2016

A Comparison Study Of Poverty Students' Istep+ Growth Model Scores Based On Schools' Socioeconomic Status Levels

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A COMPARISON STUDY OF POVERTY STUDENTS' ISTEP+ GROWTH MODEL SCORES BASED ON SCHOOLS' SOCIOECONOMIC STATUS LEVELS

A Dissertation

Presented to

The College of Graduate and Professional Studies

Department of Educational Leadership

Indiana State University

Terre Haute, Indiana

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

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May 2016

Keywords: High poverty, low poverty, academic achievement, poverty, Title I, student enrollment size, minority percentage, special education percentage, growth model

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ABSTRACT

The purpose of this quantitative study was to determine if there is a significant difference in the English/language arts and mathematics 2014 ISTEP+ median growth model scores between students of poverty based on their school's socioeconomic status (SES) level. The study examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of the school's ISTEP+ growth model score within different poverty levels. The study used Indiana public schools that contained students in Grades 4 through 8 who qualified for free and reduced lunches (FRL). The levels of SES were based on the school's FRL rate percentage and used three different levels: affluent (0-39.9%), moderate-poverty (40.0-60.0%), and high-poverty (60.1-100%). The results of this study showed only moderate-poverty middle schools were significantly different than high-poverty middle schools in the area of mathematics when looking between different levels of SES in elementary and middle schools. Special education student percentage was a significant predictor of ISTEP+ median growth model scores for ELA and mathematics in high-poverty elementary schools and ELA in affluent middle schools. In all three levels, special education percentage decreased the corresponding ISTEP+ growth model scores. Minority student percentage had a mixed effect on ISTEP+ median growth model scores. Mathematics scores increased in moderate-poverty elementary and affluent middle schools and decreased the ELA scores in high-poverty elementary schools and mathematics scores in moderate-poverty middle schools.

ACKNOWLEDGMENTS

I have been very lucky and blessed to have family and friends' support throughout my life. Throughout the process, I have had key people to keep me motivated and guide me through the process. I was fortunate to have Dr. Terry McDaniel as my chair along with Dr. Todd Bess, Dr. Bobbie Jo Monahan, and Dr. Kyle Lanoue on my dissertation committee. I appreciate their encouragement and feedback along the process. I especially want to thank Dr. McDaniel who was patient and helpful in finishing this milestone.

I appreciate the New Albany Floyd County cohort who took this challenge on together and modeled the ideology of being stronger together than being on your own. Additional thanks and support goes to Dr. Michael Langevin and Mrs. Judy Barnes for their assistance in helping me prepare my dissertation document.

I very much appreciate my parents, Terry and Wanda Kehrer, who provided opportunities and guidance throughout my life, which shaped the person I am today. Most importantly, I appreciate and am thankful for my wife, Lauren. Without her support and love, I would never have entered and finished this step in my educational career. I continue to thank her and my God for the blessings in my life.

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CHAPTER 1

INTRODUCTION

Living in poverty and the correlation it has on a child's education has been well documented. Between 1954 and 1966, three inter-linked events started America's interest in poverty and education. *Brown V. Board of Education* in 1954 was the first, which ended segregation in schools. The Elementary and Secondary Education Act (ESEA) program was created in 1965. Its purpose was to help children of poverty improve their academic performance. In 1966, the Coleman Report, named after the head researcher in the project, James Coleman, was released (Wong & Nicotera, 2004). Coleman studied poverty and how to overcome it. These three events began America's quest to help children of poverty catch up to their affluent peers.

In 1954, *Brown V. Board of Education* decided separate was not equal in terms of providing education for all children. The decision was a major victory of the civil rights movement. This Supreme Court decision started a wave of civil rights movements that spread throughout the 1960s that helped African Americans and other minorities gain rights that had been denied based on race. *Brown's* true purpose was to undo school segregation in the hope of opening up equality in education. Unfortunately, in 2004, 50 years after the decision, African American students attended a school where only 29% of their classmates were Caucasian, which is down 7% from 36% in 1980 (Strauss, 2013). Strauss (2013) stated that African American children are more racially and socioeconomically isolated presently more than any time since data has been collected. The National Assessment of Educational Progress (NAEP) reported African American fourth graders' average math scores have increased higher than the average math score of Caucasian a generation ago (as cited in Strauss, 2013). However, current Caucasian achievement scores have improved which still creates an achievement gap between Caucasians and African Americans (Strauss, 2013).

In 1966, the ESEA was created by former President Lyndon Johnson in response to the growing rate of poverty in American and the need for improvements in the education field in America. President Johnson declared a "war on poverty." The ESEA's purpose was to increase funding to enhance equal educational opportunities to high-poverty schools (Wong & Nicotera, 2004). "ESEA was developed under the principle of redress, which established that children from low-income homes required more educational services than children from affluent homes" (The Social Welfare, 2014, para. 2). President Johnson said, "For every one of the billion dollars that we spend on this program, will come back tenfold as school dropouts change to school graduates" (The Social Welfare History Project, 2014, para. 3).

Coleman's (1966) report would challenge President Johnson's comment. Coleman's purpose was to study equal educational opportunities and to affirm the common belief that large disparities exist in academic achievement between Caucasian and African American schools, which in turn would explain academic achievement differences (Wong & Nicotera, 2004). Coleman found a difference in achievement, but his findings did not support the difference was based on funding (Wong & Nicotera, 2004). Coleman "argued that school improvements (higher quality teachers and curricula, facilities, or even compensatory education) had only a modest impact on students' achievement" (The Social Welfare History Project, 2014, para. 4). The

Coleman report found what happened in the home had a greater impact than what teachers did inside the school building. This changed the view of a successful school, from looking at what schools had in terms of resources and materials (books, library, or computer lab), to looking at what it produced based on student performance (Viadero, 2006). The Coleman report brought two important questions to the forefront of education: first, what can be done to help overcome the influence of a child's family socioeconomic status (SES), and second, can the disparities between the affluent and the low socioeconomic student be eliminated?

Debate continues over the best methods to serve high-poverty students, which include a higher proportion of minorities encompassing African American and Hispanic students, compared to affluent students, which are made up of a high percentage of Caucasian students. Researchers continue to study poverty and the achievement gap, how schools use resources to increase student achievement, and the varying effects of students' individual characteristics, such as family background, household income level, parents' education attainment level, race, and gender. The goal is to help identify other methods to decrease poverty and close the achievement gap. The hope is to understand why the gap exists and close it.

Statement of the Problem

Sass, Hannaway, Xu, Figlio, and Feng (2010) reported that the difference between high-poverty and low-poverty schools is significant, especially measuring student academic performance and/or educational attainment. The U.S. Department of Education (USDOE; 2011a) reported school districts are short-changing schools that serve low-income students by inequitably distributing their state and local funds. The USDOE (2011a) report stated,

> The data reveal that more than 40% of schools that received federal Title I money to serve disadvantaged students spent less state and local money on teachers and other

personnel than schools that don't receive Title I money at the same grade level in the district. (p. 3)

Students who attend high-poverty schools are typically at a disadvantage, not only from financial deficiency, but also from an educational opportunity. Research indicates students of poverty do not have the same type of teachers as students in low-poverty areas. Ingersoll (2004) found that high-poverty urban school faculties lose one-fifth of their faculty each year. "Although all schools tend to have teachers that range in effectiveness, data from North Carolina and Florida indicate that the least effective teachers in high-poverty schools are much less effective than their counterparts in lower poverty schools" (Almy & Tooley, 2012, p. 2). Historically, children of poverty who attended high-poverty schools scored lower on standardized testing, had higher school dropout rates, and acquired lower paying jobs than their counterparts at low-poverty schools (Jensen, 2009).

It can be argued under an outcome standard that schools of high-poverty need higher quality resources, which includes teachers, than low-poverty schools to overcome their educational shortcomings that disadvantaged families bring to the classroom (Clotfelter, Ladd, Vigdor, & Wheeler, 2006). To provide equivalent educational opportunities for students of poverty, high-poverty schools need better resources than low-poverty schools. Borg, Borg, and Stranahan (2012) reported, "High quality teachers, measured by the interaction of the average years of teacher experience and the percentage of teachers with advanced degrees at each school, have a significant and positive effect on student test scores" (p. 20). They also found that smaller classroom sizes contribute to increased test scores for high-poverty and low-poverty schools, but the effect is larger in the high-poverty schools.

ESEA was reauthorized by Congress, and renamed in 2001 as the No Child Left Behind

(NCLB) Act of 2001 (NCLB, 2002). According to Education Week (2004), since NCLB was passed, Title I has become one of the most well-known parts of the federal education law referring primarily to Part A of NCLB, Improving the Academic Achievement of the Disadvantaged Program which focuses on elementary and secondary schools. The Title I program was created to help poor children in high-poverty schools overcome the disadvantages that come from being raised in poverty and reduce the achievement gap between high and low-poverty students (Roza, Miller, & Hill, 2005a). According to Rural School and Community Trust (2011), "disadvantaged students are those who come from low-income families, are in foster homes, or are neglected or delinquent, or who live in families receiving temporary assistance from state governments" (para. 4). The purpose of Title I was the appropriation of federal funding, in addition to state and local funding, to public high-need schools to provide additional support and resources for high-poverty students (McClure, 2008).

NCLB has given schools the ability to increase their spending on additional staff, resources, equipment, and supplies. Over $12.3 billion in federal funds were authorized for the 2004 fiscal year making it the largest federal education program for elementary and secondary schools (Education Week, 2004).

> The purpose of this title (Title I) is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments. (USDOE, n.d.a, Sec. 1001, para 1)

The scope of Title I is extensive. According to the USDOE (n.d.a), during the 2009-10 school year, more than 56,000 public schools used Title I funds to provide additional academic support and learning opportunities to low-achieving children. In the same time frame, more than 21 million children were served by Title I with approximately 59% of students in kindergarten through fifth grade, 21% in Grades 6-8, and 17% in Grades 9-12, 2% in preschool, and less than 1% ungraded (USDOE, n.d.a).

Schools with at least 40% of their students enrolled in the free and reduced lunch program are eligible for Title I funds (Malburg, 2015). A school that receives federal funding has certain requirements. Education Week (2004) reported the following requirements for states that receive Title I, Part A, funding:

> Have academic standards for all public elementary and public and secondary school students; test students in English and math every year between Grades 3 and 8 and once in high school; report on student achievement by average school performance, as well as by performance of specified subgroups; ensure that all students are academically proficient by the spring of 2014; and hold districts and schools accountable for demonstrating adequate yearly progress (AYP) in student achievement. (para. 4)

For a student to qualify for the free or reduced lunch (FRL) program, his or her family must meet the requirements based on the number in the household and annual household income before taxes (Indiana Department of Education [IDOE], n.d.).

In 2014, a single person was considered to be living in poverty if he or she made less than $11,670, and for each additional person in the household, the poverty level increased $4,060 per person (U.S. Department of Health & Human Services, 2014). Living in poverty affects children's present academic achievements and their future income potential which will determine if they repeat the cycle of living in poverty. Grissmer, Flangan, Kawata, and Williamson (2000) used the National Education Longitudinal Study (NELS), which sampled approximately 25,000 eighth graders, and reported household income had a significant positive relationship with math and reading test scores. Grissmer et al. (2000) found educational attainment of a child's mother and father had a positive and significant relationship with math and reading test scores, with the greatest effect achieved from having a college-educated parent.

Significance of the Study

Over 50 years have passed since the *Brown V. Broad of Education* decision, and still, an education achievement gap exists between low-income poverty students and their affluent peers. ESEA has also passed its 50th anniversary, and new amendments to ESEA, such as NCLB, have focused on continued efforts to address the achievement gap. Despite the intentions of the Brown decision and the ESEA, the achievement gap still exists and has not notably reduced. "There are no easy fixes for the achievement gap that exists between the average student in the high-poverty schools and the average student in the low-poverty schools" (Borg et al., 2012, p. 21).

This study examined the Indiana Statewide Testing for Education Progress Plus (ISTEP+) median growth model scores for students who qualified for the free and reduced lunch program. It compared growth rates for high-poverty students between schools with a low free and reduced lunch rate and high free and reduced lunch rate. Title I schools receive additional federal dollars to close the achievement gap. Non-Title I schools, who still have high-poverty students but the number represents an overall lower percentage of their student population than Title I schools, receive no additional federal dollars. However, these schools still have high-poverty students and are held to the same expectations. This study compared the ISTEP+ median growth score in schools with different levels of free and reduced rate students.

Another significance of this study was the information regarding the relationship between the poverty level of a school and the academic growth of the school's free and reduced population. School administrators have the ability to draw district boundary lines within their corporations. If a school corporation is large enough, should it divide inner-school boundary lines that create a minimal number of high-poverty schools that have extreme high-poverty, or should the corporation increase the number of high-poverty schools that still qualify for Title I funding but at a lower percentage rate than the minimal number? This study could give school leaders information that would help make this decision.

This study also examined enrollment size, percentage of minority students, and special education student percentage and if these three characteristics serve as predictors of the school's ISTEP+ growth model score within different levels of poverty. School administrators need the ability to provide support for schools that demonstrate a higher need. This study provided important relationships about the percentage of minority students and special education students and the effect it has on ISTEP+ growth model scores.

Purpose of the Study

The purpose of this study was to determine if there is a significant difference in the ISTEP+ median growth model scores between students of poverty based on their school's SES level. This study examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of the school's ISTEP+ growth model score within different poverty levels. High-poverty schools typically are supported by Title I funds to support and increase students' academic achievement. Affluent schools do not have such support for their students of poverty. Which educational setting is better for a student of poverty, one with support and a high level of poverty or one with low support and less poverty?

Research Questions

1. Is there a significant difference on the ISTEP+ English/language arts median growth

model scores for students of poverty based on SES level of the elementary school?

2. Is there a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the elementary school?
3. Is there a significant difference on the ISTEP+ English/language arts median growth model scores for students of poverty based on SES level of the middle school?
4. Is there a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the middle school?
5. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in elementary schools based on their SES level?
6. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in elementary schools based on their SES level?
7. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in middle schools based on their SES level?
8. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in middle schools based on their SES level?

Limitations

Data gathered for this study were collected from the IDOE. Errors in recording the data from each school cannot be accounted for in this study. The validity of the ISTEP+ actually measuring the academic level of students was a limitation along with the formula used to create the Indiana growth model score for each grade level and school. To have a subgroup, a school must have 30 or more students who qualify for the subgroup. Schools with less than 30 students who qualified for free and reduced lunch rates were not represented in this study.

Delimitations

For this quantitative study, only public schools in Indiana were used. The ISTEP+ English/language arts and mathematics median growth model scores from fourth-through eighth-grade students who qualified for free and reduced lunch rate were used solely to determine if there is a significant difference in SES levels of elementary and middle schools only. High schools were not a focus of this study, as well as full pay lunch students for both elementary and middle schools. The definition of an elementary, middle, and high school limited this study based on predetermined configurations. If a school's configuration was kindergarten through eighth grade, it was considered a middle school even through it contained fourth grade. Only the 2014 (2013-14 school year results) ISTEP+ median growth model scores were used in this study. The 2015 data were not used based on the testing standards and were changed for 2014-15 school year. This presented many challenges to schools which did not receive the new standards until after the school year started. Furthermore, validity of the scores became highly debated and scale scores were adjusted based on an analysis of different forms and methods of assessment, computer or paper, and pencil. The 2014 test represented less controversy and more stability. However, the 2014 ISTEP practice test had technology issues which caused many schools to opt for the paper-pencil method instead of online testing (Fillmore, 2014), but issues in the 2014 test were vastly much improved over the 2013 test in which over 30,000 students lost Internet connection while taking the test (McInerny, 2014).

Definition of Terms

An *affluent school,* also known as a school with low-poverty student population, was a school with a free and reduced lunch count less than 40%. An *affluent student or peer* was a student who does not qualify for the free and reduced lunch rate program.

Elementary school, as used in this study, was defined as a public school containing fourth, fifth, sixth grades or seventh as the highest grades in the building.

High-poverty school, as used in this study, had 60.1% or more of their students participating in a free and reduced lunch program.

Median growth model score, as used in this study, referred to only the 2013-14 ISTEP+ English/language arts and mathematics growth model score for students of poverty.

Moderate-poverty school, as used in this study, had 40% to 60% of their students participating in a free and reduced lunch program.

Middle school, as used in this study, was defined as a public school that has eighth grade in the building.

Minority students, for this study, were students of other ethnicity than Caucasian.

Poverty students, for this study, were defined as students who are eligible for the free or reduced lunch program.

Public schools, for this study, were defined as traditional public and charter schools.

Special education students were properly defined as students with disabilities. Since most of the data listed referred to these students as special education students, this is the term that was used in this study to indicate students with handicaps.

Summary

Poverty is not a new issue, and the effects of poverty are well-known. Chapter 1 provided an introduction, statement of the problem, purpose of the study, research questions, limitations and delimitations, and definition of terms. Chapter 2 reviews the literature related to poverty, student achievement, and Title I funding. Chapter 3 provides information regarding the research design and methodology, the population sample, data source and collection process, and methods of analysis. Chapter 4 presents the results and interpretations of the study based on the research questions. Chapter 5 provides a summary of the findings, discussion on the results, and recommendations for future studies.

CHAPTER 2

LITERATURE REVIEW

The U.S. Office of Management and Budget defined poverty as "persons with income less than that deemed sufficient to purchase basic needs—food, shelter, clothing, and other essentials—are designated as poor" (Jensen, 2009, pp. 5-6). Jensen (2009) defined poverty as a "chronic and debilitating condition that results from multiple adverse synergistic risk factors and affects the mind, body, and soul" (p. 6). Jensen (2009) continued by defining six types of poverty as follows:

> Situational poverty, which is sudden and usually temporarily; generation poverty, which encompasses two generations that have been born into poverty; absolute poverty, defined by scarcity of basic necessities such as shelter, food, and water; relative poverty, which is when the economic status of a family's income is below society's average standard of living; urban poverty, which occurs in large metropolitan areas where people deal with aggregate chronic and acute stressors such as over-crowding, violence, and noise; and rural poverty, which occurs in nonmetropolitan areas where families have limited access to services, support for disabilities, and quality education programs. (p. 6)

Generational poverty has been present all of America's history. In 1964, poverty went to the political forefront when President Johnson declared "war on poverty" (Fisher, 1992). This declaration generated a new interest in the study of poverty, including how many people were in poverty and how those numbers changed from year to year (Fisher, 1992). As discussed earlier, Coleman had a sizable influence on the early studies of poverty. In 1966, the Coleman Report created the debate and encouraged new research on how to overcome poverty. Coleman's report challenged the government's current notion that increased spending on education could easily solve social deficits in schools. "The report found that African American children started out school trailing behind their White counterparts and essentially never caught up—even when their schools were as well-equipped as those with predominantly White enrollments" (Viadero, 2006, para. 4). Gamoran and Long (2006) stated, "The Coleman report also found higher achievement for both low- and high-socioeconomic status students associated with a higher average SES student body" (p. 6). Jencks et al. (1972) argued since resources varied little among U.S. schools at this time, the foremost important finding of the Coleman Report was affluent peers boosted achievement. In other words, if a low-SES student was moved from the high-poverty school and placed in a low-poverty school, the student's achievement would increase.

According to Fisher (1992), Mollie Orshansky continued the work of studying poverty by forming the standard of poverty based on economy level. The development of the threshold of poverty has gone through many changes over the years. Orshansky developed 124 different thresholds based on family status which included farming and non-farming families (Fisher, 1992). Within each decade, changes were made due to political agendas.

"Each state has a required standardized test for its students to take as a part of the curriculum as a part of the No Child Left Behind Act, and each state has control over creating and administering the state-mandated standardized test" (Clark, 2013, p. 107). To fulfill this requirement in Indiana, students are required to take the ISTEP+ exam (Bremmer, 2008). The ISTEP+ was created in 1987 and first given in the spring of 1988 to students in Grades 1, 2, 3, 6, 8 and 9 (IDOE, 2011). ISTEP+ results have been used to assign or label schools a category of progress or a letter-grade based on the success or failure of the school (IDOE, 2015b).

The literature review examined four themes. The literature first focused on poverty, its effect on a child's development, and the barriers poverty creates for a student. Then the differences between teachers in high-poverty and low-poverty schools were studied. Next, the review of literature focused on the Title I part of ESEA and how it was developed. The review closed with an examination of the literature and research related to the achievement gap between poverty students and non-poverty students.

Effects of Poverty

Just as poverty is not a new problem in society, the link between poverty and education has been well documented in the education realm. "Our nation must address, and treat poverty as a condition that erodes our future and impedes any attempts at educational reform" (Capra, 2009, p. 76). The success of major educational reform is directly attached to ending poverty. The act of ending poverty needs to be seen in the same light as ending racism and other forms of discrimination.

Poverty is an ongoing issue that continues to be debated as its effects on children continue. Brown (2015) stated,

> Children who live in poverty come to school at a disadvantage, arriving at their classrooms with far more intensive needs than their middle-class and affluent counterparts. Poor children also lag their peers, on average, on almost every measure of academic achievement. (para. 1)

Poverty effects are numerous and can affect children's development before they enter school as well as during the years in school and their futures. The ramifications of living in poverty are overwhelming. There are numerous factors associated in the development of children of poverty.

Effects of Poverty on a Child's Early Development

Based on the American Psychological Association (APA; 2015), poverty affects children throughout their development but especially in their early development stages. According to the APA (2015), children with low birth rates, development delays, behavioral and socio-emotional problems, physical health problems, and poor academic achievement can be linked to the effects of living in poverty. Poverty has numerous effects on children's development socially, cognitively, and emotionally.

As stated, low birth weight is one characteristic of living in poverty. Babies who have a low birth weight are also more likely to have one or more types of learning disabilities, lower levels of intelligence, lower levels of achievement in math and reading, several physical disabilities, and grade retention (McLaughlin & Stansell, 2013). Whether or not the mother used alcohol, a mother living in poverty is far more likely to birth children with hyperactivity, malformation of some type, mental retardation, and failure to thrive (Barkley, 2006; Bigelow, 2006). Poverty can have an immediate impact on babies with lasting effects.

The age when a child experiences poverty is also important. Children who experience poverty early in their education, such as preschool through second grade, are less likely to complete high school than children who experience poverty only later in their school career (Jensen, 2009). Therefore, the less time a child spends in poverty, the less his or her academic progress is affected. The APA (2015) emphasized that poverty has an adverse effect on children's academics especially during early childhood.

Jensen (2009) categorized the primary risk factors afflicting families in poverty into four groups: “emotional and social challenges, acute and chronic stressors, cognitive lags, and health and safety issues” (p. 7). Many low SES children face social and emotional instability due to a lack of strong emotional care-givers, unsafe and unstable environments, insignificant amounts of time each week experiencing harmonious, reciprocal interaction, and poor levels of personalized, increasingly complex activities (Jensen, 2009). A stressor is anything that disrupts the body’s homeostatic balance, which is when the heart rate, blood pressure, blood sugar, and other key measurements are in their ideal ranges (Jensen, 2009). Stress can be defined by being either acute or chronic, which low SES children have more of compared to their more affluent peers (Jensen, 2009). “Acute stress refers to severe stress resulting from exposure to such trauma as abuse or violence, whereas chronic stress refers to high stress sustained over time” (Jensen, 2009, p. 22). Jensen (2009) continued, “This kind of stress exerts a devastating, insidious influence on children’s physical, psychological, emotional, and cognitive functioning-areas that affect brain development, academic success, and social competence” (p. 22). Cognitive lags are more complex and measured in different ways. Research has shown that there is a strong link between SES and a variety of cognitive ability achievement scales including IQ, achievement tests, grades, retention rates, and literacy (Baydar, Brooks-Gunn, & Furstenberg, 1993; Brooks-Gunn, Guo, & Furstenberg, 1993; Jensen, 2009; Liaw & Brooks-Gunn, 1994; Smith, Brooks-Gunn, & Klebanov, 1997). The correlation is usually very significant between SES and cognitive ability and performance (Gottfried, Gottfried, Bathurst, Guerin, & Parramore, 2003). This difference continues throughout the stages of development starting in infancy and continuing through adolescence and adulthood (Jensen, 2009). Regarding health, Sapolsky (2005), a Stanford neuroscientist, reported a correlation between SES and the child’s overall health. The lower the child’s SES, the lower the overall health of the child (Sapolsky, 2005).

Besides the lack of financial resources, people of poverty are challenged by many other disadvantages. According to Jensen (2009), transportation is an issue which directly affects high tardy rates and absenteeism. Rothman (2001) reported regular attendance is an important factor in school success. Research by Dekalb (1999) showed a direct correlation between good attendance and student achievement. Transportation also affects this population's ability to reach and maintain health care and mental services, which indirectly affects student attendance at school. A minor health issue, if not treated, could lead to further complications and, therefore, increased absences. "A head injury, for example, is a potentially dire event for a child living in poverty" (Jensen, 2009, p. 7). Often impairments in vision or hearing go untested, undiagnosed, and untreated. Other undiagnosed behavior disorders, such as attention deficient disorder (ADD) and attention deficit/hyperactivity disorder (ADHD), can go without treatment which affects the student's behavior and academic progress in and out of school (Jensen, 2009).

Poverty can impact families in numerous ways. The APA (2015) reported that chronic stress associated with living in poverty, such as homelessness and unsafe neighborhoods, has been shown to negatively affect children's concentration and memory which may impact their ability to learn. In families of poverty there tends to be a higher rate of depression, teen motherhood, and insufficient health care, which results in less attention and feelings toward the infant (van Ijzendoorn, Vereijken, Bakermans-Kranenburg, & Riken-Walraven, 2004). This lower sensitivity has an adverse effect on children's insecurity and decreases the opportunity for healthy learning and exploration for ideal brain development (Jensen, 2009). Szewczyk-Sokolowski, Bost, and Wainwright (2005) stated the attachment formed between parent and child has a positive correlation predicting the quality of future relationships with teachers and peers. "Infant attachment is critical, both because of its place in initiating pathways of development and because of its connection with so many critical developmental functions—social relatedness, arousal modulation, emotional regulation, and curiosity, to name a few" (Sroufe, 2005, p. 365). Parents of low-SES children work long hours at jobs, their children are often left home to help with the care of siblings, and these children compared to their affluent peers will spend less time playing outside, more time watching television, and are less likely to participate in after school activities (Jensen, 2009).

Even though schools try to advance students of poverty, the struggles at home continue. Low-SES children have fewer cognitive-enrichment opportunities compared to their non-impoverished counterparts. "Children from higher socioeconomic backgrounds on average begin school better prepared to learn and receive greater support from their parents during their schooling years" (Ehrenberg, Brewer, Gamoran, & Willms, 2001, p. 13). Students of poverty have fewer books at home, visit the library less, and spend considerable more time watching TV than middle income counterparts do (Grier & Kumanyika, 2006). Jensen (2009) summarized that poor children live in chaotic, unstable households which are more likely to be made up of single-guardian homes that are less emotionally responsive. Poverty increases the likelihood of being exposed to behaviors and environments that can negatively affect children's social and emotional development, as well as intellectual development. Compared with their economically affluent peers, low-income children are exposed to more family turmoil, violence, separation from their families, instability, and chaotic households than their affluent peers (Evans, 2004). Compared to their affluent peers, poor children experience less social support from their parents and family, and their parents are less responsive and more authoritarian (Evans, 2004). Low-income children read less, watch more TV, and have limited access to books and computers than high-income students (Evans, 2004).

Evans (2004) stated that low-income parents are less involved in their children's school activities. Research confirmed similar patterns.

> Compared with their more affluent peers, low SES children form more stress-ridden attachments with parents, teachers, and adult caregivers and have difficulty establishing rewarding friendships with children their own age. They are more likely to than well-off children to believe that their parents are uninterested in their activities, to receive less positive reinforcement from teachers and less homework help from babysitters, and to experience more turbulent or unhealthy friendships. (Jensen, 2009, p. 9)

The effects of poverty are more than just financial, but as discussed above, they include health, wellbeing, social and mental state.

As McLaughlin and Stansell (2013) stated,

> The effects of poverty also include being more likely to be reported in poor health, be low birth weight, have lead poisoning, die in infancy, be sick, have short stay hospital visits, be diagnosed with developmental delay, be diagnosed with a learning disability, repeat grades, be expelled or suspended, be a high school dropout, have an emotional or behavior problem but they are less likely to be treated for it, experience child abuse or neglect, experience violent crimes, live in a dangerous neighborhood, experience hunger, be jobless or not in school by age 24 and the girls are most likely to be un-wed teenaged mothers. (p. 587)

These factors fit well into Jensen's four groups: "emotional and social challenges, acute and chronic stressors, cognitive lags, and health and safety issues" (Jensen, 2009, p. 7).

Children who are not yet ready to follow teachers' directions or work independently and who do not have the ability to self-regulate their behavior when completing learning-related tasks are less likely to succeed academically (Alexander, Entwisle, & Dauber, 1993; Ladd, Birch, & Buhs, 1999; McClelland, Acock, & Morrision, 2006; McCelland & Morrison, 2003; McClelland, Morrison, & Holmes, 2000). A study by Morgan, Farkas, Hillemeier, and Maczuga (2009) looked at the "effects of socioeconomic status, race/ethnicity, gender, additional socio-demographics, gestational and birth factors, and parenting on children's risk for learning-related behavior problems at 24 months of age" (p. 401). This study defined behavior problems to include "displaying inattention, a lack of task persistence, disinterest, non-cooperation, or frustration as he or she completed a series of cognitive and physical tasks with a non-caregiver" (Morgan et al., 2009, p. 401). Morgan et al. (2009) found, "Children from lower SES households are about twice as likely as those from high SES households to display such behavior problems, which is largely attributed to the effects of having a mother with a low educational level" (p. 401). Since children of poverty have a higher risk of demonstrating behavior problems, they have a higher chance of not succeeding academically.

In one study, the behavior engagement for kindergarten students had a direct impact on learning. Behavior engagement (BE) was defined as "selecting challenging tasks in the classroom, exerting intense effort and concentration in the implementation of learning tasks in the classroom" (Robinson, 2013, p. 23). Ladd and DiNella (2009) offered this definition, "Behavior engagement refers to participation in the learning environment and, although defined in different ways, has often been operationalized in terms of how constructively or cooperatively children engage in classroom tasks and activities" (p. 190). BE and poverty are related. Jordan, Kaplan, Olah, and Locuniak (2006) reported that economically disadvantaged children show lower BE on average than more affluent peers at school entry. According to Robinson's (2013) results, "Accounting for differences in BE explained the link between poverty status and achievement gains over kindergarten" (p. 38). Robinson (2013) stated, "Results showed that the effect of BE was stronger for poor and low-income children than for non-poor children" (p. 38). "Classroom BE was associated with achievement gains independent of children's individual BE" (p. 38).

Effects of Poverty on Students' Futures

Students of poverty can be victims of educational discrimination which can directly affect their future. Research from the USDOE (2012) report indicated a significant difference in the dropout rate between students living in low-income families (5.9%) and students of higher-income families (1.3%). Students of low-income families had a dropout rate that was about four and one-half times greater than students of higher-income families. According to the APA (2015), "Inadequate education contributes to the cycle of poverty by making it more difficult for low-income children to lift themselves and future generations out of poverty" (Poverty and Academic Achievement, section 1, para. 1).

Children of poverty "are more likely than their wealthier peers to experience infant or childhood mortality, learning disabilities, adolescent pregnancy, delinquency, mental health problems, and school failure, expulsion, or drop out" (Roosa, Jones, Tein, & Cree, 2003, p. 55). Roosa et al. (2003) continued, "Adults who spent their childhoods in poverty are more likely than their peers to be unemployed and to have mental health and other problems" (p. 55). Poverty continues to affect children as they move into adolescence. Adolescents who grow up in single parent households under economic stress may be poorly supervised and allowed to be independent and left alone too early (Dornbusch et al., 1985), and the results of a study on adolescent after-school care by Richardson, Radziszewska, Dent, and Flay (1993), "demonstrate a relationship between lack of supervised care after school and susceptibility to cigarette use, alcohol use, marijuana use, depressed mood, risk taking, and academic grades" (p. 36). Overall the report showed the more adolescents are unsupervised, the higher risk adolescents would engage in problem behaviors (Richardson et al., 1993).

Escarce (2003) stated,

> The cumulative effect of socioeconomic status on families, neighborhoods, schools, and health care guarantees that poor and low-income adolescents arrive at young adulthood in worse health, engaging in riskier and more dangerous behaviors, and with lower educational attainment and more limited career prospects than their more affluent counterparts. (p. 1231)

"Studies of intergenerational income mobility have found a substantial correlation between the incomes of the fathers and their sons at corresponding points in their careers" (Escarce, 2003, p. 1231). Similar, an even higher correlation exists between family income and their children's income once the child is grown (Solon, 1992; Zimmerman, 1992). Not surprisingly, young adults who graduate college have the best chance of breaking this transmission of intergenerational SES (Escarce, 2003), but as stated previously, low SES reduces the chance of a young adult enrolling, attending, and graduating from college.

If a student of low SES goes to college, the chance of future poverty is greatly reduced. From a U.S. Census report, Capra (2009) reported Americans who received college educations had a reduced chance to experience poverty at any point in their lifetime. However, low-SES students are presented with the challenge to further their education. Capra (2009) argued that advanced courses are rarely offered at low-SES schools, parents of low SES students did not go into higher education and therefore do not encourage higher education, and teachers' lack of understanding poverty are obstacles that low-SES students have to overcome. Furthermore, this study reported disadvantaged public school graduates were not equipped for college resulting in higher dropout rates, usually within the first year (Capra, 2009).

Students of poverty are also limited by their social classes and resources concerning furthering their educations beyond high school. McDonough (1997) found that low-SES schools are restricted by the resources of the school, especially related to the guidance counselor processes and the college application and admission process. High-SES students have the resources and support to navigate the college selection more effectively than their lower SES peers. Valadez (1998) stated higher SES classes had an advantage of their low SES students to convert available resources for making decisions about attending college. Significant differences exist between high SES and low SES regarding the differences in grades, courses taken, test scores, parental conversation about college, and school assistance in filling out college applications (Valadez, 1998). The futures of students have more obstacles to overcome compared to their affluent peers. Low SES students have a challenge to overcome their economic status. Valadez (1998) stated,

> Both race and the influence of social class combine toward preserving a system in which White middle and upper class children successfully use their cultural capital to move toward higher education and eventually positions at the top of the economic ladder. (p. 19)

Although low SES students are academically capable, they continue to lack the support from home and their communities and resources to enroll and succeed in postsecondary education (Belasco, 2013).

The Pew Research Center (2014) reported that the cost of not having a college education is rising. “The economic analysis finds the Millennial college graduates ages 25 to 32 who are working full time earn more annually—about $17,500 more—than employed young adults holding only a high school diploma" (Pew Research Center, 2014, para 3). Those in this age group "also are more likely to be employed full time than their less-educated counterparts (89% vs. 82%) and significantly less likely to be unemployed (3.8% vs. 12.2%)" (Pew Research Center, 2014, para. 3). The Pew Research Center (2014) also stated that the percentage of adults living in poverty with just a high school diploma in the millennial generation compared to the baby boomers has tripled (22% compared to 7%).

To summarize, poverty limits the possible future of students of poverty. Low-SES schools do not provide the needed curriculum and coursework to help students of poverty succeed in post-secondary education. Overall, low-SES students have poorer physical and mental health, higher high school dropout rates, and reduced access to college and career tools than their affluent peers. The value of a college education has been shown in a higher annual income and breaking the ingeneration transition of poverty.

Difference Between Teachers in High-Poverty and Low-Poverty Schools

The lack of resources and experiences can significantly limit the future of poverty-ridden students. In the same way, students of poverty can be limited by their school's lack of resources and quality of their teachers. "Teachers are often viewed as the most important contributors to students' achievement because they have direct interaction with children themselves and a direct role in their learning process" (Barbarin & Aikens, 2015, p. 102). Barbarin and Aikens (2015) stated, "It is ironic that the poorest children often attend schools that lack the resources to impart the skills children need to climb out of poverty" (p. 101). The following section reviews the literature on high-poverty schools' teachers with regard to turnover and retention, perceptions, and education. "Differences in the school experiences of poor children do not arise entirely from inequitable facilities, teaching materials, and books" (Barbarin & Aikens, 2015, p. 101). Sawchuk (2015) reported that new studies are showing the importance of having experience in the classroom. Sawchuk (2015) reported that veteran teachers can increase test scores by 40% during their 10th and 30th year and lower absenteeism has been linked to experienced teachers. Auwarter and Aruguete (2008) found, "Teachers perceived that low-SES students have less promising futures than do high-SES students" (p. 243).

Teacher Retention

High-poverty schools' teacher retention is not the same for low-poverty schools. Ingersoll's (2004) research demonstrated that for schools to be effective, they must keep turnover down and retain teachers. Ingersoll (2004) stated,

> Teachers' shortages, these analysts hold, disproportion impact students in disadvantaged schools and are a major factor in the stratification of educational opportunity. Unable to match salaries, benefits and resources offered by more affluent schools, these critics argue, high-poverty school districts, especially those in rural and urban areas, have difficulty competing for the available supply of adequately trained teachers and, consequently, employ for larger proportions of underqualified teachers. (p. 3)

Ingersoll (2004) stated that demand for teachers has increased recently and disadvantaged areas are burden the most with hiring problems. "In 1999-2000, 54 percent of secondary schools (in disadvantaged areas) had job openings for math teachers" (Ingersoll, 2004, p. 5). "Likewise, 45 percent of secondary schools had job openings for special education teachers and about three-quarters of these indicated they had at least some difficulty filling these openings" (Ingersoll, 2004, p. 5). However, for both instances, the communities that reported having difficulty hiring were in urban and rural high poverty areas (Ingersoll, 2004). Again, this shows a difference between high-poverty and low-poverty schools.

Rates of teacher turnover vary with the level of poverty showing a higher level of turnover in urban and rural high-poverty schools (Ingersoll, 2004). Using data from the years 1994-1995, Ingersoll presented various reasons why teachers left high-poverty schools. “About 40% of all departures report as a reason either job dissatisfaction or the desire to pursue a better job, another career, or to improve career opportunities in or out of education” (Ingersoll, 2004, p. 11).

Some might argue that teacher retention varies based on demographics, but this is not true. “Research suggests that schools where teachers are more satisfied with working conditions also have higher student achievement, even when controlling for school demographics” (Almy & Tooley, 2012, p. 4). Their research also supported that strong school culture is very important to teacher retention. “Further, the same study finds that schools with the weakest school cultures can expect to lose twice as many of their effective teachers as those with the strongest cultures” (Almy & Tooley, 2012, p. 4). The research showed improving both conditions does not guarantee that teachers stay in high-poverty schools or even schools in general. Almy and Tooley (2012) stated,

> However, teachers in high-poverty schools who are dissatisfied with both of these conditions are less likely to stay than those who are satisfied. Improved conditions in high-poverty schools shouldn’t translate into universal retention—not all teachers will be successful in these settings. But addressing these elements is especially important for high-poverty schools as part of their efforts to retain their strongest teachers. (p. 4)

Mervis (2010) reported that some teachers who left high-poverty urban districts did not like the setting, the large classes, the confrontations with students, and the lack of resources. These factors stated by Mervis cannot be controlled directly by teachers. Educational leaders look at improving the culture and working conditions at high-poverty schools. They also have to address financial shortages that directly affect the ability to create smaller class size and supply resources teachers need in high-poverty schools.

Research data supports staffing issues for schools are being caused from a significant number of qualified teachers who are leaving the profession before reaching the retirement requirement (Ingersoll, 2004). He further stated, "The data shows that high-poverty public schools, especially those in urban communities, lose, on average, over one-fifth of their faculty each year" (Ingersoll, 2004, p. 2). Teachers left based on job unhappiness and pursuit of other jobs (Ingersoll, 2004). Besides those leaving high-poverty schools for better paying teaching positions, disadvantaged schools saw turnover being related to teachers' feelings of "hampered by inadequate support from the school administration, too many intrusions on classroom teaching time, student discipline problems and limited faculty input into school decision-making" (Ingersoll, 2004, p. 2). "The National Commission on Teaching and America's Future proffers starker numbers, estimating that one-third of all new teachers leave after three years, and 46 percent are gone within five years" (Kopkowski, 2008, para. 4). Ingersoll (2004) also stated that the number of pre-retirement teachers leaving education is increasing the rate of teacher turnover. In other words, more teachers have left before their designated retirement date.

Public opinion of why teachers leave high-poverty schools is usually focused on salary (Almy & Tooley, 2012). Although salary is a factor, it is not the number one reason teachers leave high-poverty schools or teaching in general. Almy and Tooley (2012) reported the level of compensation matters but is not the number one cause for teacher satisfaction. Almy and Tooley's (2012) research showed teacher salary was below working conditions related to satisfaction. They stated that their analyses of state and local data indicated working conditions were very important to teachers' satisfaction and retention. School leadership and staff cohesions were important to teacher retention based on the 2007-2008 Schools and Staff Survey (Almy & Tooley, 2012). Almy and Tooley (2012) stated,

> School leadership impacts teachers' overall satisfaction with teaching, as well as decisions about whether to stay or leave the profession. School leaders have the power to develop a unifying commitment to student learning, set clear expectations for student achievement, and create a culture of trust and respect, all of which are important to establishing a positive school culture. Studies of high-performing, high-poverty schools that serve large concentrations of students of color show that school leaders who create a shared mission, focus on student achievement, and uphold a commitment to teacher learning can grow, attract, and retain effective teachers. (p. 3)

The conclusion made from Almy and Tooley's (2012) research stated that some teachers leave high-poverty schools because they are unhappy with the leadership and the culture. However, improved conditions do not necessarily translate into 100% retention. High-poverty schools need to address these elements to keep stronger teachers on staff. Teachers who worked in positive working environments showed more satisfaction with the profession and planned to stay longer (Almy & Tooley, 2012).

Two types of teacher turnover can occur—teacher migration (those who transfer to other schools) and teacher attrition (those who leave the teaching profession completely). Ingersoll (2004) reviewed data from the late 1988-89, 1991-92, 1994-95, and 2000-01 which showed teacher turnover rates as 14.5%, 13.2%, 14.3%, and 15.7% respectively. Ingersoll (2004) argued and supported that the number of teachers entering the profession was less than the number leaving, including migration and attrition. He also stated that some turnover was good in an organization. Turnover is beneficial by removing ineffective teachers and bringing in new hires who promote innovation. An organization needs turnover to keep from getting stagnant, but researchers also pointed out that performance problems can be related to high levels of turnover and cause it (Ingersoll, 2004). Ingersoll (2004) further stated,

> Hence, from an organizational perspective, some teacher turnover, especially of ineffective teachers, is necessary and beneficial. But from this perspective, turnover of teachers from schools is of concern not simply because it may be an indicator of sites of potential staffing problems and so-called teacher shortages, but because of its relationship to school cohesion and, in turn, performance. Moreover, from this perspective this relationship runs in both directions. That is, high rates of teacher turnover are of concern not only because they may be an outcome indicating underlying problems in how well schools function, but also because they can be disruptive, in and of themselves, for the quality of the school community and performance. (p. 8)

Summarizing, teacher retention is important, especially for performance. Studies have shown higher turnover in high-poverty schools, and researchers have shown a correlation between teachers' experiences and academic performance.

Teachers' Perceptions of High-Poverty Students and Parents

The perception of poor people and students in the United States, especially teachers, is stereotyped in numerous ways (W. R. Williams, 2009). Poor people are thought to be in their economical short falling because of their own failures and poor choices, and rarely is it considered their status in life is from the inability to acquire services and opportunities that would allow progress (Rank, Yoon, & Hirschl, 2003). Strauss (2013) referred to five different stereotypes of opinions of the poor, “Poor people are lazy. They don’t care about education. They’re alcoholics and drug abusers. They don’t want to work; instead, they are addicted to the welfare system” (para. 6). Jensen (2009) reported, “chronic tardiness, lack of motivation, and inappropriate behavior” (p. 5) are constant complaints of teachers in high-poverty schools. All three can be related to the effects of living in poverty. Almy and Tooley (2012) reported,

> Teacher survey data from the U.S. Department of Education’s 2007-08 Schools and Staffing Survey (SASS), a nationally representative survey of teachers, showed that teachers in high-poverty schools rate poverty and other conditions associated with it (such as readiness to learn, parental involvement, and student health) as more problematic in their schools. (p. 3)

Teachers who teach in high-poverty schools are very aware of the struggle that comes with teaching in high-poverty schools.

Do teachers have a pre-conceded opinion regarding students of poverty, and how does this affect their expectations and teaching? A student’s score can be influenced positively by the teacher’s view of the value of education held by the student’s parents (Hill & Craft, 2003). In other words, if a teacher believes the parent values education, the teacher will grade a student more favorably. Barbarin and Aikens (2015) reported, “Teacher beliefs about an expectation of their students may be just as important as degrees and training” (p. 102). Research by Auwarter and Aruguete (2008) showed “that children from higher SES backgrounds are judged more favorably than are equally performing children of lower social class backgrounds” (p. 245). They also found that teachers who believed that SES is a predictor for students’ achievement felt ineffective when working with low-SES students.

Teachers’ opinions regarding parents are important, and for children of poverty, the opinions can be unfounded and can impact student success. Gorski (2013) discussed a student with a working parent who misses structured opportunities for family involvement might be treated differently by providing excuses for them, such as he is traveling for work or she is working late, and the parent of a high-poverty student might be interpreted as disinterested in the child's education. Gorski (2013) stated that the first step for teachers is to humble themselves and realize they have biases formed of high-poverty students.

Gorski (2013) continued to state that some high-poverty students do fit the stereotype, and this helps to solidify teachers' perception of all high-poverty students if they are unaware of their own biases. For example, if two or three high-poverty students in a teacher's classroom present an honest disinterest in school which fits the teacher's perception of high-poverty students, then this verifies the teacher's opinion of high-poverty students which was used as a bias, a type of discrimination, for other high-poverty students. Jervis (2006) added, "Given the complexity and ambiguity of our world, it is unfortunately true that beliefs for which a good deal of evidence can be mustered often turn out to be mistaken" (p. 643). Jervis (2006) continued to explain that judgments, although based on indefinite evidence, can be used to confirm preexisting beliefs, and people do not use logic or factual data to form opinions.

One reason that teachers have this perception is their own personal background, which is usually middle class. "Many nonminority of middle-class teachers cannot understand why children from poor backgrounds act the way they do at school" (Jensen, 2009, p. 11). "Some teachers perceive certain behaviors typical of low SES children as 'acting out,' when often the behavior is a symptom of the effects of poverty and indicates a condition such as a chronic stress disorder" (Jensen, 2009, p. 11). Ford, Farah, Shera, and Hurt (2007) stated that such disorders alter students' brains and often lead to increased impulsivity and poor short-term memory. This can be seen in the classroom as blurting out, acting before asking permission, and forgetting what to do next (as cited in Jensen, 2009). The backgrounds of teachers in low-poverty schools most commonly match their students, and in high-poverty schools this is not the case. This leads to an increase in difficulty for relating to and teaching children of poverty.

Teachers' Education Levels and Effectiveness

Teacher quality has consistently been found to be the most important school-based factor in student achievement (Darling-Hammond, 2000; Hightower et al., 2011; Rank et al., 2012). Having a qualified teacher matters most when it comes to student achievement. There is a difference between the quality and education level between high-poverty and low-poverty schools which creates a different experience for high-poverty students compared to their affluent peers. Barbarin and Aikens (2015) stated that differences in school experience of poor children arise from the lack of quality of instructional interaction, curricula, and teaching practices. This study further stated that classrooms with low SES focused more on drill and practice than higher order thinking skills.

Boyd, Lankford, Loeb, Rockoff, and Wyckoff (2008) reported low-performing, poor, and minority students systematically are instructed by teachers with the weakest qualifications, such as certification status and exam scores, SAT scores, undergraduate college ranking, and teacher experience across many states. Using student-level microdata from 2000-01 to 2004-05 from North Carolina and Florida, Sass, Hannaway, Xu, Figlio, and Feng (2012) found, “the average effectiveness of teachers in high-poverty schools is in general less than teachers in other schools and there is significantly greater variation in teacher quality among high-poverty schools” (p. 104). Differences in teacher effectiveness were mainly caused by the least productive and effective teachers in the high-poverty schools (Sass et al., 2012).

Another study showed a discrepancy between effectiveness among the lower tier of effective teachers. "Although all schools tend to have teachers that range in effectiveness, data from North Carolina and Florida indicate that the least effective teachers in high-poverty schools are much less effective than their counterparts in lower-poverty schools" (Almy & Tooley, 2012, p. 2). The result of having any low or mediocre teachers working with high-poverty students can greatly affect students' academic progress. "Students who start at the below-basic level and have three bottom-quartile teachers in a row remain below basic, while similar students who have three top-quartile teachers in a row end up performing well above the proficient level" (Almy & Tooley, 2012, p. 2). Although discrimination is usually based on color, students in high-poverty schools are being discriminated against based on their SES.

The Education Consortium for Research and Evaluation (EdCore; Office of the District of Columbia Auditor, 2014) analyzed the IMPACT scores from the District of Columbia Public Schools (DCPS). IMPACT is the DCPS system for assessing the performance of school-based staff members, teachers, and school leaders. EdCore (Office of the District of Columbia Auditor, 2014) reported DCPS teachers at affluent schools received higher markers than their counterparts at high-poverty schools. EdCore (Office of the District of Columbia Auditor, 2014) continued by stating, "Considerable research has demonstrated that students in schools with concentrations of students from low-income families are more likely than their more advantaged peers to be taught by teachers with fewer years of experience and lesser qualifications" (p. 25). This study used the free and reduced lunch price to distinguish schools of high poverty. The study showed that IMPACT scores and low SES (high-poverty) are moderately and negatively correlated, and further, it stated associated teacher IMPACT scores decrease as the percentage of low-income students increase (Office of the District of Columbia Auditor, 2014). This report suggested that with fewer students of poverty the higher the teacher's IMPACT score. The study showed schools with less poverty had higher effective teachers compared to their high-poverty counterparts.

Standardized test scores are used to determine school effectiveness under NCLB. If test scores do not show adequate growth and passing proficiency, schools can be placed on need improvement status. According to Stullich, Eisner, and McCrary (2007), "Students in schools that were identified for improvement for 2004-05 were more likely to be taught by teachers who said they were not highly-qualified than were students in non-identified schools" (p. xxxiv). This study also showed that "5 percent of elementary teachers in high-poverty schools reported in 2004-05 that they were considered not highly qualified under NCLB, compared with 1 percent in low-poverty elementary schools" (Stullich et al. 2007, p. xxxiv). Schools that were not identified as needing improvement had 2% of their teachers not highly qualified compared to 5% of elementary schools that were identified for improvement. For the secondary schools, the comparison was triple this amount, 4% to 12%. One reason for the difference in percentages is based on recruitment of teachers. According to Stullich et al. (2007), high-poverty and high-minority districts reported it was harder to attract highly-qualified teachers due to competitions with other districts.

Using 2011-12 Indiana's Educator and Classroom Characteristics, high-poverty schools have 5.7% teachers in their first year, 1.1% teachers without certification, 1.9% classes taught by teachers who are not highly qualified, and adjusted average teacher salary of $48,856 compared to 4.3%, 0.4%, 1.1%, and $49,832 respectfully in low-poverty schools (IDOE, 2015a). High minority schools share a similar pattern showing 5.8% teachers in their first year, 0.7% teachers without certification, 2.1% classes taught by teachers who are not highly qualified, and adjusted average teacher salary of $50,396 compared 4.0%, 0.5%, 1.8% and $49,982 respectfully in low-minority schools (IDOE, 2015a). For this study, high-poverty schools were defined as the highest quartile, which constituted more than 66% of students eligible for free or reduced lunch rate, of the schools in the state of Indiana and low-poverty schools were defined as having less than 34% of students eligible for free or reduced lunch rate. "Students in the lowest poverty and minority quartiles were taught consistently by excellent educators at rates seven to 14 percent higher than those in the highest poverty and minority quartiles" (IDOE, 2015a). This data support that minority and high-poverty schools have less experienced and qualified teachers compared to schools with more affluent student enrollment.

As previously stated, teachers are extremely important to a student's education. Children of poverty deserve the same teachers that their affluent peers have. Based on the above review, teachers of high-poverty students were less likely to remain in the high-poverty schools, had preconceived ideas that negatively affected their teaching, and were less qualified, based on education level and effectiveness ratings.

Teacher preparation is important. T. Jennings (2007) studied 142 public university elementary and secondary programs through the United States. T. Jennings (2007) found that a majority of programs focused diversity education on race/ethnicity, special needs, language diversity, economic (social class), gender, and sexual orientation.

> Elementary program coordinators who reported on their programs ranked their programs' emphasis as follows, with no notable emphasis on gender and sexual orientation: race/ethnic, 45.6%; special needs, 34.4%; language, 17.5%; economic (social class), 1.7%. The secondary program coordinators rank-ordered their programs' emphasis in a similar fashion, again with no notable emphasis on gender and sexual orientation;

> racial/ethnic, 52.2%; special needs, 26.1%; language, 15.9%; economic and social class, 2.9%. (T. Jennings as cited in Hughes, 2010, p. 57)

Hughes (2010) stated, "The priority of emphasis for these programs does not include social class; therefore, it is safe to assume that social class is not addressed in these programs" (p. 57). Jennings (2007) continued with "attention to race works to obscure other forms of diversity, particularly forms of diversity such as social class (economics) and sexual orientation" (p. 1265). Shinew and Sodorff (2003) stated, "teacher preparation programs often fail to provide their graduates with adequate knowledge and experience to be successful working in a multi-ethnic, multi-racial community—particularly those communities with high numbers of students living in poverty" (p. 24). Focusing teacher preparation on the concept of poverty including its short- and long-term effects on students' academic achievement, social and economic development will improve preservice teachers' ability to be effective teachers with students living in poverty (Hughes, 2010).

Title I

The government's response to improve achievement in high-poverty schools was creating ESEA, Part 1 or what is commonly called Title I funding. The very purpose of Title I was to provide support and extra assistance to children of poverty. The next section reviews a brief history of Title I, and an analysis of whether or not the achievement gap has been reduced for high-poverty students, including the African American and Hispanic achievement gap.

History of Title I

The Elementary and Secondary Education Act (ESEA) was passed in 1965. "ESEA requires that schools receiving funds under Title I be comparable in services to schools that do not receive Title I funds" (McClure, 2008, p. 11). The purpose of the act was "to ensure federal financial aid is spent on top of state and local funding in which all public school children are entitled" (McClure, 2008, p. 11). On April 12, 1965, President Johnson signed the legislation which was considered an historic moment. "The new law was considered a legislative triumph because previous attempts to provide federal aid to primary and secondary education by Congress had always floundered on the 'two R's', race and religion" (McClure, 2008, p. 11). Title I provided funds to schools in areas of high concentration of low-income families (McClure, 2008). The excerpt for Section 201, Elementary and Secondary School Act of 1965 reads,

> In recognition of the special educational needs of low-income families and the impact that concentrations of low-income families have on the ability of local educational agencies to support adequate educational programs, the Congress hereby declares it to be the policy of the United States to provide financial assistance . . . to local educational agencies serving areas with concentrations of children from low-income families to expand and improve their educational programs by various means (including preschool programs) which contribute to meeting the special educational needs of educationally deprived children. (as cited in McClure, 2008, p. 12)

Although race and religion were two hurdles to overcome, the dispute over the use of Title I funds soon took center stage. At first, Congress "devoted primarily to working out the details of the Title I formula, which allocated federal funds to states and school districts based primarily on the number of low-income children ages 5 to 17" (McClure, 2008, p. 12). At this time, Congress provided little oversight on how the money was spent (McClure, 2008). As school districts spent their money on material, staff members, and new facilities for all students, oversight of Title I funds became the focus.

In 1969, *Is It Helping Poor Children? Title I of ESEA. A Report* was published (Washington Research Project, 1969). McClure stated, “This report helped guide Title I into a supplementary program aimed at the educationally disadvantaged students in high-poverty schools rather than on the general needs of the entire district or school” (McClure, 2008, p. 13). “Not only federal money being spent on the general needs of school systems, it was also paying for goods and services that had previously been paid with state and local funds” (McClure, 2008, p. 13). Title I money was meant to supplement state and local expenditures, not supplant expenditures, and this abuse of Title I money became known as supplanting (McClure, 2008). Over the first three years of ESEA, the Office of Education had established policy and enforcement measures, but a tool to prevent supplanting did not exist (McClure, 2008). In addition Roza, Miller, and Hill (2005b) stated, “Title I funds are supposed to boost spending for high-poverty students, not fill in the holes created by district allocation practices” (p. 2). In 1970, Congress added the comparability requirement to Title I,

> State and local funds will be used in the local educational agency to provide services in project areas which, taken as a whole, are at least comparable to services being provided in areas in such districts which are not receiving funds under this title. (Sec. 105 (a) (3))

As Congress added comparability requirements, the Office of Education mandated regulations that each Title I and non-Title I school be comparable on five measures,

> The number of pupils per certified teachers. The number of pupils per other certified instructional staff, including principals, vice principals, guidance counselors, and librarians. The number of pupils per non-certified instructional staff, including secretaries, teacher aides, other clerical personnel. Instructional salaries (less longevity)

> per pupil. Other instructional costs-per pupil, such as textbooks, school library books, audio-visual equipment, and teaching supplies. (Heuer & Stullich, 2011, p. 2)

To this day, the language is barely unchanged (McClure, 2008).

Comparability is a key term when discussing Title I. "ESEA requires school districts to provide services to higher-poverty, Title I schools, from state and local funds, that are at least comparable to services in lower-poverty, non-Title I schools" (USDOE, 2011b). Comparability is defined in terms of services rather than actual school-level expenditures (USDOE, 2011b). The Reagan administration "did succeed in relaxing the criteria for demonstrating comparability and the reporting requirements through the budget reconciliation process" (McClure, 2008, p. 21). Throughout the next 20 years, comparability continued to be an issue with improper guidance and oversight. The above requirements have been revised since then, and the current statute, which was reauthorized in 2002, provided that "a local educational agency may receive [Title I funds] only if State and local funds will be used in [Title I schools] to provide services that, taken as a whole, are at least comparable to services in [non-Title I schools]" (ESEA Section 1120A(c); Heuer & Stullich, 2011, p. 2). This new statute specified that a district can meet comparability requirement by filing a written assurance that it has established and implemented "a district-wide salary schedule; a policy to ensure equivalence among schools in teachers, administrators, and other staff, a policy to ensure equivalence among schools in the provision of curriculum materials and instructional supplies" (Heuer & Stullich, 2011, p. 2).

The NCLB (2002) revamped the Title I program and brought change. NCLB, according to Stullich et al. (2007),

> built upon and expanded the assessment and accountability provisions that had been enacted as part of the ESEA's previous reauthorizing legislation, the Improving

> America's School Act (IASA), while also creating new provisions related to parental choice and teacher quality. (p. 2)

The changes were designed to improve the quality and effectiveness of the entire elementary and secondary education system by helping to raise achievement of all students, which included Title I students and groups with low achievement (Stullich et al., 2007). Some of the NCLB requirements were mandatory testing of students yearly in the third through eighth grade and once in the secondary setting on assessments aligned to state standards, setting state targets for schools and district performance that would lead to all students achieving proficiency on state reading and mathematics assessment by the 2013-14 school year, and states establishing definitions for highly qualified teachers (Stullich et al., 2007). Along with ESEA's previous reauthorizing legislation, the IASA created "new provisions relating to parental choice and teacher quality" (Stullich et al., 2007, p. 2). Because of IASA, states' reading and mathematics assessments were aligned to newly written state standards (Stullich et al., 2007). NCLB also required schools and districts that did not meet their goal of adequate yearly progress (AYP) to be under sanctions (Stullich et al., 2007). Schools that do not meet AYP would be identified as needing improvement and subject to other sanctions designed to improve their performance and provide students with additional educational options (Stullich et al., 2007). As Stullich et al. (2007) stated,

> These and other changes were intended to increase the quality and effectiveness not only of the Title I program, but also of the entire elementary and secondary education system in raising the achievement of all students, particularly those with the lowest achievement levels. (p. 1)

Students who are serviced by Title I funding have continued to increase each decade, especially as schools implemented school-wide programs. Title I participants have tripled from 1994-95 to 2004-05, 6.7 million and 20.0 million served respectively (Stullich et al., 2007). In 2004-05, 87% of Title I participants were in school-wide programs. As noted earlier, this makes research difficult since Title I schools that are school-wide target below level students with no regard to their poverty status.

Per-pupil funding has continued to be a source of debate. In 2004-05, the average Title I allocation in the highest poverty Title I schools compared to the lowest poverty Title I schools was $558 and $763 respectively (Stullich et al., 2007). In other words, the high-poverty schools received fewer per student dollars in Title I funding than schools with a lower poverty rate. “In February 2008, the Title I office issued revisions and clarifications to existing statutory and regulatory comparability requirements” (McClure, 2008, p. 22). In 2009, the American Recovery and Reinvestment Act of 2009 (ARRA; 2009), required schools that received Title I, Part A, ARRA funds “to report a school-by-school listing of per pupil education expenditures from state and local funds for the 2008-09 school year” (Heuer & Stullich, 2011, p. 5). Current Title I practices allow a district to meet comparability requirements if it establishes and implements other measures for determining compliance, including: student/instructional staff ratios; student/instructional staff salary ratios; expenditures per pupil; or a resource allocation plan based on student characteristics, such as poverty, limited English proficiency, disability, and so forth (Heuer & Stullich, 2011, p. 3). Through these measures, legislation is trying to enforce that schools are spending Title I funds to help children of poverty decrease the academic gap between non-poverty schools. Schools, by law, are required to keep school documentation to prove they are compliant with the comparability requirement.

As legislation has defined comparability, studies have been performed to discover if there are inequities in the distribution of funds. Roza et al. (2005a) revealed that for four out of five urban school districts studied, the highest poverty schools had lower per-pupil expenditures. Lower per-pupil expenditures were found in the highest-poverty schools from non-categorical program funds compared to schools with low poverty. They reported the range from 10% to 15% less.

Heuer and Stullich (2011) focused on “whether Title I schools and higher poverty schools have comparable levels of per-pupil expenditures as non-Title I schools and lower poverty schools within the same district” (p. 1). The first question Heuer and Stullich (2011) focused on was “To what extent do Title I schools have lower per-pupil expenditures from state and local funds, compared with non-Title I schools in their district?” (p. ix). Kober, McMurrer, and Silva (2011) concluded,

> Elementary schools are more often served by Title I because many districts believe it is more effective from an educational and cost standpoint to identify and address academic problems when children are still young or because some middle and high schools do not have high enough poverty rates to qualify for Title I. (p. 4)

Larger school districts can have a higher number of elementary schools than middle and high schools. This can allow the poverty rate of elementary schools to vary in the district based on population served by each elementary. For example, a district could have five elementary schools with two qualifying for Title I with poverty rates of 50% and 60%. When combined with the other three schools in middle schools, the poverty rate could be lower than 40% given that the other three schools have poverty rates lower than 40% and similar or larger student enrollment.

Class Size

If a school receives Title I funding, one possible use of the funding is to hire more staff, which usually means teachers. This would enable the class size of Title I schools to be smaller than non-Title I schools. When it comes to improving achievement in the classroom, class size is one element that has been debated. Research by Jefferson (2012) showed that using the Schools and Staffing Survey, average class size among teachers in self-contained elementary school classes for high-poverty schools, noted as 75% or more students on free and reduced lunch, was 20.4 and for low-poverty schools, noted 34% or less free and reduced lunch, was 20.8. Jefferson explained that smaller class size could be the reflection of having a larger number of special education teachers in Title I schools because student-teacher ratios are found by dividing the number of students by the number of certified teachers. This does not necessarily mean smaller class size. If a school has interventionists, special education teachers, or other certified staff members that are not assigned to a classroom, this would skew the average class size statistic.

With the creation of a federal class-size-reduction program in 2000 and the NCLB, reducing class size gained prominence (Education Week, 2004). “The number of students in a class has the potential to affect how much is learned in a number of different ways” (Ehrenberg et al., 2001, p. 1). Ehrenberg et al. summarized the effects of how the size of the class could affect how students socially interact with each other, and the mere size could relate to more or less noise and disruptive behavior. Behavior of the class affects the kinds of activities the teacher is able to implement in the classroom. As the number of students increase in the class, the amount of time the teacher is able to devote to individual students, and their specific needs, decreases. The smaller the class size the more the teacher can likely provide individualized instruction to students. Class size could also affect the means to which a teacher might assess students' assessments. Smaller classrooms could enable more students to engage in conversation and more in-depth assessments (Ehrenberg et al., 2001). "An example, in small classes teachers may be able to spend more time with students who are struggling with the content of a lesson, or cope with the disciplinary problems presented by children with behavior disorders" (Ehrenberg et al., 2001, p. 13).

Researchers continue to debate the benefit from small class size. In general, studies have shown that students learn more in smaller settings, which is linked to smaller classes having positive impact on improvements in achievement (Fredriksson, Ockert, & Oosterbeek, 2013; Schanzenbach, 2007; Sparks, 2010). The most credible of these studies is Tennessee's statewide Student/Teacher Achievement Ratio (STAR) project, which began in the late 1970s. The results of the study showed that the learning gains students made in classes of 13 to 17 students persisted long after the students moved back into average-size classes (Education Week, 2011). This study also found that poor and African American students appeared to gain the greatest learning gains in smaller classes (Education Week, 2011).

In follow-up studies on students who participated in the STAR project, students who had been in small classes in their younger years had better personal and academic outcomes throughout their school years and beyond (Sparks, 2010). This study of the STAR project also showed that attending a smaller class size in Grades K-3 increased the probability that the student would take either the ACT or SAT college entrance exam by the end of high school (Krueger & Whitmore, 2001). It can be suggested that since the ACT or SAT exam are required by most colleges in the United States, smaller elementary class sizes increase the likelihood that students will attend college (Krueger & Whitmore, 2001). According to Borg et al. (2012), Akerlof and Kranton reported that investing in smaller class size may make a difference in the ability of good teachers to be effective because of the relationship the students and teachers can build due to the small class size. They discussed this relationship between student and teacher helps to change the self-image of the student positively. From this positive change, they believed this is why students, even eight years after they participated in the program, who participated in the Tennessee STAR experiments with smaller class sizes took the SAT and ACT tests at much higher rates than their counterparts. A report by Education Week (2011), further supported higher achievement with smaller class size,

> Likewise, a 2001 evaluation of the Student Achievement Guarantee in Education (SAGE) class size reduction program by researchers at the University of Wisconsin-Milwaukee found that a five-year-old program of class-size reduction in Wisconsin resulted in higher achievement for children living in poverty. (para. 9)

The American Federation of Teachers (AFT; 2010) reported on Rouse's study, "Rouse compares the achievement of Milwaukee voucher students and students in three types of Milwaukee Public Schools: regular schools, magnets, and schools participating in the Preschool to Grade 5 Grant Program (P-5 schools)" (p. 3). The program Rouse studied was a state-funded supplement program helped to "cut the pupil-teacher ratio, on average, to 17 to 1" (AFT, 2010, p. 3). AFT (2010) reported in reading, "the study showed that P-5 (small class size) public schools made substantially faster gains in reading than those in regular public schools, the public magnet schools, and the voucher schools" (p. 3). In math, "students in P-5 (smaller class size) public schools made faster math gains than students in the regular public schools and the public magnet schools, and the same gains as the voucher schools" (AFT, 2010, p. 3).

Educators continue to debate the benefit of small class size. However, in general, studies have shown that students learn more in smaller settings, which is linked to smaller classes having a positive impact on improvements in achievement (Education Week, 2011). Research supports Title I schools spending Title I funds on additional staff which could reduce class size or provide more support during instruction.

Achievement Gap Between Poverty Students and Non-Poverty Students

Since Title I funding is formulated to provide more support to schools with high poverty, it is important to examine the increase or decrease in the achievement gap between Title I schools, and non-Title I schools. If so, an increase in academic achievement for high-poverty students and a decrease in the achievement gap between high-poverty students and their affluent peers should be apparent. Is Title I making a difference?

A report by Kober et al. (2011) reported on this very question. Kober et al. (2011) "compared achievement trends since 2002 on state reading and mathematics tests for Title I students and for students not participating in Title I" (p. 1). This study "looked whether Title I students have made gains in reading and math at Grades 4, 8, and the high school grade tested for NCLB and whether achievement gaps between Title I and non-Title I students have narrowed" (Kober et al., 2011, p. 1). The study used "two indicators of achievement on each state's test - the average (mean) scores on the scoring scale for that test, and the percentages of students scoring at or above the proficient level" (Kober et al., 2011, p. 1).

Kober et al. (2011) reported the following findings,

> Achievement on state reading and math tests has improved for Title I students in most states with sufficient data. Title I participants have made gains since 2002 in 79% or more of the states with sufficient data, according to either mean scores or percentages proficient. In most cases, the number of states with gains for Title I students was equal to or greater than the number with gains for non-Title I students. (p. 2)

This would support that Title I students' achievement gains are surpassing their non-Title I peers which would also support the achievement gap has been reduced. This does not mean that Title I achievement scores are surpassing their affluent peers' scores.

Further findings indicated, "Gaps between Title I and non-Title I students have narrowed more often than they have widened since 2002, although trends were less encouraging at Grade 4 than Grade 8 or high school" (Kober et al., 2011, p. 2). The reported stated, "Even when gaps widened, however, it was most often because achievement improved for both Title I and non-Title I students but rose faster for the non-Title I groups" (Kober et al., 2011, p. 2). This shows improvement for both groups with non-Title I students.

Gaps also narrowed at times, but "it was most often because achievement improved at a faster rate for Title I students than for non-Title I students" (Kober et al., 2011, p. 2). Many different scenarios can cause gaps to narrow. Kober et al. (2011) summarized the "gap can narrow even if achievement declines for both groups but declines at a faster rate for the higher-achieving group" (p. 3). For this study, achievement scores increased for both groups and Title I students had a greater rate of gain. This "accounted for 78% of the instances of mean score gaps narrowing and 82% of the instances of percentages proficient gaps narrowing" (Kober et al., 2011, p. 3). Again, this would support Title I services having a positive effect on academic achievement.

The final finding for the Kober et al. (2011) report stated, "The size of achievement gaps between Title I and non-Title I students varied greatly among states but was often smaller than gaps for low-income students or for certain racial/ethnic groups" (p. 2). The findings indicated that "gaps between Title I and non-Title I students were generally smaller than the gaps between low income and non-low income students, and smaller than African American-White gaps and Latino-White gaps" (Kober et al., 2011, p. 3).

Continuing their study, Kober et al. (2011) reported "that gaps between Title I and non-Title I students were generally smaller than those between low-income and non-low-income students in the 19 states studied" (p. 18) and "the Title I gap was smaller than the low-income gap 77% of the comparisons made of these two gaps" (p. 18). This means although Title I services are helping students in Title I programs, the effect is smallest on low-income students. Kober et al. (2011) found that when looking at percentage proficient, Title I students made relatively more progress than the low-income subgroup. To clarify, NCLB subgroups include all low-income students, whether they are at a Title I school or not. When looking at the mean scores, 81% of the widening trend represented this pattern, and when looking at the percentage proficient, 71% likewise (Kober et al., 2011). Since high-poverty students get majority of Title I funds, it is important to note that it can be difficult to compare low-income subgroups to Title I students which do have some non-poverty students. In a Title I school, students who are targeted to receive intervention or assistance are based on achievement need, not income (Kober et al., 2011).

Stullich et al. (2007) prepared a report on the trends of the NAEP between the years 2000-2005. The report showed statistically significant gains in 4th-grade reading, mathematics, and science for African Americans and Hispanic students and students in high-poverty schools overall (Stullich et al., 2007). They reported positive trends for middle and high school students in mathematics and negative trends for 8th- and 12th-grade reading.

Stullich et al. (2007) reported, "State assessments indicated a slight reduction in the achievement gap between low-income students and all students in reading mathematics from

2002-03 to 2004-05, typically between 1 and 3 percentage points" (p. 28). They also noted that achievement gains for African Americans and Hispanics students since the 1970s surpassed the gains made by White students. This resulted in a significant decline in the African American-White and Hispanic-White achievement gap. "The NAEP provides a high-quality assessment that is consistent across state lines, but it is not aligned with individual state content and achievement standards, so it may not precisely measure what students are expected to learn in their states" (Stullich et al., 2007, p. xiii). A more detailed summary of their findings is reported below.

Using the data from the NAEP results for public schools, Stullich et al. (2007) first looked at the average scale scores by grade level (fourth, eighth, and twelfth grades) from 1992, 1990, and 1996 to 2005 in reading, mathematics, and science respectively. For fourth grade, reading scores increased by 2%, mathematics increased by 25%, and science increased by 1%. For eighth grade, reading scores increased by 2%, mathematics increased by 16%, and science decreased by 1%. For 12th grade, reading scores decreased by 5% mathematics increased by 6% and science decreased by 1%.

Next, Stullich et al. (2007) categorized three groups in regard to poverty status; low-poverty schools, all schools, and high-poverty schools, and they looked just at fourth-grade reading, mathematics, and science average scale scores. High poverty was defined in this report as those schools with 76% or more of their students who were eligible for free or reduced priced lunches, and low-poverty schools were defined as 0 to 25% of their students who were eligible for subsidized lunches (Stullich et al., 2007). Again, the same subject and years were studied. For fourth-grade reading, high-poverty schools increased by 5%, low-poverty schools increased by 3%, and all schools increased by 4%. For fourth-grade mathematics, high-poverty schools increased by 27%, low-poverty schools increased by 33%, and all schools increased by 25%. For fourth-grade science, high-poverty schools decreased by 4%, low-poverty increased by 3%, and all schools increased by 4%. From 2000 to 2005, high-poverty schools increased 4% in reading and 12% in mathematics. The year range before 2000, high poverty in both reading and mathematics decreased and low poverty increased which could explain for the differences between 2000 and 2005.

Stullich et al. (2007) studied the main NAEP results for fourth grade and how ethnic groups average scale scores differed over the same year span described above. White, Hispanic and African American were the three categories. In fourth-grade reading, African American students increased by 8%, Hispanic students increased by 7%, and White students increased by 5%. In fourth-grade mathematics, African American students increased by 33%, Hispanic students increased by 26%, and White students increased by 27%. In fourth-grade science, African American students increased by 9%, Hispanic students increased by 10%, and White students increased by 4%. From the 2000 to 2005 years, Hispanic and Black students had a larger gain in percentage points than White students. Unlike the category of poverty previously discussed, only the average reading score decreased before 2000 by 3%.

Stullich et al. (2007) also looked at the percent proficient in fourth grade by race/ethnicity for public school students again for the years listed above. In fourth grade, reading proficient scores increased by 4% for Black students, 5% for Hispanic students, and 6% for White students. In fourth-grade mathematics, the proficient percentage increased by 12% for African-American students, 15% for Hispanic students, and 32% for White students. In fourth-grade science, 2% increase for Black students, 2% for Hispanic students, and 3% increase for White students. All years for all subjects and race/ethnicity for percent proficient showed a positive increase or no increase besides one year in reading for Black students and one year in science which showed a one percent proficient decrease.

It is notable that fourth grade high-poverty scores in reading and mathematics are showing a higher average scale score increase compared to low-poverty schools. When the percentage proficient data were reviewed, White students had a higher increase in percentage proficient than either the Hispanic or Black students. All but one span of years in the data showed White students who had a higher increase in percentage proficient than Hispanic and Black students. This could mean, although Hispanic and Black students are outpacing White students on gains on the average scale scores, they have not reached the needed scores to show a high increase in percentage proficient.

In 2005-06, 18% of Title I schools were identified for improvement in which schools serving large numbers of poor, minority, and limited English proficient (LEP) students were most likely to be identified (Stullich et al., 2007). Stullich et al. found African American students and Hispanic students were three times more likely to attend schools identified for improvements than were White students. The NAES (Aud, 2013) defined the educational achievement: "The achievement gap occurs when one group of students outperforms another group, and the difference in average scores for the two groups is statistically significant" (p. 210). As Pitre (2014) stated using information from the 2004 National Research Council, "The disparity in achievement is usually between White and non-White students and the difference can be seen in standardized test scores, grade point average, graduation rates, and college admission data" (p. 2). Howard (2010) defined the achievement gap in more ethnicity terms,

> The discrepancy in educational outcomes between various student groups, namely, African American, Native American, certain Asian Americans, and Hispanic students on

the low end of the performance scale, and primarily White and various Asian American students at the higher end of the performance scale. (p. 10)

The NAEP, which is administered by the USDOE, presented a clear and on-going discrepancy in educational achievement among student groups, with African American and Hispanic students' scores at the lowest levels of achievement (Pitre, 2014). The percentage distribution of students at or above proficiency in reading during the years 2005 to 2013 showed a lack of comparable growth in reading and mathematics based on ethnicity (Pitre, 2014). In fourth grade in 2009, 42% of Caucasian students, 16% of African American students, and 17% of Hispanic students were proficient in reading (Pitre, 2014). In the same grade level in 2013, the percentages were 46%, 18%, and 20% respectively (Pitre, 2014). Caucasian students reading proficiency scores increased 4% and African American students and Hispanic students grew 2% and 3% respectively. During the same time period for eighth grade reading proficiency, the percent increase was 5% for both Caucasians and Hispanics, but African Americans only increased by 3%. During the same time period in 12th grade, a 4% increase for Caucasians, 0% for African Americans, and 3% for Hispanics was observed (Pitre, 2014). For all grade levels, African Americans increased the least during the time period. It is also notable to recognize the Caucasian proficient percentage overall doubled the Hispanic and African American's proficient percentages.

The percentage distribution of students at or above proficiency in mathematics by race/ethnicity during the years 2005 to 2013 showed a similar result for African American students and Hispanic students saw similar gains as Caucasian students (Pitre, 2014). In fourth grade in 2009, 51% of Caucasian students, 16% of African American students, and 22% of Hispanic students were proficient in mathematics (Pitre, 2014). In the same grade level in 2013, the percentages were 54%, 18%, and 26%, respectively (Pitre, 2014). Hispanic students' math proficiency increased the most with 4% followed by Caucasian students with 3%, and African American students only increased by 2% (Pitre, 2014). During the same time period for eighth grade mathematics proficiency, the percent increase was 1% for Caucasian students, 2% for African American students, and 4% for Hispanic students (Pitre, 2014). Twelfth grade, during the same time period, showed 4% increase for Caucasian students and Hispanic and African Americans students grew 1% (Pitre, 2014). Similar to the reading proficiency rates, Caucasian students' level of mathematic proficiency was three times as much as the African American students and at least doubled the Hispanic students' proficiency levels. In both reading and mathematics proficiency rates, the comparison between Hispanic and African Americans students showed Hispanic students regularly out performed their African American counterparts.

The achievement gap, or the opportunity gap as it is also known, exists because of out of school factors, such as hunger, nutrition, parent availability, and student mobility, and in-school factors, such as teacher quality, rigor of curriculum, student engagement in academic tasks, and a school culture of expectations (Boykin & Noguera, 2011; Darling-Hammond, 2010; Delpit, 2012; Howard, 2010; Landsman, 2004; Pitre, 2014). Darling-Hammond (2010) identified three key factors adding to the opportunity gap and unequal schools: unequal access to qualified teachers, lack of access to high-quality curriculum, and resegregation of schools. Darling-Hammond (2010) argued that resegregation has hurt African Americans and Hispanics causing minorities to be the majority in central city public schools and decreasing their access to more affluent and better staffed schools.

By 2000, desegregated schools were the norm as 71% of African American students and 77% of Hispanic students were attending majority ethnic minority schools (Pitre, 2014).

Likewise, during this time period, the majority of African Americans (73%) and Hispanic (59%) students were enrolled at schools with over half of the population eligible for free or reduced priced lunch (Darling-Hammond, 2010).

According to Barton (2004), throughout the U.S. unqualified teachers are disproportionally allocated to teach low-income ethnic minority children. Darling-Hammond (2010) stated less qualified teachers, based on teacher's certification, subject matter background and expertise, pedagogical training, college choice, text scores, and experience are disproportionately found in schools with greater number of ethnic minority, low-income students. Darling-Hammond added,

> In addition to being taught by less expert teachers than their White counterparts, students of color face stark differences in courses, curriculum programs, materials and equipment, as well as human environment in which they attend school. High quality instruction—which is shaped by all of these factors—has been found to matter more for school outcomes than students' backgrounds. (p. 51)

The quality of teacher is not the only difference between schools that have majority minority student populations. Darling-Hammond (2010) found that African American, Hispanic, and Native American students have less access to academic and college preparatory courses along with attending schools that offer more remedial and vocational courses. Boykin and Noguera (2011) indicated where race and class are strong predictors of achievement; very few African American and Hispanic students are enrolled in advanced, gifted, or honor classes, but they are overrepresented in special education and remedial courses.

Boykin and Noguera's (2011) findings supported previous thoughts regarding teachers' attitudes toward poverty relate to minorities too. In communities where race is seen as an indicator of achievement, rationalization and acceptance of low performance from students of color can become the norm (Boykin & Noguera, 2011). These authors stated once race is deemed a reason for a student to achieve academically, then teachers, as well as the community and parents, accept this low achievement with little concern and desire to change. Boykin and Noguera (2011) continued by stating,

> Similar, parents who are negligent about reinforcing the value of education, who fail to encourage their children to apply themselves, or who do not regard education as an effective means to improve the lives of their children may engage in behaviors that contribute to the failure of their children. (p. 34)

Boykin and Noguera's findings fit with current research on poverty and the struggles to overcome the out of school factors.

The achievement gap for minorities has also transferred into post-secondary education. Minorities have increased their enrollment in college which shows some progress in minority achievement over the past 25 years (Reynolds, 2004; Stuart, 2009). "Despite these gains, however, the higher education achievement gap between minority groups and Whites has continued to grow as well" (A. Williams, 2011, p. 66). According to A. Williams (2011), "minority students may be enrolled in college courses at much higher rates than previously seen, but the ratio of degrees earned between these same students and White students has actually increased since 1984" (p. 66). The Hoover Institute (1998) argued this was because minority students attending college come unprepared for the rigor of post-secondary courses.

NCLB also brought accountability for all schools, Title I and non-Title I schools, and all students, low-income families and each major racial and ethnic group, students with disabilities, and limited English proficient (LEP) students. States developed their definition of AYP which was used to identify need improvement schools. Of the 11,648 schools identified for improvement in 2005-06 (12% of the nation's schools), 84% of these schools were Title I, which represented 18% of all Title I schools (Stullich et al., 2007). This was in slight increase from 2004-05. Stullich et al. (2007) added, "Schools with high concentrations of poor and minority students were much more likely to be identified than other schools, as were schools located in urban areas" (p. 62). Hispanic (28%), African American (25%), and Native American (23%) students were more likely to attend schools identified for improvement compared to 9% of White students (Stullich et al., 2007). Similarly, low-income families were more likely to attend schools identified for improvement than compared to 15% of all students (Stullich et al., 2007). "In absolute terms, the largest group of students in identified schools was students from low-income families (4.0 million), followed by White students (2.4 million), African-American students (2.2 million), and Hispanic students (2.2 million)" (Stullich et al., 2007, p. 62). As their researched continued to analyze why schools missed AYP, it showed in majority of cases, schools had higher percentages of low-income students and/or minority students.

School Enrollment Size

As pressure for student achievement continues and schools look for environments that are conducive to academic achievement, school size has been considered and researched (Stuart, 2009). Consolidating smaller schools to create a larger school in order to reap the benefits of economy of scale, which proposes that anything produced on a large scale is inherently more cost effective than anything produced on a small scale (Howley, 2008; Howley, Johnson, & Petrie, 2011). Through the mid-1900s, one-room schools were closed to reduce costs and improve educational quality through consolidation with the ability to group students by age, and schools were able to offer specialized teachers and subject matter (Howley et al., 2011).

After school consolidation became a norm, the next debate was how large should a school be, and research showed mixed results on the optimal school size (Gewertz, 2001). Irmsher (1997) argued that student enrollment size should fall between 400 and 900 students. Lee and Smith's (1997) research agreed with Irmsher's higher limit but narrowed the range between 600 and 900. Farber (1998) concurred that academic improvement in reading and math was most evident in high schools with 600 to 900 students, regardless of SES. Lee and Smith argued (1997) a significant drop in student achievement showed up in schools with less than 600 and in schools with an enrollment over 2,100 students. Howley and Bickel's (1999) research found, "the poorer the community the smaller should schools be in order to maximize school performance as measured by standardized tests" and "more affluent communities benefit from larger schools" (p. 3).

A study done by Management Decision Research Center (MDRC), a research organization that designs and evaluates education and social policy initiatives, showed positive gains for students who attended small high schools in New York City Department of Education (Unterman, 2015). The small high schools were designed from the ground up focusing on academic rigor, and strong, sustained relationships between students and faculty and community partnerships (Unterman, 2015). Results showed increased high school graduation rates for a large number of disadvantaged students of color with subgroups including African-American male students and female students and students eligible for free/reduced-price lunch (Unterman, 2015). These small high schools also modestly increased enrollment rates in postsecondary schools (Unterman, 2015).

Cotton (1996) argued that students attending small-size schools performed as well as students attending larger-size schools and, furthermore, minority students and economically disadvantaged students tended to perform better academically in small-size schools than in larger schools. A study by Gilmore (2007) found that African American, Hispanics, and Caucasian middle school students showed higher academic scores when they attended very large middle schools, schools with more than 1,999 students enrolled, compared to smaller middle schools.

A study by Johnson, Howley, and Howley (2002) examined the relationship between school size and student achievement of African Americans in Arkansas. Johnson et al. (2002) found,

> The higher the level of poverty in a community served by a school, the more damage larger schools and school districts inflict on student achievement. In more affluent communities, the impact of school and district is quite small, but the poorer the community, the stronger the influence. The achievement gap between children from more affluent and those from less affluent communities is narrowed in smaller schools and smaller districts, and widened in larger schools and larger districts. Smaller schools are most effective against poverty when they are located in smaller districts; they are less effective when they are located in larger districts. Poverty dampens student achievement most in larger schools located in larger districts. The relationship between school size, poverty, and student achievement is as much as three times greater in schools with the largest percentage of African American students. (p. 5)

This was a significant study that showed a relationship between African-American students living in poverty and academic achievement based on school size.

The size of an elementary school has also been studied. Ebert, Kehoe, and Stone (1984) used 287 elementary schools' achievement scores and school climate indicators to pinpoint the ideal school size. Ebert et al. (1984) looked at schools with greater than 800 elementary students and concluded "large schools seem to be significantly less effective in producing student achievement" (p. 28). Another study by Lee and Loeb (2000) analyzed 264 elementary schools in Chicago. In schools with fewer than 400 students, the study reported teachers were more apt to know students individually and develop appropriate teacher-student relationships that fostered each student to higher levels of achievement (Lee & Loeb, 2000). Leithwood and Jantzi (2009) reviewed data from 57 school size and student achievement studies and found that elementary schools with a high percentage of disadvantaged or culturally diverse student body maintain an enrollment no more than 300 students. If the student population was more equally proportioned between high and low SES students, then the ideal school enrollment would be 500 or less students (Leithwood & Jantzi, 2009).

Special Education Students

Federal policies since the 1960s have dramatically shaped the course of the education of special education students. "In 1965, the Elementary and Secondary Education Act and the State Schools Act provided states with direct grant assistance to help educate children with disabilities" (U.S. Office of Special Education Program, n.d., p. 3). The Education for All Handicapped Children Act (EAHCA) was drafted in 1975 which had as a core principle that every child with a disability is entitled to a free and appropriate public education (West, Whitby, & Schaefer, 2008). From this act, public schools, districts or states could no longer deny children from enrolling because of their disability. In 1990, the EAHCA was amended and became known as the Individuals with Disabilities Education Act (IDEA; University of Washington, 2015).

IDEA has had significant impact on the education of students with disabilities. Since its enactment the U.S. Office of Special Education Program (n.d.) reported,

> The majority of children with disabilities are now being educated in their neighborhood schools in regular classrooms with their non-disabled peers. High school graduation rates and employment rates among youth with disabilities have increased dramatically. For example, graduation rates increased by 14 percent from 1984 to 1997. Today, post-school employment rates for youth served under IDEA are twice those of older adults with similar disabilities who did not have the benefit of IDEA. Post-secondary enrollments among individuals with disabilities receiving IDEA services have also sharply increased. For example, the percentage of college freshmen reporting disabilities has more than tripled since 1978. (p. 3)

Through legislation like IDEA, special education students must have an individualized education program (IEP) which contains the child's present levels of educational performance, results of the child's evaluation and tests, accommodations and modifications, supplementary aids and services, annual educational goals, a description of how the child's progress is measured and reported to the parent(s), the child's least restrictive environment, the date the IEP goes into effect, a transition plan to help graduate high school, and extended school year services if needed (Stanberry, 2014).

Nearly 14% of public school students are identified as students with disabilities (Chudowsky & Chudowsky, 2009). In 2011, according to the National Center for Education Statistic (NCES; 2015), 61.1% of special education students spent 80% or more of their time in the general educational school setting and another 19.8% spent 40-79% of their time in general educational classroom school setting. This meant less than 14% of special educational students were in a self-contained classroom or spent less than 40% of their day in general educational classrooms. Since students with disabilities are reported as a subgroup under NCLB, their achievement scores on statewide assessments are compared to average scores and other subgroups in particular grades and/or subjects (West et al., 2008). West et al. (2008) further stated, “The availability of these data offer a significant opportunity to consider the performance of students with disabilities in relation to their nondisabled peers” (p. 5). NCLB brought “raised expectations for the performance of students with disabilities and highlighted the progress that needs to be made” (West et al., 2008, p. 7).

Chudowsky and Chudowsky (2009) reported, “Students with disabilities have made progress in Grade 4 at all three achievement levels-basic-and-above, proficient-and-above, and advanced” (p. 2). “Overall, the proportion of states with gains for students with disabilities at the three achievement levels was roughly similar to the proportions for all students and for students in the racial-ethnic and low-income subgroups tracked for NCLB” (Chudowsky & Chudowsky, 2009, p. 2). However, the difference is there still remains a significant gap between students with and without disabilities, often exceeding 30 to 40 percentage points in reading and math (Chudowsky & Chudowsky, 2009). VanGetson and Thurlow (2007), using the data from the National Center on Educational Outcomes ninth analysis of the public reporting of state assessment results for students with disabilities, “found that sizeable and variable gaps existed between students with disabilities and general education students” (p. 27). “Gaps in percentage of participating students reported as proficient tended to be larger at higher grades” (VanGetson & Thurlow, 2007, p. 27). From these two studies it was seen that students’ (with disabilities) achievement scores had increased since NCLB was enacted, but the difference between achievement scores of students with disabilities and without disabilities remained significant (Chudowsky & Chudowsky, 2009; VanGetson & Thurlow, 2007).

Summary

Education continues to be in the headlines of news reports and political campaigns. Ehrenberg et al. (2001) stated,

> The increased incidence of children living in one-parent homes, married women with children who were in the labor force, children who had difficulty speaking English, and children living in poverty are all parts of what has been referred to as the decline in the "social capital" available to many American school children. (p. 5)

High-poverty schools face more political and parent pressure to raise test scores and meet high standards in reading and mathematics. From the review of literature, having highly effective teachers in high-poverty schools is a key ingredient to raise test scores. Teacher turnover and lack of highly effective teachers in high-poverty schools are causing a type of discrimination to the students of these communities. The culture and environment of schools have great impact on whether teachers stay or leave a particular school, and these two characteristics, if positive, can be more important in keeping high effective teachers in schools than increasing salaries.

Title I was introduced to help reduce poverty and the achievement gap, but Title I has not lived up to its purpose despite numerous additions and changes. However, there has been progress. African Americans and Hispanics still trail in academic achievement, and again although there has been progress, they still lack the percentage of proficiency, along with other high-poverty students, than their affluent, dominantly Caucasian, peers.

Schools must find consistent methods to improve academic growth and achievement for all students while facing smaller budgets and decreased funding. This goal also includes narrowing the achievement gap between poverty and affluent students. Decisions to remodel or build new schools, how large a school should be based on the poverty rate and ethnicity, and how to effectively spend federal funding has the potential to affect academic achievement for all students. This review of literature shows, since NCLB has been enacted, there is evidence of academic growth for all students but more work is needed for students of poverty.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

This chapter contains the research design and methodology; the null hypotheses, population, data source and collection process, and methods of analysis. The purpose of this quantitative study was to determine if there is a significant difference in the ISTEP+ growth model scores between students of poverty based on their school's SES level. This study examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of the school's ISTEP+ growth model score.

Design

According to Creswell (2014), a quantitative research involves examining the relationship among variables measured, typically with an instrument, so that numbered data can be analyzed using statistical procedures. For a quantitative study Hopkins (2000) stated, 'The estimate of the relationship is less likely to be biased if you have a high participation rate in a sample selected randomly from a population" (para. 2). A quantitative research is more about relationship between variables which is the purpose of this study (Creswell, 2014).

Research Questions

1. Is there a significant difference on the ISTEP+ English/language arts median growth model scores based on SES level of the elementary school?
2. Is there a significant difference on the ISTEP+ mathematics median growth model

scores based on SES level of the elementary school?

3. Is there a significant difference on the ISTEP+ English/language arts median growth model scores based on SES level of the middle school?
4. Is there a significant difference on the ISTEP+ mathematics median growth model scores based on SES level of the middle school?
5. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in elementary schools based on their SES level?
6. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in elementary schools based on their SES level?
7. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in middle schools based on their SES level?
8. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in middle schools based on their SES level?

Null Hypotheses

1. There is no significant difference on the ISTEP+ English/language arts median growth model scores based on SES level of the elementary school.
2. There is no significant difference on the ISTEP+ mathematics median growth model

scores based on SES level of the elementary school.

3. There is no significant difference on the ISTEP+ English/language arts median growth model scores based on SES level of the middle school.
4. There is no significant difference on the ISTEP+ mathematics median growth model scores based on SES level of the middle school.
5. Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in elementary schools based on their SES level.
6. Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in elementary schools based on their SES level.
7. Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in middle schools based on their SES level.
8. Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in middle schools based on their SES level.

Population

Indiana elementary and middle schools that participated in the 2014 ISTEP+ testing were included in the study. The study used growth model scores for the ELA and mathematics portion of the 2014 ISTEP+ for those Indiana public school students in Grades four through eight who qualified for free and reduced lunches. The 2013-14 Indiana Growth Model used a statistical model to calculate each student's progress, or growth, on the state assessment (IDOE, 2015b). IDOE (2015b) explained the growth model as the following:

> The Indiana Growth Model expands the conversation of student achievement. The model measures a student's academic growth in relationship to students with similar academic histories, as well as progress towards proficiency standards. The Indiana Growth Model currently uses ISTEP+ results in a new way to help parents, schools, corporations, and the state to understand how students are growing from year to year. It also provides a common measure to show how much growth the students of each school have achieved. By incorporating growth measures, conversations on student achievement are greatly enhanced. (para. 1)

Data Source and Collection Process

The data source for this study was archived data from the IDOE's Learning Connection. The 2015 ISTEP+ median growth model scores for ELA and mathematics were gathered from IDOE public website for public elementary and middle schools' free and reduced lunch rate subgroups of students in Indiana. Along with this growth model score, the 2014-15 enrollment size, student minority percentage, and special education student percentage was collected from the IDOE's website. The data were tabulated on an excel spreadsheet and moved into SPSS version 22 for analysis, coded, and checked to make sure no errors were made. Schools were identified in the database based on percentage of SES students, enrollment size, percentage of minority students, and special education student percentage.

Methods of Analysis

Null Hypotheses 1, 2, 3, and 4 were tested using a one-way analysis of variance (ANOVA). A one-way ANOVA is an inferential test used to assess differences in a dependent variable across three or more levels of an independent variable. The dependent variable was growth model scores and the independent variable was SES level. The independent variable, SES level, was divided into three levels based on its free and reduced lunch rates. The levels were 0-39.9%, 40-60.0%, and 60.1% and greater. To ensure the validity of the inferential statistic results, the assumptions of a one-way ANOVA were examined. If the one-way ANOVA was significant, a Tukey post hoc test was used to determine where the significance lies. The Games-Howell test was used to test where the significance lies since it does not require equal variances.

Null Hypotheses 5 through 8 were tested using a simultaneous multiple regression. Multiple regression examines the amount of explained variance between the criterion variable and predictor variables. The criterion variable was growth model scores with three predictors, enrollment size, minority percentage, and special education student percentage. In Chapter 4, the multiple correlation coefficients, coefficient of multiple determination, the adjusted coefficient of multiple determination, and standard error of the estimate were reported to show the strength of the relationship between the predictors and the criterion, as well as the amount of explained variance and stability of the prediction equation. The assumptions of multiple regression were examined to ensure the validity of the inferential results. If multiple regression was significant, the coefficient's output was examined to determine which of the predictors are significant.

The unstandardized partial regression coefficient for each significant predictor helped to build a prediction equation. This statistic showed how much change in the criterion variable was predicted to occur when the significant predictor increases by one unit while all other variables were held constant. Beta weights were compared to determine the rank order of the predictor variables with regard to the explained variance within the growth model scores. Beta weights, the standardized units of impact, were used as the three predictors were on different metrics.

Summary

In the current era of accountability placed on schools by NCLB, school administrators need informational data to help determine their decisions that impact student achievement. School administrators have the challenge of supporting students of poverty and closing the achievement gap between them and their affluent peers. This study examined whether schools' SES levels can be used to predict student achievement as measured by ELA and mathematics median growth model scores on the ISTEP+. This study also examined whether factors of enrollment size, percentage of minority students, and special education student percentage served as predictors on ISTEP+ ELA and mathematics median growth model scores.

CHAPTER 4

ANALYSIS OF DATA

The main purpose of this study was to determine the influence of SES levels on ISTEP+ median growth model scores for English/language arts and mathematics among elementary and middle schools free and reduced lunch rate (FRL) student population. The study also sought to determine if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ median growth model scores for English/language arts and mathematics in elementary schools based on their SES level. The objective was to determine if the three predictors were significant at different levels of SES (affluence, moderate-poverty, and high-poverty).

This chapter includes the research questions and provides descriptive data for the whole sample, for each type of school (elementary and middle), and for each level of SES (affluent, moderate-poverty, and high-poverty). The next section reviews the inferential testing and discusses retention or rejection of the nulls. Finally, a review of the findings concludes the chapter.

Research Questions

The research questions in this study were the following:

1. Is there a significant difference on the ISTEP+ English/language arts median growth model scores for students of poverty based on SES level of the elementary school?

2. Is there a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the elementary school?
3. Is there a significant difference on the ISTEP+ English/language arts median growth model scores for students of poverty based on SES level of the middle school?
4. Is there a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the middle school?
5. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in elementary schools based on their SES level?
6. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in elementary schools based on their SES level?
7. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in middle schools based on their SES level?
8. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in middle schools based on their SES level?

Presentation of Study Sample

The collection of data for this study was gathered by using the IDOE's Learning Connection to record schools' ISTEP+ median growth model scores for the FRL subgroups.

Enrollment size, percentage of minority students, and special education student percentage was then gathered through IDOE's ISTEP+ Result webpage. Schools were then identified as an elementary or middle school. For this study, elementary schools were defined as buildings containing fourth, fifth, sixth, or seventh grade as the highest grade, and middle schools were any school identified as a building containing eighth grade. Based on these definitions, there were 1002 elementary and 459 middle schools in Indiana for the 2013-14 school year.

SES levels were divided into three categories: affluent schools, moderate-poverty, and high-poverty. Affluent schools consisted of schools with a SES level of under 40%. Moderate-poverty schools consisted of schools with a SES level between 40.0% and 60%. High-poverty schools consisted of schools with a SES level greater than 60.1%.

Descriptive Data for Whole Sample

Based on the definitions of elementary and middle schools for this study 1,002 (68.6%) elementary schools and 459 (31.4%) middle schools totaling 1461 schools were included in the study. Schools that did not report FRL percentages were not included in this study. Within the three levels of SES for the whole sample, 423 (29%) schools had less than 39.9% FRL percentage, 491 (33.6%) schools' FRL percentage was between 40-60%, and 547 (37.4%) schools' FRL percentage was 60.1% or higher.

Within the school sample, the ELA median growth model score for students of poverty ranged from 7.50 to 86.50, M = 47.68 and SD = 10.46. As defined in Chapter 1, students of poverty are defined as students who are eligible for the free or reduced lunch program.

The mathematics median growth model score for students of poverty ranged from 7.00 to 96.00, M = 47.24 and SD = 13.77. FRL percentage for schools ranged from 1.87 to 100, M = 53.42 and SD = 22.16. Enrollment for schools ranged from 77 to 4151 students, M = 497.44 and

SD = 248.80. Minority student percentage for schools ranged from 0 to 100, *M* = 28.07 and *SD* = 27.80. Special education student percentage for schools ranged from 1.31 to 41.46, *M* = 15.69 and *SD* = 5.30.

Descriptive Data by School Type (Elementary)

For the elementary school sample, the median growth model score for ELA of students ranged from 15.00 to 86.50, *M* = 48.71 and *SD* = 10.79. The mathematics median growth model score ranged from 7.00 to 87.50, *M* = 48.46 and *SD* = 13.78. FRL percentage for elementary schools ranged from 1.87 to 97.89, M = 54.68 and *SD* = 22.56. Enrollment for elementary schools ranged from 83 to 1,511 students, *M* = 457.13 and *SD* = 181.62. Minority percentage for elementary schools ranged from 0 to 100, *M* = 28.74 and *SD* = 27.38. Special education student percentage for elementary schools ranged from 2.30 to 41.46, *M* = 15.89 and *SD* = 5.38. Note that both the median growth score of ELA and mathematics means were higher for the elementary school sample than the whole group sample. The maximum enrollment of elementary schools was 1,511 students which was 36% of the maximum enrollment for the whole group sample.

Descriptive Data by School Type (Middle)

For the middle school sample, the median growth model score for ELA of students ranged from 7.50 to 74.50, *M* = 45.45 and *SD* = 9.34. The mathematics median growth model score ranged from 7.00 to 96.00, *M* = 44.57 and *SD* = 13.38. FRL percentage for middle schools ranged from 3.53 to 100.00, *M* = 50.69 and *SD* = 21.03. Enrollment for middle schools ranged from 77 to 4,151 students, *M* = 585.44 and *SD* = 337.51. Minority percentage for middle schools ranged from 0.94 to 100, *M* = 26.62 and *SD* = 28.69. Special education student percentage for middle schools ranged from 1.31 to 39.18, *M* = 15.23 and *SD* = 5.11. Note that both the median growth score of ELA and mathematics means were lower for the middle school sample than the whole group sample. The maximum special education student percentage for middle schools was 39.18% which is smaller than the maximum whole group sample percentage of 41.46. Middle schools had a smaller maximum percentage of special education student percentage compared to elementary schools.

Descriptive Data by SES Level (Affluent 0-39.9%)

The following is a descriptive analysis of 423 schools that were identified as affluent schools based on their SES level between 0 to 39.9%. With the affluent school sample, the median growth model score for ELA of students ranged from 15.50 to 86.50, *M* = 47.49 and *SD* = 11.02. The mathematics median growth model score ranged from 13.00 to 87.50, *M* = 46.71 and *SD* = 13.44. FRL percentage for affluent schools ranged from 1.87 to 39.97, *M* = 27.22 and *SD* = 9.27. Enrollment for affluent schools ranged from 88 to 4,151 students, *M* = 550.22 and *SD* = 298.58. Minority percentage for affluent schools ranged from 0.94 to 43.75, *M* = 13.41 and *SD* = 9.32. Special education student percentage for affluent schools ranged from 2.30 to 27.82, *M* = 13.62 and *SD* = 4.08. The median growth scores of ELA and mathematics means were lower for the affluent school sample than the whole group sample.

Descriptive Data by SES Level (Moderate-Poverty 40-60%)

The following is a descriptive analysis of 491 schools that were identified as moderate-poverty schools based on their SES level between 40 to 60%. With the moderate-poverty school sample, the median growth model score for ELA of students ranged from 15.00 to 80.00, *M* = 47.52 and *SD* = 9.74. The mathematics median growth model score ranged from 7.00 to 82.00, *M* = 47.14 and *SD* = 13.04. FRL percentage for moderate-poverty schools ranged from 40.00 to 59.87, *M* = 49.64 and *SD* = 5.73. Enrollment for moderate-poverty schools ranged from 84 to

3,013 students, *M* = 466.78 and *SD* = 228.05. Minority percentage for moderate-poverty schools ranged from 0.00 to 99.67, *M* =14.79 and *SD* = 15.23. Special education student percentage for moderate-poverty schools ranged from 1.33 to 36.77, *M* = 15.80 and *SD* = 4.86. The median growth score of ELA and mathematics means were higher for the moderate-poverty school sample than the whole group sample.

Descriptive Data by SES Level (High-Poverty Greater Than 60%)

The following is a descriptive analysis of 547 schools that were identified as high-poverty schools based on their SES level of 60.1% or greater. With the high-poverty school sample, the median growth model score for ELA of students ranged from 7.50 to 85.00, *M* = 47.98 and *SD* = 10.66. The mathematics median growth model score ranged from 7.00 to 96.00, *M* = 47.74 and *SD* = 14.65. FRL percentage for high-poverty schools ranged from 60.06 to 100.00, *M* = 77.09 and *SD* = 10.58. Enrollment for high-poverty schools ranged from 77 to 1,530 students, *M* = 484.15 and *SD* = 216.25. Minority percentage for high-poverty schools ranged from 1.21 to 100.00, *M* = 51.34 and *SD* = 30.40. Special education student percentage for high-poverty schools ranged from 1.31 to 41.46, *M* = 17.18 and *SD* = 5.96. The median growth score of ELA and mathematics means were higher for the high-poverty school sample than the whole group sample.

Inferential Test Results Research Questions 1 Through 4

For Research Questions 1 through 4, a one-way ANOVA test was used to measure the significant difference of ISTEP+ median growth model scores based on SES levels. A one-way ANOVA test is the appropriate tool because only one dependent variable was present with three different levels of independent variables. The independent variables were the three levels of poverty (affluent, moderate-poverty, and high-poverty). The dependent variable was the median growth model score.

Research Question 1

The null hypothesis for Research Question 1 was, "There is not a significant difference on the ISTEP+ English/language arts median growth model scores for students of poverty based on SES level of the elementary school." A one-way ANOVA test, using SPSS, was used to test for significant difference and the assumptions were tested to insure the validity of the results. Box plots were used to ensure no outliers were present. With no data points on the dependent variable being more than 1.5 standard deviations away from the edge of the box plots, it was assumed the samples did not have any outliers present. The assumption of normality was tested and met using the Shapiro-Wilk, and the dependent variable seemed to be normally distributed as $p > .05$. The assumption of normality was met.

The Levene's test of equality of variances was used to check the assumption of homogeneity of variance to ensure that variances within all three groups on the dependent variable are equal to each other. This assumption was violated since the significance value was less than .05 ($p = .043$). However, ANOVA testing is prone to being robust to violations. A difference in homogeneity of variance decreases as the *n*'s are nearly equal and decreases as the number of *n*'s increase (Lomax & Hahs-Vaughn, 2012). Homogeneity of variances can also be tested on a scatterplot of residuals by *X* and *Y* (Lomax & Hahs-Vaughn, 2012). Since the assumption of homogeneity of variance was violated, as previously stated in Chapter 3, if significant difference was found, the Games-Howell post hoc test was utilized as it is a post hoc test that does not assume equal variances.

The ISTEP+ ELA median growth model scores of affluent schools ($M = 48.52$, $SD =$

11.78), moderate-poverty schools (*M* = 48.14, *SD* = 10.12), and high-poverty schools (*M* = 49.26, *SD* = 10.60) were not significantly different. Based on the findings of the one-way ANOVA, $F(2, 999) = 1.02$, $p = .359$, no significant difference was found between the ISTEP+ ELA median growth model scores among the poverty levels in the elementary schools. The null hypothesis was retained. Any differences in the ISTEP+ ELA median growth model score between SES levels could be contributed to chance. Poverty students in the elementary schools did not perform significantly different on the ISTEP+ ELA median growth model scores based on the level of poverty in the school.

Research Question 2

The null hypothesis for Research Question 2 was, "There is not a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the elementary school." A one-way ANOVA test was used to test for significant difference and the assumptions were tested to insure the validity of the results. Box plots were used to ensure no outliers were present. With no data points on the dependent variable being more than 1.5 standard deviations away from the edge of the box plots, it was assumed the samples did not have any outliers present. The assumption of normality was tested and met using the Shapiro-Wilk, and the dependent variable seemed to be normally distributed, $p > .05$. The assumption of normality was met.

The Levene's test of equality of variances was used to check the assumption of homogeneity of variance to ensure that variances within all three groups on the dependent variable were equal to each other. This assumption was violated since the significance value was less than .05 ($p = .047$). However, ANOVA testing is prone to being robust to violations. A difference in homogeneity of variance decreases as the *n*'s were nearly equal and decreases as the number of *n*'s increase (Lomax & Hahs-Vaughn, 2012). Since the assumption of homogeneity of variance was violated, as previously stated in Chapter 3, if significant difference was found, the Games-Howell post hoc test was utilized as it is a post hoc test that does not assume equal variances.

The ISTEP+ mathematics median growth model scores of affluent schools (M = 47.62, SD = 13.86), moderate-poverty schools (M = 47.72, SD = 12.90), and high-poverty schools (M = 49.59, SD = 14.35) were not significantly different. Based on the findings of the one-way ANOVA, $F(2, 999) = 2.35$, $p = .096$, no significant difference was found between ISTEP+ median mathematics growth model scores among the poverty levels in the elementary schools. The null hypothesis was retained. Any differences in the ISTEP+ mathematics median growth model score between SES levels could be contributed to chance. Poverty students in the elementary schools did not perform significantly different on the ISTEP+ mathematics median growth model scores based on the level of poverty in the school.

Research Question 3

The null hypothesis for Research Question 3 was, "There is not a significant difference on the ISTEP+ ELA median growth model scores for students of poverty based on SES level of the middle school." A one-way ANOVA test, using SPSS, was used to test for significant difference and the assumptions were tested to insure the validity of the results. Box plots were used to ensure no outliers were present. With no data points on the dependent variable being more than 1.5 standard deviations away from the edge of the box plots, it can be assumed the samples did not have any outliers present. The assumption of normality was tested and met using the Shapiro-Wilk, and the dependent variable seems to be normally distributed, $p > .05$. The assumption of normality was met. The Levene's test of equality of variances was used to check the assumption of homogeneity of variance to ensure that variances within all three groups on the dependent variable were equal to each other. This assumption was met with the significant value being more than .05 ($p = .690$).

The ISTEP+ ELA median growth model scores of affluent schools ($M = 45.64$, $SD = 9.28$), moderate-poverty schools ($M = 46.39$, $SD = 8.91$), and high-poverty schools ($M = 44.00$, $SD = 9.83$) were not significantly different. Based on the findings of the one-way ANOVA, $F(2, 456) = 2.54$, $p = .080$, no significant difference was found between ISTEP+ ELA median growth model scores among the poverty levels in the middle school. The null hypothesis was retained. Any differences in the ISTEP+ ELA median growth model score between SES levels was contributed to chance. Poverty students in the middle schools did not perform significantly different on the ISTEP+ ELA median growth model scores based on the level of poverty in the school.

Research Question 4

The null hypothesis for Research Question 4 was, "There is not a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the middle school." A one-way ANOVA test, using SPSS, was used to test for significant difference and the assumptions were tested to insure the validity of the results. Box plots were used to ensure no outliers were present. With no data points on the dependent variable being more than 1.5 standard deviations away from the edge of the box plots, it was assumed the samples did not have any outliers present. The assumption of normality was tested and met using the Shapiro-Wilk, and the dependent variable seemed to be normally distributed, $p > .05$. The assumption of normality was met. The Levene's test of equality of variances was used to check the assumption of homogeneity of variance to ensure that variances within all three groups on the dependent variable were equal to each other. This assumption was met with the significant value being more than .05 (p = .618).

The ISTEP+ mathematics median growth model scores of affluent middle schools (M = 45.11, SD = 12.56), moderate-poverty middle schools (M = 46.07, SD = 13.28), and high-poverty middle schools (M = 41.99, SD = 14.12) were significantly different. Based on the findings of the one-way ANOVA, $F(2, 456) = 3.74$, p = .024, there was a significant difference found between ISTEP+ mathematics median growth scores among levels of poverty in the middle school. The null hypothesis was rejected.

A Tukey HSD was used to determine where the significance was because the assumption of homogeneity of variance was met (equal variances). The moderate-poverty middle schools were significantly higher in ISTEP+ mathematics median growth model scores compared to the high-poverty middle schools, p = .022. All other comparisons were non-significant, p > .05.

Inferential Test Results Research Questions 5 Through 8

Research Questions 5 through 8 involved the three levels of poverty. Each level, affluent (0-39.9%), moderate-poverty (40-59.9%), and high-poverty (60-100%) was examined for each research question. The three levels of poverty are distinguished by the following: a – affluent, b – moderate poverty, and c – high poverty.

Research Question 5a

The null hypothesis for Research Question 5a was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in affluent elementary schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ ELA median growth model scores in affluent elementary schools.

The independence of residuals tests whether there is a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.19) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increases. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals are aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that is needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .792 to .903.

The multiple correlation coefficient (R) tells how well the criterion variable is explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .11 demonstrated a small relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 1.1% of variance in ISTEP+ median growth model scores in affluent elementary schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking in consideration for sample size and number of predictors (adjusted R^2 = .00), 0% of the variance of the criterion variable was explained by the predictors. The .011 difference between the R^2 and adjusted R^2 is the shrinkage in the model. The standard error of the estimate (11.79) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 11.79 units of ISTEP+ ELA median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did not explain a significant amount of variance in the criterion variable with $F(3, 266) = 1.013$, $p = .387$. For the purpose of this test, since the predictor variables did not explain a significant amount of variance in the criterion variable, a prediction equation could not be generated to help determine growth model scores of poverty students in affluent schools.

Research Question 5b

The null hypothesis for Research Question 5b was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in moderate-poverty elementary schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ ELA median growth model scores in affluent elementary schools.

The independence of residuals tests whether there is a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.03) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increases. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .892 to .912.

The multiple correlation coefficient (R) shows how well the criterion variable is explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .11 demonstrated a small relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) shows 1.3% of variance in ISTEP+ median growth model scores in moderate-poverty elementary schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which compared models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted R^2 = .003), 0.3% of the variance of the criterion variable was explained by the predictors. The .01 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (10.11) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 10.11 units of ISTEP+ ELA median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did not explain a significant amount of variance in the criterion variable, $F(3, 314) = 1.361$, $p = .255$. For the purpose of this test, since the predictor variables did not explain a significant amount of variance in the criterion variable, a prediction equation could not be generated to help determine growth model scores of poverty students in affluent schools. The model summary statistics are presented in

Research Question 5c

The null hypothesis for Research Question 5c was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in high-poverty elementary schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ ELA median growth model scores in high-poverty elementary schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual

1.84) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increased. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .798 to .849.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .19 demonstrated a small to medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 3.4% of variance in ISTEP+ median growth model scores in high-poverty elementary schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed the comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted R^2 = .027), 2.7% of the variance of the criterion variable was explained by the predictors. The .007 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (10.46) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 10.46 units of ISTEP+ ELA median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) had the ability to predict ISTEP+ ELA median growth model scores in high-poverty elementary schools. The ANOVA was significant, $F(3, 410) = 4.82$, $p = .003$, thus showing a linear relationship between the predictors and the criterion. As previously stated in Chapter 3, the coefficient's output was examined to determine which of the predictors significantly explained the variance in the criterion variable.

Percentage of minority students was a significant predictor, $t = -2.03$, $p = .043$. By examining the unstandardized partial regression coefficient, the ELA median growth model score was predicted to decrease by .04 per every 1% increase in the school's minority percentage while holding all other predictors constant. Special education student percentage was also a significant predictor, $t = -3.34$, $p = .001$. By examining the unstandardized partial regression coefficient, the ELA median growth model score was predicted to decrease by .33 per every 1% increase in the school's special education student percentage while holding all other predictors constant.

When looking at the two significant predictors, the beta weights indicated that special education students (-.181) had the greatest impact on the ELA median growth model scores followed by percentage of minority students (-.110). Enrollment was not a significant predictor within the model, $t = .929$, $p = .353$. Partial regression coefficients are presented in Table 14.

Table 1

Unstandardized and Standardized Partial Regression Coefficients for ELA Median Growth (Elementary with High-Poverty)

Independent Variables	B	SE	β	*t*	Sig.
Student Enrollment Size	.003	.003	.049	.929	.353
Percentage of Minority Students	-.039	.019	-.110	-2.033	.043*
Special Student Education Percentage	-.334	.100	-.181	-3.339	.001*

Note. *Significance was set at the .05 level.

Research Question 6a

The null hypothesis for Research Question 6a was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in affluent elementary schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ mathematics median growth model scores in affluent elementary schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.07) which showed the residuals were not correlated with one another, and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increases. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .792 to 903.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .08 demonstrated a small relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 0.6% of variance in ISTEP+ median growth model scores in affluent elementary schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted $R^2 = .01$), 0% of the variance of the criterion variable was explained by the predictors. The .011 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (13.89) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 13.89 units of ISTEP+ mathematics median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did not explain a significant amount of variance in the criterion variable, $F(3, 266) = .554$, $p = .646$. For the purpose of this test, since the predictor variables did not explain a significant amount of variance in the criterion variable, a prediction equation could not be generated to help determine growth model scores of poverty students in affluent schools.

Research Question 6b

The null hypothesis for Research Question 6b was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in moderate-poverty elementary schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explain a significant amount of variance in the ISTEP+ mathematics median growth model scores in moderate-poverty elementary schools.

The independence of residuals tests whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 1.84) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increased. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .892 to .912.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .186 demonstrated a small to medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) shows 3.5% of variance in ISTEP+ median growth model scores in moderate-poverty elementary schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed a comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted $R^2 = .026$), 2.6% of the variance of the criterion variable was explained by the predictors. The .009 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (12.73) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 12.73

units of ISTEP+ mathematics median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) had the ability to predict ISTEP+ median mathematics growth model scores in moderate-poverty elementary schools. The ANOVA was significant, $F(3, 314) = 3.769$, $p = .011$, thus showing a linear relationship between the predictors and the criterion. As previously stated in Chapter 3, the coefficients output was examined to determine which of the predictors significantly explained the variance in the criterion variable.

Percentage of minority students was a significant predictor, $t = 2.451$, $p = .015$. By examining the unstandardized partial regression coefficient, the median mathematic growth model score was predicted to increase by .127 per every 1% increase in the school's minority percentage while holding all other predictors constant. Special education student percentage and student enrollment size were not significant predictors within the model, $t = -.562$, $p = .575$, and $t = 1.138$, $p = .256$ respectively. The partial regression coefficients are presented in Table 2.

Table 2

Unstandardized and Standardized Partial Regression Coefficients for Mathematics Growth (Elementary with Moderate-Poverty)

Independent Variables	B	SE	B	*t*	Sig.
Student Enrollment Size	.005	.004	.067	1.138	.256
Percentage of Minority Students	.127	.052	.144	2.451	.015*
Special Student Education Percentage	-.081	.144	-.033	-.562	.575

Note. *Significance was set at the .05 level.

Research Question 6c

The null hypothesis for Research Question 6c was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in high-poverty elementary schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explain a significant amount of variance in the ISTEP+ mathematics median growth model scores in high-poverty elementary schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 1.89) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increased. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .798 to .849.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .185 demonstrated a small to medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 3.4% of variance in ISTEP+ median growth model scores in high-poverty elementary schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted R^2 = .027), 2.7% of the variance of the criterion variable was explained by the predictors. The .007 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (14.15) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 14.15 units of ISTEP+ mathematics median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did have the ability to predict ISTEP+ median mathematics growth model scores in high-poverty elementary schools. The ANOVA was significant, $F(3, 410) = 4.858$, $p = .002$, thus showing a linear relationship between the predictors and the criterion. As previously stated in Chapter 3, the coefficient's output was examined to determine which of the predictors significantly explained the variance in the criterion variable.

Special education student percentage was a significant predictor, $t = -2.899$, $p = .004$. By examining the unstandardized partial regression coefficient, the mathematics median growth model score was predicted to decrease by .393 per every 1% increase in the school's special education student percentage while holding all other predictors constant. Student enrollment size and percentage of minority students were not significant predictors within the model, $t = .686$, $p = .493$, and $t = .474$ and $p = .636$ respectively. The partial regression coefficients are presented in Table 3.

Table 3

Unstandardized and Standardized Partial Regression Coefficients for Mathematics Growth (Elementary with High-Poverty)

Independent Variables	B	SE	β	*t*	Sig.
Student Enrollment Size	.003	.005	.036	.686	.493
Percentage of Minority Students	.012	.026	.026	.474	.636
Special Student Education Percentage	-.393	.135	-.158	-2.899	.004*

Note. * Significance was set at the .05 level.

Research Question 7a

The null hypothesis for Research Question 7a was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ ELA median growth model scores for students of poverty in affluent middle schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ ELA median model scores in high-poverty elementary schools.

The independence of residuals tests whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.00) which showed the residuals were not correlated with one another, and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increased. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .856 to .965.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .229 demonstrated a small to medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 5.3% of variance in ISTEP+ median growth model scores in affluent middle schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed for comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted $R^2 = .034$), 3.4% of the variance of the criterion variable was explained by the predictors. The .019 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (9.12) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 9.12 units of ISTEP+ ELA median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) had the ability to predict ISTEP+ median ELA growth model scores in affluent middle schools. The ANOVA was significant, $F(3, 149) = 2.758$, $p = .044$, thus showing a linear relationship between the predictors and the criterion.

Special education student percentage was a significant predictor, $t = -2.628$, $p = .010$. By examining the unstandardized partial regression coefficient, the ELA median growth model score was predicted to decrease by .567 per every 1% increase in the school's special education student percentage while holding all other predictors constant. Student enrollment size and percentage of minority students were not significant predictors within the model, $t = -1.051$, $p = .295$ and $t = .950$ and $p = .344$ respectively. The partial regression coefficients are presented in Table 4.

Table 4

Unstandardized and Standardized Partial Regression Coefficients for ELA Growth (Affluent Middle Schools)

Independent Variables	B	SE	β	*t*	Sig.
Student Enrollment Size	-.002	.002	-.091	-1.051	.295
Percentage of Minority Students	.089	.094	.081	.950	.344
Special Student Education Percentage	-.567	.216	-.213	-2.628	.010*

Note. * Significance was set at the .05 level.

Research Question 7b

The null hypothesis for Research Question 7b was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in moderate-poverty middle schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ ELA median growth model scores in moderate-poverty middle schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 1.92) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increases. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on the tolerance levels for all predictors were above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .826 to .908.

The multiple correlation coefficient (*R*) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An *R* of .12 showed a small relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 1.4% of variance in ISTEP+ median growth model scores in moderate-poverty middle schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed the comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking in consideration for sample size and number of predictors (adjusted R^2 = -003), -0.3% of the variance of the criterion variable was explained by the predictors. The .011 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (8.92) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 8.92 units of ISTEP+ ELA median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did not explain a significant amount of variance in the criterion variable, $F(3, 169) = .825$, $p = .482$. For the purpose of this test, since the predictor variables did not explain a significant amount of variance in the criterion variable, a prediction equation could not be generated to help determine growth model scores of poverty students in moderate-poverty middle schools.

Research Question 7c

The null hypothesis for Research Question 7c was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in high-poverty middle schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ ELA median growth model scores in high-poverty middle schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.048) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increased. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on the tolerance levels for all predictors were above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .833 to .944.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .24

demonstrated a small to medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 5.5% of variance in ISTEP+ median growth model scores in high-poverty middle schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking in consideration for sample size and number of predictors (adjusted R^2 = .033), 3.3% of the variance of the criterion variable was explained by the predictors. The .022 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (9.67) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 9.67 units of ISTEP+ ELA median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did not explain a significant amount of variance in the criterion variable, $F(3, 129) = 2.521$, $p = .061$. For the purpose of this test, since the predictor variables did not explain a significant amount of variance in the criterion variable, a prediction equation could not be generated to help determine growth model scores of poverty students in high-poverty middle schools.

Research Question 8a

The null hypothesis for Research Question 8a was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of

ISTEP+ mathematics median growth model scores for students of poverty in affluent middle schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ mathematics median growth model scores in affluent middle schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.17) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increased. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .856 to .965.

The multiple correlation coefficient (*R*) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An *R* of .304 demonstrated a medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) shows 9.2% of variance in ISTEP+ median growth model scores in affluent middle schools was explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed for comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted R^2 = .074), 7.4% of the variance of the criterion variable was explained by the predictors. The .018 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (12.09) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 12.09 units of ISTEP+ mathematics median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) had the ability to predict ISTEP+ mathematics median growth model scores in affluent middle schools. The ANOVA was significant, $F(3, 149) = 5.052$, $p = .002$, thus showing a linear relationship between the predictors and the criterion. As previously stated in Chapter 3, the coefficient's output was examined to determine which of the predictors significantly explained the variance in the criterion variable.

Percentage of minority students was a significant predictor, $t = 3.872$, $p < .001$. By examining the unstandardized partial regression coefficient, the mathematics median growth model score was predicted to increase by .483 per every 1% increase in the school's minority percentage while holding all other predictors constant. Special education student percentage and student enrollment size were not significant predictors within the model, *t* = -1.002, *p* = .318, and *t* = .103, *p* = .918 respectively. The partial regression coefficients are presented in Table 5.

Table 5

Unstandardized and Standardized Partial Regression Coefficients for Mathematics Growth (Affluent Middle Schools)

Independent Variables	B	SE	β	*t*	Sig.
Student Enrollment Size	-.003	.003	-.085	-1.002	.318
Percentage of Minority Students	.483	.125	.324	3.872	.000*
Special Student Education Percentage	.030	.286	.008	.103	.918

Note. * Significance was set at the .05 level.

Research Question 8b

The null hypothesis for Research Question 8b was, “Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in moderate-poverty middle schools based on their SES level.” Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ mathematics median growth model scores in moderate-poverty middle schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 1.91) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increases. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on having the tolerance levels for all predictors above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .826 to .908.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .15 demonstrated a small relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 2.3% of variance in ISTEP+ median growth model scores in moderate-poverty middle schools was being explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed for comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking into consideration sample size and number of predictors (adjusted $R^2 = .006$), 0.6% of the variance of the criterion variable was explained by the predictors. The .017 difference between the R^2 and adjusted R^2 was the shrinkage in the model.

The standard error of the estimate (13.24) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 13.24 units of ISTEP+ mathematics median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did not explain a significant amount of variance in the criterion variable, $F(3, 169) = 1.342$, $p = .263$. For the purpose of this test, since the predictor variables did not explain a significant amount of variance in the criterion variable, a prediction equation could not be generated to help determine growth model scores of poverty students in moderate-poverty middle schools

Research Question 8c

The null hypothesis for Research Question 8c was, "Student enrollment size, percentage of minority students, and special education student percentage do not serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in high-poverty middle schools based on their SES level." Simultaneous multiple regression tests using SPSS were used to determine if student enrollment size, percentage of minority students, and special education student percentage explained a significant amount of variance in the ISTEP+ mathematics median growth model scores in high-poverty middle schools.

The independence of residuals tested whether there was a correlation between residuals within the model. The assumption was met since the Durbin-Watson score was near 2.0 (actual 2.20) which showed the residuals were not correlated with one another and the assumption was met. Next, the assumption of linearity was examined by graphing the data and checking for a linear relationship in nature. This assumption was met as the majority of the residuals fell within the confidence bands around zero (between +2 and -2). The assumption of homoscedasticity was met as the plot of residuals did not show evidence of the residuals increasing or decreasing as the predicted value of the criterion variable ELA median growth score increases. Furthermore, the data were reviewed to ensure there were no outliers within the criterion variable (growth scores). The assumption was held based on no data point was more than 1.5 standard deviations away from the edge of the box plots. The assumption of normality of residuals was met since the residuals were aligned with the diagonal line on the normal *p-p* plot of regression standardized residuals. The assumption of no multicollinearity was met based on the tolerance levels for all predictors were above the .2 minimum that was needed to fulfill this assumption. The tolerance levels for the predictors in this regression ranged from .833 to .944.

The multiple correlation coefficient (R) tells how well the criterion variable was explained by the set of predictor variables (Lomax & Hahs-Vaugh, 2012). An R of .279 demonstrated a small to medium relationship between the criterion variable and the predictors. The coefficient of multiple determination (R^2) showed 7.8% of variance in ISTEP+ median growth model scores in high-poverty middle schools was being explained by the linear combination of the predictor variables of student enrollment size, percentage of minority students, and special education student percentage. The adjusted R^2 provided an adjustment which allowed the comparison of models fitted to the same set of data with different samples of data (Lomax & Hahs-Vaugh, 2012). After taking in consideration for sample size and number of predictors (adjusted $R^2 = .057$), 5.7% of the variance of the criterion variable was explained by the predictors. The .021 difference between the R^2 and adjusted R^2 was the shrinkage in the model. The standard error of the estimate (13.72) measured the amount of variability in the points around the regression line. It was the standard deviation of the data points as they were distributed around the regression line. This meant this model had a standard deviation of 13.72 units of ISTEP+ mathematics median growth model scores regarding the distance of the residuals from the regression (prediction) line.

This multiple regression revealed that the predictors (student enrollment size, percentage of minority students, and special education student percentage) did have the ability to predict ISTEP+ median mathematics growth model scores in high-poverty middle schools. The ANOVA was significant, $F(3, 129) = 3.638$, $p = .015$, thus showing a linear relationship between the predictors and the criterion.

Percentage of minority students was a significant predictor, $t = -2.065$, $p = .041$. By examining the unstandardized partial regression coefficient, the mathematics median growth model score was predicted to decrease by .086 per every 1% increase in the school's minority percentage while holding all other predictors constant. Special education student percentage and student enrollment size were not significant predictors within the model, $t = 1.513$, $p = .133$, and $t = -1.876$, $p = .063$ respectively. The partial regression coefficients are presented in Table 6.

Table 6

Unstandardized and Standardized Partial Regression Coefficients for Mathematics Growth (Affluent Middle Schools)

Independent Variables	B	SE	β	*t*	Sig.
Student Enrollment Size	.006	.004	.138	1.513	.133
Percentage of Minority Students	-.086	.042	-.180	-2.065	.041*
Special Student Education Percentage	-.377	.201	-.174	-1.876	.063

Note. * Significance was set at the .05 level.

Summary of Descriptive Data

In this chapter, quantitative data were used to retain or reject 16 research questions in this study on how poverty affects the ISTEP+ ELA and mathematics median growth score. The first four null hypotheses were tested using a one-way ANOVA through SPSS and found only one significant and, therefore, one was rejected. In moderate-poverty middle schools, ISTEP+ mathematics median growth scores were significantly higher than the high-poverty middle schools.

The next six null hypotheses were tested using linear regression and focused on the elementary school setting. The group looked at each level of poverty and asked if school enrollment size, percentage of minority students, and special education student percentage served as predictors for ISTEP+ ELA and mathematics median growth scores. In high-poverty elementary schools, special education student percentage and minority student percentage both decreased the ISTEP+ ELA median model growth score while only special education student percentage decreased the ISTEP+ mathematics growth score. For moderate-poverty schools, minority student percentage had an increase to ISTEP+ mathematics median growth score.

The last six null hypotheses were also tested using linear regression and focused on the middle school. The group looked at each level of poverty and asked if school enrollment size, percentage of minority students, and special education student percentage served as predictors for ISTEP+ ELA and mathematics median growth scores. Special education student percentage decreased the ISTEP+ ELA median growth score for affluent middle schools and decreased the ISTEP+ Math median growth score for high-poverty middle schools. Minority student percentage had an increase in the ISTEP+ mathematics median growth score for affluent middle schools.

CHAPTER 5

DISCUSSION OF FINDINGS, IMPLICATIONS, AND FUTURE STUDIES

Chapter 5 is divided into four sections: summary, discussion of findings, implications, and recommendations for future research. Chapter 4 contained the presentation of the data, and this chapter further discusses the findings in greater detail. The summary section discusses the purpose of the study, why ISTEP+ median growth scores were used, and who benefits from this study. The conclusion section discusses actions that could be done in order to reduce the achievement gap between students of affluent schools and students of poverty. The final section recommends suggestions for future studies that could create more depth to this study.

Summary of Study

The purpose of this study was to determine if there was a significant difference in the ISTEP+ median growth model scores for students of poverty based on their school's SES level. This study also examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of the school's ISTEP+ median growth model score for students of poverty within the different levels of poverty in elementary and middle schools. High-poverty schools typically are supported by Title I funds to support and increase students' academic achievement while affluent schools do not have such support for their students of poverty.

The following questions were investigated in this study:

1. Is there a significant difference on the ISTEP+ English/language arts median growth model scores for students of poverty based on SES level of the elementary school?
2. Is there a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the elementary school?
3. Is there a significant difference on the ISTEP+ English/language arts median growth model scores for students of poverty based on SES level of the middle school?
4. Is there a significant difference on the ISTEP+ mathematics median growth model scores for students of poverty based on SES level of the middle school?
5. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in elementary schools based on their SES level?
6. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in elementary schools based on their SES level?
7. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty in middle schools based on their SES level?
8. Do student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty in middle schools based on their SES level?

Chapter 2 provided research and substantiation that poverty students lag behind their affluent peers in educational opportunities and proficiency rates on standardized testing. This study looked at the growth of poverty students within different SES levels of schools. The study investigated if poverty students grew at significantly different rates based on their school's SES level. This study only used the ISTEP+ ELA and mathematics median growth model scores for the FRL subgroup. It was important to understand the growth model score only measured growth and not proficiency on the ISTEP+.

This study used the 2013-14 ISTEP+ ELA and mathematics median growth model scores for the FRL lunch population from public schools in Indiana that contained Grades 4, 5, 6, 7 and/or 8. Within the 1,461 schools that had a reportable SES level, statistical tests were used to determine if there was a significant difference between median growth model scores within elementary schools and middle schools. Further testing looked at whether a school's student enrollment size, percentage of minority students, and special education student percentage served as predictors of ISTEP+ ELA and mathematics median growth model scores for students of poverty based on their SES level.

Discussion of Findings

Chapter 4 presented the findings of this study from the statistical analysis. This section discusses the retention or rejection of each null. After each null is discussed, then an overall discussion on the findings is presented.

The nulls for Research Questions 1 and 2 stated there was not a significant difference on the ISTEP+ ELA and mathematics median growth model scores for students of poverty based on SES levels in elementary schools. Both of the nulls were kept which meant no statistical differences were present. Based on research from Chapter 2, poverty students are not at the same proficiency rate on standardized testing as their affluent peers, but this study looked at growth rate. Part of the literature review did find that Title I had a positive effect on poverty students' academic success. Kober et al.'s (2011) research suggested that Title I students, which most qualify for FRL rates, made gains greater than their non-Title I peers in reading and mathematics achievement. However, this study focused on median growth rate. This study showed that elementary poverty students did not vary significantly on the growth score based on their school's SES level. It could be that the small percentage of poverty students in affluent elementary schools received the support needed to match the support that was available in moderate and high-poverty schools, like Title I funding, to have similar growth scores. Since this study looked at only median growth model scores, proficiency pass rates were not reviewed. Although, there could be a correlation between median growth rate and proficiency rate on the ISTEP+. As discussed later, a comparison study into proficiency passing rates of poverty students in the different levels of poverty would provide more insight. Another possibility could be that affluent schools lack the necessary resources to provide additional support to students of poverty, and therefore, poverty students in affluent schools just keep pace with their high-poverty peers and do not surpass them in growth.

The nulls for Research Questions 3 and 4 stated there was not a significant difference on the ISTEP+ ELA and mathematics median growth model scores for students of poverty based on SES levels in middle schools. Although there was no significant difference in ELA median growth scores, there was a significant difference in mathematics median growth scores. Moderate-poverty students had a higher median growth score than their high-poverty peers. This could be based on a higher number of students who needed support in mathematics in high-poverty schools. Also, mathematical questions at the middle school level became more problem solving in nature which required a solid foundation in number sense, computation, and problem solving. As children moved through school and especially entered middle school grade, math reasoning became more sophisticated and problems became more challenging and complex (Heatly, Bachman, & Votruba-Drzal, 2015).

Teacher qualifications and expectations were discussed in the review of literature. A main theme throughout the literature review described how high-poverty schools do not have the resources and have lower qualified teachers compared to affluent schools (Barbarin & Aiken, 2015; Ingersoll, 2004) which could be reasons for lack of significance overall in Research Questions 1 through 4. Based on the literature review, high-poverty schools lack the overall quality of teachers in years of experience, have more emergency certified teachers, and lower-scored teacher evaluations. These high-poverty schools' characteristics could explain the lack of significance in the median growth model scores for both subject areas.

The nulls for Research Questions 5a, 5b, and 5c examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty based on their SES level in elementary schools. There was no significant difference within affluent and moderate-poverty schools. However, in high-poverty schools, special education student percentage and minority student percentage were both found to be significantly different, with special education student percentage having a larger effect. Both groups had a negative impact on median growth scores. The ELA median growth model score is predicted to decrease by .04 per every 1% increase in the school's minority percentage while holding all other predictors constant, and the ELA median growth model score is predicted to decrease by .33 per every 1% increase in the school's special education student percentage while holding all other predictors constant. For example, if special education percentage increases by 10% while all other predictors stay constant, the ELA median growth model score will decrease by 3.3 points.

With a high-poverty school comes high-need students, and this need could reduce the ability of high-poverty elementary schools to provide support to minority and special education students compared to their affluent and moderate-poverty peers which showed no significant difference. From evidence in Chapter 2, research continues to support teachers in high-poverty schools are less qualified and have not received the training needed in schools which include higher numbers of special education and minority students (Clotfelter et al., 2006; Ingersoll, 2004). To be effective, a teacher needs good classroom management, instructional and curriculum knowledge, and knowledge to be able to differentiate teaching to different students' needs and abilities. Typically, high-poverty schools have less experienced teachers (Almy & Tooley, 2012).

The nulls for Research Questions 6a, 6b, and 6c examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores for students of poverty based on their SES in elementary schools. In affluent elementary schools there was no significant difference. In moderate-poverty elementary schools, minority student percentage was found significant and had a positive effect on the ISTEP+ median growth scores for students of poverty in mathematics. In high-poverty elementary schools, special education student percentage was found significant and had a negative effect on median growth score for students of poverty in mathematics. Special education students typically lag behind their peers, and high-poverty elementary schools have a higher rate of special education students compared to affluent and moderate-poverty settings. It is possible that high-poverty elementary schools have the demand of meeting their high-SES student population needs which can typically include a high percentage of the school's special student education population. This large need diminishes the support that administrators, teachers, and special education teachers can provide to the special education students. McLaughlin and Stansell (2013) made numerous references to students of poverty being more likely to be identified with a learning disability. Again, the number of students who need support is larger in moderate and high-poverty schools, and it might be possible that in moderate-high poverty schools the minority students are able to be focused on more, especially English language learners (ELL) students.

The nulls for Research Questions 7a, 7b, and 7c examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ English/language arts median growth model scores for students of poverty based on their SES in middle schools. The only significant difference found was in affluent middle schools. Special education student percentage had a negative effect on the ELA median growth scores. Research by Chudowsky and Chudowsky (2009) stated that students with disabilities have made gains in achievement levels that compare to all students' gains including racial-ethnic and low-income subgroups. The findings in this study state the special education student percentage has a negative impact on the students of poverty growth scores which relates to lower growth scores.

The nulls for Research Questions 8a, 8b, and 8c examined if student enrollment size, percentage of minority students, and special education student percentage serve as predictors of ISTEP+ mathematics median growth model scores based on their SES in middle schools. In the moderate-poverty level no significant difference was found. However, in the affluent middle schools, percentage of minority students had a positive effect on the growth score, and in high-poverty middle school, percentage of minority students had a negative effect on the growth score. The study focused on academic growth, not proficiency. It is possible ELL students would improve at a faster rate, since the ELL programs are targeted for increased English language skills. As their understanding and reading of English increases, this has direct implications to ISTEP+ growth. ELL students are better able to understand the assessment, and therefore, able to demonstrate their knowledge more proficiently with their improved understanding of the English language.

Typically in affluent schools, a lack of diversity reduces the number of subgroups. The ability for schools to focus on subgroups in affluent and moderate-poverty schools is likely superior to the ability of schools to focus on subgroups in high-poverty schools. Furthermore, based on their level of student need, affluent middle schools, which have less minorities and students of poverty, could focus resources on their ELL student subgroup enabling a faster rate of growth. This could allow schools to focus more resources on this subgroup. This contrasts with high-poverty schools where resources are distributed through the entire building and not on a particular subgroup.

Implications

High-poverty schools overwhelmingly had the most significant differences in growth model scores for ELA and mathematics. It is very interesting to note that moderate-poverty schools did not have any significant differences that decreased the median growth model score. In the elementary setting, percentage of minority students increased the median mathematics growth score.

In moderate-poverty schools, student enrollment size, percentage of minority students, and special education student percentage did not have a negative impact toward the median growth score. In fact, percentage of minority students had a positive impact on elementary mathematics median growth scores. Moderate-poverty middle schools out-performed high-poverty schools in mathematics median growth score.

An implication from findings of this study is school leaders should closely examine the factors that are part or a result of poverty and consider programs to help address the special needs of high-poverty schools that struggle with student achievement. High-poverty schools that are successful should be studied to examine what strategies they have used to attain achievement. A good resource is Carter (2000) who examined 21 high achieving high-poverty schools.

Affluent schools, although only at the middle school level, had a significant decrease based on special student education percentage in ELA's median growth score and an increase from minority student percentage in mathematics. Minority students increased the median growth score in two areas: ISTEP+ ELA median growth score in moderate-poverty elementary schools and mathematics median growth score in affluent middle schools. Minorities are sometimes shared in the ELL subgroup of students. Other research suggested that depending on when ELL students become proficient in the English language, they had a greater improvement rate in social/behavior outcomes than their native English-speaking peers (Halle, Hair, Wandner, McNamara, & Chien, 2012). Better social behavior can be linked to learning time and academic progress (Jensen, 2009). The quality of instruction is important for educating English learners (Calderon, Slavin, & Shanche, 2011). "Closing the achievement gaps means, in part, closing similar gaps in teacher preparation programs and ongoing professional development" (Calderon et al., 2011, p. 107). There is a common thread between a school's FRL population and its percentage of minority students. Research has shown that minority children are disproportionately poor, which leads to other health and educational issues supported in Chapter 2.

Based on the findings of this study, an argument could be offered in making affluent middle schools magnets for minority students based on the positive increase it has on the ISTEP+ mathematics median growth score. Although no difference was seen for ELA with regard to middle school and percentage of minority students, it has the potential to benefit both minorities and the overall growth score for affluent middle schools. More research is required on the effects of having a higher minority student percentage on the proficiency pass rate of a school and discussed later in this chapter. A similar argument could be made for affluent elementary schools and moderate-poverty middle and elementary schools. If schools in the moderate-poverty level became minority magnet schools, this could possibly enable these schools to qualify for Title I funding. This would enable schools to receive additional funding to focus on their increased minority student increase. More research would be needed to understand the relationship between percentage of minority percentage and proficiency rates.

Special education student percentage was the dominant area that decreased growth scores in this study. Special education student percentage decreased the ISTEP+ median growth model scores for students of poverty in ELA and mathematics for high-poverty elementary schools, in ELA for affluent middle schools, and in mathematics for high-poverty middle schools. If special education students' growth is affecting the school's growth score negatively, it would be logical to conclude that special education students' proficiency rates would be low compared to other subgroups and the overall school's proficiency rate. Research from this study validates the need for continued effort in supporting special education students especially in moderate to high-poverty schools.

The findings of this study validate the concern and re-evaluation of high stakes testing. J. L. Jennings and Bearak (2014) would agree the role of high stakes testing as well as the structure of the test themselves should be re-evaluated. White et al. (2016) commented, "We must encourage a measure of socioeconomic and racial integration before imposing high stakes testing that largely measures race, SES, and their interactions" (p. 21). The results of the study as well as the findings from the studies mentioned would question if it is fair to put some special education students through a proficiency test that they cannot pass. Instead of holding schools accountable for these student proficiency rates, it would make more sense to hold schools accountable for growth compared to similar peer groups of special education students.

Future Studies

Minority student percentage increased the ISTEP+ mathematics median growth scores in moderate-poverty elementary schools and affluent middle schools based on their SES level. However, percentage of minority students decreased ISTEP+ median growth model scores in mathematics in high-poverty schools. Looking back at Chapter 2, African American students scored lower than Hispanic students and Caucasian students in proficiency tests in fourth grade, and these percentages decreased at the middle and high school levels. Research also showed that African American high-poverty students attended more high-poverty schools which could explain the decrease in median growth scores of high-poverty middle schools. However, further investigation into the type of minority students attending the affluent middle schools and moderate-poverty elementary schools could lead to making this current study richer. This study did not study the makeup of the ethnicity in the minority percentage. A study could examine the makeup of the ethnicity of the student minority percentage to see if there is a significant difference in the median growth model scores or proficiency rates in each type of school based on their SES level. The study could investigate the differences found in this study based on school culture and practices or SES level.

Although few significant differences were seen with Research Questions 1 through 4 regarding the median growth model score, the same study could be done looking at the proficiency pass rates. Research from Chapter 2 stated high-poverty schools have a lower proficiency pass rate than affluent schools. Also, minorities do not pass with the same proficiency rate as non-minorities. A study using the same predictors, student enrollment, percentage of minority students, and special education student percentage, could analyze the ISTEP+ proficiency rates between the different levels of SES and add much value to this study. A follow-up study would be to compare this growth model study to the proficiency study. A study analyzing growth and proficiency would provide a more in-depth base of knowledge.

Special education student percentage decreased the ISTEP+ ELA and mathematics median growth model scores for students of poverty in high-poverty elementary schools, and scores decreased for the median growth model scores for ELA in affluent middle schools and math in the high-poverty middle schools. Further study into schools with high median growth model scores for their special education population would be warranted. This study could also see if there is a significant difference in ISTEP+ median growth model scores based on the instruction model used in the school, pull-out or inclusion method, and on the different types of special education classifications, such as other health impairment, specific learning disability, emotional disability, and moderate disability to name a few.

A possible study would be to research schools with high-growth rates and compare the method of instruction and assessment practices within the different levels of SES, affluent, moderate-poverty, and high-poverty. This current study only looked at the growth rate and not the method of instruction or assessment. This could be done by looking at the school's education practices of instruction, time dedicated to the various academic areas, and the type and frequency of testing. As discussed before, Carter (2000) examined 21 high achieving high-poverty schools. Do the same characteristics/themes resonate in all three different types of SES levels?

This study focused on the FRL population. So often the FRL population is examined for growth and proficiency, but what about the overlooked paid-lunch students in schools of poverty? Paid-lunch students would be defined by students who do not qualify for a free or reduced lunch rate. Although few significant differences were seen with Research Questions 1 through 4, a study could examine the ISTEP+ ELA and mathematics growth model scores for the paid-lunch students would provide more information to support the lack of significance between elementary schools and middle schools based on SES levels.

Summary

This chapter provided a review of the research questions, implications from the study, and possible future studies. As the government continues to hold schools accountable for students' growth and proficiency rates on state assessments, schools will face challenges to educate all students, especially minorities and high-poverty students, as resources continue to decrease and the number of students in poverty increases. This study showed minimal differences between elementary and middle schools based on SES levels. However, percentage of minority students was a significant predictor in the ISTEP+ median growth model scores showing an increase and/or decrease of the overall score. Percentage of minority students actually showed an increase in the median ISTEP+ mathematics growth model score in affluent middle schools and moderate-poverty elementary schools. This could be the most significant finding in this study and worthy of further investigation. Special education student percentage always showed a decrease in the ISTEP+ median growth model scores when it was a significant predictor. This finding provides more support to find alternative methods on assessing special education students for growth and proficiency. This study provided important relationships about the percentage of minority students and special education students and the effect it has on ISTEP+ growth model scores.

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