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Measuring the Achievement Gap:
A New Lens for Economic Disadvantage

A dissertation
presented to
the faculty of the Department of Educational Leadership and Policy Analysis
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Doctor of Education in Educational Leadership

by
Suzanne Claiborne Bryant
May 2016

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Dr. Cecil Blankenship
Dr. William Flora
Dr. Susan French-Graybeal

Keywords: Economically disadvantaged, achievement gap, socioeconomic status

ABSTRACT

Measuring the Achievement Gap:

A New Lens for Economic Disadvantage

by

Suzanne Claiborne Bryant

The purpose of this study was to determine if there was a difference between a student's reading/language arts TCAP scale score and his or her lunch status for students in grades three, four, and five within two school systems in Tennessee. The population consisted of 2,442 students who were in grades three, four, and five during the 2014-2015 school year in a city school system in east Tennessee and a county school system in middle Tennessee. The Kruskal-Wallis H, a non-parametric test, was used to identify statistically significant differences in the medians of the reading/language arts TCAP scores across the three types of lunch payment status. The independent variable was the type of student lunch status (free, reduced, and full pay). The dependent variable was the reading/language arts TCAP scale score of students in grade three, four, and five.

The quantitative findings revealed the relationship between student lunch status group and reading/language arts TCAP scale score was significant for all four research questions. In all analyses, the difference in the reading/language arts TCAP scale scores of students in the free lunch status group and the full pay lunch status group was significant. When the data from both school systems were combined, there was a significant difference in the scale scores between the free and full pay lunch status groups, the free and reduced lunch status groups, and the reduced and full pay lunch status groups.

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DEDICATION

This dissertation is dedicated to my grandparents, Mildred and Albert Claiborne. My grandmother was the first person in my family to go to college. She went to the University of Tennessee where she studied to become a special education teacher. She attended college for three years and became the first special education teacher in Campbell County. She started the home bound program and touched the lives of many students who would not have otherwise had an education.

My grandfather was a wonderful man who valued hard work. Even though he did not graduate from high school, he was the smartest person I have ever known. My grandparents instilled in me from a young age that I would go to college. They paid for my undergraduate degree and gave me the confidence and opportunity to become anything that I chose to be.

My grandfather passed away in 2001 at the age of 86 and my grandmother passed away in 2011 at the age of 99. Even though they will not be here to see my hooding ceremony, I know that they will be looking down with pride on this accomplishment that they were so much a part of. I love you Granny and Papaw – thank you for loving me and supporting me throughout my life!

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I owe all credit for the inspiration and completion of this dissertation to God. God has blessed me and inspired me throughout my entire life. He has laid a burden on my heart for children in poverty. I am forever grateful to the children and youth of Jacksboro United Methodist Church and Christ United Methodist Church. Dr. James Comer says “No significant learning can occur with a significant relationship”. Relationships with these children and youth have helped me truly understand the daily lives of children in poverty, as well as the challenges they face in public education.

I am eternally grateful to my husband of 27 years, Bobby Bryant. He has supported me through four college degrees, two children, and one life threatening illness. He is my rock and soul mate and this dissertation would not have been possible without his support and encouragement. My daughters Alicia and Amanda are my inspiration and my greatest blessing. I am so proud of them both and am thankful and blessed to be their mother. I am also thankful to my mother-in-law, Alice Bryant. Throughout the years she has been one of my biggest supporters and has provided child-care, school pick up, housework, food, and so much more. Also my brother, Darrell Claiborne, who has always been there for me and has borne most of the burden for caring for our parents during the times of my illness and graduate work.

My father, Gerald Claiborne, raised me as a single parent. He instilled confidence and love in me and made me the person I am today. He passed away in 2012. Although I know that he is proud of this accomplishment, he would be sure to tell me not to get “the big head” since I have my doctorate. He always kept me grounded and loved me unconditionally.

I met my dear friend, Tanna Nicely as a college freshman in 1986, this is the third and final degree we have earned together. I am so proud of Tanna and all that she has accomplished.

I would not have taken this final step in my educational career without her support and encouragement.

I am thankful to Dr. Lyle Ailshie, who brought me to Greeneville City Schools where I found a school system full of people who truly make decisions based on research and what is best for children. Also, Dr. Linda Stroud, Beverly Miller, MBA, and Dr. Jeff Moorhouse who have supported me throughout this process. Their personal and leadership examples have made me a better leader as well as a better human being.

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CHAPTER 1

INTRODUCTION

As a public educator in the state of Tennessee for over 25 years, I have been blessed to have worked with students from varied backgrounds and family situations. Some of the most striking observations and personal learning experiences in my career have stemmed from working with students from impoverished backgrounds. These experiences of working with students and families in poverty provide the basis for this study.

For thirteen years of my career, I taught in an elementary school where around 53% of the students qualified for free and reduced lunch benefits under the National School Lunch Program and were, therefore, labeled economically disadvantaged. In this particular school, even though the free and reduced lunch rate was 53%, a great deal of the students qualified for reduced lunch rather than free lunch benefits. Many of these families were working poor. They worked, but did not earn enough income to make a living wage. This qualified the students of these families for reduced lunch benefits, rather than free. Another observation about the lives of these students was that many of their parents were enrolled in college or technical school themselves, in order to better provide for their families. Though living in poverty, the work ethic of these families translated to high expectations for learning for their children.

The second experience in my career that has impacted this study occurred from 2005-2007 when I served as principal of a school that had around 95% of students who qualified for free and reduced lunch benefits. Although the students in this school who qualified for free or reduced lunch benefits were also labeled economically disadvantaged, the family life situations of these students varied drastically from the students in the previous school. Whereas many of the students in the previous school qualified for reduced lunch benefits, most of the students in this school qualified for free lunch benefits. The school was in close proximity to the local

housing projects, where the majority of the students in the school resided. A large number of these students had families who had lived in poverty for many generations. The attitude toward education and work in these families was extremely different from the families in the previous school, even though students in both groups were considered economically disadvantaged. Therefore, the strategies to help these children learn and reach their full potential needed to be different from the strategies with the students in the previous school.

Although all the students described in these scenarios were economically disadvantaged by the current definition, their daily lives and family lives were vastly different. Due to these and other factors associated with generational and situational poverty, their educational experiences were also very different. Combining the group of students who qualify for free lunch benefits and the group of students who qualify for reduced lunch benefits into one category (economically disadvantaged) for No Child Left Behind accountability purposes suggests a lack of understanding of poverty on the part of lawmakers. This work seeks to develop an argument that these two groups must be separated in order to develop more accurate measures of accountability. Moreover, more precise measurement of the achievement gap could enable educators to be more strategic in the methods used to address the individual needs of students living in poverty and in turn, could successfully narrow or close the achievement gaps for these students.

Statement of the Problem

According to The No Child Left Behind Act of 2002 (NCLB), a student is defined as economically disadvantaged by qualifying for free and reduced lunch benefits. This definition is problematic in the detail that the economically disadvantaged subgroup is made up of students who qualify for both free lunch and reduced lunch, and no distinction is made between the two

groups. The life experiences, educational experiences, and family environments can differ significantly for students of families living in poverty. A large percentage of students who qualify for free lunch benefits live in homes of extreme poverty that has persisted for multiple generations. In contrast, students who qualify for reduced price lunches may come from low income working families or families that might be in poverty for a short term due a particular life situation. Although the life experiences may be very different for students in these two groups, the current measurement of economically disadvantaged combines the two groups into one. Combining these groups for accountability and data analysis poses potential problems for educators, students, and families. The underlying reasons for the achievement gap in each group could be completely different and different strategies may be necessary to meet the academic needs of students in each group.

In this study, I will evaluate the achievement gap between economically disadvantaged and non-economically disadvantaged students through a different lens. I will separate the scores in the economically disadvantaged subgroup into two distinct groups; students who qualify for free lunch and students who qualify for reduced lunch benefits.

Purpose of the Study

The purpose of this study is to determine if there is a difference between a student's reading/language arts TCAP score and their lunch status for students in grades three, four, and five within two school systems in Tennessee.

Research Questions and Hypotheses

In order to ascertain if there were differences in reading/language arts TCAP scores of students in grades three, four, and five with regard to lunch statuses, the following research questions were investigated.

Research Question 1

Is there a difference between reading/language arts Tennessee Comprehensive Assessment Program (TCAP) scale scores of students in grade three with regard to three types of lunch payment status (free, reduced and full pay)?

Ho1. There is no significant difference between reading/language arts TCAP scale scores of students in grade three with regard to three types of lunch payment status (free, reduced and full pay).

Research Question 2

Is there a difference between reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay)?

Ho2. There is no significant difference between the reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay).

Research Question 3

Is there a difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay)?

Ho3. There is no significant difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay).

Research Question 4

Is there a difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to the three types of lunch payment status (free, reduced and full pay)?

Ho4. There is no significant difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to three types of lunch payment status (free, reduced and full pay).

Significance of the Study

Since the implementation of No Child Left Behind (NCLB, 2002), high stakes testing and accountability have been the norm. The Race to the Top grant, to which Tennessee was the first recipient, added more stringent layers of accountability for teachers, schools, school systems, and students. In an educational era where stakes are high, it is vital to ensure that all measurements accurately assess what they are intended to measure, true student learning and growth. The function of accountability data should be to use the data to improve learning outcomes for students. The purpose in measuring the achievement gap is to attempt to close the achievement gap for students who are in historically low performing populations. Greater precision in measurement of the achievement gap could assist educators in better understanding the gap. Furthermore, greater understanding of the lives of the students in the economically disadvantaged subgroup could lead to educational practices that narrow the achievement gap.

Additionally, President Obama signed the Every Student Succeeds Act (ESSA, 2015); into law in December of 2015, which has replaced No Child Left Behind. This law will provide greater flexibility to state leaders in determining accountability measures. This legal shift means that results from studies like this one could provide information to state officials that would aid in developing more meaningful accountability measures.

Definitions of Terms

- Economically Disadvantaged - *Economically disadvantaged family or individual* means a family or individual that is—

(1) Eligible for any of the following:

(i) The program for Aid to Families with Dependent Children under part A of title IV of the Social Security Act (42 U.S.C. 601).

(ii) Benefits under the Food Stamp Act of 1977 (7 U.S.C. 2011).

(iii) To be counted for purposes of section 1005 of chapter 1 of title I of the Elementary and Secondary Education Act of 1965, as amended (chapter 1) (20 U.S.C. 2701).

(iv) The free or reduced-price lunches program under the National School Lunch Act (42 U.S.C. 1751). (Title 34 Education)

- Free Lunch Eligibility – “Students are eligible for free lunch if their household income is less than 130% of the federal poverty guidelines” (Howell and LeBeau, 2010, p. 122). According to the 2014 Income Eligibility Guidelines, a family of 4 would qualify for free lunch benefits if their annual income is below \$31, 525 (Federal Register, 2015).
- Generational Poverty – “Generational Poverty occurs in families where at least two generations have been born into poverty. Families living in this type of poverty are not equipped with tools to move out of their situation” (Jenson, 2009, p. 6).
- PISA – “The Program for International Student Assessment (PISA) is an international assessment that measures 15-year-old students' reading, mathematics, and science literacy every three years. First conducted in 2000, the major domain of study rotates between mathematics, science, and reading in each cycle. PISA also includes measures of general or cross-curricular competencies, such as collaborative problem solving. By design, PISA emphasizes functional skills that students have acquired as they near the end of compulsory schooling. PISA is coordinated by the Organization for Economic

Cooperation and Development (OECD), an intergovernmental organization of industrialized countries, and is conducted in the United States by NCES.” (IES, 2015)

- Poverty- “The Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using Consumer Price Index (CPI-U). The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps)” (US Census Bureau, 2015).
- Reduced Lunch Eligibility – “Students are eligible for a reduced price lunch if their household income is less than 185% of the federal poverty guidelines” (Howell and LeBeau, 2010, p. 122). According to the 2014 Income Eligibility Guidelines, a family of 4 would qualify for reduced lunch benefits if their annual income is below \$44,863 (Federal Register, 2015).
- Relative Poverty – “Relative poverty refers to the economic status of a family whose income is insufficient to meet its society’s average standard of living” (Jenson, 2009, p. 6).
- Situational Poverty - “Situational poverty is generally caused by a sudden crisis or loss and is often temporary. Events causing situational poverty include environmental disasters, divorce, or severe health problems” (Jenson, 2009, p. 6).
- Socioeconomic Status - Socioeconomic status is commonly conceptualized as the social standing or class of an individual or group. It is often measured as a combination of education, income and occupation. (American Psychological Association, 2015).

- TCAP - Tennessee Comprehensive Assessment Program. This program includes all elementary and secondary assessments administered by the Tennessee State Department of Education.

Delimitations and Limitations

There are both limitations and delimitations to this study. One delimitation is the number of school systems that were used in the study. The study used data from two school systems, one city school system in upper east Tennessee and one county school system in middle Tennessee. The study is also delimited by the fact that only data from students who were in grades three, four, and five during the 2014-2015 school year were used in the study. Increasing the number of school systems, grade levels, and years of data used could increase the generalizability of the findings.

A limitation to this study is that the city school system historically out performs the state performance levels with all subgroups. Due to this, the economically disadvantaged students in this system could possibly score higher on the reading portion of the TCAP than students in other systems across the state.

School poverty levels in each school system could be another limitation. The study data is analyzed by school system, not by individual schools. The results could possibly be different if broken down by individual school, due to the school effect of the data.

Chapter Summary

This study is organized into five chapters. Chapter 1 is a history and context of the study, statement of the problem, research questions and null hypotheses, significance of the study, definitions of terms, delimitations, and limitations. Chapter 2 is a review of literature. Chapter 3

addresses the research design and methodology. Chapter 4 presents the result of the data analyses. Chapter 5 is a detailed data analysis summary, conclusion, and recommendations for practice and further research.

CHAPTER 2

REVIEW OF LITERATURE

Introduction to Literature Review

Childhood poverty and its effects on learning have been widely researched in fields of education, psychology, and sociology. The literature has been reviewed extensively in order to highlight the research that is most relevant to the problem addressed in this study—evaluating the achievement gap between economically disadvantaged and non-economically disadvantaged students by separating the scores in the economically disadvantaged subgroup into two distinct groups. From the review, this researcher chose the following areas as the most relevant to include for deep understanding of the topic and its relationship to this body of research: contextual setting and history, current economic achievement gaps in the United States, life challenges of students in poverty, effects of poverty on student achievement, measures of economic disadvantage, socioeconomic status and poverty, and free and reduced lunch as the measure of economic disadvantage.

Contextual Setting and History

In 1965, the Elementary and Secondary Education Act (Elementary and Secondary Education Act [ESEA], 1965) was signed into law by President Lyndon Baines Johnson. “ESEA offered new grants to districts serving low-income students, federal grants for text and library books, created special education centers, and created scholarships for low-income college students. Additionally, the law provided federal grants to state educational agencies to improve the quality of elementary and secondary education” (ESEA, 1965). The law has been the subject of debate in Congress since its inception and has been amended numerous times (Thomas and Brady, 2005).

After President Ronald Reagan's election in 1980, federal funding was cut for many educational programs and social programs geared toward the poor (Danziger and Haveman, 1983). Also, during the Reagan era, *A Nation at Risk* was published in 1983. The results from *A Nation at Risk* gave rise to the assumption that schools in the United States were failing our nation's children and prompted politicians to begin to look for ways to measure performance of public schools. The Title I amendment of 1988 began the mandates for school accountability by adding the requirement for states to document academic achievement for disadvantaged students (Thomas and Brady, 2005). In an attempt to statistically verify the suggestions of public school failure from *A Nation at Risk*, in 1990 Admiral James Watkins commissioned the Sandia Laboratories to document the data behind the assumptions that American schools were failing. The *Sandia Report* actually provided statistical proof that America's scores had improved, rather than declined (Ansary, 2007). However this report was never publicized and the message that American's schools were failing persisted.

The push for great accountability based on standardized test results gained momentum in the late 1980's. President George H.W. Bush introduced legislation for increased accountability in 1991. The bill, America 2000, called for national academic standards and national testing. Although this bill was defeated, it was the beginning of the thought process behind the strict accountability measures that would later be put into law with the No Child Left Behind Act. President Bill Clinton continued this move toward greater accountability with the Improving American's Schools Act of 1994. This bill called for holding schools accountable for improved student achievement.

In 2002, President George W. Bush gave ESEA an updated name, No Child Left Behind (NCLB, 2002). NCLB exposed achievement gaps and placed strong accountability expectations

on schools and school systems for growth and gap closure with historically underserved populations. One of the mandates of NCLB was that schools close the achievement gap for students who are determined to be economically disadvantaged. For NCLB purposes, students are considered economically disadvantaged if their family income levels qualify them to receive free or reduced lunch benefits. These accountability measures remain in place today. It is still unknown what measures of accountability state departments will choose under the flexibility of the new ESSA law (2015). However it is clear that ESSA, like NCLB before it, will demand and measure academic growth in the economically disadvantaged subgroup.

Current Economic Achievement Gaps in the United States

For decades, researchers have been keenly aware that an achievement gap exists between low income and high income students. The intent of ESEA was to level the playing field by offering additional academic opportunities for students from low income families. This achievement gap has been well documented and continues to be the topic of much research and debate.

One national indicator of the achievement gap between low socioeconomic level and high socioeconomic level students is the National Assessment of Educational Progress (NAEP). According to a report by the National Center for Education Statistics (2013), NAEP reading gap scores for students in low poverty versus high poverty percentages were: 4th grade 37%, 8th grade 33%, and 12th grade 35%. In the state of Tennessee, the 2015 grades 3-8 reading gap between economically disadvantaged and non-economically disadvantaged students was 30.9% and the English II/English III gap was 25.3% (Tennessee Department of Education, 2015).

While the achievement gap between economically disadvantaged students and non-economically disadvantaged students has widened since 1970, not all areas of achievement gap

have faced such failures to achieve closure targets. The black-white achievement gap has actually narrowed (Reardon, 2013; Reardon, Robinson-Cimpian, and Weathers, 2007).

Researchers have identified several possible underlying reasons for the widening of the income achievement gap. A possible underlying contributor to this gap is that income inequity between the top 90th percentile income earners and the bottom 10th percentile income earners has grown exponentially since the 70s, when the top earners earned five times the income of the bottom earners (Reardon, 2013). Today, the top income family earns 11 times that of the low income family (Reardon, 2013).

Additionally, in comparison to the 1970's, children in poverty today are much more likely to be raised in single-parent homes than their higher income counterparts. The majority of these single-parent homes are led by mothers, many with low education levels (Reardon, 2013). In contrast, the parents of the higher income students generally have levels higher educational attainment.

Several studies have concluded that the greatest predictor of academic achievement is socioeconomic level (Dickenson and Adelson, 2014; Levin, 2007; Van Larr, 2001).

Socioeconomic level has been found to be a greater predictor of academic achievement than other factors such as race, quality of the school the student attends, class size, school funding levels, and other commonly identified factors. However, not all researchers agree with these conclusions. Researchers such as Ladson-Billings and Irvine insist that there is an "education debt", rather than a true achievement gap. They conclude that factors such as teacher quality, school funding, health care, and other gaps are the true reasons for the inequities (Milner, 2013).

In stark contrast to the numerous research studies on the effects of family socioeconomic factors on student achievement, the punitive measures for achievement gap closure in NCLB are

tied to the body of research which concludes that the underlying reasons for the achievement gap lie entirely with the schools (Evans and Rosenbaum, 2008). Gap closure measures in NCLB ignore all other factors and place the burden and blame for achievement gap closure solely on the teacher and school. One area of scrutiny in the law is the measures by which achievement and success are judged. Carey (2013) suggests that these measures, almost entirely based on standardized test scores, are one dimensional and do not measure what students actually know and are able to do.

Life Challenges of Students in Poverty

The research on childhood poverty identifies that students living in poverty face specific challenges that are more prevalent in this group than in students living in families of higher socioeconomic status. The reasons for these challenges are varied but tend to include: single parent homes, parental stress, environmental risk, unsafe physical environments, homelessness and high mobility, residential crowding, and caregiver depression (Earmon, 2000; Herbers, 2012; Roy and Raver, 2014). The occurrence of each of these stressors alone, and in combination, can have dramatic effects on children and can be manifested in various ways.

It is clear that there is no single way to categorize levels of poverty. Researchers have made distinctions in levels and types of poverty, using various criteria. These distinctions include: chronic poverty, life-course poverty, intergenerational poverty, persistent poverty, transitional poverty, deep poverty, generational poverty, situational poverty, and relative poverty (Cuthrell, Stapleton, and Ledford, 2010; Earmon, 2000; Jenson, 2009; Moore, 2005). These categories are an attempt to look more deeply at the human experiences associated with poverty, rather than viewing every situation of people in poverty in the same way. Categories and distinctions serve as frame for deeper understanding of the lives of students living in poverty.

They also give educators an avenue for clearer understanding of behaviors of students in poverty and the reasons behind those behaviors.

The effects of living in poverty can be observed in academic performance as well as internalizing and externalizing behaviors and self-regulation skills (Earmon, 2000; Evans and Rosenbaum, 2008; Herbers, 2012). Many students in poverty enter school with gaps and deficits in learning due to early life experiences. Students in poverty may enter school linguistically disadvantaged because that lack experiences that promote literacy. Hart and Risley (2003) conducted long-term research of students of 42 families from upper socioeconomic status (SES), middle SES, lower SES, and students whose families were on welfare. They found that “in four years, an average child in a professional family would accumulate experience with almost 45 million words, an average child in a working class family 26 million words, and an average child in a welfare family 13 million words” (p. 6). Not only was there a huge disparity in the number of words children acquire, the types of encouraging and discouraging interactions were also drastically different. “In a 5,200-hour year, there would be 166,000 encouragements to 26,000 discouragements in a professional family, 62,000 encouragements to 36,000 discouragements in a working-class family, and 26,000 encouragements to 57,000 discouragements in a welfare family” (p. 5). These early language and vocabulary experiences place children in poverty at a distinct academic disadvantage prior to school entrance.

Numerous studies identify possible family and environmental factors in students from low income homes that are probable contributors to the academic achievement gaps in the United States, particularly the achievement gaps in the area of reading. These studies look at factors such as lead exposure, self-regulation skills, exposure to environmental print, availability, selection, and variety of print materials available in homes and neighborhood bookstores and

libraries, quality of books and staff in school libraries, adult supervision and guidance in student book selection, amount of time adults spend reading with children, student mobility rates, and speech/language patterns in the home (Evans, 2005; Evans and Rosenbaum, 2008; Miranda, Kim, Reiter, and Galeano, 2009; Munoz, Clavijo, and Koven, 1999; Neuman, 2013). These factors are present prior to school entrance and lead to increased discrepancies in reading ability, therefore widening the achievement gap. By ages 10-13, students from richer neighborhoods have been observed to self-select and read more challenging non-fiction and informational text and choose informational videos. In contrast, students from poorer neighborhoods more regularly choose to read low level, below grade level texts and choose videos and books for entertainment content (Neuman, 2013).

Mistry and Wadsorth (2011) looked at the various ways parents invest in their children and identified three pathways that parents use to make these investments. The first pathway is to invest in health and safety in the form of regular medical/dental visits and healthy diets. Children in poverty may not have access to services that promote physical well-being and may come to school with deficiencies in these areas. The second pathway that was the availability of learning materials in the home. These learning materials consist of books and printed materials, language used in the home, engagement in literacy activities, and visits to museums and libraries. Families living in poverty have limited access to these resources and activities. The third pathway of parental investment consists of resources outside the home. This can include participation in clubs, sports teams, and social and religious activities. Children in poverty have very limited access to extracurricular activities due to lack of funding and transportation. Also, due to economically and racially segregated neighborhoods, students living in poverty are more

likely to attend schools with higher concentrations of students in poverty and could be subject to lower expectations from teachers.

In addition to academic challenges faced by students in poverty, internalizing and externalizing behaviors in children can manifest themselves in various ways. Earmon (2000), defined these behaviors as “Externalizing problems are characterized by aggression, hyperactivity, and noncompliance, whereas internalizing behaviors include problems such as withdrawal, depression, and anxiety” (p. 143). Children who have spent the majority of their lives in poverty are likely to exhibit internalizing behaviors. These children may have problems adjusting due to the multiple life stressors associated with generational and persistent poverty. Externalizing behaviors can become more apparent when families are faced with situational or transitional poverty to due to factors such as recent job loss or change in parent marital status (Earmon, 2000; Roy and Raver, 2014).

Effects of SES on Student Achievement

Overwhelming evidence indicates that the socioeconomic level of students is a factor in achievement. Numerous studies have demonstrated that students who are classified as economically disadvantaged do not perform as well in school as their non-economically disadvantaged peers (Ladd, 2001). The extent to which the impact of socioeconomic status as a single risk factor, or in combination with other risk factors, impacts achievement remains a subject of debate in the United States and other countries.

When looking at several risk factors, Battle and Lewis (2002) concluded that “socioeconomic status is more than three times more important than race in predicting outcomes” (p. 21). Sirin (2005) also found socioeconomic status to be a strong predictor of

academic achievement. However, he found that the predictive strength of socioeconomic status was greater for white students than minority students.

State assessments, national assessments, and international assessments show a strong relationship between socioeconomic status and achievement. According to Levin (2007) "The reality, in PISA and in every other assessment of student outcomes, is that socioeconomic status remains the most powerful single influence on students' education and other life outcomes" (p. 75). When looking at outcomes in the United States, Tienken (2012) found no cases where the subgroup of economically disadvantaged students scored higher than the non-economically disadvantaged subgroup on any state assessment or in any grade level. Additionally, Lee (2006) tracked the progress of closing achievement gaps using NAEP data and found that few states had been able to both increase achievement for all and begin to narrow the economic achievement gaps.

Sirin (2005) found in his review "that parents' location in the socioeconomic structure has a strong impact on students' academic achievement. Family SES sets the stage for students' academic performance both by directly providing resources at home and by indirectly providing the social capital that is necessary to succeed in school. Family SES also helps to determine the kind of school and classroom environment to which the student has access" (p. 438).

McLoyd (1998) found that persistent poverty has more detrimental effects on academic achievement than transitional poverty. Additionally, McLoyd found that for every year a child lives in poverty, the chance of being retained or placed in special education increases by 2-3%.

Measures of Economic Disadvantage, SES, and Poverty

While there is much debate in both the education and psychological research about how to measure economic disadvantage and poverty in general, there is a relatively small amount of discussion in the literature regarding the need to separate the economically disadvantaged subgroup into students who qualify for free and those who qualify for reduced lunch benefits. Most of the discussion stems from the idea that simply qualifying for free or reduced lunch benefits does not paint an accurate picture of the whole life of a child, and therefore, is not the best measure. Though there is agreement in the research literature that a better measure should be used, there is little agreement as to what that measure should be. Roosa, Deng, Nair, and Burrell (2005) make the case that consistency in the measure of poverty would make comparisons across research studies possible.

The US Census Bureau originally began measuring poverty in 1963-64. It currently uses a system based on monthly income and family size to determine poverty status. According to the Institute for Research on Poverty (2014) at the University of Wisconsin-Madison, “in 2012 ... the poverty threshold for a family of four was \$23,492. The official national poverty rate was 15.0 percent. There were 46.5 million people in poverty.” Brady (2003) makes the case that the current US measure of poverty is neither valid nor reliable.

When searching for more detailed measures, researchers have suggested using models such as a Latent Class Analysis (LCA) and the cumulative risk model. According to Roy and Raver (2014), the cumulative risk model “assumes that it is the accumulation, rather than the content, of risk that matters most for children’s functioning” (p. 391). The LCA approach “has been used to consider ways that risks may coincide to predict negative outcomes in infancy, clinical outcomes in later childhood, and academic trajectories in adolescence” (Roy and Raver,

2014, p. 391). The problem with using only one measure of economic disadvantage as a risk factor lies in the fact that it is difficult for educators and others to develop targeted interventions when all risks are treated the same. To be able to identify and break down individual risk factors would allow educators to provide appropriate interventions that could possibly counteract the effects of the stressors associated with poverty.

Roosa et al. (2005) studied current methods used to describe poverty in various bodies of research. They highlighted the issue that most studies give the impression that all researchers of poverty use the same guidelines to identify their population, which is totally misleading. The types of measures included in their study were: absolute poverty, relative measures of poverty, family budget approach, income based approaches, social stratification, income-to-needs ratio, hunger and food insecurity, social exclusion, and collective poverty. Iceland (2005) asserts that a quasi-relative measure of poverty that is used by the National Academy of Sciences (NAS) is the most informative measure of poverty.

Many scholars have suggested that the current official measure of poverty is a low estimate of the actual percentage of people who actually live in true poverty since current official measure is an absolute measure. "If only the relative measure of poverty were used and set at 50% of the mean income in the United States would increase poverty rates by about 37% above current levels" (Roosa et al., 2005, p. 975).

Lubienski and Crane (2010) analyzed the results of the Early Childhood Longitudinal Study (ECLS-K) that has been the topic of much analysis since its release in 1999. "This study identifies several variables that are important supplements to traditional SES measures, including the number of children in the household, mother's age at first birth, and children's books at home" (p. 2). The variables in this study were self-reported by the parents of the children in the

study. Lubineski and Crane identify several issues that make using free and reduced lunch status the measure of economic disadvantage under NCLB problematic. They give the example that no distinction is made between the child of a doctoral student who is experiencing situational poverty due to temporary unemployment while in school and the child whose parents have lived in poverty for multiple generations and has lower than high school education. Even though the income levels of both students place them in the economically disadvantaged subgroup, there is a great likelihood that their life experiences are vastly different.

Perry and McConnelly (2003) suggest that the way the Program for International Student Assessment (PISA) determines economic disadvantage is the most accurate measure. According to the Organisation for Economic Co-operation and Development (OECD), the PISA determines economic disadvantage by the following method.

Socio-economic status is a broad concept that summarises many different aspects of a student, school or system. A student's socio-economic status is estimated by an index, the PISA index of social, cultural and economic status, which is based on such indicators as parental education and occupation, the number and type of home possessions that are considered proxies for wealth, and the educational resources available at home. The index is built to be internationally comparable. Students are considered socio-economically advantaged if they are among the 25% of students with the highest PISA index of social, economic and cultural status in their country or economy; socio-economically disadvantaged students are those among the 25% of students with the lowest PISA index of social, economic and cultural status. PISA consistently finds that socio-economic status is associated with performance at the system, school and student levels. (p. 39-40)

Free and Reduced Lunch as the Measure of Economic Disadvantage

The use of free/reduced lunch eligibility as the definition for socio-economic level and economic disadvantage has been criticized by many (Dickenson and Adleson, 2014, Sparks 2014).

Sirin (2005) stated:

The use of participation in school lunch programs as a measure of SES, though common, is conceptually problematic....Furthermore, research shows that eligibility for full or partial school lunch program only weakly correlates with academic achievement as grade level rises, possibly because adolescents are less likely than younger children to file the applications. Despite these limitations, eligibility for lunch programs is still one of the most commonly used SES measure in current literature on academic achievement, partly because it is easier to obtain than school records and does not require having to gather data from students and parent. (p. 44)

Tienken (2011) makes the case for the need to separate the economically disadvantaged subgroup into students who eat free lunch and those who eat reduced lunch.

There are meaningful differences between being eligible for free lunch as opposed to reduced lunch and those differences have varying influences on student achievement. Data from the National Assessment of Educational Progress (NAEP) for Math and LA results for grades 4 and 8 suggest that students eligible for free lunch scored statistically significantly ($p < .05$) lower than students not eligible for free or reduced lunch. Conversely, there was not a statistically significant difference in scores between students eligible for reduced lunch and those not eligible for reduced or free lunch. The

free category captures some of the effects of poverty whereas the reduced lunch category does not. However, states do not often separate achievement into the two distinct categories, and instead, report achievement as one category: free/reduced lunch. This designation masks some of the negative influences of poverty because the scores for students eligible for free lunch would be even lower than those in the category known as free/reduced lunch. The combined free/reduced lunch category does not allow for deep exploration of the effects of poverty because it includes students whose family income is up to \$39,220, almost two times the federal poverty income threshold (p. 263).

According to Dickenson and Adelson (2014),

The practice of using lunch status as a proxy for SES has been called into question. Free/reduced lunches status is determined by family income and only reflects one component of SES as it has been traditionally conceptualized. Moreover it reflects participation in a program rather than eligibility, meaning that some families that would qualify for free/reduced lunch do not receive it and are categories with those who do not qualify. Additionally, is a single indicator that has been dichotomized and so contains limited information about underlying differences in SES and may mask relationships that are not linear (p. 3).

According to MacCallum (2002), the fact that the variable is dichotomized makes a statistical difference in measurement. He asserts that the dichotomization of a quantitative measures can have substantial negative effects. “These consequences include loss of information about individual differences; loss of effect size and power in the case of bivariate relationships;

loss of effect size and power, or spurious statistical significance and overestimation of effect size in the case of analyses with two independent variables; the potential to overlook nonlinear relationships; and, as shown in this article, loss of measurement reliability” (p. 38). Based on this research alone, combining the students who qualify for both free and reduced lunch into one group does not hold great statistical reliability.

In addition to the issues associated with reliability in combining the two groups, the issue of the variance in the lives of students who qualify for free and those who qualify for reduced lunch remains an area of concern. Carpenter (2015) studied 18,011 students whom he classified as Homeless and High Mobility (HHM). Of that HHM group, 55% of the students qualified for free meals while only 4% qualified for reduced meals. This striking illustration demonstrates that students who qualify for free lunch undergo different and greater challenges than students who qualify for reduced lunch. Carpenter and Severn (2006) assert that within group differences are ignored when choosing a single definition with which to measure achievement gaps. Certainly, combining the two groups of students into one economically disadvantaged subgroup completely ignores the differences in the two groups. “For practitioners, this underscores the need to disaggregate student data into many combinations of subsets to understand the dynamic relationships that exist within and between groups” (p. 123).

An additional criticism in using free and reduced lunch status as a measure of poverty and economic disadvantage is that it measures the number students who receive these benefits, rather than the number of students who qualify for these benefits (Harwell and LeBeau, 2010; Sirin, 2005). Many possible reasons have been identified for students who would qualify for free and reduced lunch benefits not receiving these benefits. Among these reasons are social stigma in receiving these benefits (older children do not apply) and parent hesitation in reporting income

to the government. Due to these and other factors, Harwell and Lebeau (2010) estimate that as high as 20% of the students in the United States are misclassified. This misclassification could result in complete inaccuracy in gap closure measurement under NCLB as well as problems with inaccuracy of data used in educational, psychological, and sociological research.

Chapter Summary

While research repeatedly brings to light the fact that poverty does affect student success in school, students in poverty are not inherently destined for failure. Rather, deep understanding of types of poverty and the life challenges experienced by those living in poverty, can serve as a starting point to enable educators to provide targeted interventions. These interventions have the potential to change the academic trajectory for economically disadvantaged students. It is vital that all educators receive professional development on the types of poverty in order to deepen their relationships with students and develop greater understanding of the effects of poverty. Equally important is the need to accurately measure the achievement gap. More precise measurement will allow educators to be able to pinpoint the appropriate approaches, interventions, and supports for each student. Clearly defining the achievement levels of students in each lunch status, rather than combining students who receive free and reduced lunch benefits into one economically disadvantaged subgroup, could begin to enable educators to narrow the achievement gap.

CHAPTER 3

QUANTITATIVE METHODOLOGY

The purpose of this study is to determine if there is a difference between a student's reading/language arts TCAP score and their lunch status for students in grades three, four, and five within two school systems in Tennessee.

Instrumentation

This quantitative study used archival student TCAP data. Quantitative studies are typically used with tests, secondary data, and archival data (Patton, 2002); therefore quantitative research was the best methodology for archival TCAP data. Data for this study were collected from a city school system in upper east Tennessee and county school system in middle Tennessee. These data are not accessible by the public; therefore, the researcher sought and was granted permission from both directors of schools to obtain the data. Both school systems use PowerSchool as their student management system. PowerSchool is a student information system product developed by Pearson that some school systems purchase to house all state-required student information. The TCAP score information is housed in a secure accountability website that is only accessible by directors of schools. A template was developed for the school systems to export the needed information from PowerSchool into an Excel spreadsheet. Directions were provided to the districts for downloading the needed TCAP Excel files from the accountability website. All identifiable student information was removed before the data were released to the researcher.

Validity and Reliability

To reasonably ensure validity, results from the Tennessee Comprehensive Achievement Program data were used. All students who take this assessment are subjected to a standardized

protocol for test administration and security. The state of Tennessee and the testing vendors have taken measures to reasonably ensure that this instrument provides reliable scores. The same statistical process in SPSS was used for all grade levels, to reasonably ensure the instrument provided valid and reliable data (Green and Salkind, 2011).

To reasonably ensure reliability a 95% confidence interval was used for calculations.

Population

This study was conducted using data from two schools systems in Tennessee: a city school system in east Tennessee and a county school system in middle Tennessee. The population of the study included all third, fourth, and fifth grade students who took the reading/language arts TCAP assessment during the 2014-2015 school year from each of the systems.

These school systems were selected because they use PowerSchool as their student management system and also use the Tennessee accountability website to obtain TCAP information. The PowerSchool system houses student lunch status variables used in this study and the Tennessee accountability site houses student TCAP achievement levels for all grades and subjects. Additionally, a template was developed that allowed school systems to export the information into an Excel spread sheet where all identifiable student information was removed before it was sent to the researcher.

Number of Subjects

In the city school system, 629 students participated in the reading/language arts TCAP assessment in grades three, four, and five during the 2014-2015 school year. In the county school system, 1,813 students participated in the reading/language arts TCAP assessment in grades three, four, and five during the 2014-2015 school year.

The V Lookup function of Microsoft Excel was used to link student lunch status to TCAP achievement scale score for each student. The Kruskal-Wallis H was used to determine the difference between the three types of lunch status (free, reduced, and full pay) on the dependent variable, reading/language arts TCAP scores of students in grades three, four, and five, both separately and combined, during the 2014-2015 school year (Green and Salkind, 2011; Witte and Witte, 2010).

Data Collection

The researcher created a template that district student database administrators used to create an Excel file with the following information: student grade level during the 2014-2015 school year, student lunch status (free, reduced, or full pay) and 2014-2015 reading/language arts TCAP scale scores in grades three, four, and five. These data were sorted using the V Lookup function in Excel. All identifiable student information was removed before release to the researcher.

Data Analysis

Distributions of reading/language arts TCAP scale scores were not similar for all groups, as assessed by visual inspection of a boxplot, which violated the assumptions of an ANOVA. Therefore, a Kruskal-Wallis H test was conducted on each grade level separately and on all grade levels combined. The purpose of the research was to determine if there were significant differences in reading/language arts TCAP scores between groups, which differed in their status of lunch payment.

Ethical Considerations

This study is a quantitative study using archival achievement test data for TCAP proficiency data and meal price status.

Some ethical considerations are (Sieber and Tolich, 2013):

- FERPA (Federal Educational Rights and Privacy Act) - The researcher was intentional to ensure that no identifiable student information was used. It is illegal to disclose student test score data to outside sources. It is also illegal to disclose the meal pay status for students. The researcher worked with the school systems to ensure sure that all identifiable student information had been removed.
- Sample Size –The researcher ensured that the sample size was adequate enough to derive generalizations from the data.
- Permission – The researcher obtained permission for the director of schools of the systems used in this research.

The researcher worked diligently to ensure that the literature review and suggestions for future research in no way suggested that low income students are not as capable of learning as other students. The purpose in this research is simply to determine if the measurements that are currently being used to label student data are as accurate as they could be. The researcher firmly believes that all students can learn at high levels, and measuring achievement gaps more accurately could lead to better understand of what types of supports teachers and school systems could put in place to ensure that all students are truly reaching their potential.

Integrating Summary

For the research methodology, a non-experimental quantitative approach with a secondary data analysis design was selected. The data for this study were archival achievement test data for TCAP proficiency data and lunch price status. A non-experimental design chosen because these types of research designs “describe phenomena and examine relationships between different phenomena without any direct manipulation of conditions that are experienced”

(McMillian and Schumacher, 2010, p. 22). This type of research is appropriate because this research will attempt to describe relationships in existing TCAP data, with no manipulation of conditions. This is a secondary data analysis because the data that was used had already been gathered, and these existing data files were used for the analysis.

Research Questions

Research Question 1

Is there a difference between reading/language arts TCAP scale scores of students in grade three with regard to three types of lunch payment status (free, reduced and full pay)?

Ho1. There is no significant difference between reading/language arts TCAP scale scores of students in grade three with regard to three types of lunch payment status (free, reduced and full pay).

Research Question 2

Is there a difference between reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay)?

Ho2. There is no significant difference between the reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay).

Research Question 3

Is there a difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay)?

Ho3. There is no significant difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay).

Research Question 4

Is there a difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to the three types of lunch payment status (free, reduced and full pay)?

Ho4. There is no significant difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to three types of lunch payment status (free, reduced and full pay).

Chapter Summary

The information regarding the research design, methods, and procedures that were used in this study were outlined in Chapter 3. The population consisted all third, fourth, and fifth grade students who took the reading/language arts TCAP assessment during the 2014-2015 school year from two school systems in Tennessee. Quantitative procedures were used to analyze differences between students 2014-2015 reading/language arts TCAP scores and their lunch status (free, reduced, and full pay). An analysis of the data is provided in Chapter 4, and implications, conclusions, and recommendations for further study are presented in Chapter 5.

CHAPTER 4
ANALYSIS OF DATA

Introduction

This chapter contains findings for each school system separately and results of data from the combination of both school systems. It also contains a summary of the findings of this study. As a first step in this analysis, data were analyzed for the city school system by testing for differences in reading/language arts TCAP scores between students in the three lunch status groups (free, reduced, and full pay) for each grade level (grade three, grade four, and grade five) separately. The city school system data were further analyzed by testing for differences in reading/language arts TCAP scores between students in the three lunch status groups (free, reduced, and full pay) in all three grade levels combined.

The data from the county school system were analyzed by testing for differences in reading/language arts TCAP scores between students in the three lunch status groups (free, reduced, and full pay) for each grade level (grade three, grade four, and grade five) separately. The county school system data were further analyzed by testing for differences in reading/language arts TCAP scores between students in the three lunch status groups (free, reduced, and full pay) in all three grade levels combined. Number of students used for each research analysis is represented in Table 1.

Table 1

Population Numbers of Student Reading/Language Arts TCAP Scores Used in Study

<u>TCAP Group</u>	<u>N</u>
Grade 3 City	202
Grade 3 County	621
Grade 4 City	230
Grade 4 County	610
Grade 5 City	190
Grade 5 County	582
City Grades 3, 4, 5 Combined	629
County Grades 3, 4, 5 Combined	1,813
Combined City and County Grades 3, 4, 5	2,442

Finally, the city and county school system’s reading/language arts TCAP scores for students in grades three, four, and five were combined and analyzed by testing for differences between scores for students in the three lunch status groups (free, reduced, and full pay).

Because the data were not normally distributed, the Kruskal-Wallis H, a non-parametric test, was used to identify statistically significant differences in the medians of the reading/language arts TCAP scores across the three types of lunch payment status.

Findings and Analysis of Research Question 1

Research Question 1

Is there a difference between reading/language arts TCAP scale scores of students in grade three with regard to three types of lunch payment status (free, reduced and full pay)?

Ho1. There is no significant difference between reading/language arts TCAP scale scores of students in grade three with regard to three types of lunch payment status (free, reduced and full pay).

Test for Research Question 1 using East Tennessee City School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grade three during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 202) = 16.63, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the third grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (0.085), indicating that 8.5% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status groups. There was not a significant difference between free and reduced or between reduced and full pay lunch status. The means, pairwise differences of the medians and significance levels of third grade TCAP scale scores and lunch status are presented in Table 2. The third grade TCAP median scores by lunch status are presented in Table 3.

Table 2

Third Grade Pairwise Differences Comparison by Lunch Status (City School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	750.00	Reduced	766.50	-16.50	1.00
	750.00	Full Pay	771.00	-21.00	<.001*
Reduced	766.50	Full Pay	771.00	-4.50	1.00

Table 3

Third Grade TCAP Scale Scores (City School System)

Lunch Status	N	Median
Free	92	750.00
Reduced	10	766.50
Full Pay	100	771.00
Total	202	759.00

Test for Research Question 1 using Middle Tennessee County School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grade three during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 621) = 70.42, p < .001$. Therefore the null

hypothesis was rejected. The strength of the relationship between the third grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (.055), indicating that 5.5% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm’s sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status groups. There was not a significant difference between free and reduced or between reduced and full pay lunch status. The means, pairwise differences of the medians and significance levels of third grade TCAP scale scores and lunch status are presented in Table 4. The third grade TCAP median scores by lunch status are presented in Table 5.

Table 4

Third Grade Pairwise Differences Comparison by Lunch Status (County School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	748.00	Reduced	762.00	-14.00	.057
	748.00	Full Pay	774.00	-26.00	<.001*
Reduced	762.00	Full Pay	774.00	-12.00	.141

Table 5

Third Grade TCAP Scale Scores (County School System)

Lunch Status	N	Median
Free	398	748.00
Reduced	39	762.00
Full Pay	184	774.00
Total	621	759.00

Findings and Analysis of Research Question 2

Research Question 2

Is there a difference between reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay)?

Ho2. There is no significant difference between the reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay).

Test for Research Question 2 using East Tennessee City School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grade four during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 230) = 36.18, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the fourth grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta

Squared, was large (.159), indicating that 15.9% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm’s sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status. There was not a significant difference between free and reduced or between reduced and full pay lunch status. The means, pairwise differences of the medians and significance levels of third grade TCAP scale scores and lunch status are presented in Table 6. The third grade TCAP median scores by lunch status are presented in Table 7.

Table 6

Fourth Grade Pairwise Differences Comparison by Lunch Status (City School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	746.00	Reduced	769.00	-23.00	.050
	746.00	Full Pay	772.00	-26.00	<.001*
Reduced	769.00	Full Pay	772.00	-3.00	1.00

Table 7

Fourth Grade TCAP Scale Scores (City School System)

Lunch Status	N	Median
Free	89	746.00
Reduced	16	769.00
Full Pay	125	772.00
Total	230	762.00

Test for Research Question 2 using Middle Tennessee County School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grade four during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 610) = 45.54, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the fourth grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (0.043), indicating that 4.3% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status groups. There was not a significant difference between free and reduced or between reduced and full pay lunch status. The means, pairwise differences of the medians and significance levels of

fourth grade TCAP scale scores and lunch status are presented in Table 8 The fourth grade TCAP median scores by lunch status are presented in Table 9.

Table 8

Fourth Grade Pairwise Differences Comparison by Lunch Status (County School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	p
Free	737.00	Reduced	746.00	-9.00	.305
	737.00	Full Pay	762.00	-25.00	<.001*
Reduced	746.00	Full Pay	762.00	-16.00	.378

Table 9

Fourth Grade TCAP Scale Scores (County School System)

Lunch Status	N	Median
Free	385	737.00
Reduced	32	746.00
Full Pay	193	762.00
Total	610	746.00

Findings and Analysis of Research Question 3

Research Question 3

Is there a difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay)?

Ho3. There is no significant difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay).

Test for Research Question 3 using East Tennessee City School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grade five during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 190) = 38.24, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the grade five reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was moderate (.073), indicating that 7.3% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status and the reduced and full pay lunch status groups. There was not a significant difference between the reduced and free lunch status groups. The means, pairwise differences of the medians and significance levels of fifth grade TCAP scale scores and lunch status are presented in Table 10. The fifth grade TCAP median scores by lunch status are presented in Table 11.

Table 10

Fifth Grade Pairwise Differences Comparison by Lunch Status (City School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	747.00	Reduced	753.00	-06.00	1.00
	747.00	Full Pay	785.00	-38.00	<.001*
Reduced	753.00	Full Pay	785.00	-32.00	<.001*

Table 11

Fifth Grade TCAP Scale Scores (City School System)

Lunch Status	N	Median
Free	82	747.00
Reduced	19	753.00
Full Pay	89	785.00
Total	190	766.00

Test for Research Question 3 using Middle Tennessee County School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grade five during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 582) = 42.42, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the fifth grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (.033), indicating that 3.3% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free lunch status group and the full pay lunch status group. There was not a significant difference between the reduced and full pay lunch status groups or between the free and reduced lunch status groups. The means, pairwise differences of the medians and significance levels of fifth grade TCAP scale scores and lunch status are presented in Table 12. The fifth grade TCAP median scores by lunch status are presented in Table 13.

Table 12

Fifth Grade Pairwise Differences Comparison by Lunch Status (County School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	744.00	Reduced	750.00	-06.00	.167
	744.00	Full Pay	762.00	-18.00	<.001*
Reduced	750.00	Full Pay	762.00	-12.00	.323

Table 13

Fifth Grade TCAP Scale Scores (County School System)

Lunch Status	N	Median
Free	343	744.00
Reduced	43	750.00
Full Pay	196	762.00
Total	582	750.00

Findings and Analysis of Research Question 4

Research Question 4

Is there a difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to the three types of lunch payment status (free, reduced and full pay)?

Ho4. There is no significant difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to three types of lunch payment status (free, reduced and full pay).

Test for Research Question 4 using East Tennessee City School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grades three, four, and five combined during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 629) = 80.68, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the third, fourth, and fifth grade combined reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (.040), indicating that 4% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status and between the reduced and full pay status groups. There was not a significant difference between the reduced and free lunch status groups. The means, pairwise differences of the medians and significance levels of third, fourth, and fifth grades combined TCAP scale scores

and lunch status are presented in Table 14. The combined third, fourth, and fifth grade TCAP median scores by lunch status are presented in Table 15.

Table 14

Third, Fourth, and Fifth Grade Combined Pairwise Differences Comparison by Lunch Status (City School System)

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	747.00	Reduced	759.00	-12.00	.324
	747.00	Full Pay	776.00	-29.00	<.001*
Reduced	759.00	Full Pay	776.00	-17.00	<.007*

Table 15

Third, Fourth, and Fifth Grade TCAP Scale Scores (City School System)

Lunch Status	N	Median
Free	267	747.00
Reduced	45	759.00
Full Pay	317	776.00
Total	629	762.00

Test for Research Question 4 using Middle Tennessee County School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students who were in grades three, four, and five combined during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 1,813) = 153.44, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the third, fourth, and fifth grade combined reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (.041), indicating that 4.1% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status, a significant difference between the free and reduced lunch pay status groups, and a significant difference between the reduced and full pay lunch status groups. The means, pairwise differences of the medians and significance levels of third, fourth, and fifth grades combined TCAP scale scores and lunch status are presented in Table 16. The combined third, fourth, and fifth grade TCAP median scores by lunch status are presented in Table 17.

Table 16

*Third, Fourth, and Fifth Grade Combined Pairwise Differences Comparison by Lunch Status
(County School System)*

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	743.00	Reduced	755.50	-12.50	.001*
	743.00	Full Pay	767.00	-24.00	<.001*
Reduced	755.50	Full Pay	767.00	-11.50	.014*

Table 17

Third, Fourth, and Fifth Grade TCAP Scale Scores (County School System)

Lunch Status	N	Median
Free	1126	743.00
Reduced	114	755.50
Full Pay	573	767.00
Total	1813	752.00

Test for Research Question 4 using Combined East Tennessee City School System Results and Middle Tennessee County School System Results. A Kruskal-Wallis H test was conducted to evaluate differences among the reading/language arts TCAP scale scores of students in the combination of a city school system in east Tennessee and a county school system in middle Tennessee who were in grades three, four, and five combined during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay). The test, which was corrected for tied ranks, was significant, $\chi^2(2, N = 2,442) = 257.33, p < .001$. Therefore, the null hypothesis was rejected. The strength of the relationship between the third, fourth, and fifth grade combined reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small (.041), indicating that 4.1% of the variance of the TCAP scale scores were accounted for by the lunch statuses.

Follow-up tests were conducted to evaluate pairwise differences among the three groups, controlling for Type I error across tests using the Holm's sequential Bonferroni approach. The results of the tests indicated a significant difference between the free and full pay lunch status, a significant difference between the free and reduced lunch pay status groups, and a significant difference between the reduced and full pay lunch status groups. The means, pairwise differences of the medians and significance levels of third, fourth, and fifth grades combined TCAP scale scores and lunch status are presented in Table 18. The combined third, fourth, and fifth grade TCAP median scores by lunch status are presented in Table 19.

Table 18

East Tennessee City System and Middle Tennessee County System Combined Third, Fourth, and Fifth Grade Pairwise Differences Comparison by Lunch Status

Lunch Status	Median	Comparison Group	Median	Difference in Median	<i>p</i>
Free	744.00	Reduced	756.00	-12.00	<.001*
	744.00	Full Pay	769.00	-25.00	<.001*
Reduced	756.00	Full Pay	769.00	-13.00	<.001*

Table 19

City County Combined TCAP Scale Scores

City County Combined Lunch Status	N	Median
Free	1393	744.00
Reduced	159	756.00
Full Pay	890	769.00
Total	2442	753.00

Chapter Summary

Chapter 4 presented the 4 research questions along with the 4 associated hypotheses. Also included were the analyses of the data and the related tables. Chapter 5 summarizes and interprets the findings and presents conclusions based on the analysis. In closing, recommendations for practice and recommendations for further research are presented.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The final chapter of this study includes findings, conclusions, and implications for further research. This study evaluated the achievement gap between economically disadvantaged and non-economically disadvantaged students through a different lens than the current NCLB definition. The study separated the scores in the economically disadvantaged subgroup into two distinct groups; students who qualify for free lunch and students who qualify for reduced lunch benefits.

The purpose of this study was to determine if there was a difference between a student's reading/language arts TCAP score and their lunch status for students in grades three, four, and five within two school systems in Tennessee. The results provided evidence that there is a significant difference in student's reading/language arts TCAP score within the three categories of lunch status (free, reduced, and full pay).

Findings

Research Question 1

Research question 1 asked if there were differences among the reading/language arts TCAP scale scores of students who were in grade three during the 2014-2015 school year with regard to the three types of lunch payment status (free, reduced, and full pay).

Results for East Tennessee City School District. The study revealed no significant difference between the reduced and full pay lunch status groups. The study also found no significant difference between the free and reduced lunch status groups. The study did find a significant difference between the free and full pay lunch status groups. The strength of the

relationship between the third grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Results from Middle Tennessee County School District. The study revealed no significant difference between free and reduced or between reduced and full pay lunch status. The study did find a significant difference between the free and full pay lunch status groups. The strength of the relationship between the third grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Research Question 2

Research question 2 asked if there was a difference between reading/language arts TCAP scale scores of students in grade four with regard to three types of lunch payment status (free, reduced and full pay).

Results for East Tennessee City School District. The study revealed no significant difference between the reduced and full pay lunch status groups. The study also revealed no significant difference between the free and reduced lunch status groups. The study did find a significant difference in the fourth grade reading/language arts TCAP scores between the free and full pay lunch status groups. The strength of the relationship between the fourth grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was large.

Results from Middle Tennessee County School District. The study revealed no significant difference between free and reduced lunch status groups. The study also found no significant difference between reduced and full pay lunch status. The study did find a significant difference between the free and full pay lunch status groups. The strength of the relationship between the

fourth grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Research Question 3

Research question 3 asked if there was a difference between reading/language arts TCAP scale scores of students in grade five with regard to three types of lunch payment status (free, reduced and full pay).

Results for East Tennessee City School District. The study revealed no significant difference between the free and reduced lunch status groups. The study did find a significant difference in the fifth grade reading/language arts TCAP scores between the free and full pay and between the reduced and full pay lunch status groups.. The strength of the relationship between the grade five reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was moderate.

Results from Middle Tennessee County School District. The study revealed no significant difference between the reduced and full pay lunch status groups. The study also revealed no significant difference between the free and reduced lunch status groups. The study did find a significant difference in the fifth grade reading/language arts TCAP scores between the free and full pay lunch status groups. The strength of the relationship between the fifth grade reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Research Question 4

Research question 4 asked if there was a difference between reading/language arts TCAP scale scores of students in grades three, four, and five combined with regard to the three types of lunch payment status (free, reduced and full pay).

Results for East Tennessee City School District. The study found no significant difference between the free and reduced lunch status groups. The study did find a significant difference between the free and full pay lunch status groups. The study also found a significant difference between the reduced and full pay lunch status groups. The strength of the relationship between the third, fourth, and fifth grade combined reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Results from Middle Tennessee County School District. The study found a significant difference between the free and full pay lunch status groups. The study also found a significant difference between the free and reduced lunch pay status groups, and a significant difference between the reduced and full pay lunch status groups. The strength of the relationship between the third, fourth, and fifth grade combined reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Results from Combined East Tennessee City School System Results and Middle Tennessee County School System Results. The study found a significant difference between the free and full pay lunch status groups. The study also found a significant difference between the free and reduced lunch pay status groups, and a significant difference between the reduced and full pay lunch status groups. The strength of the relationship between the third, fourth, and fifth grade combined reading/language arts TCAP scale scores and the student lunch statuses, as assessed by Eta Squared, was small.

Conclusions

The analysis of data revealed that in every case studied, the difference in reading/language arts TCAP scale scores were significantly different between the students in the free lunch status and the students in the full pay lunch status groups. The data did not show this consistency in the relationship between the reduced and free lunch status groups. When analyzed by grade level, the sample size, while relatively large, was still smaller than looking at all data combined. In the grade level sample analysis, the difference between the reading/language arts TCAP scale scores between students in the reduced lunch group and students in the full pay lunch status group was not significant. The exception to this was in the fifth grade scores for the city school system. Also, in all cases the number of students included in the reduced lunch category was relatively small and considerably smaller in comparison to the free and full pay lunch status groups.

When the grade levels were combined, the difference in the reading/language arts TCAP scale scores of the students in the reduced pay lunch status group and the full pay lunch status group was significant in the both the city and county school systems. When both school systems were combined, the differences between all lunch status groups were significant.

The results of combining the reading/language arts scale scores of students in third, fourth, and fifth grades in the city and county school system revealed significant differences between all lunch status groups. This supports the assertion of the researcher that accountability measures would be more precise if the free lunch status group and the reduced lunch status group was separated, rather than combined into one group.

Recommendations for Practice

Both the research literature and the results of this study suggest that there are differences in the two groups of students that make up the current subgroup labeled economically disadvantaged. Students in the free lunch group and students in the reduced lunch group can lead very different lives and have vastly different needs. These needs include academic, economic, behavioral, and socio-emotional.

When attempting to close the achievement gap between economically disadvantaged and non-economically disadvantaged students, the school staff should first and foremost know their students and their families. Schools and school systems should intentionally educate all staff on research and needs of children and families in poverty. Schools should purposefully align all available resources to support struggling students and families. A one size fits all intervention for struggling students will never close the current achievement gaps.

School leaders should constantly communicate high expectations for all students. Real life success stories of children in poverty should be an ongoing part of school culture and professional development. Leaders should intentionally foster a culture of high expectations for all students, while simultaneously creating a culture of high support for meeting individual student and family needs. Also, schools and school systems should develop intervention teams that look at the needs and risk factors for struggling students. This team should help coordinate all available resources to make sure that student needs are met. This team should also regularly analyze all data to check progress and adjust the support accordingly.

Finally, state and federal officials should carefully re-examine all accountability measures. Data from the No Child Left Behind era suggest that the economic achievement gap is not closing, despite the strict accountability measures that have been placed on schools and

teachers. The measurement should move from the measurement of gaps, to the measurement of continued growth for each group of students. It is time the federal and state governments move from putative agencies, to support agencies and address the real problems, rather than the perceived problems promoted by political propaganda and special interest groups.

A greater understanding of poverty and deeper relationships with students and families, along with intentional interventions and coordinated services will make differences in the lives of individual students. We will only be able to close the gap when we truly understand the lives of the students who live in poverty. The findings of this study suggest that more precise measurement of the economically disadvantaged subgroup could further this understanding.

Recommendations for Further Study

Based on the results of this study, I recommend the following areas for further study.

1. Replication of this study using data from the entire state of Tennessee.
2. Replication of this study analyzing gender and race within each lunch status group.
3. Replication of this study using data from all grade levels of TCAP and EOC testing in the city school system, the county school system, and with state wide data.
4. Analyze trend data for over time for student groups used in this study.
5. Compare the results of the economically disadvantaged subgroup achievement gap during the 2014-15 school year in the two schools systems to the 2015-2016 economically disadvantaged subgroup achievement gap in order to see if the gaps remain the same with the state of Tennessee's new formula for determining economically disadvantaged status.

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APPENDIX

Director's Permission Letter

January 4, 2016

Dear Director of Schools,

As a student at East Tennessee State University, I am currently involved in the dissertation phase of the Education Leadership and Policy Analysis doctoral program. The purpose of my dissertation, *Measuring the Achievement Gap*, is to determine if there are significant differences in reading/language arts TCAP scores of students in grades three, four, and five with regard to three types of lunch status: free, reduced, and full pay.

I am seeking permission to access reading/language arts TCAP scores and lunch status for students in grades three, four, and five during the 2014-15 school year. Student names will be removed in order to insure that student information is non-identifiable.

Thank you for your participation in this research. If you have questions you may contact me at 423-823-2080 or email at bryants@gcschools.net. The results of this research will be available to you upon request.

Sincerely,

Suzanne Bryant

Assistant Director of Schools for Instruction, Greeneville City Schools

Permission is granted for Suzanne Bryant to utilize the 3rd, 4th, and 5th grade district reading/language arts TCAP scores of students enrolled during the 2014-15 school year.

Signature of Director of Schools

Date

VITA

SUZANNE CLAIBORNE BRYANT

Personal Data: Date of Birth: January 8, 1968
 Place of Birth: Monterrey, California
 Marital Status: Married

Education: Public Schools, Campbell County, Tennessee
 The University of Tennessee, Knoxville, Tennessee
 Elementary Education, B.S., 1990
 The University of Tennessee, Knoxville, Tennessee
 Curriculum and Instruction, M.S., 1994
 The University of Tennessee, Knoxville, Tennessee
 Educational Administration and Supervision, Ed.S., 2004
 East Tennessee State University, Johnson City, Tennessee
 Educational Leadership, Ed.D., 2016

Professional
Experience: Teacher, Union County School District, 1990-1992
 Teacher, Campbell County School District, 1992-2005
 Principal, Campbell County School District, 2005-2007
 Data/Curriculum Coordinator, Campbell County School District,
 2007-2010
 Assistant Director of Schools for Instruction, Greeneville City School
 District, 2010 – present

Career Goal: To use the abilities and talents God has given me to glorify Him and make
 a positive difference in the lives of children