Assessment, with ELPA proficiency level being the most important predictor. An examination of the beta weights for gender indicates that Spanish speakers have a 1.29-point advantage over other language speakers in this model regarding reading performance. Similarly, proficient ELPA21 students have an 8.36-point advantage over emerging or progressing ELPA21 students. Results revealed the equation for predicting ACT Aspire Summative Reading Assessment performance as follows: ACT Aspire Summative Reading Assessment performance (predicted) = 416.00 + 0.72(Poverty) + 0.90(Gender) - 1.29(Native Language Spoken) + 8.36(ELPA Proficiency Level).

## Summary

The purposes of this study were to determine the predictive effects among poverty, gender, native language spoken, and ELPA proficiency on reading performance as measured by the ACT Aspire Summative Reading Assessment on EL students in Grades 4, 7, and 10 in a public northwest Arkansas school district. The summary of the results is displayed in Table 10.

Table 10

*Summary of p Values for the Three Hypotheses on ACT Aspire Summative Reading Assessment and Predictor Variables for Grades 4, 7, and 10*

Variables by H <sub>0</sub>	H1	H2	H3
Model	< .001	< .001	< .001
Poverty	.525	.964	.298
Gender	.017	.013	.053
Native Language Spoken	.519	.051	.012
ELPA Proficiency Level	< .001	< .001	< .001

Multicollinearity was not an issue with the three hypotheses, so all variables were included in each regression model. All three null hypotheses were rejected due to the statistical significance of the regression models, and all had large effect sizes. The predictor variables that significantly contributed to the various regression models were as follows. For Hypothesis 1, gender and ELPA proficiency level significantly contributed to the regression model. For Hypothesis 2, gender and ELPA proficiency level

significantly contributed to the regression model. For Hypothesis 3, native language spoken and ELPA proficiency significantly contributed to the regression model. ELPA proficiency significantly contributed to the adjusted regression model for all the hypotheses. Chapter V discusses the findings, implications, recommendations, potential for practice, and future research considerations.

## **CHAPTER V**

### **DISCUSSION**

This study aimed to determine the predictive effects of poverty, gender, native language spoken, and ELPA21 proficiency on reading performance as measured by the ACT Aspire Summative Reading Assessment for ELs in Grades 4, 7, and 10. Bronfenbrenner's (1979) ecological systems theory identifies multiple layers of influence on the individual child. Understanding the possible effects of these different influences can help educators determine how to create and support systems to aid students in reaching proficiency in reading. Scarborough's Rope (2001) identifies language comprehension as a key foundational reading skill. The science of reading initiatives in education (Arkansas Division of Elementary and Secondary Education, 2021) focuses on Scarborough's Rope (2001) and the guidance from the National Reading Panel (1999); however, a gap in research connecting ELs to reading exists (August et al., 2009). This chapter summarizes the multiple regression analysis findings for each hypothesis, connects the findings and implications to the current research in the literature review, identifies recommendations for multiple stakeholders connected to ELs, and examines future research considerations.

## **Findings and Implications**

### **Hypothesis 1**

Hypothesis 1 stated that no predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 4 English language learners in a Northwest Arkansas school district. The regression model was statistically significant with a large effect size, and the null hypothesis was rejected. The predictor variables of gender and ELPA21 proficiency significantly predicted reading performance as measured by the ACT Aspire Reading Summative Assessment, with ELPA21 proficiency being the most important predictor.

### **Hypothesis 2**

Hypothesis 2 stated that no predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 7 English language learners in a Northwest Arkansas school district. The regression model was statistically significant with a large effect size, and the null hypothesis was rejected. The predictor variables of gender and ELPA21 proficiency significantly predicted reading performance as measured by the ACT Aspire Reading Summative Assessment, with ELPA21 proficiency being the most important predictor.

### **Hypothesis 3**

Hypothesis 3 stated that no predictive effects will exist among poverty, gender, native language spoken, and ELPA21 proficiency status on reading performance measured by the ACT Aspire Summative Reading Assessment for Grade 10 English

language learners in a Northwest Arkansas school district. The regression model was statistically significant with a large effect size, and the null hypothesis was rejected. The predictor variables of gender, native language spoken, and ELPA21 proficiency significantly predicted reading performance as measured by the ACT Aspire Summative Reading Assessment, with ELPA21 proficiency being the most important predictor.

### **Poverty**

The research connecting poverty to student achievement has been focused on building the case for poverty as a barrier to learning. Jensen (2009) identified that students from poverty could overcome the possible effects. Kennedy (2018) supported Jensen by identifying that students from poverty placed in mixed ability grouping with engaging instruction can reveal higher levels of achievement. Poverty as a variable in the regression did not indicate any statistical significance with the sample collected. The data on poverty may be consistent with the data revealing that a statistically significant relationship did not exist. If the students in the data sample were from poverty but had engaging instruction and were placed in mixed ability grouping throughout their courses of study, they may have overcome the effects of poverty. These factors would not show a significantly significant relationship.

The data supports the literature about students overcoming poverty. Jensen (2009) identified specific strategies to support students in overcoming the effects of poverty. The use of any strategies was not included as a variable and cannot be confirmed as a definitive reason for the lack of statistical significance. However, Jensen and Kennedy (2018) supported Bronfenbrenner's ecological systems theory that identifies a student's school experiences in the microsystem more significantly influence the student than

poverty in the exosystem. The research was supported by the findings that the data had no statistical significance, and the literature indicated that students from poverty could overcome any barriers to learning. Students overcoming poverty through strategies cannot be set aside as a possibility.

## **Gender**

Researchers suggest that gender may affect student achievement. According to Reardon et al. (2018) and Peterson and Parr (2012), the possible gender gap may be linked to the test questions used in an assessment. The regression analysis indicated a statistical significance in the outcomes of reading performance by gender. The beta weights of the model indicated that females in Grade 4 have a 0.71-point advantage over males, and in Grade 7, females have a 1.03-point advantage over males in the model regarding reading proficiency. However, in Grade 10, no statistical significance for gender was found. The ACT Aspire Summative Reading Assessment consists of multiple choice and constructed response test items at each grade level. The data supported the findings of Reardon et al. (2018) with a limitation to the Grade 4 and Grade 7 samples. The results for Grade 10 do not align with the prior research findings of Petersen (2018). Gender can affect student achievement but with some limitations.

Additional researchers revealed a deeper look at literacy skills development and significant gaps concerning gender. Wilsenach and Makaure (2018) and Nalipay et al. (2020) showed that females outperform males on literacy assessments. The studies indicated that females scored higher on literacy assessments due to more vital foundational literacy skills and parental influences. The regression data illustrated that females in the study outperformed males by a statistically significant measure. The

study's limited scope included gender, but neither foundational reading nor other outside influences can offer some connection that supports the literature but is not comprehensive support of the research. Literacy skills development and gender gaps can exist, but more research would benefit in determining definitive conclusions.

### **Native Language Spoken**

The native language spoken by a student has been shown to affect reading performance. Merz et al. (2020) and Sultana et al. (2020) identified that students' native language spoken and the use of the language by students' parents significantly affected their literacy abilities. The researchers revealed that the amount of language spoken in the home might indicate linguistic development. However, the regression showed no statistical significance for the native language spoken for Grades 4 and 7, while a statistical significance existed for Grade 10. The regression partially supports the literature concerning the Grade 10 sample. The native language spoken by a student affected reading performance for the students in Grade 10. The findings connect and support Cummins's (1979) theory of second language acquisition, where a student's native language level can be an indicator of second language acquisition. Cummins (1979), Chomsky (2014), and Krashen (2003) revealed that second language learning is connected to native language understanding and cross-linguistic transfer is successful if ELs have a deeper understanding of language. Native language development can support language and literacy acquisition.

The connection between the native language spoken and reading performance can be identified through the foundational linguistic principles of all languages. Kahn-Horowitz and Saba (2018) identified that phonological awareness, orthographic

knowledge, and derivational morphology in a native language spoken could help determine the level of language transfer in ELs. Geva and Ramirez (2015) illustrated the orthographic depth hypothesis theory that connected transparency to additional language transparency as an indicator of successful cross-linguistic transfer. The findings of the Grade 10 sample indicated that the students that had Spanish as their native language spoken were a higher predictor of reading performance than other languages. The results support the orthographic depth hypothesis theory by indicating that the native language spoken (Spanish) is transparent and that the cross-linguistic transfer to English, which is opaque, was a higher predictor than other languages in the data set that were not as transparent. The foundational linguistic principles of all languages highlight the connection between the native language spoken and reading performance.

### **ELPA21 Proficiency**

Studies in language proficiency reveal an interconnection between language and literacy. Gough and Tunmer (1986) identified that language comprehension was part of reading comprehension. Scarborough (2001) recognized that the specific skill of language comprehension was necessary for reading comprehension. The findings of this study revealed that the most important predictor of reading performance was ELPA21 proficiency. ELs in Grades 4, 7, and 10 that scored proficient on the ELPA21 language assessment had the highest predictor value to determine reading performance. The data supported the interconnected relationship between language comprehension and reading comprehension. Language learning supports literacy development.

## **Recommendations**

### **Potential for Practice/Policy**

This regression analyzed the various predictor variables that could affect reading proficiency measured by the ACT Aspire Summative Reading Assessment. The results of this study could be helpful to several stakeholder groups connected to the education of ELs: classroom teachers, building and district administrators, professional development coordinators, and state and national education leaders. These multiple stakeholder groups can benefit by examining the role of gender, native language spoken, and ELPA21 proficiency on reading performance in Grades 4, 7, and 10. Demographically, ELs are the fastest growing population in public schools (National Center for Educational Statistics, 2020). The findings of this study could help create policies to support ELs, develop targeted professional support for educators connected to ELs, and support classroom, building, and district decisions that facilitate research-based approaches to support ELs to meet high levels of reading performance.

Classroom teachers connected to ELs have minimal research to support their everyday instructional decisions. Goldenberg (2013) shared that information on best practices to support ELs' instruction was lacking. The findings of this study support the connection between language learning and reading proficiency. Bridging the understanding of the components of Scarborough's Rope (2001), Gough and Tunmer's (1986) simple view of reading, and Chomsky's (2014) theory of syntax to the language and literacy needs of students would be instrumental in supporting the overall reading growth of ELs. This study revealed the importance of understanding the syntax and structure of the English language to demonstrate proficiency on the ELPA21 assessment.

The large effect size of ELPA21 proficiency to predict reading performance reinforces Chomsky's theory and helps classroom teachers understand the importance of developing language skills in ELs as a foundational practice before assuming reading skill sets. A classroom teacher can use the findings of this study to support focusing instructional time on language development and language practice for ELs. The data support Scarborough's Rope and the need for language comprehension as a critical piece to reading comprehension.

Building and district administrators that support the work of classroom teachers connected to ELs can also benefit from the findings of this study. The predictor variables of gender, native language spoken, and ELPA21 proficiency significantly affected reading performance at different grade levels. Administrators can use the findings to support the scheduling of time dedicated to language development for ELs (Goldenberg, 2013) to support more robust language comprehension to support Scarborough's Rope (2001) as foundational to reading. The findings of this study can also help to determine the types of questions and practice sessions that may be useful for interventions depending on the grouping of ELs. For example, having males or females engaging in different types of interventions in Grades 4 or 7 that support how they process language (Peterson & Parr, 2012) or having small groups organized by native language spoken (Cummins, 1979; Kim & Piper, 2019) in Grade 10 may help to focus interventions and instruction on supporting the specific reading needs of each group. Organizing time to support language, focusing on language development goals, and targeting data collection around the four components of language development: reading, writing, listening, and speaking, can help administrators grow their ELs to proficient readers.

Professional development coordinators can use the findings of this study to support specific instructional routines and practices. Professional learning for educators, connected to research and evidence (Goldenberg, 2013), helps focus adult learning. Using the findings of this study, professional development coordinators can build on the body of research established for language and literacy and adapt strategies to target the needs of ELs (August et al., 2009). Focusing on the predictor of ELPA21 proficiency, professional development coordinators can customize their approaches to the needs of ELs and support the methods of dedicated language development to support overall reading performance. With the information supporting English proficiency as a predetermining factor for reading performance, professional development can shift to a targeted approach focusing on language acquisition and adding in the other components of foundational literacy. Building upon this understanding, all content area teachers can benefit from understanding the role linguistic development plays in determining reading proficiency.

State and national education leaders and policymakers can use the findings of this study to help determine future policy decisions supporting ELs. Understanding the predictor of ELPA21 proficiency on reading performance can help state and national education leaders and policymakers. They can make decisions that align with the importance of positioning standards to support language development (Fenner & Segota, 2012), connecting the decisions about reading instruction to include the research-based approaches best to support ELs (August et al., 2009), and understanding the benefit of having a language development assessment as part of the state accountability plan (Lyons et al., 2017). The findings of this study illustrate the importance of language development for ELs (Goldenberg, 2013). ELPA21 proficiency has a large effect size in predicting

reading performance for ELs. State and national education leaders and policymakers can support this by updating policies recognizing the need for language development. Using the findings of this study, additional policies to support language proficiency assessments and their connection to accountability can be examined. Identifying the ways to support ELs can help support one of our fastest-growing groups of students in public education.

### **Future Research Considerations**

This study identified that gender, native language spoken, and ELPA21 proficiency had a predictive effect on reading performance as measured by the ACT Aspire Summative Reading Assessment. Not enough evidence existed to determine that poverty affected reading performance as measured by the ACT Aspire Summative Reading Assessment. The study revealed several future research considerations:

1. This study sampled one school district for the regression. Future research might consider a larger sample size from multiple districts or a statewide sample.
2. Future research might focus on additional measures of reading performance. The ACT Aspire Summative Reading Assessment was the state reading assessment at the time of the study, but the regression model may be used with other reading performance data instruments.
3. Possible replications of the study could include other predictor variables, such as years in United States schools. This study included ELs from various linguistic backgrounds at different grade levels. However, the time students have been enrolled in United States schools might identify the time needed to gain overall reading skills.

4. A replication of this study with different grade levels may benefit the research and identify if patterns emerge beyond the three grade levels examined.  
Looking at students in earlier years or higher education settings may lead to a deeper understanding of the predictors of reading performance.
5. Identifying one sample group of students over multiple years may help identify trends in data related to reading proficiency with ELs.
6. Additional groups of students could be added to the replication of this study to include ELs that are no longer in language services or students that were never identified as ELs to see if the predictor variables have a significant effect on reading performance.

### **Conclusion**

This study examined the possible predictive effects of poverty, gender, native language spoken, and ELPA21 proficiency on reading performance for ELs in Grades 4, 7, and 10, as measured by the ACT Aspire Summative Reading Assessment. The findings of this regression analysis identified gender, native language spoken, and ELPA21 proficiency as statistically significant. These variables are closely connected to the student in their microsystem (Bronfenbrenner, 1979). Female ELs in Grade 4 and Grade 7 had a higher predictive value than males for reading performance, aligning with the research of Petersen (2018). Spanish native language spoken in Grade 10 had a higher predictive value than other languages for reading performance. ELPA21 proficiency had the most significant effect on reading performance in Grades 4, 7, and 10. These results align with the research of Gough and Tunmer (1986) and Scarborough (2001), connecting to the science of reading and linguistic comprehension that is necessary for

reading. The study's analysis contributed to the growing evidence connecting ELs' language acquisition and literacy learning.

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