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Principal Leadership and Its Influence on Educational Outcomes for High Need Student Populations

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PRINCIPAL LEADERSHIP AND ITS INFLUENCE ON EDUCATIONAL OUTCOMES FOR HIGH NEED STUDENT POPULATIONS

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As a result of the achievement gaps that exists between high poverty and low poverty student groups, as well as accountability criteria mandated by the federal No Child Left Behind Act (2001), which requires significant improvements in student achievement for low-income and minority students, school districts must now implement strategies that assist them in obtaining outcomes that demonstrate significant growth in achievement for these students. One strategy considered for improving achievement in high poverty schools suggests assigning the best educator resources to the most disadvantaged groups. This study more closely examines the theory about the impact of leadership for low income groups and acknowledges the negative impact of poverty on student achievement outcomes. Despite poverty's negative impact, the researcher hypothesizes that principal leadership can mitigate the impact of poverty to improve student achievement for disadvantaged student groups.

In order to examine the proposed theory, the study employs a quantitative research design using a secondary dataset from the New Teachers Center to explore relationships that exist between key variables including principal leadership, school culture, student achievement and school poverty. Further the research explores whether the influence of principal leadership when used to impact the school culture is more significant in high poverty schools than low poverty schools in hopes that the information

will contribute to the conversation for developing strategies that improve achievement for disadvantaged student groups.

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CHAPTER 1

INTRODUCTION

In 2009, the National Assessment of Educational Progress (NAEP) developed a common set of standards and metrics across subject areas to allow for consistent administration and monitoring of student progress. These tools provided the nation with a "common yardstick" (Aud et al., 2010) for assessing student growth over time. A review of this assessment shows that the average national reading scale score for fourth-grade students was 221. This number means little on its own. However, when examining it in the context of the same scores for fourth graders from 2007-2009, one is more clearly able to understand its significance. The NAEP finds that despite the efforts of teaching staff, this score remained nearly unchanged. The pattern of stagnation is an indication that there may be a larger problem occurring within the American schools that is resulting in little improvement to student achievement.

Although the statistic above demonstrates an overall lack of growth in reading for fourth-grade students in the United States, reading achievement for low-income students as defined by the National School Lunch Program (NSLP), appears more alarming. The eligibility standards from the NSLP, the National Assessment of Education Progress (Annie E. Casey Foundation, 2010) finds that 83% of the nation's fourth graders from low-income families had reading skills below the level of proficiency. Furthermore, Aud et al. (2010) find that reading scores for low-income students are typically 28 points lower than the achievement of students who did not qualify for free or reduced-price lunch.

Poverty, Race and the Achievement Gap

A comparison of the student achievement data for low-income students and their more affluent counterparts suggests that lower income students are advancing academically at a pace that is slower than higher income students. The differences between achievement outcomes serves as evidence of an achievement disparity or gap between the two student groups. Further, a similar disparity is observed between Caucasian students and African American students. Although being African American on its face is not synonymous with being poor or low achieving, studies (Aud et al., 2010; Lippman, Burns & McArthur, 1996) indicate that these factors are often present in school environments where there are high percentages of African American students and high levels of poverty.

Aud et al. (2010) say that African American students are 47% more likely to attend a high-poverty school. Further a relationship between African American students and low student achievement is supported by the National Assessment of Education Progress (Annie E. Casey Foundation, 2010) student achievement statistics that continue to illustrate a persistent achievement gap between the two student groups. . The presence of these disparities inspires research that hopes to discover answers about how to close the gap and improve achievement for poor students.

Aladjem, Boyle, and Kurki (2005) are among the researchers who have explored some of the reasons behind the existing academic crisis. They state that students are most likely to be enrolled in schools within their neighborhoods. Furthermore, Kannapel and Clements (2005) say that many of the worst performing schools in the nation are also the most impoverished schools. Lippman et al (1996) further support this claim with

research that demonstrates that as poverty increases student achievement decreases. Additionally, they find that many of the poorest schools are located within urban settings where there are high percentages (about 30%) of minority students, (e.g. African American, Hispanic and Pacific Islander) who are often poor. Lippman et al define poverty by the percentage of students who are eligible for free and reduced lunch, a number that they say is greater than the percentage of poor students in both suburban and rural districts. Acknowledging a relationship between poverty, race, and poor performance on state assessments is not sufficient to conclude the existence of a causal relationship; however, it does suggest that some schools may face severe problems in meeting the educational needs of poor, African-American, other minority and disadvantaged students and preparing these students for later life success.

In terms of defining high poverty schools and students, Clotfelter, Ladd, Vigdor, and Wheeler (2006) say that standards of practice for measuring the level of poverty at the school level are based on determining the percentage of students who both apply and are eligible for free or reduced price lunches through the federally funded school lunch program. A student's free or reduced-price lunch status is often used as a proxy that represents poverty concentration in schools (Aud et al., 2010). The U.S. Department of Education (Aud et al., 2010) define high-poverty schools as those schools where at least 75% of the students are eligible for free or reduced-price lunches.

In addition, Aud et al. (2010) indicate that a large percentage of the students who qualify for free and reduced-price lunches are often African American (40%) and Hispanic (42%) students. Research (Clotfelter et al., 2006; Kannapel & Clements, 2005; Lippman et al., 1996) has shown that the schools attended by the above student groups

are also schools that tend to experience more challenges in improving the achievement of these students. This suggests that African American and other minority students who are low-income are more likely to attend schools with other low-income and minority students. Additionally, the literature suggests that minority and poor students are less likely to receive the support they need to overcome academic and school location challenges.

Further supporting this hypothesis is an examination of achievement gains for disadvantaged students. Researchers (Aud et al, 2010; Clotfelter et al., 2006; Kannapel & Clements, 2005) say that the achievement gains for poor minorities are particularly low when compared to students who have more financial resources. This is especially true of those who are educated in schools where there are large percentages of low-income students as in the case of high-poverty schools that can have a low-income population as high as 100%, suggesting a correlation between poverty and student achievement. The theory that there are different achievement outcomes that exist between these groups is further supported by data representing the increase in the number of students from high-poverty schools that require additional academic support (Aud et al., 2010).

The Effects of Concentrated Poverty

Borman and Dowling (2010) offer an additional explanation for the student achievement differences between these groups by suggesting that differences in achievement are the result of teacher bias, that is, a teacher's preference for interacting with higher income students. Because researchers (Aladjem et al., 2005; Shah, 2012) conclude that students are most likely to attend schools in their neighborhood, it is assumed that students from high poverty neighborhoods will most likely attend school

with other low-income students. Aud et al. (2010) find that African American children are more likely to attend schools that are considered high poverty. This research further suggests that poor and African-American students who attend schools in neighborhoods where there is a higher concentration of poverty are most likely to attend schools that have few higher income classmates. As such, the students who attend schools with high percentages of poor and/or minority students have an increased likelihood of being subjected to teacher bias that favors high-income students and thus it is the conjecture of the researcher that as a result of the teacher bias that these student may be less likely to receive the skills that will equip them with the tools needed for school success.

Additionally, in regard to the impact that student disadvantages have on achievement, the Coleman Study (1966) finds that the schools influence student achievement. This work was further developed by Borman & Rachuba (2001) and others (Kennedy, Jung, Orland, & Myers, 1986; Lippman et al., 1996; Myers, 1985) who identified both race and poverty as having a negative impact on student achievement. The Borman & Rachuba study (2001) concludes that when both low-income and higher income students attended low-poverty schools, the student achievement results were generally higher. In contrast, when students, regardless of income, attended high-poverty schools, their achievement was negatively impacted as a result of attending the high-poverty schools.

Borman and Rachuba (2001) say that the school's composition, defined by both racial and socioeconomic distribution, can be used to predict student achievement and is up to 150% more important than the student's individual race or class in predicting student achievement. This suggests that effects associated with a school (e.g., teacher

practices, leadership, and student population) are more likely to impact student achievement than are individual family (or student) effects. Bidwell and Kasarda (1980) say that schools themselves do not result in learning, but rather the school provides the environment that can support the learning that occurs.

The Impact of Urban Poverty

The condition of concentrated poverty is one that is often identified within urban settings and indicative of the presence of more severe problems related to poverty, race, and student achievement. Lippman et al. (1996) say that urban schools typically have higher percentages of African American and Hispanic students than suburban schools. Additionally, the authors suggest that minority students comprise the vast majority of poor students within urban schools. Lippman et al. (1996) say that 40% of urban students attend high-poverty schools that are identified as schools with concentrations of poverty greater than 40%. This suggests that African American and Hispanic students are more likely to attend schools that have high concentration of poor students and are thus more likely to have increases in the problem areas that result from poverty.

Similar to the achievement outcomes found in schools with both high degrees of poverty and those attended by a large percentage of African-American and Hispanic students, urban schools also have lower achievement levels than nonurban schools. Lippman et al. (1996) find that achievement as measured by scores on achievement tests for urban eighth graders were generally lower than the achievement tests scores for suburban eighth graders. Additionally the authors say that suburban students are more often white. Further, Aud et al. (2010) find that suburban Whites are less often poor. This suggests that minority students are most likely to live in urban settings and attend schools

where there are high concentrations of poverty, factors that are likely to correlate with subpar student achievement.

Not only do the above statistics establish a link between urban schools and high poverty schools, but they also suggest that urban students may be overrepresented in the statistics and thus indicate the presence of even more severe education and life consequences for these students. Lippman et al. (1996) hypothesize that the characteristics of both poverty and an urban setting together produce effects that are more devastating than they would be if imposed on schools in nonurban locations.

Another factor that is negatively impacted by poverty is educational attainment. Lippman et al. (1996) defines educational attainment as the amount of education and credentials attained as measured by high school and postsecondary completion rates. The researchers say that when compared to their suburban and rural counterparts, urban students were less likely to graduate from high school on time, a factor that is said to be influenced by the school's location, yet separate from the concentration of disadvantaged students. Because researchers (Cantor, Smolover & Stamler, 2010; Lippman et al., 1996) say that educational attainment is strongly linked to economic success, one can assume that because the poor and more specifically, the urban poor contribute significantly to the percentage of students who score lower on assessments (Kannapel & Clements,2005), there may be barriers to their achieving this level of success.

Limited Access to High Quality Resources

Inequitable distribution of resources present barriers that inhibit the success of students. Particularly, the absence of suitable resources is negatively correlated with a student's socioeconomics (Schmidt, Cogen & McKnight, 2011). Schmidt et al. (2011)

say that inequitable student achievement outcomes are the result of unequal educational learning opportunities or limited exposure to the resources that advance learning. This suggests that students' access to adequate learning opportunities is restricted as a result of their family's financial resources.

Student Achievement

The above scenario draws a link between student achievement outputs and resource inputs. This framework has its foundation in education production function studies. Hanushek (1979) says that student achievement is influenced by primary inputs that can include many factors such as student's peers, family, or schools that impact student achievement. The hypothesis that the student achievement outcomes for poor students are hindered by inadequate resources, spurs thinking about which strategies assist in improving the plight of these students.

Gamoran and Long (2006) say that modern policies are needed that redistribute resources in a way that assists poor students to obtain student achievement outcomes that are similar to those of their higher income counterparts. Among the policy changes advocated by the researchers are those that provide the best resources to the students who attend high poverty schools, suggesting that current educational policies may distribute resources in a way that disadvantages the poor. Although this study finds that the variations between schools has little influence on student achievement, it demonstrates more significant effects occurring as a result of school-influenced factors such as decisions about how resources are distributed.

Further, researchers (Borman & Rachuba, 2001; Gamoran & Long, 2006; Lippman et al., 1996) find that poverty is a factor that when concentrated may act as a

deterrent to improved student achievement outcomes. Despite the dismal forecast about the plight of low-income students in high-poverty schools, Gamoran and Long (2006) say that negative factors associated with these schools can be negated by providing greater benefits to disadvantaged students than are provided to their more affluent peers.

Clotfelter et al. (2006) say that schools with the highest poverty levels often have the lowest test scores and receive the least experienced and qualified teachers and principals. Furthermore, their study finds that ratings for the principal leadership in these schools are typically among the lowest. These statistics reveal problems that contribute to the inequity that exists among schools. It can be assumed that without effective teachers, principals, and other quality resources in these schools, the schools will continue to encounter difficulty in improving student achievement outcomes for the most disadvantaged groups.

Quality Educators

In terms of securing high-quality teachers, Clotfelter et al. (2006) find that high-poverty schools have the highest percentage of teachers with "weaker average qualifications," (p. 13) as identified by experience level, licenses, and graduation from competitive undergraduate institutions. Additionally, the researchers say that the number of inexperienced teachers in high-poverty schools has continued to rise over a 10-year period. This statistic suggests that high-poverty schools are without staff who are deemed effective and thus appear to lack the human resources that contribute to improved student achievement outcomes. Thus, these schools have limited capacity to improve student learning.

Resource Infusion

Clotfelter et al. (2006) say that in terms of equal education opportunities or resource inputs across schools, that students in high-poverty schools should have resources (e.g., teachers and principals) that are at least "similar in quality" (p. 5) to their more advantaged student counterparts. Like Coleman (1966) the authors acknowledge that this strategy alone would not be sufficient to result in student achievement outcomes for poor students that are equal to more advantaged students. Instead, Clotfelter et al. (2006) suggests that in order to arrive at this outcome, that disadvantaged students require a higher quality resource to compensate for family disadvantages such as poverty.

Still other researchers (Gamoran & Long, 2006) agree with theories posed by Clotfelter et al. (2006) and advocate for the infusion of quality resources to assist students who attend high-poverty schools achieve at improved levels. Additionally the authors hypothesize that higher quality resources will assist poor students to achieve at a higher rate despite their race or socioeconomic status. Their research offers hope to the poorest students; not only of school success but of life success by suggesting that with improved resources these students can also access a quality education and, therefore gain access to improved educational, vocational and higher earnings opportunities that are believed to occur as a result of securing a quality education.

Inhibited Life Success

While education may be viewed as a vehicle that assists students in gaining access to the experiences that lead to both personal and financial success, an examination of student achievement outcomes across socio-economic groups reveal disparities among the most disadvantaged groups. Researchers (Hernandez, 2011; Lippman et al., 1996)

find that education attainment correlates strongly with economic success and better life outcomes; yet find that poorer students often have lower educational attainment, as indicated by both graduation rates and test scores. Because a relationship exists between education attainment and one's lifetime earnings, substance abuse, and incarceration rates (Kutash, Nico, Gorin, Tallant, & Rahmatullah, 2010), we can assume that as a result of poor children being at risk for lower education attainment, they are also at risk for having lower quality life outcomes (e.g., higher incarceration, substance abuse, and teen pregnancy rates). This suggests that poorer students may not have access to the same life success as their higher income counterparts as a result of their academic preparation or lack thereof.

The decline in student achievement outcomes and related life success for some of the nation's students may cultivate a perception among other industrialized nations that America's schools have lost their educational prestige among the world's economic, educational, and technological elite. Cantor et al. (2010) say that in 1960, the United States was ranked number one in high school graduation rates. However, by 2006, the authors indicate that the ranking had slipped to 18 among 24 industrialized nations. In addition, 30% of American schools are failing to make adequate yearly progress (AYP; U.S. Department of Education, 2008). Conley (1991) posits that America's decline in global prestige is likely the result of an educational system in crisis and has spurred a growing awareness of this problem that has motivated much of the education reform phenomenon and a particular focus on low-achieving schools and students.

Purpose of the Study

This study acknowledges the negative impact of poverty in influencing student achievement outcome, as well as the importance of resources that are necessary to influence the achievement outcomes for low income students. As a result, the study seeks to more closely examine the school leader's role in mitigating the influence of poverty for low income student groups.

While researchers (Clotfelter et al., 2006; Coleman et al., 1966; Gamoran & Long, 2006) have studied the role that high-quality resources have played in improving student achievement for high poverty students, few researchers have explicitly explored the influence of principal leadership in respect to high-poverty students' achievement. Leithwood and Day (2008) say that new school accountability efforts are responsible for the renewed interest in leadership effectiveness and understanding its contribution to student achievement. Shelton (2010) says that states are most interested in understanding the role that principals play in shaping teaching and learning cultures within their schools and are using this information to recruit, prepare, and train their principals to become more effective leaders.

In response to the need to learn about resources and their impact on student achievement outcomes, this study acknowledges the challenges in improving student achievement outcomes when poverty is concentrated at a school as posed by Coleman (1966) and others (Borman & Rachuba, 2001; Cantor et al., 2010; Gamoran& Long, 2006; Lippman et al., 1996). However unlike Coleman, the current research posits that resources do matter and seeks to learn whether the human resource of principal

leadership has a more pronounced influence on student achievement for the poorest students.

Although many studies (Hallinger, 2003; Hallinger & Heck, 1996; Heck, 1992; Leithwood & Reihl, 2003; Leithwood, Louis, Anderson & Wahlstrom, 2004; Waters, Marzano, & McNulty, 2005) find that a positive relationship exists between principal leadership and student achievement, none of these studies has established a direct link between principals' effectiveness and student achievement improvement. This begs into question an understanding of why schools are looking at leadership as a solution for improving student achievement instead of other strategies that may be more directly linked to improved student achievement. Robinson, Lloyd, and Rowe (2008) conclude that one of the major reasons for the interest in exploring leadership's impact on student achievement is based on a belief that school leaders can assist in reducing the educational disparities between "social and ethnic groups" (p. 636).

While research studies (Leithwood and Levin, 2005; Robinson et al, 2008) have acknowledged the influence of leadership, these studies do not directly identify how leadership contributes to the changes that occur in student achievement outcomes. Of the more than 37 meta-analytic studies that exist, Robinson et al. (2008) say that few identify more than an indirect relationship between principal leadership and student achievement. Still other researchers (Leithwood et al., 2004) have found that troubled schools cannot be improved without the assistance of effective leadership, suggesting a more direct relationship between the principal's practice and student achievement outcomes.

Researchers (Leithwood & Levin, 2005; Waters, Marzano & McNulty, 2003) have attempted to bring clarity to the above juxtaposition by acknowledging both the

significance of the principal's role and their indirect contribution to student achievement by explaining how leadership influences other factors within the school that directly impact student achievement outcomes. Leithwood (2005) hypothesizes that sources of school leadership such as principals have a direct effect on school and classroom practices that result in direct effects on student learning. Furthermore, Hallinger and Heck (1996) find that a principal's leadership makes the biggest impact on student learning when the leadership focuses on internal school processes such as academic expectations, norms, and school policies, factors believed to more directly influence student achievement. The National School Climate Center (2007) cites these factors as being representational of the schools' climate, culture and learning environment. Leithwood and Levin's (2005) work suggests that principals are able to influence student achievement by influencing variables (e.g. school culture and the learning environment) that are most closely connected to students.

Leithwood et al. (2004) say that conditions representing the school's culture directly influence student learning. Hallinger's (2003) research further supports the idea about how principal leadership impacts student learning. Additionally, the author calls out culture as a factor that principals can impact that also touches student achievement. Culture, climate and the learning environment have been identified by scholars (Fans & Maher, 1990; Stop, 1994; Thacker & McInerney, 1992; National School Climate Center, 2007) as factors that principal impact that connect to student learning. That said, these researchers suggest that by playing an active role in creating positive cultures (and school environments), principals support positive student achievement outcomes.

Explicitly related to the student achievement outcomes of poor students, Leithwood et al. (2004) say that a positive school culture helps negate the environmental challenges often found in more challenging schools. Because high-poverty schools typically have lower achievement levels, this logic is important as it suggests that changes to the school culture circumvent the challenges of poor students' achievement. Most notable in the process of changing school culture is the role of principal leadership, which Leithwood et al. (2004) say is a necessary component for improving the quality of low-performing schools.

In terms of the leadership effects associated with the principal role, Leithwood et al. (2004) say that the influence of leadership makes the largest contribution when it is used where it is needed most. This sentiment is supported by other studies (Clotfelter et al., 2007; Leithwood & Day, 2008) that find higher quality resources provided to low-income schools result in the students at these schools overcoming their achievement deficits. These studies identified principal leadership as one of several resources for which quality can be improved to result in higher student achievement.

Principal leadership as a resource that contributes to student achievement growth has been widely studied. Many of these studies suggest that leadership is a factor that improves student achievement outcomes for high-poverty students. Cantor et al. (2010) say that in order to eliminate the achievement gap, the quality of principals, teachers and administrator resources provided to high-poverty schools must be of a higher quality as demonstrated by years of experience and advance degrees. In terms of higher quality, Clotfelter et al (2006) says that quality is often defined by experience, licenses and graduation from competitive colleges and universities. Thus the principal leaders of high-

poverty schools must be among the most effective leaders in order to improve achievement.

Despite growing support to improve the quality of leadership and other resources in high-poverty schools, there are few studies citing principal leadership as a resource that directly correlates to improved student achievement outcomes for poor students. This suggests that there is more to learn about leadership and the factors (e.g., teacher practices, classroom environment and school culture) that it influences, precisely in relation to improving student achievement outcomes for low-income students.

The Wallace Foundation (2012) says that school leadership is identified as a priority for many school reform efforts and among the most pressing issues for public schools. In addition, Heck's (1992) studies indicate that new trends in K-12 schools find that more school districts are beginning to hold the school staff responsible for the instruction and leadership in schools. Furthermore, Heck (1992) cites examples of school districts that have removed ineffective principals as part of district reform initiatives. These examples indicate a growing support for strategies that involve improving leadership quality and support a theory about principals' leadership effect on the school environment that improve student achievement. As such, the nation is becoming witness to the emergence of a new paradigm, one that posits that effective principals can increase student achievement outcomes for all students by improving the quality of the school learning environment.

Rationale and Significance of the Study

The above discussions suggest that when examining the achievement of students from low-income households, the differences between the achievement gains of this group and their more affluent counterparts are of particular concern. The U.S. Department of Education, National Center for Education Statistics (as cited in Aud et al, 2010) reports on the historically low achievement of students who live in poverty and the achievement gap that exists between them and their higher income peers across grade levels and subject areas.

Furthermore, because low-income students are identified as a subgroup with specific achievement goals in the No Child Left Behind (NCLB) Act (2001), schools that serve large populations of low-income students appear to have more at stake while also having an increased difficulty in improving student achievement for low-income groups of students (Clotfelter et al., 2007). It is believed that these findings may advance policy changes that result in the most effective staff (and principal leaders) being assigned to the highest need schools.

It is further anticipated that the information obtained from this study will contribute to educational leadership and school reform literature. Lippman et al. (1996) hypothesized that the schools that educate America's most challenged and impoverished student populations negatively impact national student achievement outcomes. The authors further state that growth among this group must be stimulated in order to eliminate achievement disparities.

In addition, Cantor et al. (2010) find that school failures often correlate with increases in other societal problems (e.g., incarceration, dropouts, and teen pregnancy

rates) that interfere with America's ability to compete globally. The perceived failure among many schools "undermines our national obligation to children and exacts enormous economic and social costs" (Cantor et al., 2010, p. 2). Lippman et al. (1996) say that high-poverty schools account for many of the nation's dismal student achievement outcomes and indicate that as the concentration of poverty increases in schools, achievement decreases. As such, it is believed that the primary beneficiaries of this research would be school districts, schools of education with principal leadership programs, schools, and other institutions that serve communities with high concentrations of low-income students and achievement challenges.

The Wallace Foundation (2012) finds that the U.S. Department of Education has identified principals as playing an important role in helping the most troubled schools to improve student achievement. As a result, it is anticipated that this study will help school districts determine whether it is beneficial to continue focusing resources on improving the quality of principal leadership or whether those efforts and resources should be redirected to other areas of the organization that may result in a greater likelihood of success for this population.

Undoubtedly, students and staff will also benefit, and in turn, American communities and other extended social jurisdictions will benefit from the results of this study. Further, it is anticipated that the information obtained through this study can directly impact schools with large achievement gaps between disadvantaged and advantaged students, as well as assist in determining whether cultivating specific elements such as the school's culture promote improved student achievement for high-poverty students.

Research Questions

Because researchers (Leithwood et al., 2004) have indicated that a positive school environment can have a positive influence on student achievement, states such as North Carolina have begun to rely upon data generated from Teachers Working Condition Survey as a guide to improve schools (Hirsch, Sioberg, Robertson, & Church, 2010) within the state. Hirsch et al. (2010) indicate that these changes can be made quickly and can also have a positive influence on students.

Furthermore, current research has supported the development of policies that focus on improving the quality of resources that high-poverty schools receive in order to improve their student achievement. Leithwood et al. (2004) identify a link between principal leadership in high poverty schools and improved student learning. Researchers (Clotfelder et al., 2007; Leithwood & Day, 2008) say that the resources allocated to high-poverty schools should exceed the quality of those same resources provided to low-poverty schools in order to eradicate achievement gaps, and their research offers additional support for the argument that schools should provide their neediest students with the best resources as a way to eliminate achievement disparity. Therefore within this context, the study poses that having effective principals at the helm of the high-need schools can lessen the impact of poverty in order to have a positive effect on student achievement.

As a result, this study seeks to use quantitative method to examine the premise stated above and explore the impact that effective leaders have on learning environments within both high-poverty and low-poverty schools. Additionally, the study will determine whether the impact is more significant within schools based on the demographics served

by the school (i.e., low- or high-income students). Furthermore, this study will present an in-depth analysis and discussion pertinent to the above argument thereby providing further insight into the power of leadership to influence the most vulnerable school environments.

It is also anticipated that the study will assist in learning about the effectiveness of leadership and determine whether these effects can stimulate different levels of success among various groups. The following research questions will guide this investigation:

- Do high poverty and low poverty schools vary in relation to student achievement?
- Does leadership effectiveness differ among leaders in higher poverty schools versus those in lower poverty schools?
- Does a school's culture differ among higher poverty schools versus lower poverty schools?
- Does a school's culture differ as a function of leadership and does that difference vary among higher poverty schools versus lower poverty schools?

Research Position

My current role as a program manager with a large urban school district influenced my decision to select a research project addressing principal leadership and student achievement. In this role, I have held the responsibility of managing a grant that funds operations associated with a newly developed evaluation and compensation system for school principals. This initiative was formed based on a belief that effective leadership drives school improvement. It is hypothesized that improving the effectiveness of the principal results in changes to the school culture and that this change helps to foster

improved student achievement outcomes. Being in this position has allowed me to become privy to the issues faced by school districts that serve high percentages of high-poverty students.

In particular, I have become keenly aware of the existing deficits in achievement that exist between low-and high-income students. Furthermore, as a result of my work with principals and central office administrators, I have become increasingly more sensitive to the challenges that schools encounter in regard to growing achievement among high-poverty students. Because our district serves large percentages of minority, special education, and poor students, there is an increased level of accountability from district board members, parents and community members, and the State Department of Education to ensure that we are providing an equitable and high quality education to all students. The presence of issues of disparity and increased accountability have spurred what I believe to be a sense of urgency within this district as well as other districts that serve large percentages of poor students to develop strategies that can assist in closing the achievement gap between poor students and their more affluent peers.

Although examining principal leadership is but one of many strategies that our school district is attempting to utilize as part of our efforts to improve achievement, we know that other human capital initiatives like those focused on developing a quality teacher corps are hinged on ensuring that quality leaders are in all of our schools, but particularly in those schools that have an increased level of need as indicated by high levels of poverty, disability rates, and low student achievement outcomes. Understanding the role that principals can play in recruiting and developing teachers and shaping the school culture has provided me with insight that assists in understanding the complexity

of both the issues and the proposed solutions related to improving resources for low-income students with the intent of improving student achievement outcomes.

Research Strategy

In order to assist in addressing the above research questions, I have relied on a quantitative research design. The planned strategy included a review of secondary data (previously collected by the State of North Carolina) that examined leadership, school culture and student achievement within the State of North Carolina while giving consideration to the following:

- Students' free and reduced lunch eligibility; and
- Students' Accountability, teaching the Basics with an emphasis on high educational standards, and maximum local Control (ABC) results;

Summary of the Methods

For the study, I am interested in learning how leadership influences student achievement outcomes within high poverty schools. As a result, I conducted explanatory research to examine leadership and school culture in relation to high poverty schools. I will use a secondary dataset obtained from the New Teacher's Center to perform relevant analysis that assists in answering key research questions.

The dataset included student achievement data from the North Carolina ABC assessments and information from the State's Teacher Working Condition Survey that assesses both leadership effectiveness and the strength of the school culture. These metrics assisted me in learning about how the independent variables work through the study's dependent variable.

The independent variables for this study are identified as follows:

- IV_1=Principal Leadership
- IV_2=School Culture as measured by the following variables in the Teaching and Learning Survey
    - Time
    - Facilities and Resources
    - Community Support
    - Student Conduct
    - Teacher Leadership
    - Professional Development
    - Instructional Practices
- IV_3=School Poverty

Additionally, I included other independent variables that serve as control variables. The variables that were included as controls include the following:

- IV_k=Various control variables
    - School Poverty (primary interest)
    - Educator Experience
    - Student Teacher Ration
    - Student Race
        - Other Minority
        - Hispanic
        - Black
        - White

Further identified as variables for the study is the dependent variable,

- DV_1=Student Achievement

Research (Hallinger and Heck, 1996 and Leithwood et al, 2004) indicates that principals influence many factors that impact student achievement. Thus this theory supports my hypothesis that effective principal leadership influences school culture in high poverty schools in a way that supports improved student achievement outcomes.

As such, I sought to determine whether a predictive relationship exists between the study's identified independent variables (e.g. leadership, culture, school poverty) and the dependent variable (student achievement). The relationships were explored by

analyzing data obtained through the Teaching and Working Conditions Survey that measures both the quality of the school's leadership and the culture.

Assumptions

This study assumes that children from low-income households attend poorer quality schools and receive fewer and inferior resources than do their lower poverty counterparts, a factor that is supported by much research. Clotfelter (2006) and Aud et al (2010) find that in particular minority and poor students receive ineffective and inexperienced teachers and other staff found to correlate with improved student achievement outcomes. It is expected that the researcher will find a similar relationship between poverty, student achievement and resource allocation among schools in North Carolina.

It is also assumed that children from lower socioeconomic backgrounds more often attend schools that are led by less effective leaders that have limited ability to impact the school's culture and thus have less influence on driving the teaching practices that can assist in bolstering student achievement outcomes. The assumption is one that is supported by the theories of Clotfelter et al. (2007) who say that minority and low-income students are most likely to be assigned staff that are ineffective and inexperienced.

It is assumed that North Carolina is not uniquely different from other states and thus, it is also assumed that in North Carolina that the most effective principals will be assigned to low poverty schools and that the less experienced principals will be assigned to high poverty schools. Additionally it is assumed that in high-poverty schools where the leader is deemed effective, the level of leadership competency influences others and has a

more significant impact on student achievement than would a similarly effective leader at a low-poverty school. Further it is believed that within the low-poverty school that the leader's influence will have less of an impact because the students may come to school with fewer barriers to learning and are first influenced by their home and family culture, which may be more aligned with the goals of the school and community, resulting in less influence of the leader. This assumption is supported by the findings of the Coleman report (1966) that indicate that student achievement outcomes for high-income students are more related to parental factors that are closely linked to socioeconomics.

Limitations

The limitations of the study can be anticipated to be those related to the methodology used; particularly those related to the School Working Conditions Survey that assesses the strength of the school culture. The School Working Conditions Survey relies on a Likert scale that limits the respondents' flexibility to choose responses that are not listed. This serves as a benefit to the analysis and allows for correlating responses across participants, an action that would be achieved with various responses across a large number of participants.

Furthermore, the survey limits results to the perceptions of teachers and principals participating in the study and does not include the input of other stakeholders (Assistant Superintendent, parents, students, etc.). As such, the results are restricted to persons found by researchers to have the largest impact on student achievement outcomes and the learning environment (Wallace, 2004 and Hallinger and Heck, 1996) and thus increases face validity.

Delimitations

In terms of the delimitations of this study, one might assume that a natural path might be to examine the impact that leadership has on all students. This study chooses instead to focus on those who are most vulnerable as indicated by student achievement outcomes. Although there exists much research (Hallinger & Heck, 1996; Leithwood et al., 2004; Leithwood & Jantzi, 2000) that substantiates the impact that leadership has on influencing general student achievement outcomes, the schools participating in these studies have not been clearly identified as schools with increased levels of poverty, which is believed to correlate negatively to student achievement outcomes. Kannapel and Clements (2005) said that poor children are overrepresented among the number of students scoring below the proficiency level on state assessments. This serves to support the need to focus on strategies that improve the student achievement outcomes for this group.

Definition of Terms

It is likely that many of the terms used throughout this research may be unfamiliar to those outside of the education field. As a result, the researcher has provided this section to list terms that have been both defined above and will appear throughout the dissertation. The reader is invited to review the terms below, which are available to the reader as a reference for use throughout the reading of the text.

Climate. A set of psychological priorities of a given work environment that are based on the collective perception of the people in that environment (Burke, 2008).

Culture. Defined by (group members') beliefs, values, and attitudes (Burke, 2008).

High-Poverty Schools. For the purpose of this study, these are schools that qualify for Title 1 services, that is, serving a student population where 75% of the student body is eligible to receive free and reduced-price lunch services.

Leader. An individual who demonstrates traits that help influence others to move toward the achievement of a particular goal.

Leadership. The act of influencing others to move toward the achievement of a particular organizational goal.

Leadership Effects. The result of an act that influences others to move towards the achievement of a particular organizational goal.

Low-income Student. Student who qualifies for free or reduced-price lunch, which is based on the federal criteria for determining income guidelines. In order to qualify for either free or reduced-price lunches, the families of the students must have incomes that fall 185% below the poverty threshold (U.S. Department of Agriculture, 2012).

Organizational Change. Moving an organization towards its most optimal or efficient state.

Principal. Identified as a school's primary administrator who holds the responsibility of administering the day-to-day school operations, evaluating teaching staff, and advancing the district's mission at the individual school level.

Student Achievement. Improvement in student learning as measured by state and local assessments that demonstrate student proficiency in the identified subject matter.

School Culture. Beliefs, values, and attitudes held by a school's group members that influence student learning.

School District. Entity that is fiscally responsible for the delivery of educational services to students attending schools within a designated location.

School Leadership. The administrator assigned to a particular school and charged with the day-to-day operations and management of the school building. In addition, this person is in charge of managing and monitoring the staff responsible for the delivery of educational services to all enrolled students.

School Reform. The strategic act of improving the quality of education received by all students within the district, giving particular attention to the education services and achievement of high-needs students.

School Staff. Individuals employed by the district and assigned to a particular school under the charge of the school's principal and responsible for delivering educational services to students assigned to the school.

Teaching and Learning Environment (TLE). The school and classroom environment that encompasses a set of beliefs, values, and attitudes that are reflected in both the teaching and student engagement practices.

Chapter Summary

The number of high-poverty students able to demonstrate proficiency on state assessments designed to measure learning has indicated that the American educational system needs improvements. As a result, school systems are identifying large-scale reform strategies that can potentially help improve student achievement for all students, but they have found a specific urgency to identify strategies for assisting the earners with

the most need. Aud et al. (2010) and Clotfelter et al. (2007) reaffirm this by saying that in order to address the urgency of the achievement crisis among the most vulnerable groups, many school districts now focus their efforts on improving the quality of resources provided to those with the lowest achievement who are often our poorest students.

One of the most important elements identified to improve student achievement outcomes is staff resources, which include principals and teachers. In terms of these resources, Clotfelter et al. say that poor students often are served by the least experienced and effective staff. Because researchers (Hallinger, 2003; Hallinger & Heck, 1996; Heck, 1992; Leithwood et al., 2004; Leithwood & Reihl, 2003) find that principals impact achievement by influencing the staff and the environment of schools, this study will explore whether the presence of high-quality leadership impacts these factors as they exist within high-poverty schools to improve student achievement.

In the next chapters, I will review current literature that informs practices related to principal leadership and its impact on student achievement outcomes for low-income students. In addition, I will present research that represents the influence that leaders have on school culture and how this relationship impacts student achievement.

Furthermore, this researcher will present quantitative research methods that assist in determining whether relationships exist between the effects of school leaders, culture, and student achievement, but more precisely determine whether the correlations are more significant for low-income student populations. Finally, this study will also present a review of research findings related to this topic, provide a synthesis of these findings, and engage in discussion that weaves the findings of other research with the findings of this study and explore avenues for future research that could enhance this area of study.

CHAPTER 2

LITERATURE REVIEW

Chapter two presents a contextual overview that depicts theories about how education improves achievement for poor students. Additionally, the chapter presents theories about the barriers that limit access to life success for less affluent student groups. Furthermore, this chapter will examine reasons why eliminating achievement disparities has emerged as one of the most important issues of focus for urban school districts and show why school districts are concentrating on improving the quality of school leadership as a solution for overcoming the challenges associated with the student education achievement crisis.

The information presented in chapter two is important to note as it dispels beliefs that education alone can assists in improving student achievement for student living in poverty. Instead the information presented in this chapter demonstrates how ineffective resources including teachers and principals have not been successful in ensuring that high poverty students obtain the skills that prepare them to gain access to post-secondary education and employment opportunities that are indicators of success.

Historic Context

Theories about How Education Improves Outcomes for Poor Students

Many Americans grow up believing that less advantaged students can overcome the challenges of their lives by simply working harder and obtaining a quality education. Beliefs about education in America being the "Great Equalizer" (Mann, 1848) suggest that education can place disadvantaged groups on equal footing with those who have more life advantages. This assumption also suggests that education can mitigate the

barriers that hinder the advancement of one's financial standing. Although this may appear to be a rational theory, it is based on logic that assumes that high quality education is accessible to all.

In terms of educational resources, both history and research (Aud et al., 2010; Cantor et al., 2006; Kannapel & Clements, 2005; Lippman et al., 1996) indicate that disparities do exist in education for children living in poverty. This is important to note, as it is often assumed that all American students receive similar education resources, which generates an unsubstantiated belief that all student have a similar likelihood of achieving success. However acknowledging the presence of a resource gap, creates support for the argument that the education received by low-income students has not helped to level the playing field and thus has not benefited poor groups as prescribed by the Mann's theory (1848).

A review of student attainment data further supports the above claim. Researchers (Aud et al., 2010; Cantor et al., 2006; Kannapel & Clements, 2005; Lippman et al., 1996) conclude that when compared to more affluent student groups, disadvantaged groups have lower attainment rates as indicated by high school graduation percentages, performance on state assessments, college completion rates, and employment earnings. These outcomes suggests that as a result of subpar educational resources that the pathways to opportunities are limited.

Theories about the Barriers that Limit Access to Life Success

The practice of limiting access to high-quality educational opportunities to the poor dates back to the late 1700s. While educating the poor was a practice that was generally accepted in the United States, Vinovskis (1992) says that the motive for

educating the poor was rooted in a desire to influence the poor (who were most often immigrants) to adopt actions, beliefs, and behaviors that were more typical of middle class America. Because the intent was not to assist the poor to improve their economic standing, Vinovskis (1992) indicates that the quality of the schools attended by low-income children was usually inferior when compared to the school quality of middle class students.

Furthermore in terms of educational quality, little consideration was given to the quality of educational services delivered to poor students because it was believed that most would likely become farmers and thus the assumption was made that little education was needed for this vocation. This rationale was further supported by the large numbers (80%-90%) of poor students who left school before entering ninth grade (Kantor & Lowe, 2004) and thus would support a rationale of reserving the best educational resources for the more affluent students as allocating them to the poor for the purpose of improving quality of life was likely believed to be a misuse of quality resources.

High school education was considered advanced learning in the 1700s and 1800s. Kantor and Lowe (2004) indicate that this level of education was typically reserved for young men and women from middle and upper middle class families. Kantor and Lowe conclude that the education received by middle and upper middle class families was often of higher quality and say that these students were instructed by teachers who themselves were better educated. Furthermore, the authors say that even when schools became more open to more economically diverse student groups, the academics that poor students were offered was often restricted to a tract that was less academically focused. Such practices began to establish a historic precedence of using education as a way to cultivate middle

class values and citizenship as opposed to improving economic standards and life success for the poor.

The above history about educating poor students assists in shedding light on similar modern day practices for education high poverty students. Additionally, the historic context assists in understanding possible motives for providing less affluent students subpar resources. . Low expectations in terms of vocational and post-secondary goals for poor students may result in the provision of education that qualifies these students to participate in the workforce at a basic level. In comparison, it can be argued that most affluent students will attend college and secure high earning vocations and that in anticipation of this outcome, these students receive a level of education that prepares them to assume careers that require postsecondary education and leads to employment that allows them to earn a livable wage.

Student Achievement for both the affluent and the poor appear to be reflective of their access to educational opportunities. As citizens of the United States, many may subscribe to the belief that all students have access to the same educational opportunities and thus similar access to post-secondary education and high earning vocational prospects. If this assumption is true, it would suggest that education disparities between affluent and high poverty students do not exists.

Lippman et al. (1996) dispel this belief and find that high-poverty students are less likely than more affluent students to have access to higher quality programs such as those for the gifted and talented. Additionally, the authors conclude that students living at the lowest socioeconomic levels have higher poverty and unemployment rates as adults. This suggests that by not having access to quality education programs that lower income

students may also be denied access to opportunities that could improve their employment outcomes, and thus their future financial standings.

Revelations about the above correlations draw into focus theories about the deliberateness of strategies for providing subpar education to the poor. Bowles and Gintis (1976) say that these practices do not occur by accident, but reflect different educational objectives and expectations that administrators, teachers, and parents have for students of different social classes. This is important as the above information supports an argument that says that the best resources should be allocated to those to whom society has high expectations for success, which in itself suggests that all students, particularly poor students, are not expected to achieve success. This thinking further propels the widening of the existing resource gap.

Theoretical Underpinnings

Eliminating Student Achievement Disparities Emerging as an Important Issues

When approaching this study, it is important to begin by examining both the problems identified in this research and the proposed solutions through their various theoretical lenses, which include organizational theory, organizational change, and school leadership theories. These theories provide additional context about how effective leadership can drive changes within the school organization to obtain improved student achievement outcomes for low-income students.

This work will explore the school system as an organization that has become inefficient as a result of its perceived failure to improve student achievement, particularly for low-income students. Additionally, the study will examine how a demand for an improved organization (school system) has resulted in the development of reform

initiatives that focus on leadership within individual schools as a tool for improving student achievement particularly for low-income groups.

Understanding the School System as a Functioning Organization

When school districts engage in school reform initiatives, it implies that components of the system must change in order to deliver an educational product that is acceptable to the districts' stakeholders. In order to understand the components that motivate changes within schools, one must first understand the school district as an organization. Researchers (Blau & Scott, 1962; Etzioni, 1964; Scott, 1998) define *organizations* as units that collectively and purposefully work towards achieving specific goals of the organization. In this light, school districts presumably work toward a united purpose of educating all students and should therefore be understood as a functional organization.

As evidenced in federal policy and the No Child Left Behind mantra, society has expectations of its school systems. It assumes that school districts will consistently work toward the goal of equipping students to achieve educational milestones, which will in turn prepare them to meet the expectations of both the workforce and postsecondary institutions. In addition, society has come to rely upon the student achievement as the standard for determining whether the schools, staff, and leaders of the district and its schools are effective.

Scott (1998) says that organizations that do not meet the expectations of society are often pressured to implement changes that produce society's desired expectations and outcomes. Thus, when school districts fall short of the goal to educate students in the way that is expected, the community, government, and other stakeholders may force them to

rectify problems, restore efficiency and allow for the successful achievement of the pursued goal. Weick and Quinn (1999) define this process as organizational change. In terms of organizational change for schools, the process requires that school districts correct the problems that interfere with student learning.

Organizations and the Environment: Correcting Organizational Inefficiencies

Burke (2008) says that organizations interact with the environment in a way that ensure organizational accountability and assists in sustaining the organization and contributes to the organizational change process. Burke (2008) says that interaction with the environment motivates the organization to move towards its intended outcomes and to correct systems that interfere with the organization achieving its identified goals. Burke (2008) further indicates that the interaction with the external environment is necessary in order to ensure the organization's existence. The organization ensures its survival by meeting the expectations of society in terms of the product that is delivers.

School systems typically rely on relationships with the environment that include parents, community members, and funding agencies. These components assist in sustaining the school district by providing resources, funding, support, and ensuring accountability. Burke (2008) says that societal dissatisfaction with the organization's product forces the organization to examine and change its practices or risk becoming obsolete.

In the case of school districts that are unable to deliver quality education services, they risk becoming unsustainable as a result of lost funding or parents choosing alternative school options. Additionally, the communication between the environment and the organization forces the school district to implement changes that produce the

outcomes demanded by groups represented by the external environment. A district's response to the changes that stakeholder groups impose helps to ensure the district's success.

Extracting Resources from the Environment

In addition to the above benefits associated with an organization's interaction with the environment, a relationship with the environment allows an organization to extract resources from the environment that assists in both replacing and repairing various organizational components. Burke (2008) says that organizations must interact with the environment in order to generate change within the organization. The author further hypothesizes that organizations that fail to interact with the environment risk extinction.

For schools and school systems, a healthy relationship with the environment is likely to result in securing effective teachers and administrators for schools. Clotfelter et al. (2007) conclude that most high-poverty schools experience difficulty attracting and retaining high-quality administrators and staff. The observable challenge of a disconnected relationship with the environment may result in the inability of high poverty schools within school districts to positively influence the components of the school (e.g., learning environment, school climate, and teaching practices) that help to improve student achievement. A disconnection with goals of the environment is an important note, as organizations that fail to connect with the environment may be the result of the school district's or school's outcomes being misaligned with the expectations of the environment.

Poor Student Achievement Outcomes and the Consequences for High Poverty Students

For schools that serve large numbers of low-income students, researchers (Loeb, Kalogrides & Horng, 2009; Branch, Hanushek & Rivkin, 2009) suggests that the failure of these schools occurs as a result of ineffective or subpar human resources. That is, some schools are unable to extract high quality resources from the environment, which includes effective principals, teachers and other staff. This is particularly true of high-poverty, low-achieving schools where the resources are needed most. Researchers (Clotfelter et al., 2007) find that a lack of adequate resources is often the reason for academic decline within schools and districts.

Furthermore, assumptions can be made about how limited success for students in high-poverty schools may result from penalties wielded by an external environment that holds educational institutions accountable for student achievement. Based on existing student achievement data, the environment may have determined that these schools have not met the criteria to establish legitimacy and thus are not able to tap into the environment to secure high quality resources.

Drawing a connection between misaligned outcomes and resources is an important concept, as much of the research (Clotfelter et al, 2007, Loeb et al, 2009; Branch, Hanushek & Rivkin, 2009) presented indicates a strong correlation between student achievement outcomes and the resources that they receive. Additionally, the researchers have presented evidence that the inability to secure resources has played a major role in poor students not receiving the same quality of education and thus presents

additional support for why addressing these inequities has surfaced as a primary issue for addressing the quality of resources available within low-income schools.

Burke (2008) indicates that organizations are not naturally inclined to change without influence or pressure from the external environment. For school systems, the interaction that motivates school reform or change is often the result of pressure exerted from legislative bodies enforcing rigorous reform initiatives. Leithwood and Day (2008) say that policyholders are now imposing high standards of accountability on schools for student achievement outcomes.

Heck (1992) finds that the 2001 No Child Left Behind (NCLB) legislation plays a significant role in increasing accountability among school systems, as the law requires that schools document instructional efforts and outcomes by providing student achievement data results from state assessments or other high-stakes tests. The recent reform movements in school systems motivated by new legislative expectations have pushed schools to adopt new strategies that improve schools both by offering funding to those who succeed in improving student achievement and imposing harsh sanctions on those whose strategies do not result in improved student achievement. This thereby exerts pressure on the school entity to implement changes that align to the external environment expectations. Researchers (Burke, 2008; Lewin, 1958; Schein, 1987) suggest that this type of pressure forces changes to occur within an organization.

Disconfirming Beliefs in Order to Move Organizations towards Change

Burke (2008) suggests that the compliance measures exerted by this new legislation create conditions that assist members of organizations to become dissatisfied with the existing state of the organization that motivates change. Burke relates this

urgency to the phase of "unfreezing" explored by Lewin (1947) and cites this as a crucial step in preparing an organization to become more accepting of change. Burke further indicates that as part of this process, an organization is readied for change because awareness is created among organization members about the ineffectiveness of existing measures implemented by the organization. Schein (1987) finds that disconfirming organizational members' existing beliefs induces guilt and moves the group to act (or change) to ensure their own and the organization's survival.

For school systems, the process of disconfirmation has been evident during the implementation of the NCLB Act (2001). An examination of the history leading up to the NCLB Act illustrates how school systems were confronted with achievement data that made both society and schools aware of the deficiencies that existed in the American education system. The confirmed student achievement deficits spurred urgency among school districts to adopt new strategies designed to advance the educational attainment and growth of all students, regardless of challenges (e.g., poverty) perceived to be outside of the school purview.

Although both state and federal governments acknowledge that there are barriers that make the work of staff in high-poverty schools difficult, they continue to demand better student achievement outcomes for the schools and districts that educate low-income and minority students. As a result, school districts that serve large populations of high-poverty students identify strategies (e.g., improving the quality of staff, leadership and school culture) that are found to promote success among this group of students.

Furthermore, Leithwood (2007) finds that most reform initiatives in the United States and other parts of the world are aimed at increasing public accountability for

schools. A review of the NCLB Act (2001) suggested that its primary intent was to improve the academic achievement outcomes for disadvantaged groups. Darling-Hammond (2007) says that the NCLB Act was an attempt by the Bush administration to address the deficiencies and inequities of the American educational system by holding schools more directly responsible for improving student achievement for students within districts' subgroups such as low-income, minority, or disabled students. Protheroe (2005) concludes that new levels of accountability and rigorous goals have made it necessary for both schools and districts to require changes in achievement that are immediate and significant.

Not only does NCLB (2001) require that districts demonstrate continuous student growth, but the law also requires that schools show growth among its highest need students (e.g., special education, low-income, and minority students). For some districts, particularly those located in urban settings, accomplishing these mandates may prove to be beyond ambitious. Protheroe (2005) concludes that as a result of more rigorous standards, like those imposed by NCLB, districts are now more accountable for the achievement of subgroups (e.g., low-income, disabled, and minority students) and may be subjected to sanctions that are based on the groups' achievement on state assessments. As a result, it is believed that schools that serve high percentages of students represented in the above subgroups, inherit an increased liability to ensure that student achievement improve for the students with the most need.

Other legislation that has influenced education reform is the recently implemented federal Race to the Top program. The $4.35 billion program is the largest competitive grant in history and was created as part of the American Recovery and Reinvestment Act

of 2009. Shelton (2010) says that the federal Department of Education hopes that the incentive of large amounts of funding dollars for school reform will encourage school systems to reexamine leader policies and accountability or risk not having access to these funding dollars. This implies that there exists a trend to incent districts to respond to state and national requirements to change existing systems or risk financial consequences that districts may not be able to afford. Legislation that advocate for improved resources and student achievement outcomes for low-income and minority students are important in the process of motivating changes within public school systems as they use funding incentives to drive changes that align to expectation of the environment.

Scott (1998) theorizes that organizations that reflect the priorities of the environment establish legitimacy, which assists the organization to secure resources. The author's theory suggests that schools that are unable to secure high quality teachers and principal resources (e.g. high-poverty and low-achieving schools) may not reflect societal priorities and thus may have lost the benefit of participating in an exchange with the environment that allows them to obtain high quality school leaders and teaching staff. The National Education Association (NEA, 2008) education policy states that when more experienced teachers leave high-poverty schools, they are most often replaced by uncertified or inexperienced teaching staff. One of the consequences for the students who attend these schools may be receiving ill-equipped or unprepared staff to assist them in achieving adequate educational growth.

The Role of Leadership in Shaping Organizations and Establishing Legitimacy

One theory that has been recently floated as a strategy to encourage experienced teachers to go to the highest need schools, is one that is based on a theory about the

influence of good principal leaders. Kimball (2011) suggests that despite the challenges associated with low-achieving schools, teachers (and perhaps other staff) are attracted to schools that are run by effective leaders. This suggests that the effectiveness of a school's leadership plays a significant role in improving the quality of schools that educate high poverty students.

Kannapel and Clements (2005) concur that principal leadership is a factor that plays a significant role in improving the quality of a school, as they identify the principal as being able to coordinate components (e.g., quality teaching staff and school culture) within a school that contribute to its success. This suggests that principals may be positioned to align the school environment to the expectations of the environment. Jaffee (2001) says that organizations must incorporate the rules and requirements established by the environment in order to be perceived as legitimate and that this ultimately assures the organization's survival.

Beliefs about leaders' abilities to transform components of school organizations align with the beliefs of Burke (2008) and Murphy (2010) who indicate that no real change within any organization can begin without giving thought to the organization's leadership. Education researchers (Peterson & Kelly, 2001; Leithwood, 2007; Deal & Peterson, 1990) identify principals as the key players to implement comprehensive reform programs. Theories about the role of principals and the significance of their role in the reform process suggest that principals, in their positions as leaders, have the ability to improve student achievement for their school organization by putting strategies in place that move the school towards its desired state of change.

Heck (1992) says of principal leaders that they are in a position that enables them to influence key aspects of the school that result in increased student achievement. As a result of the belief about the ability of school leaders to influence components of the school that impact student achievement, school districts now recruit leaders who develop strategies that assist in creating the learning environment within schools that support the achievement of improved student gains.

The Impact of Effective Principal Leadership on the Achievement of High-Poverty Students

Principals are identified as key players in many education reform movements, as a result of their ability to influence the conditions in a school. The National Commission on Teaching and America's Future (2003) says that effective principals establish the school's vision and demonstrate the skills that assist in developing school environments that can meet the needs of the 21st century. Additionally, Peterson, and Kelly's (2001) findings indicate that measurable change to a school organization cannot occur without considering the impact of leadership, thus suggesting that school reform efforts cannot be successful without ensuring that the school leadership is also effective.

It is clear from the research presented that the principal's role is significant and can assist in acting upon factors that result in improved student achievement outcomes. (Hallinger and Heck, 1996; Leithwood et al, 2004). Although research has typically found that leadership's direct effects on student achievement are small, Leithwood and Levin (2005) says that leaders impact student achievement by influencing a variety of factors such as school culture that directly influence student achievement. This is significant to note as it suggests that leaders have a wide range of influence within schools that assist in impacting student achievement outcomes for students. Studies (Loeb

et al., 2009; Papa, Lankford, & Wyckoff, 2002; Rice, 2010; Branch et al., 2009) about the significant role that effective principal leaders play in improving school quality and student achievement outcomes, and find that schools serving disadvantaged students are least likely to have effective principals as a resource that Andrews and Soder (1987) say more significantly impacts the student achievement outcomes of this group.

This suggests that one reason for the poor academic achievement of the students who attend these schools may be that they receive leadership resources of lower quality than more affluent schools. This suggests that leadership is an important aspect of student achievement and that schools with subpar leadership and high poverty students are disadvantaged. Additionally this disadvantage plays out via poor academic outcome results for poor students.

Although many might agree that higher poverty students should have access to school leaders who are at least comparable in quality to those at schools attended by lower poverty students, Clotfelter et al.(2007) indicate that simply having equal resources is not enough to eradicate the existing disparities between disadvantaged students and non-disadvantaged students. The authors posit that in order to arrive at the same student achievement outcomes as more affluent students, students from high-poverty backgrounds require access to resources of a higher quality than those received by their more affluent counterparts. In other words, to arrive at equal achievement outputs, the quality of the inputs for low-income students must be of higher quality. This strategy requires adoption of a new paradigm; one that prioritizes the needs of poor students by providing them with the best resources this includes having access to the best leadership.

Clotfelter et al. (2007) say that improving the quality of resource inputs can help overcome the educational disadvantages associated with poverty. Heck (1992) suggests that many of the environmental factors encountered by low-income students could be overcome through "strategic school organization" (p. 5) and strong principal leadership. Thus, it is hypothesized that leadership may neutralize poverty's effect on educational achievement and act as a factor that bolsters the achievement of low poverty students.

Andrews and Soder (1987) further demonstrate the leverage that leadership can provide in improving student achievement for high-poverty students. Their study reveals that low-income students attending high-quality schools or schools with effective principals have more significant gains than students in schools of poor quality or those that have ineffective principal leadership and thus is a study that will support the hypothesis for this study that posits that high quality resources, explicitly principal leadership has more significant impact on high poverty student populations.

The above is supported by Leithwood et al. (2004) find benefits associated with effective leadership for schools that have the greatest challenges (e.g., poverty and low student achievement outcomes). They further conclude that leadership is the key to improving student achievement for these students. Particularly valuable in relation to these studies were the findings that reflect the impact that strong leadership can have in influencing the student achievement outcomes of high-needs students.

Therefore, the strategy of improving principal leadership effectiveness as a resource within high poverty schools may offer high need student groups a benefit that is separate from and above the benefit that this same strategy provides to other student groups. These studies indicate that providing high-poverty schools with effective leaders

could potentially assist in eradicating the achievement gap that exists between high poverty students and their more affluent counterparts.

Andrews and Soder (1987) support the adoption of the strategy to provide effective leadership to high-poverty groups. They find that although principal leadership does little to influence student achievement for White and non-free-lunch students, leadership (whether strong or weak) significantly and consistently influences the student achievement outcomes for minority and high poverty students, with the greatest differences occurring among students eligible for free lunch. Thus, the study suggests that ensuring the placement of strong, effective principals in low-achieving schools where the student population is largely low-income may assist in improving student achievement outcomes and eradicate the achievement gap between low-poverty and high-poverty students.

The Equality of Education Study (Coleman, 1966) was among the first studies to initiate interest in a theory about resources and school differences in order to assess their influence on student achievement. Gorman and Long (2006) hypothesize that the original purpose of this research may have been to substantiate theories about how resources advantaged low poverty schools. Instead the authors say that because only small differences in achievement were observed and attributed to school resources (e.g. teacher quality, curriculum and facility) that this theory was initially rejected. The Coleman (1966) report instead attributed student achievement gains to be more related to characteristics that are influenced more by students' individual backgrounds, precisely factors that are most often attributed to the student's socioeconomics and parental influence.

Furthermore, the study's outcomes suggest that schools do little to advance the learning of high- income students. However in the case of low-income students, the study finds that the same high quality resources produce improved student achievement outcomes. These findings further substantiate that high quality resources can in fact negate the impact of the home environment for low-income students in a way that is different for other students.

This theory is further confirmed in Summers and Wolf's (1975) analysis education production function study that speaks to specific resources that best influence student achievement for low-income students. The authors' research outcomes find that resources such as class size and teacher quality positively affect student achievement outcomes for low-income students and thus also support movements posed by researchers (Gamoran and Long, 2006) to provide the best resources (e.g. teachers and principals) to the students who need them the most.

Other research that adds additional support for the theory about the impact of effective leadership on student achievement outcomes of high poverty student populations include the Leithwood et al (2004) study which indicates that leadership has more significant impacts in schools with more challenging circumstances. These studies corroborate the need for policy changes that advocate for the identification of the most effective school leaders and placing them into schools where there is an increased level of need, as defined by low achievement and high poverty.

Research conducted by Heck (1992) suggests that even risk factors such as low SES (poverty), language barriers, and poor parental participation can be overcome through "strategic school organization" (p. 5) and strong principal leadership. Although

the study does provide additional support for the theory about the benefits of principal leadership and its impact on student achievement outcomes of high-needs students, the authors caution against generalizing the results, as the study only includes elementary schools. As such, it is suggested that future studies include representation from other school grades (e.g., elementary, middle, and high school).

Other studies that discuss the relationship of principals to achievement growth for low-income students are those that identify the principal as the link to securing more effective staff, a factor shown to directly correlate with improved student achievement gains. Leithwood et al. (2004) conclude that among school-related factors that are associated with student achievement, leadership is second only to classroom instruction in improving student achievement outcomes. The NEA (2008) says "there is no one factor more important for attracting and retaining (quality and experienced) teachers and improving schools than a skilled and knowledgeable leader . . ." (p.3).

One could hypothesize that in order to improve student achievement and obtain high quality teachers, school districts must improve the quality of principal resources provided to high-needs schools.

While some school reform efforts have focused on improving the quality of school leaders as a solution for accelerating student achievement, studies do not conclusively support the hypothesis that leadership alone can improve the most challenging schools. Many studies (Hallinger, 2003; Hallinger & Heck, 1996; Heck, 1992; Leithwood & Reihl, 2003; Leithwood et al., 2004; Waters et al., 2005) find that the relationship between principal leadership and student achievement is an indirect one. This is important to note, as the argument that principals are a significant factor in school

reform efforts may be difficult to justify by simply assuming a direct relationship between principal leadership and achievement. Hallinger and Heck (1998) find that studies that attempt to establish a direct relationship between the two factors are at best weak. Still other research studies offer explanations about how principals impact student achievement without directly influencing it.

Principal Effectiveness and the Impact on Factors Linked to Student Achievement

Because principals' practices do not directly influence student achievement, researchers (Hallinger and Heck, 1998; Leithwood and Levin, 2005) imply that principals influence other variables that are more directly linked to student achievement. Researchers (Leithwood et al., 2004; Leithwood & Levin, 2005) explain this relationship through a mediated effects model that speaks to the impact of school leadership. Based on this framework, Hallinger and Heck (1998) conclude that principals' effects on student achievement outcomes occur by way of indirect paths that are mediated by people, factors, or events within the organization.

Kannapel and Clements (2005) indicate that school culture is one factor that can be influenced by principal leadership that also influences student achievement. While culture is a term that is not easily defined, Peterson and Deal (1998) define culture as the norms, values belief and traditions of an organization that are observable over time.

Specific to school culture, Hinde (2004) says that culture occurs within a school as a result of interactions between and among students, staff, and the community and guide the behavior of the staff and students within a school. Michigan State University (2004) says that school culture is represented by the shared values of the principal, staff, students and others who are part of the school community. This implies that the principal

in concert with others in the school building contribute to the shaping of the school culture that Leithwood et al (2004) find also influences student achievement.

Furthermore, researchers (Leithwood et al, 2004) find that in addition to culture that principals also influence the school climate. Michigan State University (2004) defines climate as being reflective of the "physical and psychological" (p. 2) components of a school that are most receptive to change and that provide the "preconditions" (p. 2) that are essential for teaching and learning to occur. In essence, this definition can be summarized as the feelings that individuals experience as a result of the conditions of the environment. The Leithwood et al, (2004) model identifies classroom conditions as a factor that contributes to the development of a positive teaching and learning experience and indicates that it represents the school climate.

Research (National School Climate Center, 2007) speaks to the importance of a healthy school climate and its contribution to student success. However, the Alliance for Excellent Education (2013) finds that high poverty schools often struggle to implement positive school climates and thus also struggle with improving student achievement. Leithwood et al (2004) explain that by improving classroom conditions (school climate) through teachers' actions that student achievement can also be improved.

Upon researching climate and culture in the literature, there appears to be much disagreement about how best to distinguish the terms. The NSCC (2007) says that while there exists a convincing body of evidence that is available, much of the literature does not accurately or consistently define the terms and uses the terms interchangeably, thus contributing to the lack of clarity about the terms.

Other anticipated challenges include difficulty in measuring perceptions related to values as associated with school culture. Hoy and Feldman (1999) imply that perceptions related to values that are associated with culture are not easily measured and suggests instead measuring behavior perceptions typically associated with climate that they say is less abstract than culture and thus present fewer empirical measurement problems. The authors further suggest that this makes climate less difficult to measure and a recommended construct for assessing the health of the school organization. Further, researchers (Schein, 1985) imply that culture is inclusive of climate. This suggests that the researcher will be able to assess aspects of a school's culture through information obtained via an assessment of the climate.

Both climate and culture relate to leadership in improving student achievement. For the purpose of this study, the researcher will focus on the relationship between school leadership and school conditions that can also include culture. However, in terms of measuring the perceptions of teachers and other staff, the researcher will seek to use measurements that assess school climate as a way of measuring the conditions of the school. This decision is driven by research (Hallinger & Heck, 1998; Leithwood et al, 2004; Michigan State University, 2004) that indicates a strong relationship between school conditions and student achievement, as well as research (Hoy & Feldman, 1999) that identifies measurements associated with climate as being less abstract than those associated with culture and thus a better construct for measuring the quality of the school environment.

Understanding the Conceptual Framework and It's Influences

The conceptual theory for this study hypothesizes that leadership impacts student achievement by manipulating conditions within the school that influence student achievement. As such, the conceptual framework (figure 1) for this study is based on a commonly held premise about the relationship between a leader's effective practices and achieving the organization's intended goal, that of improving student achievement.

More precisely, the study's framework assumes that the effects of leadership are influenced by the environment and organizational school district's culture, which also influence leadership. Further the model illustrates reciprocal influence that the leader has on the organization. Additionally the model hypothesizes that the leader is able to implement his/her beliefs and values through the design/structure of the organization that are operationalized through policies and systems that influence school conditions and impact teacher practices. Lastly the model illustrates the influences that the principal leadership has on teachers' practices that impact the conditions in the classroom and that are hypothesized to improve student achievement outcomes for high poverty students.

Moreover, the Wallace Foundation's supported leadership study model (Leithwood & Levin, 2005) serves as a guide to the model for this study. This model demonstrates the role that effective school leadership plays in influencing factors (e.g. teacher practices, classroom and school conditions) within the school's learning environment that impact student achievement.

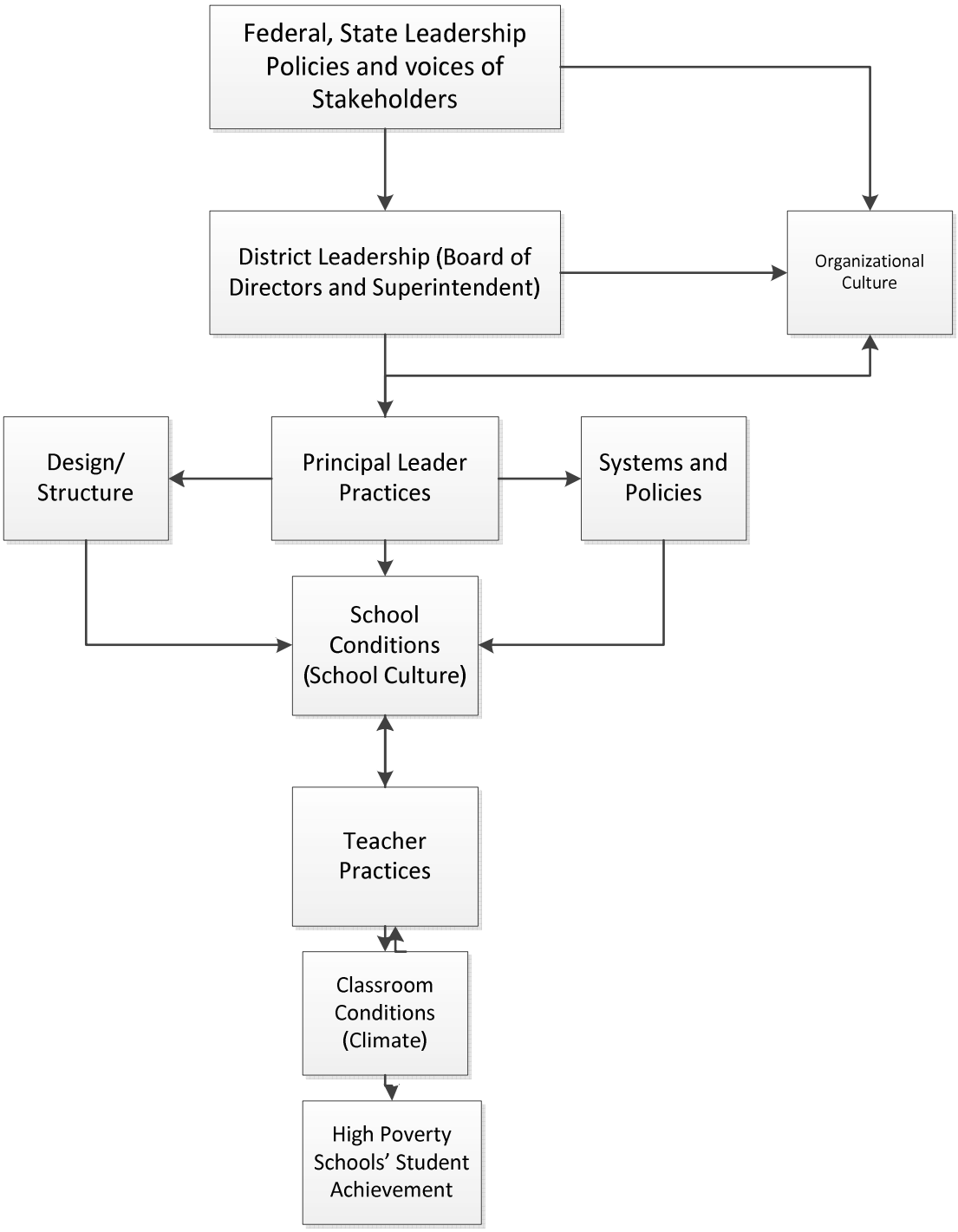

Figure 1. Conceptual framework: school leadership impact model for high poverty student achievement (adapted from Wallace, 2004, p. 18 and Burke Litwin, 1992)

Additionally Hallinger and Heck's (1998) variation of the Pitner's (1988)

Reciprocal Effects model implies that there are factors indicates that there are factors that

act as mediators that interact with leadership to impact student achievement outcomes . The researchers' models suggest that the school leader's ability to influence student achievement occurs as a result of interacting with other variables. Hallinger and Heck (1998) further imply that while leadership practices contribute to school achievement outcomes, a school leader's achievements often occur through the actions of other people, events or organizational factors. Further, Pitner's (1998) Mediated Effects with Antecedent Model implies that other factors (e.g. the school leader's education, training and socio-economics background) can influence both the impact of the principal leader and the outcome of student achievement.

While the conceptual model for this study accepts theories about the impact of poverty on student achievement outcomes founded in other research, it also accepts the research findings (Clotfelter et al., 2007 and Heck, 1992) that indicate the student achievement outcomes anticipated by high poverty can be mitigated by effective principal leadership. Furthermore, the conceptual model for this study demonstrates the significance of school leadership in both providing direction and exercising influence on the school conditions (school culture) in ways that help schools achieve the desired outcome of improved student achievement outcomes.

Based on the influence of the two models discussed above, the framework for this study makes a similar assumption that leadership practices can impinge upon other variables (i.e., school conditions, classroom conditions, and teacher practices) more directly in order to influence student achievement outcomes. Specifically, the model assumes that the school leader driven by his/her vision for the school works to change beliefs about student learning that results in changes in practices and behaviors in others

and creates a learning environment that results in improved student achievement for high poverty students.

In addition to the influence of school leadership models, the framework for this study is also influenced by organizational theory that speaks to the factors that motivate change within the organization. In terms of the model's organizational influence, the components of the framework are also reminiscent of those in the Burke and Litwin's (1992) causal model of organizational performance and change. The Burke and Litwin model, although without specific reference to school organizations, identifies the organizational leader as playing an instrumental role in influencing the intended outcomes of an organization by gaining insight from the environment that influence the leader's values, beliefs and practices that result in the development of policies and procedures that change the organizational culture. Burke (1992) says that culture is a transformational component and that changes occurring to an organization's transformational components assist in moving an organization towards its optimal performance and achieving organizational goals.

Specific to the issue of leadership and its role in organizational change, there are few models other than the Burke and Litwin (1992) model that capture the significance of the leader's influence. Although there are other models (Nadler & Tushman, 1977; Tichy, 1983; Weisbord, 1976) believed to be representational of the organizational change process and the leader's influence, however, Burke (2008) says that these models do not speak to organizational change but more to the function of an organization. Like the conceptual model for this study, the Burke and Litwin model focuses on key factors related to change; among these factors are culture and leadership. Burke (2008) indicates

that the Burke and Litwin model is useful to assist in understanding how key components within the organizations (particularly those that directly connected to the external environment) contribute to the process of organizational change.

When exploring issues related to educational reform, the Burke and Litwin (1992) model is also useful in understanding the impact that the external environment has in developing reform strategies for school districts across the country, as well as to the application of tenets related to leadership and its resulting impact on changing the school learning environment. Burke (2008) says that transformation within organizations occurs when leadership works to link the information obtained from the external environment to transformational factors (e.g. vision, mission, and culture) in order to influence the organization. Burke and Litwin (1992) indicate that changes to an organization's structure may result in total system changes when key structures within the organization are impacted. Burke (2008) says that these factors affect structural components of the organization that often result in organizations' members developing new behaviors to accommodate these changes, thus reflected in a changed culture by new beliefs, values, attitudes and practices.

Exploring the Details of the Study's Model

While the conceptual framework for this research encompasses many components, the model (see figure 2) used for this study will only focus on the principal's effectiveness, the school's conditions like culture and student achievement outcomes for high poverty students. The decision to focus precisely on this dynamic of the research model is based on the findings of researchers (Hallinger, 2003; Hallinger & Heck, 1996; Heck, 1992; Leithwood et al., 2004; Leithwood & Reihl, 2003; Waters et al., 2003) that

focus on principals' direct impact on other measures that directly influence student achievement. As such, this study validates the proposed hypothesis by utilizing a model that is based on a premise about how leadership can impact mediating (intervening) variables such as the school's conditions (culture) in order to influence student achievement outcomes for high poverty students.

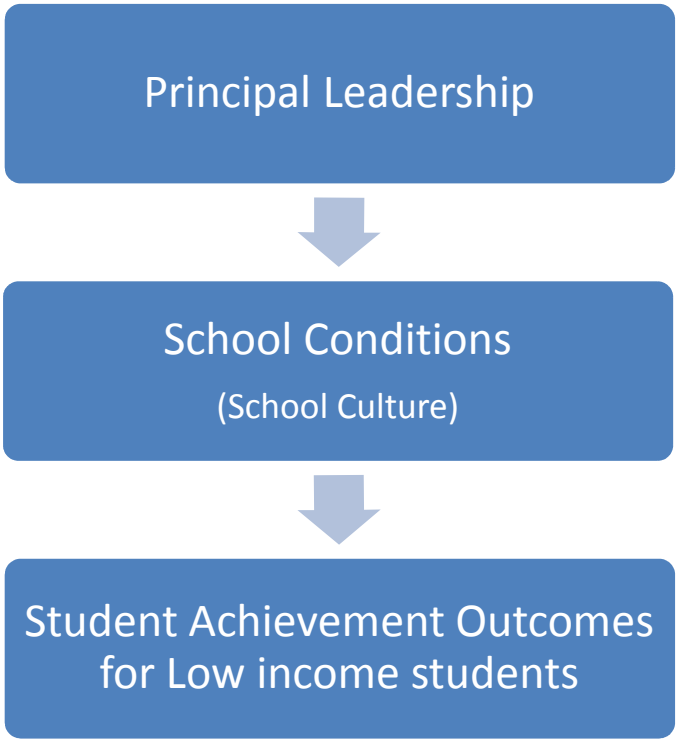

Figure 2. Principal impact framework for high-poverty schools

In accordance with this strategy for examining the influence of principal leadership, this study assumes that principal effectiveness drives changes in the school's conditions (that includes the beliefs, values and practices of the individuals within the school). Therefore, this study hypothesizes that as a result of the effectiveness of the leader that the influences on the school's conditions can more significantly support the needs of low-income students. This theory is based on studies (Hallinger, 2003; Hallinger & Heck, 1996; Heck, 1992; Leithwood & Reihl, 2003; Leithwood et al., 2004) that find

that principals are able to impact aspects of the school that influence student achievement and other studies (Clotfelter et al., 2007; GA Moran & Long, 2006) that conclude that the effectiveness of principal leadership more significantly influences achievement for low-income students.

The chapter is included to demonstrate how the pieces of the model relate to one another. Chapter two relies upon various models (e.g. organization, leadership, school leadership and organizational change models) to provide foundational understanding of the model for this study. The theoretical framework for this study hypothesizes that the leader plays a significant role in improving student achievement outcomes for low-income students. Specifically the model suggests that for schools that serve large percentages of low-income students that the principal leader, as a result of other influences implements a vision for the school that impacts the school environment and is able to change the beliefs of teachers and others who are able to implement practices that improve student achievement.

While many resources were used to document the information in this literature review, it should be noted that all the items appearing in the literature review do not appear in the model, but provide essential background in understanding key elements included in the framework. As a point of interest for the reader, additional resources not cited in the text may also be found in the list of supplemental resources in Appendix A.

Chapter Summary

Chapter two presents an overview of the following four research questions that will drive this study:

1. Do high poverty and low poverty schools vary in relation to student achievement?

2. Does leadership effectiveness differ among leaders in higher poverty schools versus those in lower poverty schools?

3. Does a schools' culture, as measured by the school conditions differ among higher poverty schools versus lower poverty schools?

4. Does a schools' culture differ as a function of leadership and does that difference vary among higher poverty schools versus lower poverty schools?

Additionally the chapter introduces theories about education and reveals how many schools that educate high percentage of low income students are missing the mark in terms of improving student achievement for this group of students. Further the chapter links the disparity in student achievement outcomes for poor students, resulting from inequitable access to quality education to limited access to high quality vocational and educational opportunities for these students.

Chapter two also examined reasons why eliminating academic disparities has emerged as one of the most important issues of focus for school districts, states and the Federal Department of Education, and shows why improving the quality of the school leader has become a focus of districts as they explore strategies for improving achievement outcomes for high risks groups. As such, the information presented in chapter two is important in the context of this study as it illustrates that education alone is

not enough to improve outcomes for students living in poverty and instead introduces other research that support a specific strategy, that of improving the quality of school leaders, which is found to have a particularly significant influence on the achievement of high poverty students.

Chapter three will be used to outline the methods that will assist in measuring key variables found in the Principal Impact Framework for High Poverty Schools. Further chapter three will reveal the source of the data, as well as outline methods and identify and operationally define the primary variables. Furthermore, the researcher will present the hypothesis of the research study and analysis that will assist in answering the research questions for this study.

CHAPTER 3

METHODOLOGY

The literature presented in chapter two substantiates the impact that principals have on low-income student populations' achievement outcomes. This provides support for improving the quality of principal leadership within schools that educate high percentages of low-income students. Furthermore the literature review presented in chapter two speaks to a principal's ability to improve the quality of school conditions, which research (Leithwood et al, 2004; Hallinger and Heck, 1998) suggests contributes to improved student achievement.

Chapter three focuses on the methodology that this study will use to measure leadership effectiveness and its influence on the school environment to determine whether principal leadership, as measured by the principal's ability to improve the quality of the school's culture, results in improved student achievement for the poorest students within the state of North Carolina.

The research will be used to research questions that lend themselves to the following hypotheses:

1. School poverty has an effect on student achievement
2. School culture has an effect on student achievement
3. School leadership has an effect on student achievement
4. A two-way interaction exists between school poverty and school culture in terms of student achievement
5. A two-way interaction exists between school poverty and school leadership in terms of student achievement

6. A two-way interaction exists between school leadership and school culture in terms of student achievement
7. A three-way interaction exists among school poverty, school culture, and school leadership in terms of student achievement

These hypotheses emerged from the supported idea that principal practices have an impact on school conditions in a way that impacts the student achievement of high poverty students.

Setting and Sample Frame

The state of North Carolina is located in the southeast region of the United States. It currently has 115 school districts (excluding charters) that serve 1,450,435 students. The Kids Count Data Center (Annie E. Casey Foundation, 2010) reports that 53.9% (approximately 75,993,340) of the state's 1,409,895 enrolled students qualify for free and reduced-price lunch. It should be noted that the total number of students given here may be different the number of total students referenced in other parts of the study, particularly in terms of the numbers used for analysis. This is likely the result of data cleansing, resulting in the elimination of some schools (e.g. charters and other schools without sufficient data).

The sampling frame for this study will include all schools within the state of North Carolina that meet the minimum participation rate of 40% on the 2009-10 *Teaching Working Conditions Survey* and have an *ABC* school level composite score, used to measure student achievement across various grade levels.

Research Design

The study used quantitative research methods to conduct an explanatory research design to explore both direct and indirect causal relationships between principal leadership and school culture. The study compares differences between high poverty schools to low poverty schools. The dependent variable that has been identified for this study is student achievement that will be measured using the ABC composite scores from the North Carolina Accountability, teaching the Basics with an emphasis on high educational standards, and maximum local Control (ABC). The information was obtained from the North Carolina data and statistics website (http://abcs.ncpublicschools.org/abcs/) where the 2009-10 data is publically accessible.

One of the independent variables for this study will be school culture, which will be measured in terms of results from the North Carolina Teacher Working Conditions Survey (NTC, 2010). Teachers within all schools in the state of North Carolina were administered the Teaching and Working Conditions Survey to assess the quality of the school culture. Additionally this assessment also includes a measurement of leadership which measures the effectiveness of the leadership and will serve as measurement of leadership for this study, included in the model as an independent variable. The dataset including the results of the 2009-10 survey results were obtained from the New Teacher Center using the form included in Appendix B.

As indicated above, one of the variables for this study will define poverty. Poverty will be determined by the percentage of students qualifying for free and reduced lunch. Each school within the state has a continuous variable denoting the poverty rate as measured by the number of students who are eligible for free and reduced lunch. A

higher level of eligibility indicates high levels of poverty. Poverty is included as a primary control variable in the model in addition to educator experience, student teacher ratio and race (White, Black, Hispanic and Other Minority).

Data Source

For this study, the researcher will rely upon secondary survey data obtained from the New Teacher Center. The data provided will include results from the Teaching and Working Conditions (TWC) Survey, an assessment of school conditions that has been administrated to all schools within the state of North Carolina and North Carolina student achievement data from the 2009-10 school year, assessed by examining ABC composite results.

It should be noted that while similar TWC is available from the school district for which I am employed, I choose not to use my district's data as we were just beginning to use this survey in 2010 and did not have the historic data of North Carolina. Additionally the assessment was only used for an individual school district and not the entire state as in the case of North Carolina. As result, I believed that the historic data and use within the entire state would assist in producing results related to this study that would be more widely applicable for a broader audience.

In terms of the achievement data used for this study, the data resulting from the North Carolina ABC ratings are composite scores based on multiple standardized assessments dependent on grade level and administered to students annually were obtained from the state's Data and Statistics website (http://www.ncpublicschools.org/data/reports/) and are available to the public. The TWC Survey results were provided by the New Teacher Center after first submitting an

informal request, followed by a formal request using the form found in Appendix B. From the dataset and download, I was able to obtain data that assisted me in assessing school leadership effectiveness, the quality of the school culture and their impact on student achievement.

Specifically in terms of the TWC surveys, they are administered to teachers, principals and other staff within schools located in the state of North Carolina from 2009-10. This year is most significant as it was the first year in which every district and traditional school within the state obtained the minimum 40% response rate for the survey, resulting in 89% of the state's educators participating as respondents in the survey (NTC, 2010). Additionally, the participating schools will have both an ABC composite scores and meet the 40% participation threshold for the Teaching and Working Conditions Survey.

In regard to gathering information about principals' leadership capacity, I used the secondary data as assessed by the Teachers and Working Conditions (TWC) Survey. The tool assessed the following factors related to school culture as measured by professional development, teacher leadership, school leadership, facilities and resources, community support and involvement, time, managing student conduct, and instructional practices and support. The survey contains 72 questions rated on a Likert scale ranging from 1 to 5 and is administered to staff by means of an online survey. The study used this secondary data resulting from an assessment of leadership as determined by a section of the Teacher Working Conditions (TWC) Survey, which Wheeler (2006) concludes to be a reliable measurement of principal leadership effectiveness. Clotfelter et al. (2007) finds that the leadership items on the survey that correlated most with the leadership factor were the

items that assessed the principal's vision for the school, responsiveness to concerns about leadership, and general leadership strength.

The state of North Carolina has collected this information on each principal since 2002. The data used for this research comes from the 2010 survey, which received responses from 105, 000 educators (89% of all North Carolina educators). This information was obtained through a request for secondary data use from the New Teacher Center responsible for administering, collecting, and managing the survey data.

In terms of validity for the leadership factor, the New Teacher Center (2012) concludes that the questions included in both the school leadership and education sections were valid. The specific content included in the survey is supported by an extensive literature review conducted by the North Carolina Professional Teaching Standards Commission (NCPTSC). As for reliability, the leadership component was found to have an internal consistency of .929 (New Teacher Center, 2012), thus indicating the ability of this measurement to consistently measure leadership. As a result, this instrument will serve as the measurement of leadership for this study.

As for measuring culture, the Teacher Working Condition (TWC) Survey identifies the presence and strength of conditions within a school that support student learning as assessed through teacher perceptions (New Teacher Center, 2012). Litwin and Stringer (1968) say that perceptions are beliefs that organizational members hold about an organization that contribute to their productivity, thus suggesting a positive correlation between perceptions and meeting the goals for organizational (school) quality. Banks, Bodkin, and Heissel (2011) say that the TWC Survey serves as a tool for assessing whether capacity-building efforts, strategies that are targeted in schools with a history of

low achievement, can be determined by changes reflected in the school's leadership, culture, or other working conditions. The New Teacher Center (2012) finds that this survey provides a robust measure of aspects of a school's teaching and learning conditions, and thus indicates that the instrument is an appropriate (valid) measure of school culture. Furthermore, the validity of the assessment is also affirmed by Banks et al. (2011), who identifies the tool to be a valid assessment of school culture and affirms the construct validity of the instrument.

In addition to the instruments described above, North Carolina student achievement data was also used determine the impact that both leadership and culture have on this dependent variable. Currently, the state relies on the results of the ABC End of Grade Test to determine student growth expectations at the end of Grades 3-8 and assesses growth at the elementary and middle (Public Schools of North Carolina, State Board of Education, Department of Public Instruction, 2012).

Additionally the data from this survey allowed me to obtain information about the quality of the school culture within each of the participating schools. Leithwood et al (2004) say that the principal leader influences the school's culture. Thus an examination of data that assesses the strength of schools in North Carolina provided me insight about the quality of leadership within each school.

Further, I used the data to determine whether schools that have positive learning environments have a greater influence on student achievement in high poverty schools. In order to determine the presence and strength of these relationships, I analyzed student achievement data using the North Carolina ABC ratings.

This school level assessment is currently administered to 2,482 schools in the state of North Carolina and is based on student achievement outcomes that include Mathematics and Reading end of the year grade test for grades 3-8, Science tests in grades 5-8, end of course tests for English I, Algebra I and Biology, cohort graduation rate and student performance on alternate assessments for student with disabilities. For the purpose of this study, I devised a sample that considered whether each of the participating schools had an ABC assessment.

Validity and Reliability

The New Teachers Center (2010) says that the 2010 version of the Teaching and Working Conditions Survey is similar in content to previous iterations (2002, 2004, 2006, and 2008) of the survey and is found to be similarly valid. The survey has been tested for content, construct and predictive validity.

In terms of testing the survey's content validity, the content included in the survey is supported by an extensive literature review conducted by the North Carolina Professional Teaching Standards Commission (NCPTSC). The NTCJ (2010) says that the NCPTSC identified conditions that were believed to contribute to both teacher mobility and dissatisfaction. The authors say that initially the 30 conditions created served as the foundation for the first survey that was administered in 2002 and used to determine whether educators agreed with these conditions.

The New Teacher Center (2010) reports that in 2004, that educators were asked to use an ordinal scale to rank the importance of each question on the 2004 instrument to allow for a factor analysis to be conducted in order to verify the importance of each set of critical conditions included in each section of the survey. The researchers found that the

questions that were most important were also those that had the highest factor loads and thus these questions were included in the battery of core questions in the 2010 version of the survey.

Additionally, the Teaching and Working Conditions Survey theorizes that there are eight distinct constructs that assess the quality of the learning environment. They are time, managing student conduct, school leadership, professional development, teacher leadership, facilities and resources, community support and involvement, instructional practices and support. In order to determine the validity of these particular constructs a factor analysis was used. The New Teacher Center (2010) indicates that this analysis was run in order to determine if the assessment distinctly measured eight areas of focus. In addition, Hirsch and Emerick (2007) found correlation between working conditions as measured by the Teacher Working Conditions Survey and teacher retention and student learning. The authors also identify positive correlations between the ABC student performance composite and conditions present within a healthy school environment.

In terms of reliability of the Teaching and Working Conditions Survey, it has been assessed for internal consistency by calculating Cronbach's Alphas. The New Teacher Center (2010) reported that all measures were reliable with alpha coefficients above .859.

Data Collection Procedures

The study used secondary survey data obtained from the North Carolina TWC study from 2010. Using this data, I compared the results of the surveys administered to staff members during this year and examined and compared the results within and between participating school groups. This information assisted in determining whether

the leadership practices as implemented by the principals of the high-poverty schools are more effective in shaping the schools' culture (e.g., establishing high expectations for staff and students) and whether these factors have resulted in improved student achievement outcomes for the identified schools. The information in terms of the survey data was obtained via a verbal request and informal written request to Dr. Andrew Sioberg (see Appendix A). This request will be followed up with a formal request for the said data using the attached North Carolina Data Request form, (see Attachment B) after receiving IRB approval. The data was then delivered via email as an electronic file attachment.

Data Analysis

In order to complete the data analysis, I used Stata statistical software. The analysis included descriptive statistics and regression based models that assist in testing the hypotheses posed for this study. I initially developed a causal model mapping out the relationship between independent variables, leadership (culture) and student achievement. I then tested the relationships between leadership and the eight descriptive variables by running an Ordinary Least Squared (OLS) regression analysis. Next, in order to determine whether a more comprehensive model could tell me more about the relationships, I performed a two block nested regression analysis including school culture. This analysis allowed me to obtain coefficient information that assisted me in determining the effects of leadership.

Similarly, I examined the relationship between student achievement and the eight descriptive variables by running an OLS regression analysis. Additionally a two block nested regression analysis was run to develop a more comprehensive model in which

student achievement was regressed against the eight descriptive variables and school leadership. As in the above analysis, I was able to obtain coefficient information that allowed me to determine the effects of leadership.

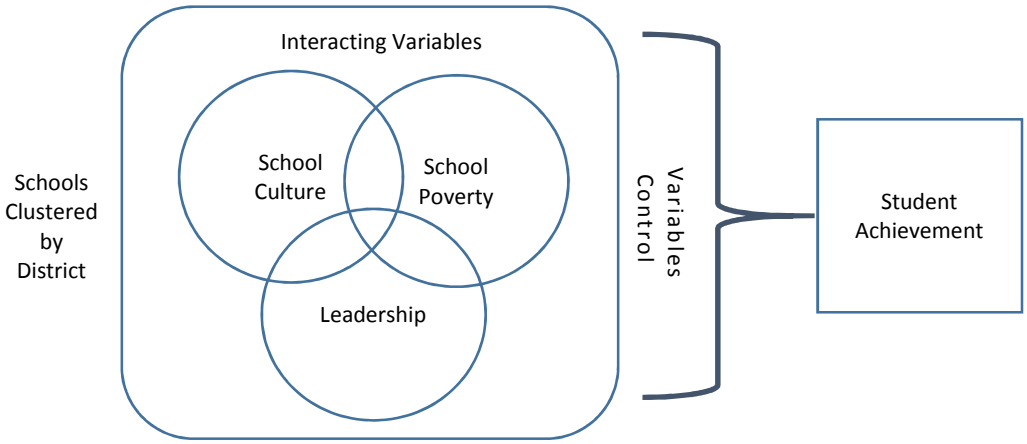

Figure 3. Analytical model

Additionally the above analysis assisted in answering the following questions related to the research:

1. Do high poverty and low poverty schools vary in relation to student achievement?
2. Does leadership effectiveness differ among leaders in higher poverty schools versus those in lower poverty schools?
3. Does a schools' culture differ among higher poverty schools versus lower poverty schools?
4. Does a schools' culture differ as a function of leadership and does that difference vary among higher poverty schools versus lower poverty schools?

The research questions emerged from the supported idea that principal practices influence school conditions in a way that impacts the student achievement of high

poverty students. Investigation into these questions will add to the body of knowledge that speaks to how quality human resources positively impact outcomes in high-poverty schools.

The multiple regression models will allow for an analysis to better understand the relationships between poverty and non-poverty groups while examining school leadership and school culture in terms of student achievement. The model will further control for school district effects and other variables such as the size of the school and length of principal tenure within the school.

Ethical Consideration

In order to ensure the safety, privacy and ethical treatment of all subjects and data included in this study, I implemented standards of the Indiana University of Pennsylvania's Institutional Review Board (IRB) in order to ensure that standard and ethical research procedures are followed. Further the subjects have incurred minimal risks associated with the study. Additionally because all data is de-identified, I have assured that all data management procedures are followed to ensure confidentially. Further confidentiality will continue to be maintained as the file obtained for this study will be secured.

Chapter Summary

In presenting chapter three, I hoped to assist the reader in gaining a clear understanding of the methodological issues that should be considered for this study. It is my intention that the reader will gain a comprehensive understanding of the research design, instruments, data analysis and relative procedures that will guide the research.

In chapter three, I presents methods that assist the reader in gaining a greater understanding about the research topic about how leadership advantages schools that serve large percentages of low-incomes students. The study's methods will assist in answering this question and others in the study by exploring the strength of the relationships based on tests of the interactions and effects among school culture, school poverty, and leadership in relation to student achievement. The next chapter will highlight the results of this study and the final chapter will discuss these results relative to the literature.

CHAPTER 4

FINDINGS

This chapter presents the analyses addressing the impact that school leaders have on school culture within high need schools in order to impact student achievement. Additionally this chapter reports the findings resulting from analyses using STATA statistical software (StataCorp, 2013) to explore data from a secondary dataset acquired from the New Teacher Center's Teacher and Working Conditions survey (2010).

The survey data obtained from the New Teacher Center (2010) includes over 105,000 respondents who participated in the annual survey. These respondents represent 89% of the educators within the state of North Carolina. Further, the New Teacher Center (2010) reports that the 2009-10 survey yielded the highest participation rate since the survey's initial administration.

This study also relies on data obtained from the North Carolina Department of Public Instruction (2010) that provides information relative to achievement including Average Yearly Progress (AYP), achievement results, accountability, teaching the Basics with an emphasis on high educational standards, and maximum local control (ABC) assessment and other information about expected achievement growth. I further obtained information that detailed the free and reduced lunch data (North Carolina Department of Public Education, 2010), which assisted me in measuring information relative to the poverty rates at each school within the state for the same year. These measures will assist in supporting the argument posed about whether poverty relates to variables (e.g. leadership and culture) to influence student achievement.

Furthermore, this chapter includes initial summary calculations that include descriptive statistics, variable generation and scale development that assists the reader in gaining contextual understanding of demographics among the students and staff, modifications occurring within the dataset, and validity and reliability of the survey tools.

Modifications/Manipulations to the Original Data

The original dataset was provided by the New Teacher Center (2010). The dataset initially included survey responses from over 105,000 participants representing a variety of educator roles including teachers, principals, assistant principals and other staff (e.g. counselors and social workers). In order to ensure that the data included assessment results that were typical of a kindergarten through twelfth grade setting, I then removed special schools and charter schools, thus making it clearer in drawing conclusions about the impact on student achievement outcomes. Further, I was advised by Keri Fiebelman of the New Teacher Center (2014) to eliminate items that measured mentorship, as these items were only administered to new teachers and would not be applicable for the majority of the educators taking the survey.

The dataset revealed that there were some cases that did not include responses for all questions. For some respondents this number was significant. As a result, I made a decision to eliminate cases in which the respondent answered fewer than 85% of the 130 questions and followed a method for imputation to address missing values. I address these processes below as I discuss the specific variables.

Lastly, each individual respondent's answers were combined with others from the specific school site to create an average school response for each question of the survey, thereby generating the school as the basic unit of analysis. The result of all omissions

and creation of averages for each school resulted in a total of 2,362 schools (or cases) included in the dataset for use in this study.

Descriptive Statistics

The research questions that I explored include the following,

- Do high poverty and low poverty schools vary in relation to student achievement?
- Does leadership effectiveness differ among leaders in higher poverty schools versus those in lower poverty schools?
- Does a school's culture differ among higher poverty schools versus lower poverty schools?
- Does a school's culture differ as a function of leadership and does that difference vary among higher poverty schools versus lower poverty schools?

In order to address the research questions for this study, it is important to have an understanding of state and school demographics. This information will assist the reader in gaining a perspective of the populations served, as well as strengths and challenges faced in the process of analysis.

According to the state's website North Carolina Department of Public Instruction (DPI) website (Retrieved from http://www.ncpublicschools.org/fbs/accounting/data, Mar. 8, 2016) there were 2,518 schools in 2010. This number includes charter schools, which were excluded from the dataset used for this study. Within the state there exist 214 school districts serving over 1.4 million students in grades K-12.

I obtained data relative to the race and ethnicity of the students that attend schools within the state of North Carolina from the state's DPI site. Like other data obtained from this site, the data depicting the student demographics for 2009-10 is publically accessible and downloadable as an Excel document. However, because there were some modifications to the Teaching Working Condition Survey data (2010) resulting in dropped cases, I omitted student demographic data for those same schools to ensure alignment. This action resulted in student racial demographics that were slightly modified from the information presented on the state website for school districts in North Carolina.

Also, because the data used for this study did not provide total male/female categories that included the total for all race categories within schools in the state, the demographics related to the data were determined by first calculating the total males and total females including all races (i.e., American Indians, Asians, Hispanics, Blacks and Whites students). I then created a new variable for each sex resulting in a measure of total males and females within the district. This allowed me to determine the total percentage of male students (51.4%) and total percentage of female students (48.6%) in schools within the state of North Carolina.

In terms of the racial groupings, because the dataset only included information relative to the total males and females within each race category, I was not able to easily determine the percentage of each race within the schools represented by the dataset. As a result, I first determined the total number of students by combining the numbers of male and female students for each race category to obtain the total number of students within each category. Each category was then added together to obtain the total number of

students. In order to check the accuracy of this number, I also combined the total number of males and females to ensure that this number aligned to the total number of students. The two methods together resulted in a total of 1,331,744 students, a number representing all students attending schools within the state of North Carolina. Table 1 which depicts these numbers appears below.

As a next step the total students within each race categories were determined. This was done by dividing the total race for both the male and female groups for each race by the total number of students within the state. This resulted in a percentage for each of the racial groups and represent the percentages for students attending the schools included in the study. The percentages break down as follows: American Indians (1.58%), Asians (2.56%), Hispanics (13.19%), Blacks (27.46%), and Whites (55%). Information related to the student race percentages are included in the bar graph appearing in Figure 4. One can obtain these percentages by also dividing the total number of students in a race category by the total number of males and females.

Table 1

North Carolina Total State Gender and Enrollment Tabulations

Male Students	Female Students	Total American Indian Students	Total Asian Students	Total Hispanic Students	Total Black Students	Total White Students	Total Pacific Islander Students	Total Students (All Races)
681101	650643	21053	34113	175727	365764	734039	1048	1331744

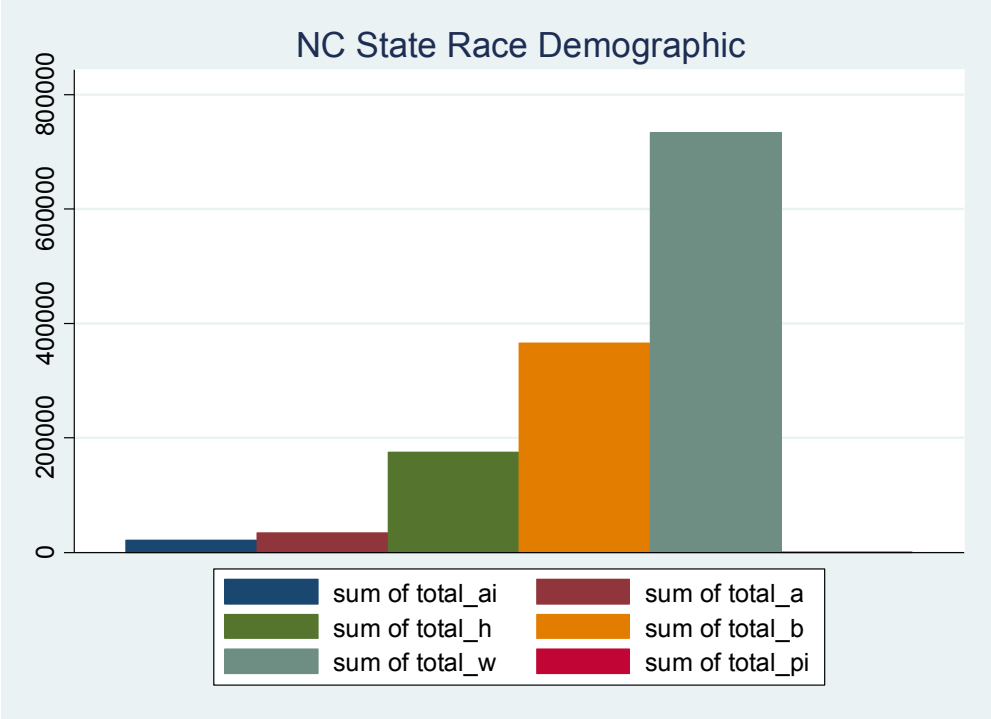

Figure 4. North Carolina student racial demographics

In terms of the race demographics, there are some slight differences that exists between information obtained from the data used for this study and that reported by the state. I attribute these differences to be the result of deleted cases occurring as a result of missing data and incomplete data removed from the dataset. Nonetheless, the differences are small and demonstrate that the state data and the data presented for this study represent similar percentages among the race categories (see Table 2 for comparison).

Table 2

Comparison of 2010 North Carolina Student Data and the Final Research Data Set

Race/Ethnicity	North Carolina State Data	Research Data
American Indians	1.4%	1.6%
Asians	2.6%	2.6%
Blacks	31.0%	27.5%
Hispanics	11.1%	13.2%
Whites	53.8%	55.0%

Sex

The calculations determining the percentages of male (51.4%) and female (48.6%) students appear above and include each race category (i.e., American Indian, Asian, Hispanic, Black and White students).

Number of School Districts

During the 2009-10 school year, the state of North Carolina reports that there were 115 school districts excluding charters (EDFacts State Profile, 2012). This number corresponds to the numbers of school districts represented in this study. Additionally, the average number of schools participating in the survey was determined by dividing the number of schools responding to the survey by the total number of schools within a respective district. This resulted in an average of 20 schools per district.

Number of Classroom Teachers within the District

The dataset obtained from the North Carolina Department of Public Instruction (2010) represents the number of teachers within the school. This number was modified to align to the dataset used for this research. Again, due to the data set modifications given missing data and specialty schools, the total teachers included in the study's dataset may appear slightly different from the numbers included in the original dataset.

For this study the researcher used the state data to determine the average number of teachers within each district by running a tabulation of the classroom teacher variable. This produced the total of number of teachers within the district for 2010 at 96,092 with the average per school being 40.95 teachers per school. The distribution of average number of teachers in North Carolina has a positive skew and indicating that the average

number of teachers participating in the survey is clustered at the left tail of the graph as indicated in Figure 5.

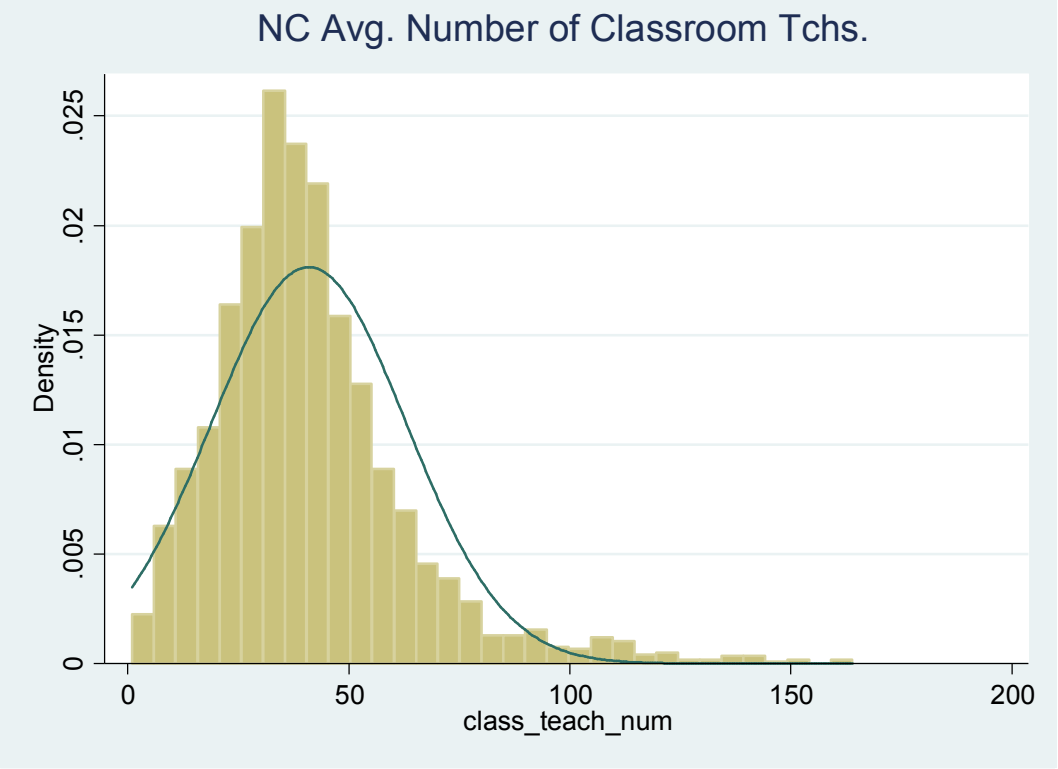

Figure 5. Histogram of average number of classroom teachers in North Carolina

Educators' Years of Experience

The data indicate that most of the educators completing the Teaching and Working Conditions survey had an average of 4.2 years of experience. A review of the histogram for these data shows that the distribution has a slight negative skew indicating that the years of experience clusters in the right tail of the graph as indicated in Figure 6.

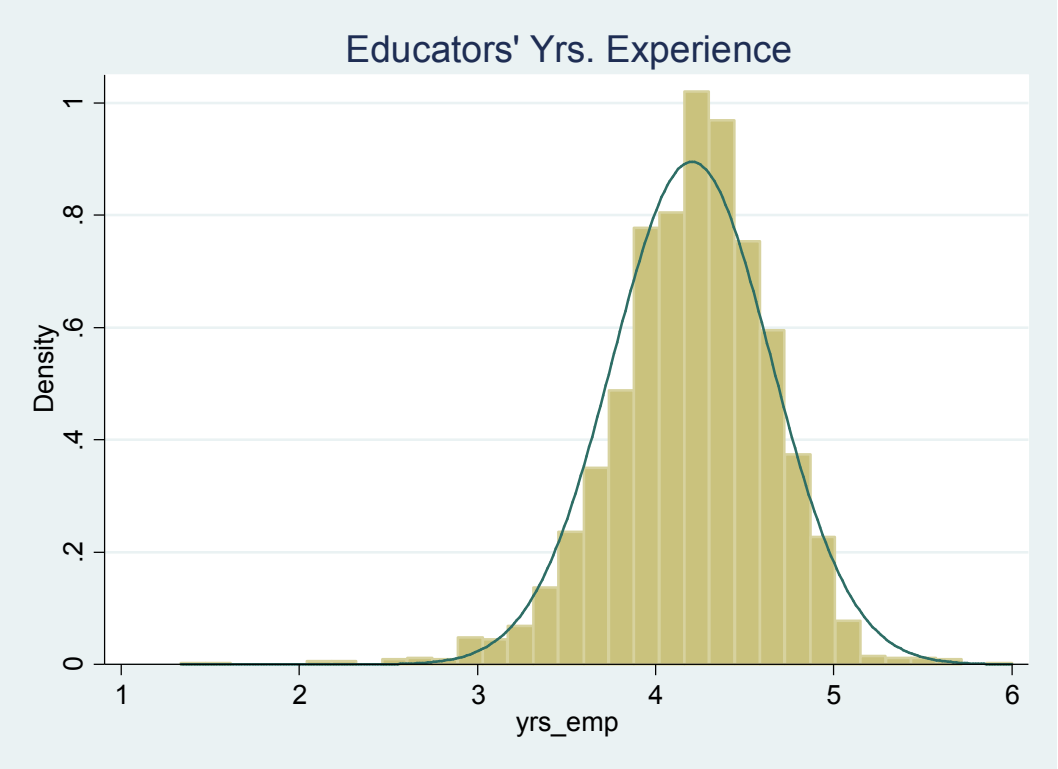

Figure 6. Histogram of mean/average years of employee experience.

State Poverty

In terms of student poverty within the state, I used the state of North Carolina's 2009-10 free and reduced lunch data obtained from the North Carolina Department of Public Instruction (DPI) data site for 2010 (http://www.ncpublicschools.org/fbs/accounting/data). This measure is an indicator often used to represent poverty levels in school (Aud et al., 2010). For school districts within the state of North Carolina, the free/reduced lunch rates ranges from 0-100 with the mean free/reduced lunch rate at 58.4%. The histogram below (Figure 7) clearly depicts this distribution.

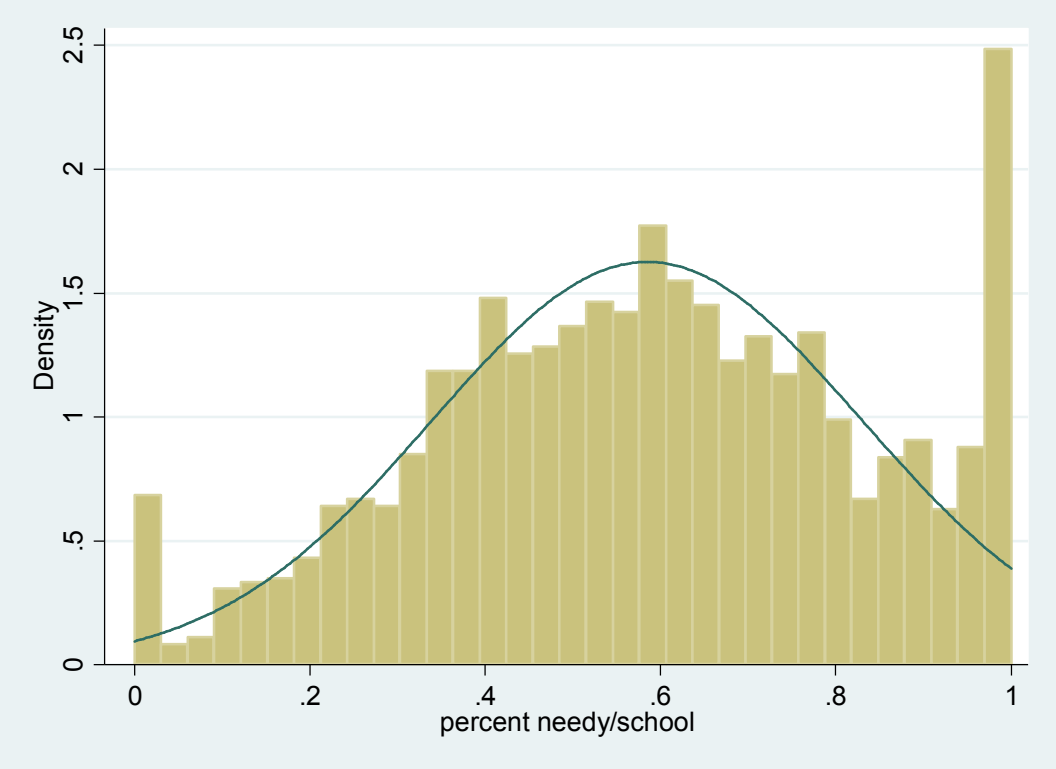

Figure 7. Histogram of school poverty percentage within the state of North Carolina

As for the social economics within the state, these data suggest that about 37% of the schools within the state are designated as "low need' as measured by free and reduced lunch rates at or below 50%. Additionally, about 34% of the schools within the state are designated as having "some need." These schools have free and reduced lunch rates between 51-74%

Variable Generation

In this section, I introduce the primary dependent variable (DV) or outcome endogenous variable, which measures student achievement, and provide details about how I developed it. Within this study, I also treat leadership and culture as dependent variables, specifically; I treat them as endogenous mediator variables. As such, the analysis involves a set of hierarchical regressions and the causal model addresses

relationships to leadership and then to culture prior to the final exploration of relationships to achievement, I also treat leadership and culture as independent variables. In so doing, discuss these variables in the subsection addressing independent variables where I share information related to my process for generating independent variables in addition to providing information about other descriptive characteristics not previously noted.

Dependent Variable

Student achievement acts as the primary dependent variable of interest (i.e., endogenous outcome variable). This variable comes from the 2009-10 ABC assessment data attained through the Public Schools of North Carolina State Board of Education Department of Public Instruction (2010). This is a publicly accessible database from which the researcher was able to download the relevant dataset as an Excel spreadsheet. It should be noted that I first thought about using a categorical variable that I created for achievement. However, after acquiring and analyzing the ABC data, I determined that the variable was continuous in nature, which would likely provide more comprehensive information related to student achievement. Nonetheless, the categorical information was retained to provide reference points for discussion purposes.

Categorical development of achievement. The achievement expectation category was created considering previously determined expected growth and high growth categories. These variables were originally coded as 1 (yes) indicating that the school has met expected growth targets or 0 (no) indicating that the school has not met its expected growth targets.

Additionally in terms of the high growth category, a similar coding structure was used. Schools obtaining high growth are denoted with a 1 (yes) or 0 (no) for not having high growth on the state assessment.

The researcher then created a new variable named achievement expected (ach_exp), where the achievement expected was determined based on whether the school met the expected growth targets and whether the school obtained high growth. Three categories were created where "0" was coded to mean that the school did not meet its expected growth targets, nor achieved high growth on the state assessment; 1 = expected growth; and 2 = greater growth than expected. A table detailing schools falling into each of the growth categories is detailed below in Table 3.

Table 3
Student Achievement Expected Growth Categories

Defined categories	**Expected Growth Y/N**	**High Growth Y/N**	**Freq**	**Percentage**
Less than Expected	0	0	276	11.8
Expected	1	0	844	36.2
Greater than Expected	1	1	1213	52

Continuous dependent variable. The dependent variable representing achievement was obtained from the North Carolina Department of Public Instruction website (2015). The information includes the results of each school's 2010 ABC student assessment. The information listed in the dataset includes a compilation of scores ranging from two to 100, which represents the average score of a participating school.

In terms of the generation of this variable, I was interested in understanding the variability of this score as reported in the results appearing in Table 4.

Table 4

Interquartile Results for Continuous Dependent Assessment Variable (ABC results)

Mean	Median	Std. Deviation	Pseudo Std. Dev.	n
74.02	76.9	14.23	12.68	2326

A histogram (see Figure 8) of this student achievement variable with a normal curve overlay demonstrates that the variable has a negative skew. As result, the regression models using this variable may not have normal i.i.d. errors. Once the models are finalized, a decision will be weighed to determine whether to transform the independent variable or consider another alternative (i.e., Huber-White Sandwich Estimator).

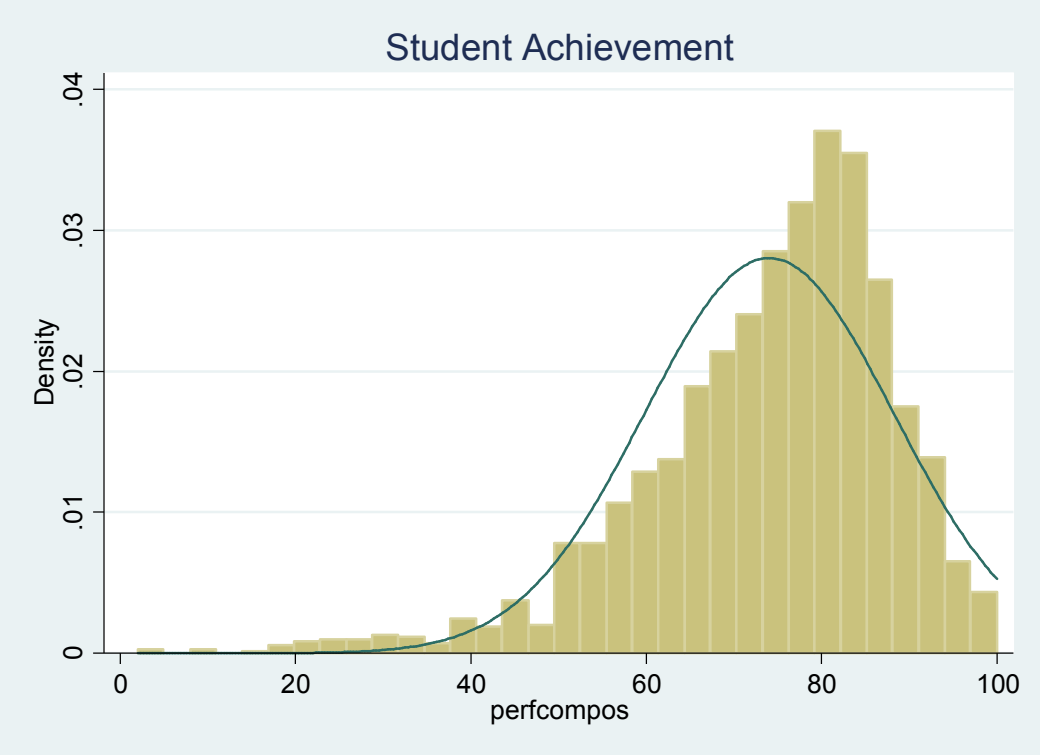

Figure 8. Histogram of school student achievement percentage within the state of North Carolina

Independent Variables

In terms of the independent variables, I selected variables based on literature that speaks directly to the factors that can affect student achievement; essentially, school leadership through school culture. In the analyses presented later in this chapter, and as noted above, I treat these variables both as independent and dependent variables; or more explicitly, as endogenous mediator variables. A more comprehensive discussion related to conceptualization of these variables and the supporting research was presented in Chapter 2. Here I note that this study includes both a composite leadership and a composite culture scale as measured from responses to the Teaching and Learning Conditions Survey.

Each of these scales were assessed across eight separate constructs that include the following: time, facilities and resources, community support and involvement, managing student conditions, teacher leadership, school leadership, professional develop, instruction practices, and support. These components are believed to impact on the achievement. The composite variables identified for this study include school leadership and school culture.

School leadership. School leadership was assessed using the questions related to leadership on the Teachers Working Conditions survey. Because there are two aspects of leadership assessed via these questions, I first determined whether the two measures of leadership (i.e. leadership perception and leadership effort) were correlated. I run a correlation between the two measures (see Table 5) and found that a high correlation exists between the two measures of leadership. This suggests that the two leadership scales are unidimensional and thus allows me to combine the two measures of leadership

into one measure of leadership and thus this combined measure represents the multi-item leadership scale used in this study.

Table 5

School Leadership Scale Correlation

School Leadership Variable	Correlation
School Leadership Perception	1.00
School Leadership Effort	.9006

In order to generate this variable, I calculated the mean leadership survey result for each school. This was obtained by adding the mean for each of the 11 leadership questions and then dividing by the total number of questions. After obtaining the mean leadership score for each school, I was then able to obtain the mean leadership results for the total number of participants and found that the average leadership score for the 2364 participants is 3.148488 (where 1=poor and 5=high leadership quality). This indicates that most schools agree that their school has average school leadership.

In order to determine whether the measure of leadership was symmetrical with normal tails, I calculated the interquartile range (IQR), the standard deviation, the mean and the median. Based on the results, I was able to determine that the measure of leadership is symmetrical as indicated by the mean (3.13) and median (3.128) being very similar to one another. Additionally an indicator of normal spread is evident by the similarities that exist between the standard deviation of .2595 and the pseudo standard deviation of .2415. A comparison of these values appear in Table 6. This is further illustrated in Figure 9, which shows a relatively normal shaped distribution of multi-item leadership scale. In addition to being a component that assesses school leadership as part

of the school culture scale, the construct of school leadership assesses the strength of leader quality within the school. A Cronbach's alpha of .923 was reported for this measure by the New Teacher Center (2010).

Table 6

Interquartile (IQR) Results Table

Mean	Median	Standard Deviation	Pseudo Standard Deviation
3.13	3.128	.2595	.2415

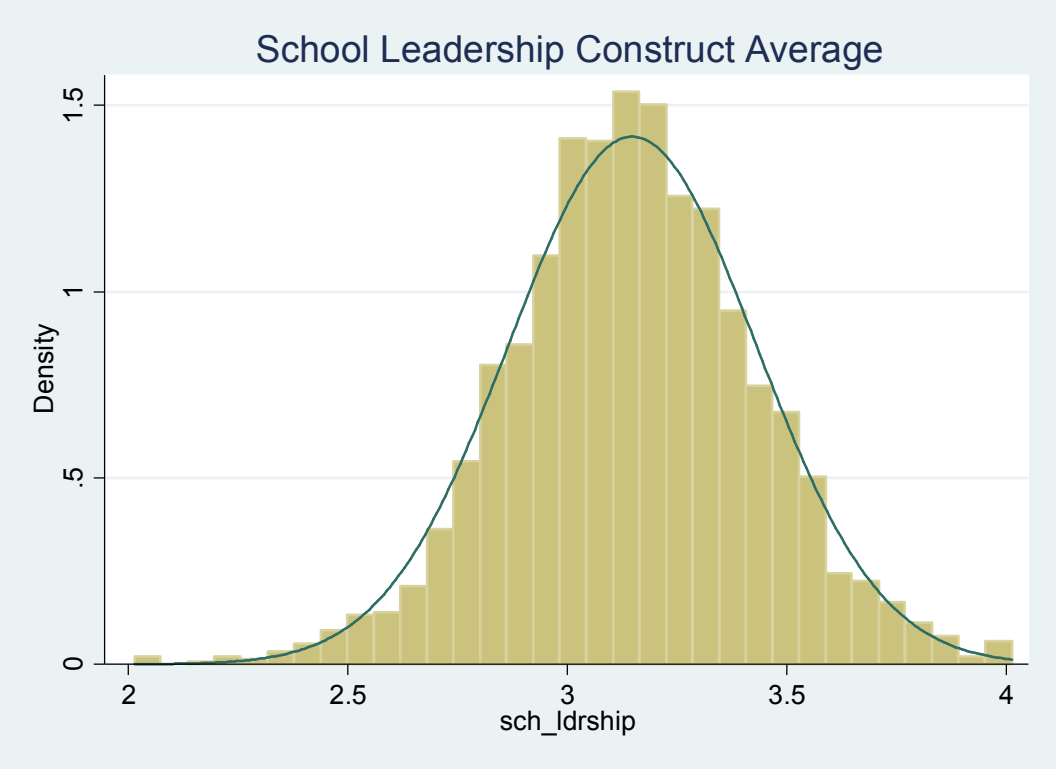

Figure 9. Histogram of school leadership construct variable

School culture. Another independent variable that I will introduce as part of this study is school culture. Survey results from the 2009-10 Teacher and Learning Conditions Survey determine the strength of the school culture within the state of North Carolina. The survey assesses culture strength across eight separate constructs that

include *Time, Facilities and Resources, Community Support and Involvement, Managing Student Conduct, Teacher Leadership, Professional Development and Instructional Practices and Support.*

The New Teacher Center (2010) identifies this survey to be a reliable and valid assessment of school culture. I calculated the Cronbach's alpha for this total multi-item scale to be .9217. This is confirmed by the New Teacher Center (2014) who indicates that the survey typically produces Cronbach's alpha coefficients within ranges from .86 to .96.

Validity. Explicitly in terms of its validity, the survey and each construct has been assessed for validity as part of the 2014 North Carolina Teaching and Working Conditions Survey (NTC, 2014). The authors reported that they conducted external validity tests of the survey scale, as well as tested for the alignment between the survey constructs and survey items using the Rasch rating scale. Researchers of the New Teacher Center (2014) say that these tests assist in determining the correlations between item-measure correlations, item fit, functioning of the rating scale, unidimensionality, and generalizability of the instrument.

In addition to the above, New Teacher Center's researchers also conducted external validity test, which found that some constructs of the survey became more reliable when separated into the separate constructs (NTC, 2010).

Reliability. The internal consistency of the Teaching and Working Conditions Survey was tested and documented by the New Teacher Center (2010) in which researchers ran Cronbach Alphas analysis to calculate alpha coefficients. The researchers indicate that these ranges serve as indicators of the instrument's high level of consistency

and reliability as confirmed by the eight survey constructs having alphas above .859. The alphas for each construct have been summarize in Table 7 derived from information provide in the analysis conducted by the New Teacher Center (2010).

Table 7

Cronbach Alpha summary for the North Carolina Teaching and Working Conditions Survey

Constructs (Factors)	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Mean Inter-Item Correlations	Number of Items
Time	.859	.860	.468	7
Facilities & Res.	.883	.884	.458	9
Comm. Supp. & Involvement	.896	.898	.524	8
Managing Std. Cond.	.903	.903	.570	7
Tch. Ldrship.	.931	.933	.637	8
School Ldrship.	.923	.924	.504	12
Prof. Dev.	.951	.952	.603	13
Instruc. Prac. & Supp.	.860	.865	.445	8

Source: New Teacher Center, 2010

Because each of the constructs has previously been factor analyzed, the New Teacher Center (2010) says that the constructs are valid measures for determining the presence of positive teacher working conditions. As a result of the previous analysis conducted by the New Teacher Center, I was able to average the Teaching and Working Conditions Survey responses (NTC, 2010) to create means for each of the eight components of the survey by school. I also averaged the comprehensive survey reports at

the school level by each individual survey question within the construct, thereby obtaining an average survey response for each question.

Imputation when creating multi-item scales. The school culture variable was generated from the related school culture constructs to create a single multi-item scale. I managed the missing values at the subscale level. I did this based on the fact that each scale had a high alpha coefficient of at least .859 (range = .859 to .951). I therefore averaged across rows that had missing values. In so doing, I was able to create a mean score for each culture subscale by dividing the appropriate row sum by its respective "n" exclusive of missing values. As a result, missing values were replaced with the determined average row mean by each subscale. Summing all mean subscales together and dividing by the number of subscales provides a measure of school culture according to the New Teacher Center (2010).

Educator experience. Clotfelter et al (2006) says that for educators, quality is often defined by experience, licenses and graduation from competitive colleges and universities. In terms of the experience of the staff, an analysis of the data finds that in general a majority of the staff within the state are experienced educators with 72% being an educator for more than four years as demonstrated in the summary statistics for this variable appearing in Table 8. Additionally, the data reveals that only two schools (.08%) have a high concentration of new teachers or teachers with less than two years of experience. These data points suggest that the state has a workforce that would be deemed high quality. Figure 10 illustrates the point in additional detail and shows the variable to be generally a normal distribution.

Table 8

Summary Statistics for the Educator Experience

Variable	Observation	Mean	Std. Dev.	Min	Max
Educator Experience	2364	4.204249	0.44572	1.333333	6

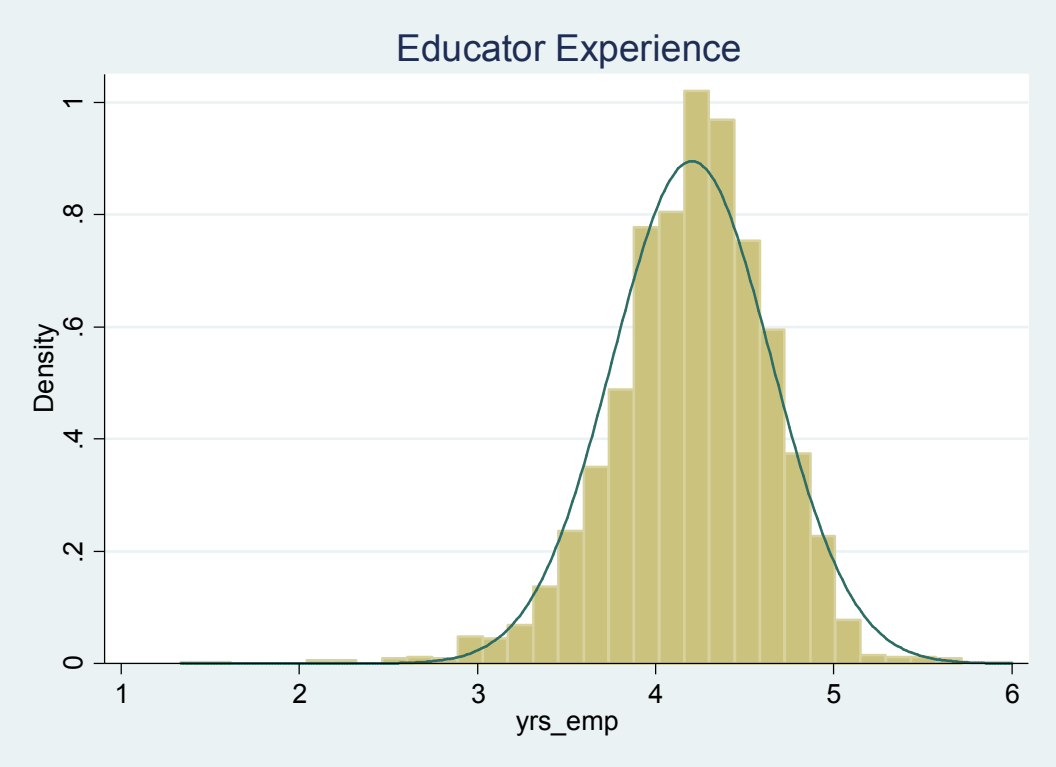

Figure 10. Histogram of educator experience

Student teacher ratio. There are many research studies that have debated the impact of reduced class size relationship to student achievement. In terms of the impact for low income students Gamoran and Long (2006) says that resources like reduced class sizes can improve outcomes for both low-income students.

In terms of the North Carolina state data, the average number of students to teacher ratio is approximately 14 to 1. This suggests a relatively reasonable student to teacher ratio. The National Center for Education Statistics (NCES) finds that in 2011 the

national student teacher ratio was 16 students to 1 thus indicating that the state of North Carolina's student teacher ratios are lower than the national average.

In terms of calculating the student teacher ratio, I was able to do so by creating a new variable from the existing data. Specifically I divided the total number of students by the number of classroom teachers assigned to the school. This resulted in the average ratio of teachers to students across the state as indicated in Table 9 below. Additionally a histogram of teacher Student Ratios within schools in the State appears below in Figure 11.

Table 9

State Teacher Student Ratio Calculation

Ratio	Linearized Std. Error	95% Conf. Interval	
2364	4.204249	14.12236	14.3535

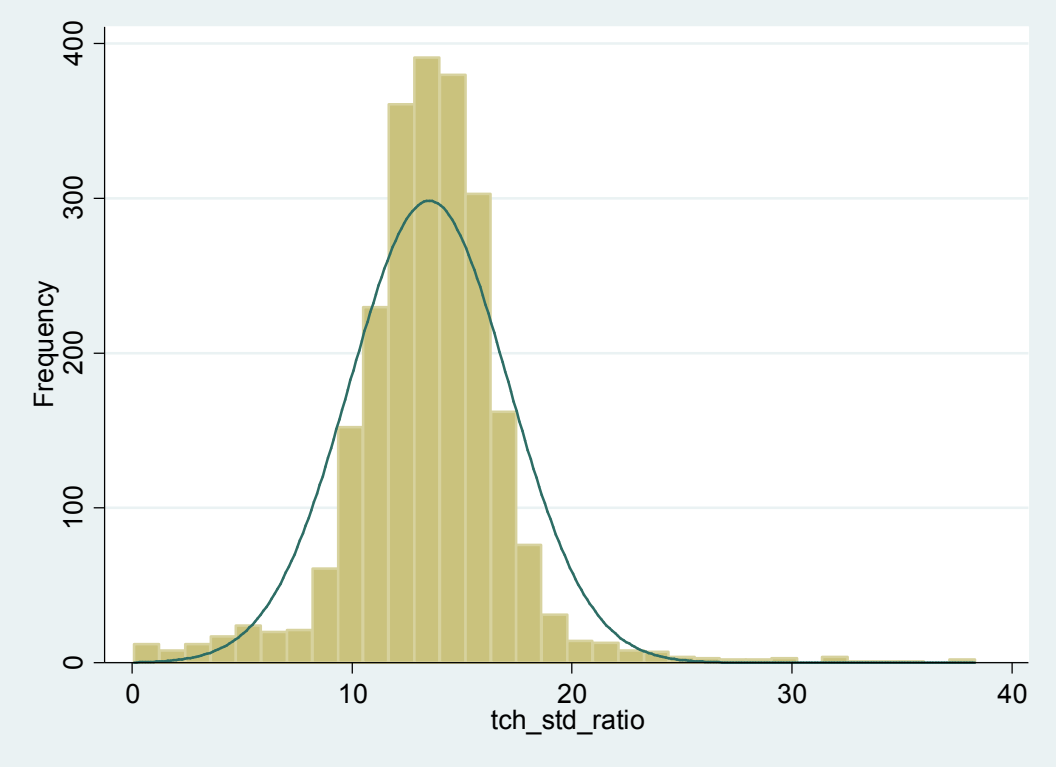

Figure 11. Histogram of teacher student ratio

School poverty. Aud et al. (2010) says that free and reduced lunch rates are indicators of poverty, the higher the percent of eligibility the higher the degree of poverty. For schools in North Carolina, 50% of schools have free and reduced lunch rates at .59. This suggests that there is a high degree of poverty within the state as previously shown in Figure 12, which is generally symmetrically distributed as initially presented as part of the descriptive statistics that begin on page 3.

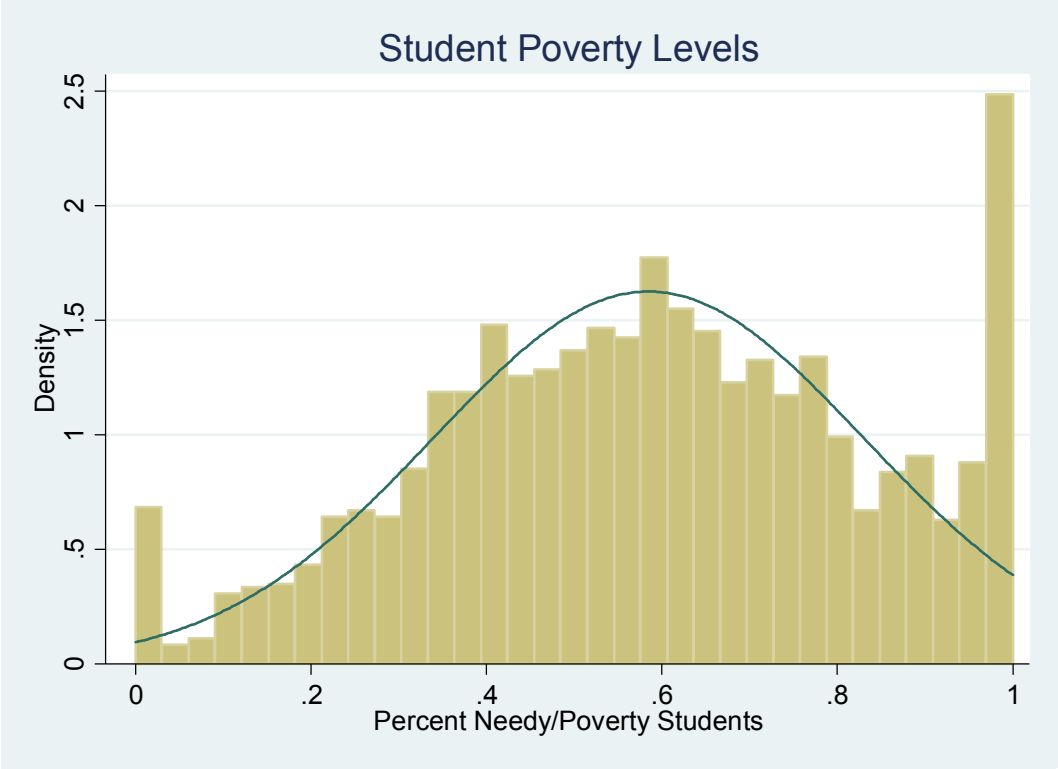

Figure 12. Histogram of North Carolina high need schools

Summary of Variables

The above sections in this chapter provided an overview of the variables that I included in this study. The dependent and independent variables were defined and discussed in terms of measurement. Because the leadership and culture variables are measured via multi-item scales comprised of multiple constructs, the above sections of this chapter introduce the reader to the constructs associated with each multi-item scale.

The above sections also provide a summary of univariate statistics related to these measures. This information assists the reader in gaining a high level overview of the variables and their generation. For the reader's convenience and ease, I have included a table (see Table 10) including the list of dependent and independent variables for the research. Additionally, I have included information relative to variable measurement and coding.

Table 10

Summary of Variables

Variable Type	**Variable Name**	**Continuous or Categorical**	**Item Coding**
Endogenous Outcome	Achievement	Continuous	0-100
Endogenous Mediator	School Culture • Time • Facilities and Resources • Community Support • Student Conduct • Teacher Leadership • Professional Development • Instructional Practices	Continuous (All)	1-4 (All)
Endogenous Mediator	School Leadership	Continuous	1-4
IV of Primary Interest	School Poverty	Continuous	0-1
Control Variable	Educator Exp.	Continuous	1-20+
Control Variable	Student Teacher Ratio	Continuous	1-20+
Control Variable	Student Race • Number Other Minority Students • Number of Hispanic students • Number of Black students • Number of White students	Continuous	1-20+

Data Analysis

In this section of the chapter, I use the proposed causal models to assist in testing the research hypotheses. First I look at relationships with leadership and then relationships with school culture. I then explore relationships with student achievement.

Exploring Relationships with Leadership and School Culture

I begin by using ordinary least squares regression to test the hypothesis that the eight independent variables (years as educator; years as an educator at a school; Hispanic population; Black population; White population; other race/ethnic population; student teacher ratio; and poverty) have an effect on leadership quality as measured by the Teaching and Learning Conditions Survey (NTC, 2010) multi-item leadership scale. Additionally, I hypothesize that the eight identified independent variables and school leadership have a relationship to school culture. These hypotheses are captured below in a causal model. Figure 13 highlights the assumed order of causality for the variables appearing in the model.

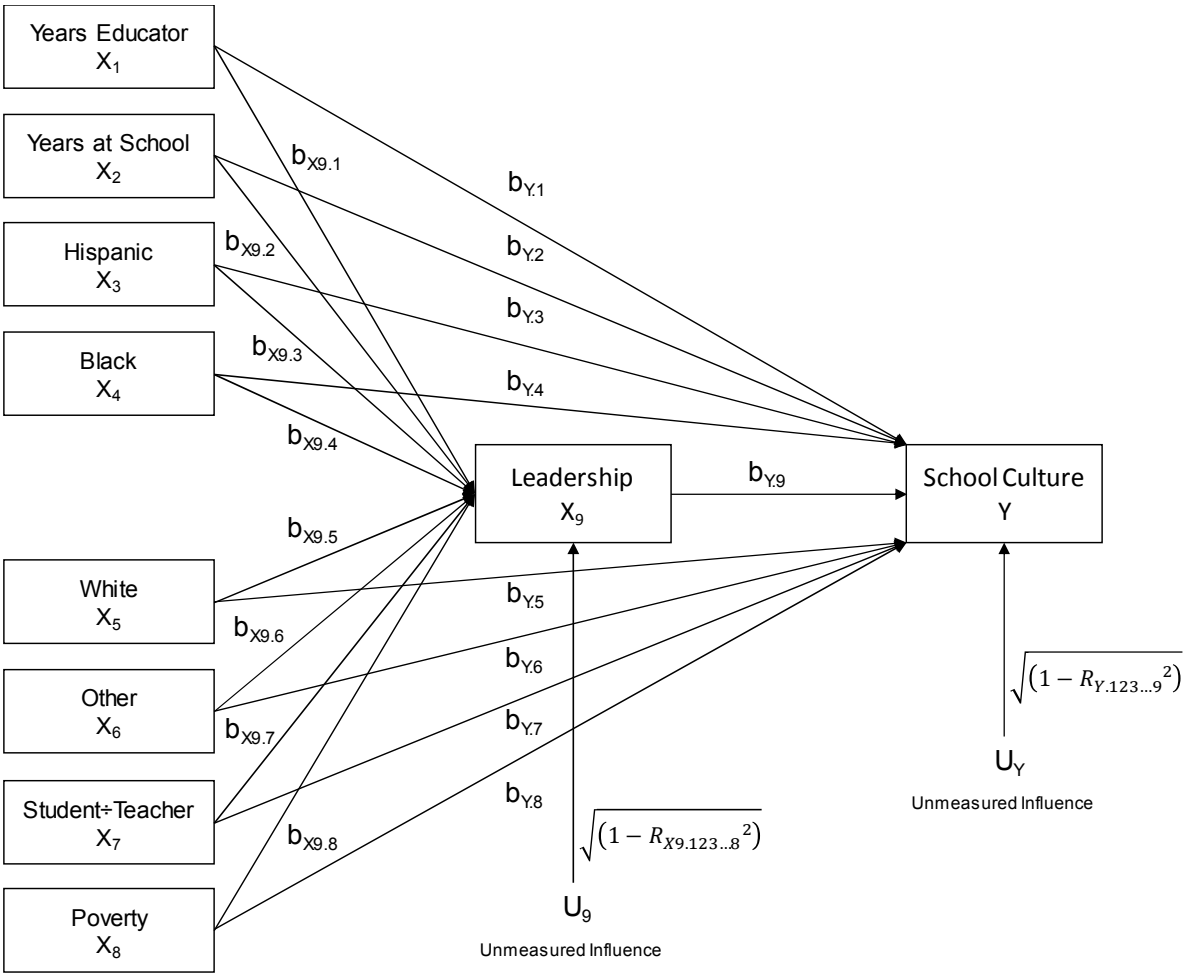

Figure 13. Causal model of school leadership and school culture

Ordinary least squares regression. After developing the causal model for the research, I analyze the relationships and obtain specific information relative to the available data. My exploration of the data begins by using an ordinary least squares (OLS) regression model that also calculates the beta coefficients (i.e., standardized coefficients). In so doing, I sought to determine the relationship between the variables included within the model (i.e. leadership, culture and student achievement). To do this, I first ran two separate regression models. The first model, explored the relationship between the dependent variable of school leadership on the demographic variables (i.e.

years as educator; years as an educator at a school; Hispanic population; Black population; White population; other race/ethnic population; student teacher ratio; and poverty).

Next, I ran a second model using school culture as the dependent variable. As in the first model, the dependent variable was regressed against the same demographic variables with the addition of school leadership. I am further interested in learning how much variability can be explained by adding the variable school leadership to the model. I am also interested in determining if leadership imparts any mediating effects on the demographic variables. To accomplish this I plan to use hierarchical (nested) regressions. However, before running the nested regressions, I critique the full models to determine whether the data fit these models.

Critique of school leadership and school culture models. I first ran the two regression models and determined that there were two cases (ID-1434 and ID-1022) that appeared as outliers. After investigating these cases in more detail, I realized that each case has a very high student-teacher ratio and they most likely represent cyber schools or another atypical school configuration. As a result, I made the decision to eliminate these two cases.

I also investigated the existence of multicollinearity and whether influential cases were impacting the findings. To test for multicollinearity, I calculated variance inflation factors (VIF). Table 11 shows the presence of reasonable VIFs.

Then, in terms of the first regression model, I investigated if the errors reflected the underlying model assumptions by exhibiting normal independent identically distributed (i.i.d.) errors. The model produced normal i.i.d. errors with only slight

evidence of heteroskedasticity (see Figure 14). As a result, I ran the model both with and without robust standard errors. This did not appear to affect the results. Therefore, given only minor demarcation from the assumptions and no difference in results when using the robust standard errors, I concluded that OLS regression was a reasonable tool to use for this analysis.

Table 11

Test for Multicollinearity of Model Regressing School Leadership on Eight Independent Variables

Variable	**VIF**	**1/VIF**
Educators' years in school	1.88	.533006
Number of White students	1.87	.535027
Poverty	1.85	.540503
Educators' years of experience	1.84	.544824
Teacher student ratio	1.35	.740198
Number of Hispanic students	1.23	.813173
Number of Black students	1.23	.814360
Number Other minority students pop.	1.06	.944783
Mean VIF	1.54	

Next I ran a leverage versus squared residuals plot in order to determine whether any leveraging effects are impacting the model. A review of the plot appearing as Figure 15 demonstrates that there is one case (ID-1817) that is exerting high leverage. However, the case appears to have a good fit and therefore I determined that it does not have an influencing effect. Upon closer exploration of case ID-1817, I found that it does not have any unusual characteristics. Subsequently dropping this case seems unwarranted and running the model without this case did not appear to result in any differences in the findings. As a result, the case was retained as part of the analysis.

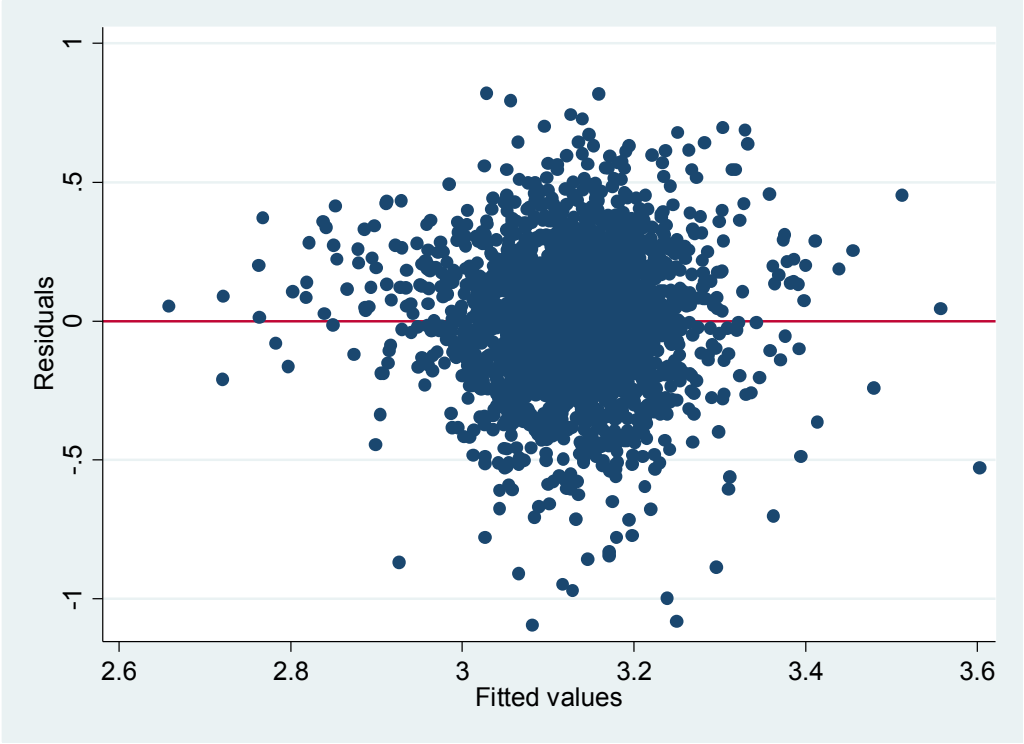

Figure 14. Residuals versus fitted plot for the regression model of school leadership on eight independent variables

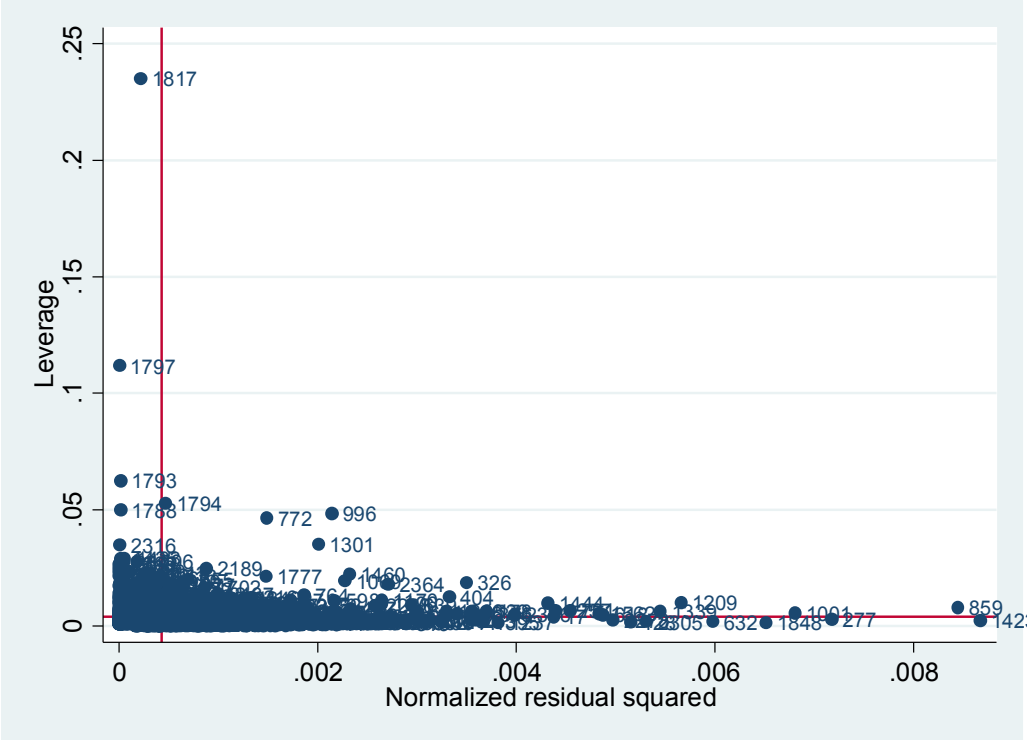

Figure 15. Leverage versus squared residuals plot for regression model of school leadership on eight independent variables

I ran a similar set of analyses including a residuals versus fitted values plot and a leverage versus squared residuals plot on the regression model that includes school culture as the dependent variable. As determined in the previous model, I found no multicollinarity, noted evidence for normal i.i.d. errors, and observed no influencing cases (see Figures 16 and 17).

As previously noted in the other model, I observed in the leverage versus residuals squared plot that case ID-1817 exhibits high leverage, but also has a good fit. As a result, I determined that it is not influential. Upon further examination, I also determined that there are no unusual characteristics associated with this case and thus no reason to drop the case. The case is therefore included in the model.

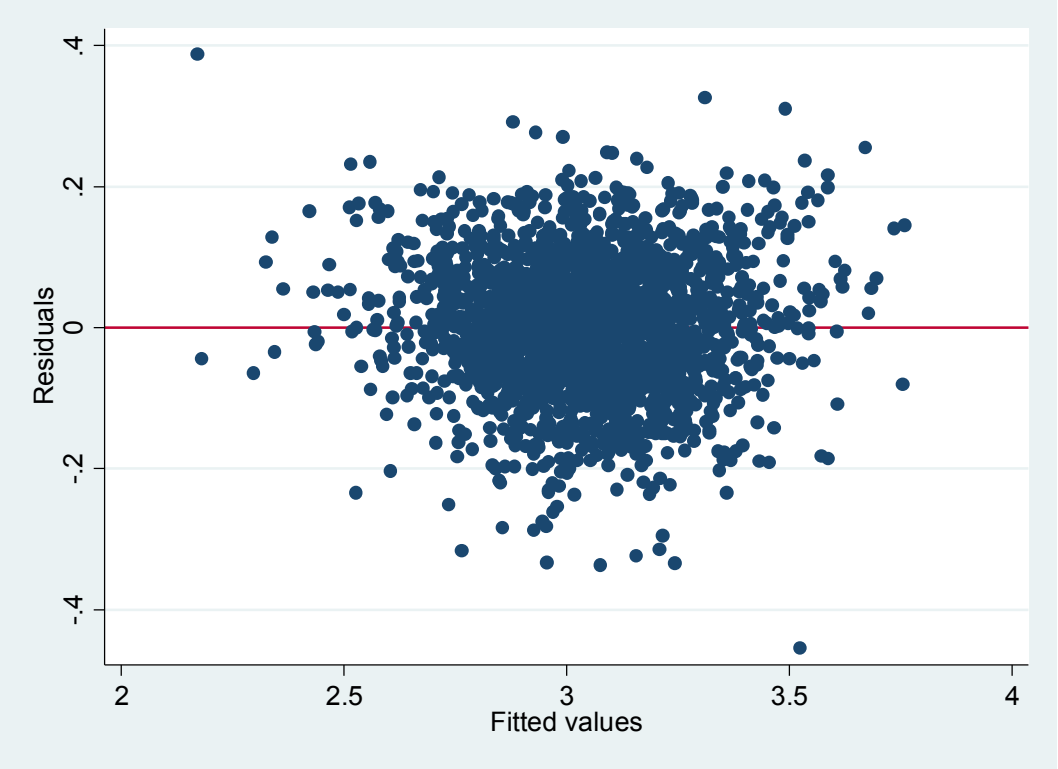

Figure 16. Residuals versus fitted plot for regression model of school culture on eight independent variables and school leadership

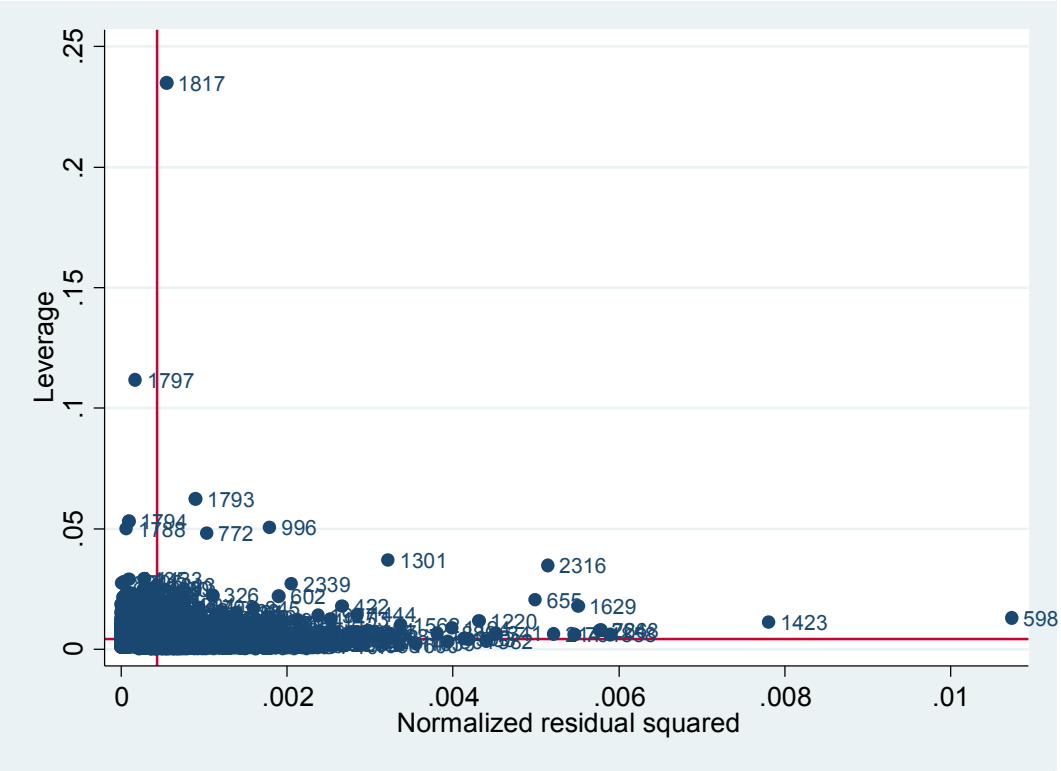

Figure 17. Leverage versus residual plot for regression model of school culture on eight independent variables and school leadership

Regression of leadership on demographic variables. I began the regression analysis by examining the relationship between the eight independent variables and school leadership. This model provides measures of the direct effects represented in the causal model below by $b_{X9.k.}$ (See Figure 18).

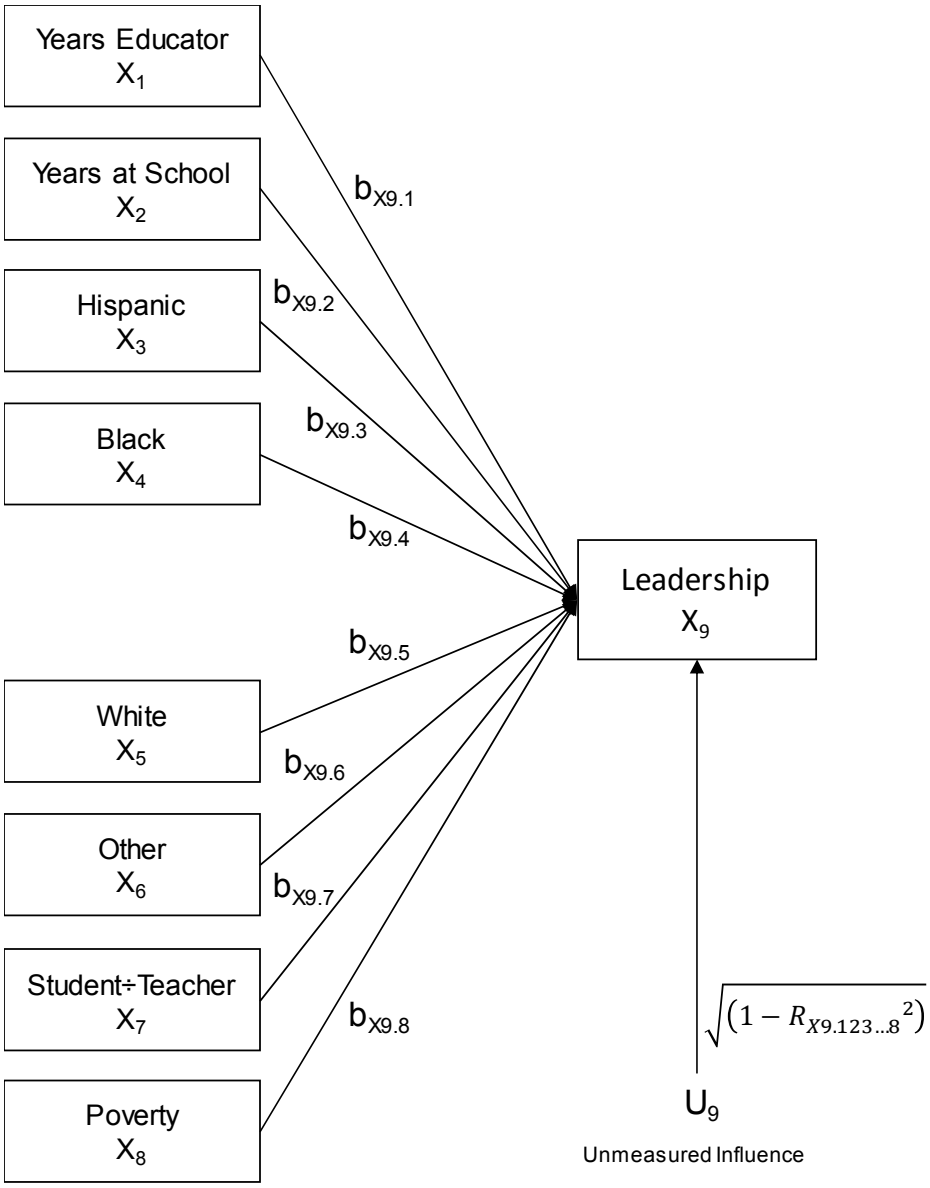

Figure 18. Causal model representing relationships between eight independent variables and school leadership

The results of the regression show a relatively low R^2 value (.1100) and adjusted R^2 value (.1069). Nonetheless, I find that the hypotheses related to this regression analysis were supported by the data outcomes, which show statistical significance for most of the independent variables as indicated by the p-values and Beta coefficients in the below table.

Table 12

Regression Output of School Leadership on the Eight Independent (Demographic) Variables

Independent Variables (Demographics)	**Coeff.**	**P-Value**	**Beta Coeff.**
Educators' Experience	.0838845	0.000	.1442996
Educators' years in school	-.0523523	0.000	-.1209264
Number Hispanic Students	-.0002494	0.001	-.0731788
Number Black Students	-.0003040	0.000	-.1985613
Number White Students	-.0001265	0.000	-.1287602
Number Other Minority Students	-.0000538	0.558	-.0118111
Teacher Student Ratio	.0071596	0.000	.0996641
Poverty	-.1285017	0.000	-.1213177

R^2 value =.1100; Adjusted R^2 value= .1069

Most notably, all things being equal, the analysis demonstrates the largest relationships exist between school leadership and educators' experience, educators' years at the school, Black student population, White student population and poverty. In terms of race, the results reveal that both number of Black students and number of White students are significant and negatively correlated to school leadership. This seems to suggest that higher leadership quality may exist in schools with more diverse populations. Yet, as the number of Black students increase, the quality of leadership is lower despite controlling for the other variables. This result deserves more emphasis in that the number

of Black students appears to have a greater relationship to school leadership quality than do the other variables in the model.

Also in terms of the relationship between teacher student ratios and leadership, the output demonstrates a significantly positive relationship. This suggests that as teacher student ratios improve so does school leadership. Even though we do not actually know the causal direction, we do see that a positive relationship exists and while it seems probable that we find better leadership attracted to schools with higher teacher student ratios, it also seems possible that school leaders are in positions to make decisions about teacher student ratios and in turn these teacher student ratios impact quality of leadership.

The output from Table 13 also supports the key hypothesis that states a relationship exists between poverty and school leadership. The results suggest a significant and negative correlation between poverty and school leadership. Irrespective of the other variables, as poverty increases the quality of school leadership decreases. This is consistent with a breadth of research literature (Loeb et al., 2009; Papa, Lankford, & Wyckoff, 2002; Rice, 2010; Branch et al., 2009) that speaks to the importance of leadership and the unlikelihood that schools that educate disadvantaged students are least likely to have effective leadership.

The beta coefficients provide information about the comparative effects of the independent variables on the dependent variable. As previously noted, the Black student population has the largest effect on school leadership (b^*=.199). The second largest effect is educators' experience (b^*=.144). Other effects to note in the model are the White student population with a b^*=.129, educators' years at the school and poverty both with b^*=.121, student teacher ratio with a b^*=.100, and lastly, Hispanic student population

with b^*=.073. Figure 19 places the beta coefficients into the causal model providing a visual of these regression results. Insignificant coefficients were noted a zero (.000).

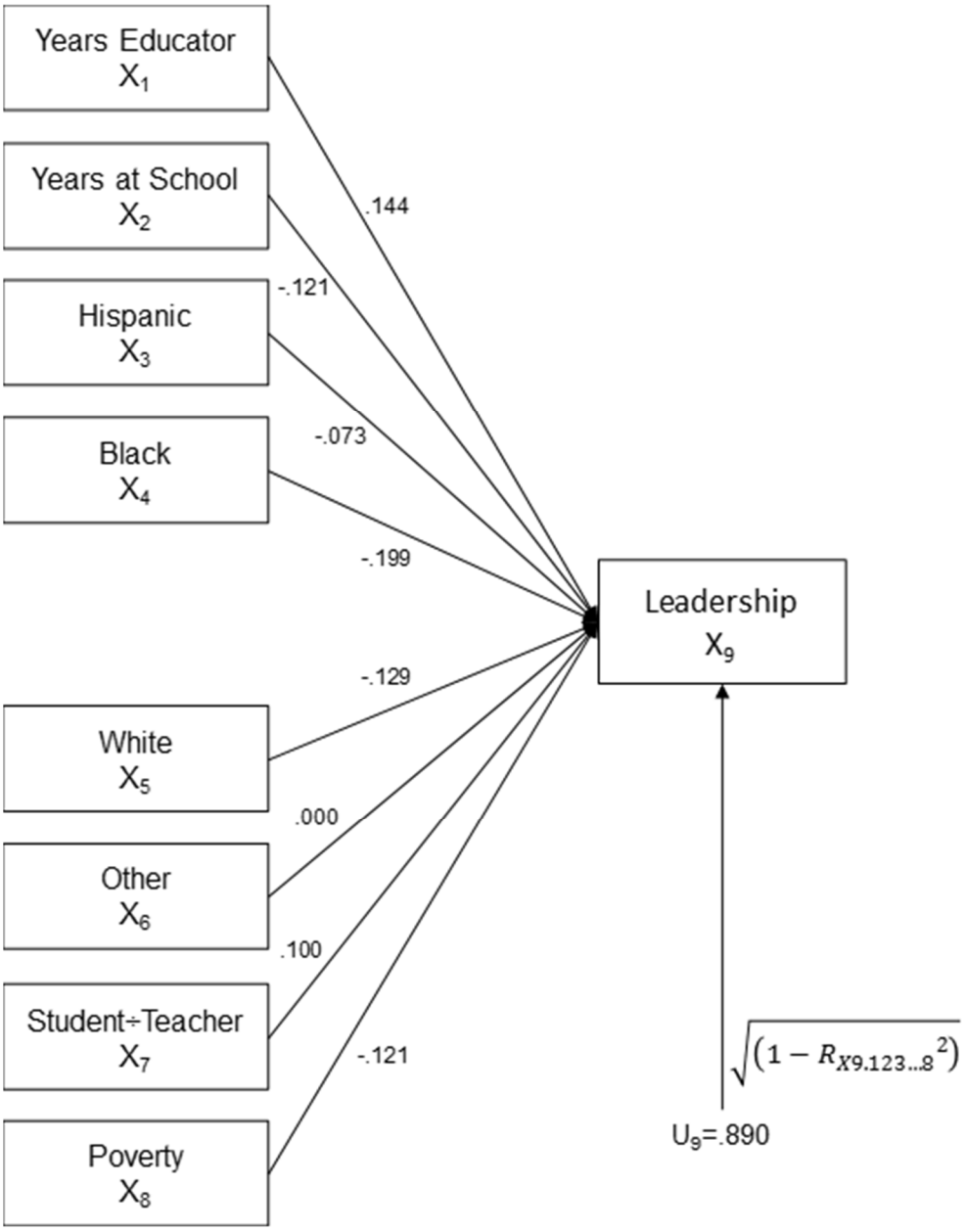

Figure 19. Causal model representing relationships between eight independent variables and school leadership including the direct effects

Nested regression with culture, leadership, and demographic variables. As a next step and in order to determine whether a more complex model provides more comprehensive information about the relationship between the dependent variables (i.e., endogenous mediator variables), school culture and school leadership, I conducted a nested regression. Specifically, I am looking to determine whether Block 1, which tests the relationship of school culture on the demographic measures, provides significantly different explanatory power about the relationship than the information in the model included in Block 2, which adds the additional variable, school leadership.

The results for the Block 1 model, return with both a low R^2 (.1635) and adjusted R^2 (.1606). In terms of the significance of the independent variables, the nested model for Block 1 finds that all variables with the exception of the "Total other students" variable are significant as indicated in Table 13.

Table 13

Nested Regression Output of School Culture on the Eight Independent (Demographic) Variables (Block 1)

Independent Variables (Demographics)	Coeff.	P-Value	Beta Coefficient
Educators' Experience	.0850159	.000	.1707650
Educators' years in school	-.0479310	.000	-.1292759
Number Hispanic Students	-.0002291	.000	-.0784793
Number Black Students	-.0003573	.000	-.2724827
Number White Students	-.0001166	.000	-.1385493
Number Other Minority Students	.0000633	.407	.0162172
Teacher Student Ratio	.0057056	.000	.0927395
Poverty	-.1259843	.000	-.1388823

R^2 value=.1635

In terms of Block 2 of the nested regression, I find that the strength of the model improves by adding the leadership variable. Precisely, as a result of the leadership variable, the R^2 value of the model significantly increases from .1635 to .8314 (F=9172.45; *p-value* < .000). This indicates that school leadership accounts for 66.79% of the explained variability in the final model, which further suggests that leadership has a substantial effect on school culture. Although the actual causal relationship is unknown, these results are supported by several research studies (Leithwood and Levin, 2005; Loeb et al., 2009; Papa, Lankford, Loeb, & Wyckoff, 2002; Rice, 2010; Branch et al., 2009) that speak to the positive influence that school leadership has on improving school culture.

The influence of leadership is further demonstrated by the beta coefficients from Block 2 (as reported in Table 14) where leadership appears to have a mediating effect on the demographic variables indicating that leadership is the mechanism through which the demographic variables operate on school culture. This is a causal relationship supported by the literature of several studies (Leithwood and Levin, 2005; Further, Pitner's, 1998; Papa, Lankford, Loeb, & Wyckoff, 2002; Rice, 2010; Branch et al., 2009) that indicate that leadership is a factor that can impact school culture in a way that impacts student achievement outcomes. As a result of adding the school leadership variable, the beta coefficients associated with the demographic variables from the Block 1 decrease. Furthermore, three of the demographic variables that were previously significant become insignificant when the leadership variable was added to the model.

Table 14

Nested Regression Output of School Culture on the Eight Independent (Demographic) Variables with School Leadership (Block 2)

Independent Variables (Demographics)	**Coeff.**	**P-Value**	**Beta Coefficient**
Educators' Experience	.0227823	.000	.0457612
Educators' years in school	-.0090911	.037	-.0245198
Number Hispanic Students	-.0000440	.112	
Number Black Students	-.0001318	.000	-.1004731
Number White Students	-.0000227	.021	-.0270070
Total Other Minority Students	.0001032	.003	.0264490
Teacher Student Ratio	.0003939	.520	.0064025
Needy	-.0306495	.004	-.0337873
School Ldrship	.7418954	.000	.8662796

R^2 value =.8314

Denoting the indirect effects, direct effects, total effects, and percent of mediation provides a logical summary of the results associated with this causal model. Table 15 presents this information. I arrived at the indirect effects by multiplying the beta coefficient for leadership from the Block 2 regression (.866) by each of the beta coefficients for the demographic variables from the previous regression of leadership on the demographic variables (see Table 12 and Figure 18). The direct effects correspond to the Block 2 beta coefficients and the total effects equate to the sum of each variables indirect and direct effect. The percent of mediation stems from the ratio of a variable's indirect effect to that variable's total effect.

Table 15

Summary of Effects on School Culture and the Mediating Effect of School Leadership

Variable	Indirect Effects	Direct Effects	Total Effects	Percent of Mediation
Educators' Experience	.125	.046	.171	73.10%
Educators' Years in School	-.105	-.025	-.135	80.77%
Number Hispanic students	-.063	.000	-.063	100.00%
Number Black Students	-.172	-.100	-.272	63.24%
Number White Students	-.112	-.027	-.139	80.58%
Number Other Minority Students	.000	.026	.026	--
Teacher Student Ratio	.087	.000	.087	100.00%
Poverty	-.105	-.034	-.139	75.54%
School Leadership	--	.866	.866	--

Leadership appears to have a significant positive relationship with school culture such that the presence of quality leadership appears tantamount to the presence of having a healthy school culture. The idea that leadership influences school culture is a theory that is well documented in the literature (Leithwood and Levin, 2005; Loeb et al., 2009; Papa, Lankford, Loeb, & Wyckoff, 2002; Rice, 2010; Branch et al., 2009) which speaks explicitly to the leader's ability to influence the school culture in a way that contributes to improved student achievement outcomes.

Given the research support for the effect of leadership on culture, it is not surprising to see the strong mediating effects that leadership has on the other variables. The majority of the effects that a variable has on school culture operate through leadership. For example, we know that poverty has a negative relationship with leadership (see Table 13 and Figure 19) and leadership mediates 75.54% of this effect such that nearly 76% of the total effect that poverty has on school culture comes through leadership. The idea that disadvantaged students, as is the case of minority students and those who are economically needy, are least likely to have effective leadership is supported by research advanced by Andrews and Soder (1987). It would seem important, therefore, to improve the negative relationship between poverty and school culture by maximizing leadership in our high poverty schools. All of this points to the importance of having strong leadership in our higher poverty schools. This notion, however, deserves more research.

Similarly, the effect of teacher student ratio on school culture completely operates through leadership. Because teacher student ratios have a positive relationship with leadership and with school culture it would again seem reasonable to maximize

leadership to gain better teacher student ratios. The mediating effects of leadership range from near 63% to 100%.

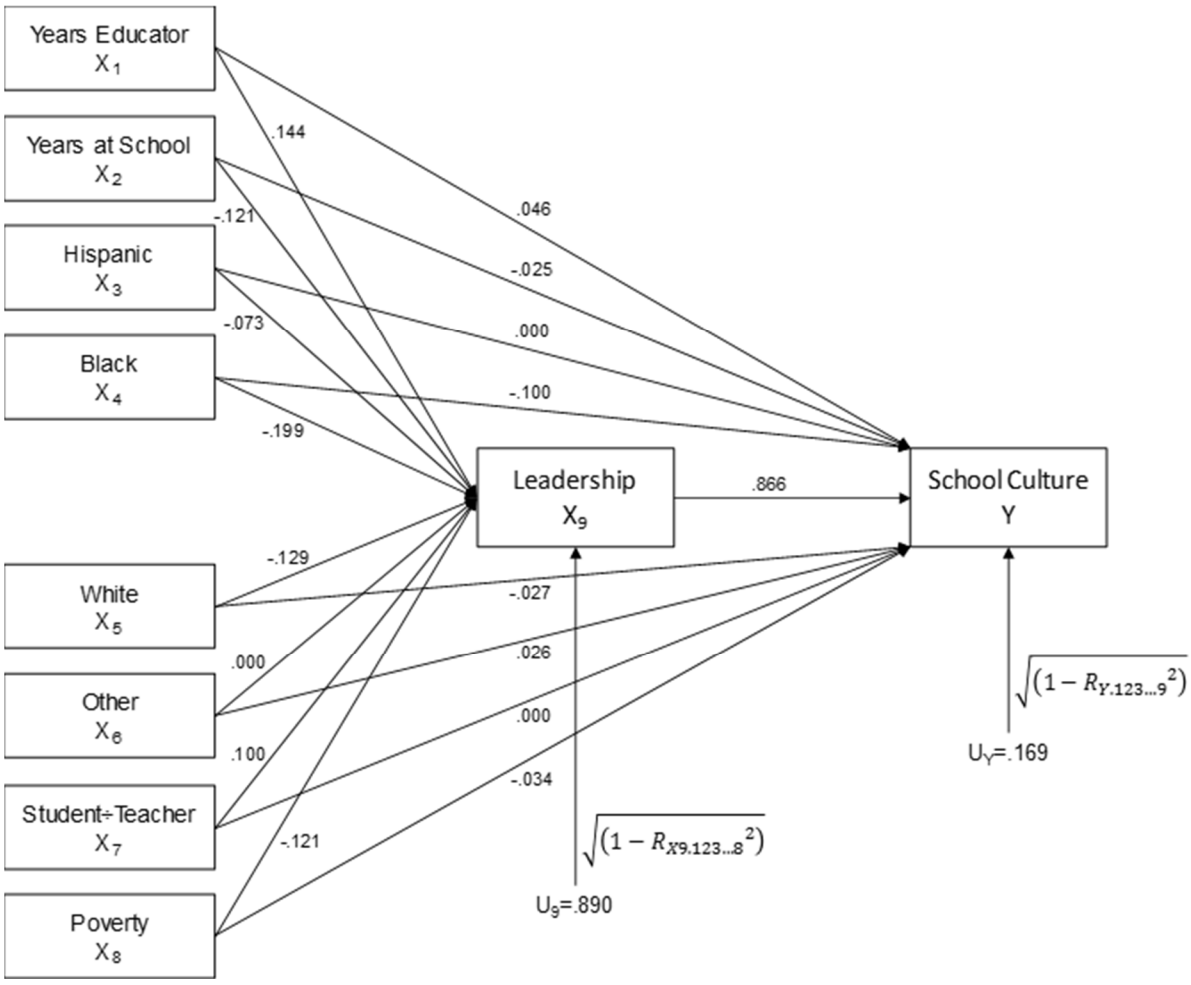

Figure 20. Causal model representing relationships between eight independent variables, school leadership, and school culture

In addition to the mediating and direct effects of leadership to school culture, the total effects of the independent variables are of interest. Race, and in particular being Black, appear to have a significant and negative effect on the quality of the school culture. This is true even more so than White or other minority races. However, I do not

know what exactly is associated with the Black experience that contributes to the association with negative school culture. This observation deserves future investigation.

In terms of the positive impacts, the results show that educator experience and teacher ratios have positive effects on school culture. The findings appear to lay out a theory of action which posits that improved outcomes for high poverty students can be obtained by increasing the number of experienced teachers, improving teacher student ratios, increasing diversity among the student population and reducing poverty. However, leadership has a strong mediating effect on all of these variables.

Analysis of Student Achievement

I also hypothesized that poverty had an effect on school achievement, which contributed to a larger theory about the effects of school leadership acting through school culture in a way that impacts student achievement. In this part of the paper I want to explore the effect sizes of leadership and school culture on the student achievement variable.

I explored the above hypotheses by conducting a second nested regression analysis. I began the process by regressing the initial eight independent variables onto the student achievement variable which appears in Block 1 of the model.

For Block 2 of the model, I wanted to include both the school leadership and school culture variables. However, given the extremely strong relationship between leadership and culture, including them in the same model would result in multicollinearity. In a sense, leadership and culture are very similar variables. While I was attempting to determine the effects of culture and the effects of leadership on student achievement, controlling for the eight independent variables, I chose to examine the

impact of one of these variables at a time, but not the two together. Further, because the principal emphasis of this study centers on the examination of school leadership, I decided to concentrate on a model that includes only the leadership variable. Nonetheless, I also explored a model that included culture and not leadership, the results were nearly the same demonstrating that these highly related variables were nearly identical in their measure.

Before interpreting the regression model, I determined the fit of the data. I did this by critiquing the model in terms of its underlying assumptions. The first regression used in the causal model (see Figure 20) came from the initial regression above that examined the relationship between leadership and the eight independent variables. The second regression was a nested regression that examined achievement on the eight independent variables and then examined achievement on these same variables along with leadership. This allowed for testing the degree to which leadership added to the explained variability and help to determine if leadership served as a mediating variable.

Diagnostics for the student achievement analyses. I first validated that a model including both leadership and school culture was multicollinear. Table 16 gives the VIFs for such a model including school leadership and school culture and demonstrates that the school leadership and school culture variables had very low tolerances. Including them in the same model would actually reverse signs, so I remained with my approach to use at a model that only included leadership.

Table 16

VIF for Model Regressing Student Achievement on School Leadership and School Culture Variables

Variable	VIF	1/VIF
School Cult.	5.90	0.169573
School Leadership	5.54	0.180575
Needy	1.91	0.522328
Number White Std.	1.91	0.522328
Educators' Years in School	1.88	0.531406
Educators' Experience	1.85	0.540711
Teacher Std. Ratio	1.37	0.729603
Number Black Std.	1.33	0.749268
Number Hisp. Std.	1.23	0.810258
Number Other	1.06	0.941618
Mean VIF	2.40	

I had previously conducted diagnostics for the regression of leadership on the eight independent variables, but needed to examine the second model that regressed achievement on leadership and the other eight independent variables. This model did not show evidence of multicollinearity. This is confirmed by the VIFs and tolerances reported in Table 17.

Next I examined the errors by using a residuals versus fitted values plot (see Figure 21). This plot depicts the existence of heteroscedasticity and a departure from the underlying assumption of normal i.i.d. error. Instead of transforming the dependent variable, I use the Hubert-White Sandwich Estimator to calculate robust standard errors, which lower the assumptions when errors diverge from assumptions made by theory (Hamilton, 1992).

As in the other model diagnoses, I also investigated for influential cases. None were found as indicated in Figure 22 below. I then established a causal model as seen in Figure 23 that uses only the leadership variable.

Table 17

VIFs for Model Regressing Student Achievement on Leadership and Eight Independent Variables (no multicollinearity*)*

Variable	**VIF**	**1/VIF**
Needy	1.91	0.524204
Number White Stds.	1.91	0.524257
Educators' Years in School	1.88	0.532674
Educators' Experience	1.84	0.544269
Teacher Student Ratio	1.37	0.729724
Number Black Stds.	1.27	0.785691
Number Hisp. Stds.	1.23	0.811141
School leadership	1.12	0.890641
Total Other Minority	1.06	0.945579
Mean VIF	1.51	

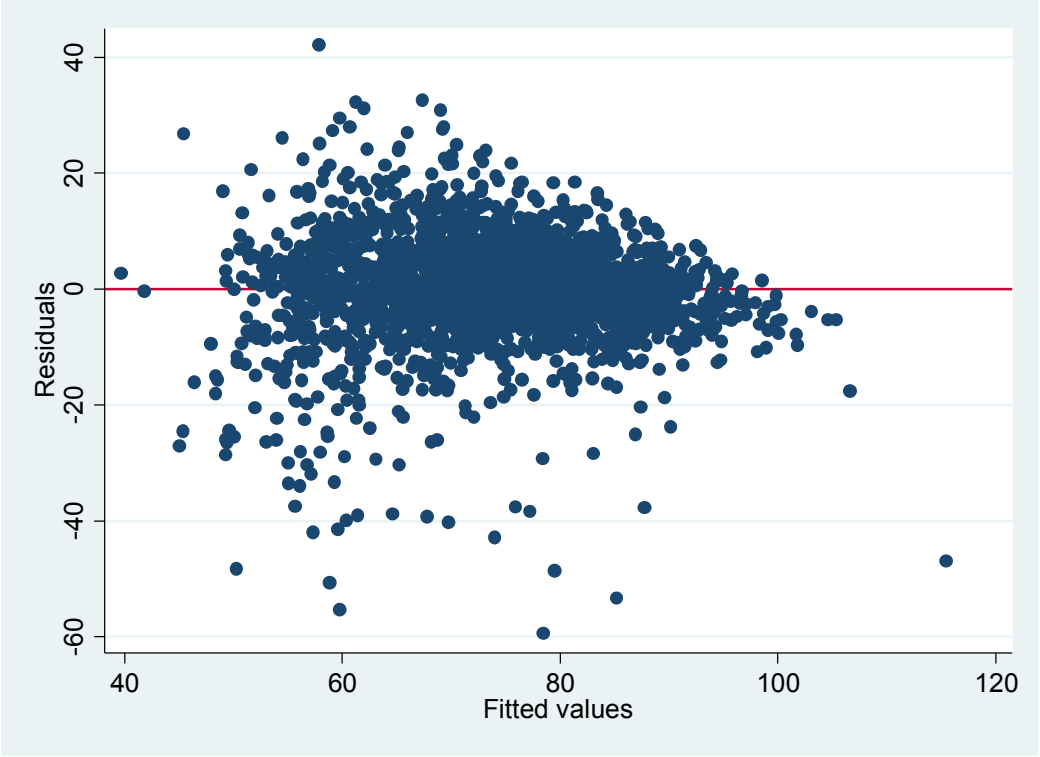

Figure 21. Residuals versus fitted plot for the model regressing student achievement on school leadership and eight independent variables

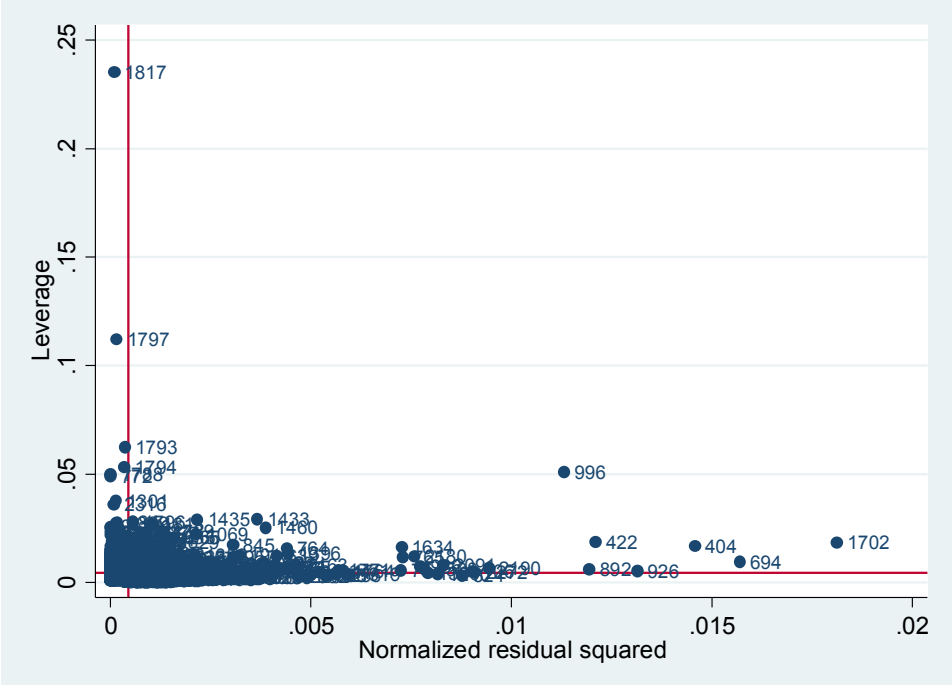

Figure 22. Leverage versus residual plot for the model regressing student achievement on school leadership and eight independent variables

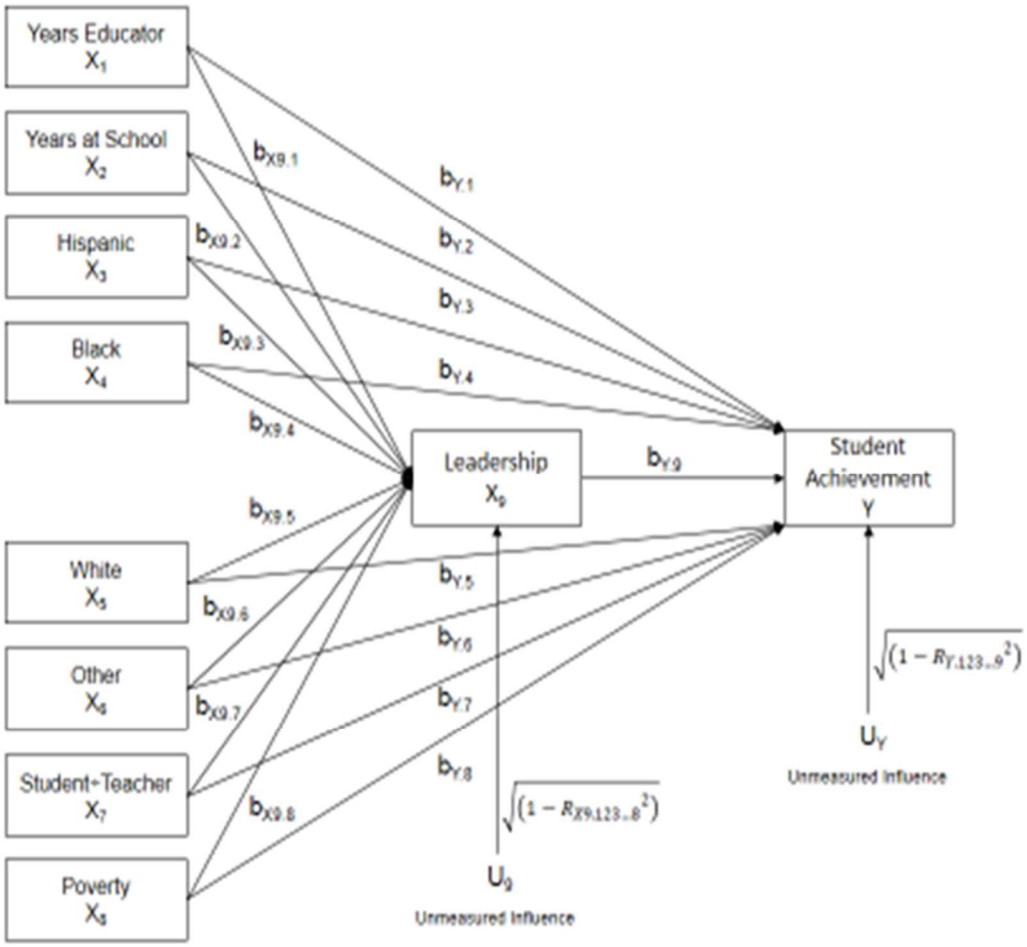

Figure 23. Causal model representing relationships between eight independent variables and school leadership and student achievement

Regression analyses for student achievement causal model. In order to test the causal model, I included the results of the previous regression analysis that regressed leadership onto the eight initial independent variables. From this model, I am able to secure the effects of the independent variable that are placed into the model below (Figure 24). The effects of the independent variables on leadership are determined by the results of the beta coefficients.

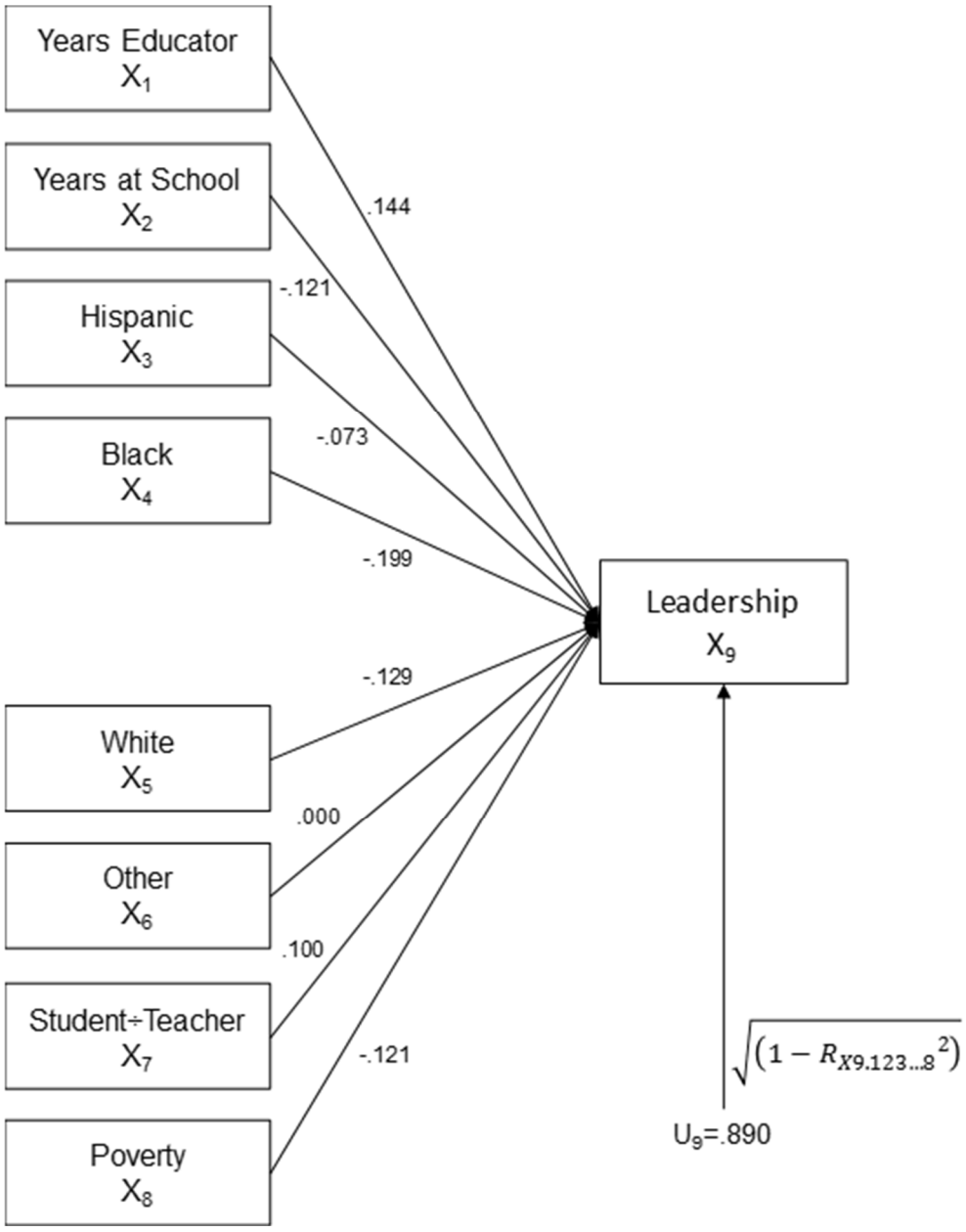

Figure 24. Causal model representing relationship between eight independent variables and leadership variable with indirect effects

I then ran the nested regression model where achievement is regressed against the initial independent variables in Block 1 of the model. For Block 2 of the model, school

leadership is added. The results for Block 1 reveal an R^2 value of .5598, which indicates that the model accounts for 55.98% of the model's variance. The variables in this model with the strongest effects include educators' years at the school, teacher student ratio, poverty, and Black students.

In terms of the Black student effect, it is important to call out the significant effect of this variable irrespective of poverty and the other variables. The regression results of this model appear in Table 18.

Table 18

Block 1 Nested Regression Output for Student Achievement Regressed onto the Eight Independent Variables

Independent Variables (Demographics)	**Coeff.**	**P-Value**	**Beta Coeff.**
Educators' Experience	-.4834662	0.565	-.0151605
Educators' years in school	3.943996	0.000	.1665526
Number Hispanic Students	.0028088	0.272	.0151512
Number Black Students	-.0131933	0.000	-.1586563
Number White Students	.0045266	0.000	.0848661
Number Other Students	-.001874	0.508	-.0075932
Teacher Student Ratio	1.100733	0.000	.2792255
Poverty	-28.13241	0.000	-.4856782

R^2 =.5598

In terms of the results for Block 2, I find that the R^2 value improves only slightly (.5934) as a result of adding the school leadership variable. Further, the addition of the leadership variable, while significant has little mediating effect on the other variables. The regression results from Block 2 of the nested regression appears below in Table 19.

Table 19

Block 2 Nested Regression Output for Student Achievement Regressed onto the Eight Independent Variables and School Leadership

Independent Variables (Demographics)	**Coeff.**	**P-Value**	**Beta Coeff.**
Educators' Experience	-1.005905	0.239	-.0315431
Educators' years in school	4.278626	0.000	.1806838
Total Hispanic Students	.0044705	0.074	.0241150
Number Black Students	-.0112137	0.000	-.1348515
Number White Students	.0052969	0.000	.0993077
Number Other Students	-.0015628	0.572	-.0063324
Teacher Student Ratio	1.050893	0.000	.2665824
Poverty	-27.38982	0.000	-.4728581
School Leadership	6.465199	0.000	.1178921

R^2 value =.5934,

Lastly the causal model is completed and includes the indirect and direct effects as indicated in Figure 24. The indirect effects of this model were obtained by multiplying the effects from the independent variables on leadership by the effect of leadership on school performance (Hamilton, 2008). I also calculated the direct and the total effects. Table 20 below highlights along with the percent of mediation.

Table 20

Summary of Effects on Student Achievement by the Eight IVs and the Mediating Effect of School Leadership

Variable	Indirect Effects	Direct Effects	Total Effects	Percent of Mediation
Educators' Experience	.000	.000	.000	--
Educators' Years in School	-.014	.181	.166	-8.57%
Number Hispanic students	.000	.000	.000	--
Number Black Students	-.024	-.135	-.158	14.82%
Number White Students	-.015	.099	.084	-18.08%
Number Other Minority Students	.000	.000	.000	--
Teacher Student Ratio	.018	.267	.278	4.24%
Poverty	-.014	-.473	-.487	2.93%
School Leadership	--	.118	.118	--

In terms of the effects of achievement on the independent variables, both poverty and teacher student ratio have high total effect values and low percentages of mediation (see Table 20). These variables appear to have significant impact on student achievement with very little help from the mediating variable of school leadership, as indicated by their direct effects. Despite the mediating relationship with leadership, each of these variable offers significant influence on student achievement on their own.

Poverty appears to have a negative influence on student achievement and drives it down. This suggest that irrespective of the impact of other variables that poverty will still contribute negatively to student achievement. In contrast, Teacher Ratio appears to positively impact student achievement and pushes it up. This suggests that irrespective of

the impact of other variables that teacher student ratio will have a positive effect on student achievement.

Further in terms of other significant independent variables and their related effects, I find that the variables Educators' Years in School, Number of Black Students, Number of White Students and Educators' Years in School have very little mediated effects, as indicated by the variables indirect effects (see Table 20). Additionally, Years of school and Number of White may have suppression effects. MacKinnon, Krull & Lockwood (2000) indicate that suppression effects can be determined by the sign differences that occur between the direct and mediated effects (indirect effects). The changes in signs suggest that leadership has a negative relationship to the independent variables. Thus in the cases of the variables number of White Students and Educators' Years in School adding the leadership variable to the model changes the total effects of these variable to positive. MacKinnon, Krull, & Lockwood (2000) says that the changes in sign are an indication of inconsistent mediation which suggests that the variable is implementing a suppression effect on the dependent variable of student achievement.

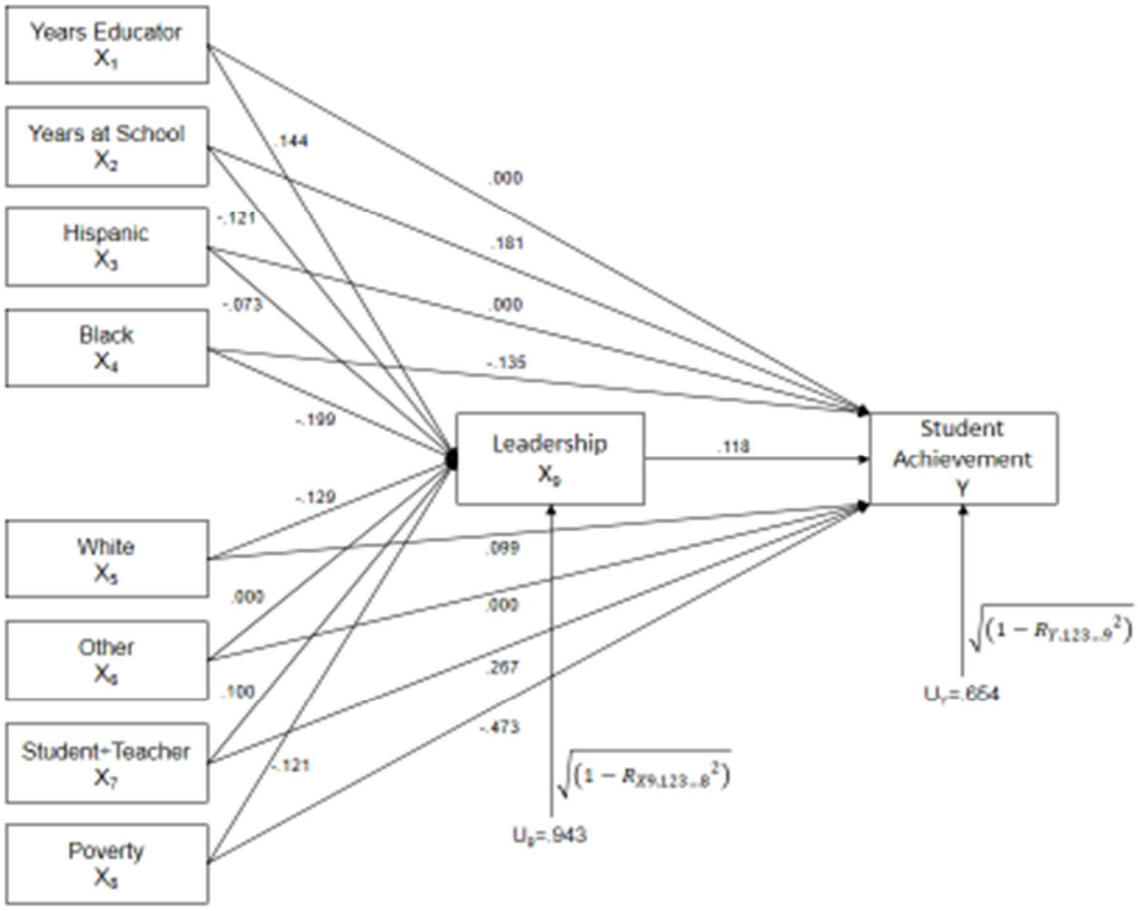

Figure 25. Causal model representing relationship between eight independent variables with indirect effects through school leadership and direct effect to student achievement

Chapter Summary

In this chapter I used a variety of analysis to assist me in answering key questions related to the research's hypotheses. Specially, the questions that are examined as part of this work are as follows:

- Do high poverty and low poverty schools vary in relation to student achievement?
- Does leadership effectiveness differ among leaders in higher poverty schools versus those in lower poverty schools?
- Does a school's culture differ among higher poverty schools versus lower poverty schools?
- Does a school's culture differ as a function of leadership and does that difference vary among higher poverty schools versus lower poverty schools?

I relied on the Stata statistical software (StataCorp, 2013) to assist in analyzing the models associated with the hypothesis for this study. Additionally, I developed causal models that assisted in explaining the relationships between independent variables and leadership, culture and school achievement. The results of these model revealed both indirect and direct effects related to both leadership, culture and student achievement.

Particularly in terms of culture and its relationship to leadership, the outcomes of the causal model show a significantly positive relationship between school culture and leadership, thus indicating that healthy school culture is synonymous to high quality leadership, a factor supported by extensive research (Leithwood and Levin, 2005; Loeb et al., 2009; Papa, Lankford, Loeb, & Wychoff, 2002; Rise, 2010, Branch et al, 2009)

speaking to the impact of leadership on school culture and improvements to student achievement.

Further through the analysis, I was also able identify mediating effects that leadership had on other variables. Most of the effects that the independent variables had occurred as a result of going through the leadership variable. This can be clearly seen between poverty and leadership. In this case most of the effects observed between poverty and leadership occurs as a result leadership, as leadership mediates 75.54% of the effects and 76% of the total effects. Similarly in terms of leadership and its effects on teacher student ratio, all effects appear to occur as a result of leadership. This suggests that leadership mediates 100% of the effects.

In terms of the effects on achievement and the mediating effects of leadership, I found highest total effect values to be associated with poverty and teacher student ratio. Both appear to have significant influence on student achievement while also having little mediation effects from school leadership as indicated by school leadership accounting for only 2.93% and 4.24% of the mediation effects. This suggest that these variables offer significant influence on the student achievement on their own with little influence from school leadership.

Similarly, I find that other variables, Educators' Years in School, Number of Black Students and Number of White Students also have very small mediated effects. Additionally, Educators' Years in School and Number of White Students have suppression effects as determined by the sign differences that exist between the direct and indirect effects, which indicate a negative relationship between the leadership and the two independent variables. The results show that when School Leadership is added to the

variables Number of White Students and Educators' Years in School (which are negative) the total effects of the variables become positive. MacKinnon, Krull & Lockwood (2000) say that these sign difference indicate a suppression effect on student achievement.

For the Chapter five of this study, I will provide a more in depth review of the findings and relative discussion as related to the theoretical underpinnings of this study. Further, I will discussion any application or benefit that this study can offer to key stakeholders, particularly school districts and school leadership preparation programs. Additionally as part of this chapter I will detail information related to the limitations, recommendations, opportunities for future study and related conclusions.

CHAPTER 5

DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

Chapter five will present an overview of the study's research. This includes revisiting the research problem, questions, methods and related findings of the study. Further, I will share both the theoretical and practical applications of this work. Lastly, I will reveal limitations, recommendations and opportunities for future research that are associated with the study's outcomes.

Recall that in chapter one I revealed concerns that have emerged in the US relative to low student achievement and, in particular, its impact on high need student groups as identified by both poverty and race. Further, the chapter provided context for the reasons why schools that primarily educate high percentages of poor students often receive resources that are of low quality, which include teachers and school leaders. Research (Leithwood and Levin, 2005; Loeb et al., 2009; Papa, Lankford, Loeb, & Wyckoff, 2002; Rice, 2010; Branch et al., 2009) was presented that speaks to the importance of resources like school leadership and its ability to impact components of the school environment (i.e. culture) that have an effect on student achievement. This research begins to lay the foundation for the hypothesis posed for this study, one which posits that high quality leadership can influence school environment factors in a way that can improve student outcomes, particularly for low income students. The hypothesis driving this study is one supported by the research of Clotfelter et al. (2006). The researchers say that schools with high percentages of impoverished students usually receive school leaders and other resources that are less experienced, less effective or of lower quality than higher income schools.

Summary of Research Methodology

The parameters of this study explicitly focused on the influence of school leadership for schools that educate high percentages of impoverished students in order to determine if the influence of leadership is more significant for this student population. Additionally, the study assisted in exploring whether the effectiveness of school culture is more significant for high poverty groups and if the influence of leadership can change the downward trend of student achievement for low income students. The research examined the outcomes of student achievement for high poverty schools, the impact of leadership on culture across socio-economic groups, and the impact of culture on achievement across socio-economic groups.

In order to explore the questions related to this study, I used a secondary dataset obtained from the New Teacher Center that included the results of the 2010 Teaching and Learning Condition Surveys administered to over 100,000 educators within the state of North Carolina. The results of this survey were used to perform quantitative analyses that identified the cultural strength in over 2500 schools within the state. The research relies on components within the same survey, which assess the strength of school leadership. These two component measures of the Teaching and Learning Conditions survey assist in examining the research hypothesis addressing how school leadership influences school culture in order to improve student achievement outcomes for high poverty students.

In terms of school leadership, the research posits that resources, and in particular school leadership, are more impactful in schools where there exists an increased percentage of impoverished students. In this study I used four research questions as

guides to examine the relationship between leadership, culture, achievement and the influence of poverty. The research questions, related discussion, and an interpretation of the findings are presented below.

Question 1. Do high poverty and low poverty schools vary in relation to student achievement? This question was initially analyzed by using Ordinary Least Squared (OLS) regression to explore the impact that poverty and other independent variables including race (i.e. Black, White, Hispanic and other minority races), educators' years of experience, educators' years in school and teacher student ratio have on student achievement outcomes. The initial analysis found that in terms of the relationship between student achievement and poverty that the two were negatively related such that as the percentage of poverty increases among high school students, student achievement decreases. This finding agrees with those of Kannapel and Clements (2005) and Lippman et al (1996) thereby further supporting findings that link poverty to poor student achievement outcomes.

Additionally this study sought to examine the presence of a more complex relationship between student achievement and the independent variables including poverty and school leadership. The relationship was explored by conducting a two block nested regression analysis. In Block 1, student achievement was regressed against eight independent variables that include poverty. For the second Block the school leadership variable is added. In both blocks, poverty is significant and found to have a negative relationship to school performance.

Through the use of Beta Coefficients obtained from the nested regression model, I was able to identify the indirect, direct and total effects. I found that poverty's total

effects on student achievement are -.487, (p-values, $< \alpha = .001$). Thus, irrespective of the influence of the other variables, the presence of poverty drives the influence of leadership down. This suggests that the while leadership is significant and strengthens the model, it has little mediating effect on the other variables. Precisely in terms of poverty and its impact on student achievement, the power of poverty is so strong that even with the addition of leadership, (a significant variable) it cannot mediate the negative effects of poverty on student achievement.

The findings of this study related to the negative effects of poverty on student achievement coincide with other documented research. Lippman et al's (1996) research supports the claim that as poverty increases, achievement decreases. This suggests that high poverty and low poverty schools vary inversely relative to student achievement.

Question 2. Does leadership effectiveness differ among leaders in higher poverty schools versus those in lower poverty schools? In terms of this question, the research analysis explores how leadership is impacted when poverty exists. Similar to the analysis in question 1, I first conducted an OLS regression where school leadership was regressed on eight independent variables, which included poverty, educator experiences, years in school, race, (i.e., Hispanic, Black, White, and other minority students) and teacher student ratio.

The results from this model, while not strong as reflected by the low R^2 value, (.1100), reveal a relationship between leadership and poverty that is statistically significant and negatively correlated as identified by both the coefficient (-.128) and the Beta Coefficient (-.121, p-value $< \alpha = .001$). These results suggest that as poverty within schools increases, the quality of leadership decreases. The results further imply that the

best leaders exist in schools where the percent of student poverty is low, thus indicating that leadership effectiveness differs between higher poverty schools and lower poverty schools. This is most likely not the result of poverty changing leadership practices, but more likely related to how principals (e.g. inexperienced and ineffective) are assigned to high poverty schools.

Clotfelter et al (2006) finds that schools that have high percentages of low income students often receive educators (e.g. teachers and principals) that have "weaker than average qualifications" (p.13) as identified by years of experience, certification and attending competitive undergraduate institution. The inequitable distribution of resources appears to present challenges that inhibit academic success, particularly among low income students. Additionally, Schmidt, Cogen & McKnight (2011) say that the absence of suitable resources is negatively correlated with a student's socioeconomics.

Question 3. Does a school's culture differ among higher poverty schools versus lower poverty schools? Question three explores whether poverty impacts school culture. In order to explore this question, an OLS regression analysis was run finding a significant relationship between the two variables. Poverty and school culture have a negative relationship such that as the percentage of poverty increases within a school, the quality of the school's culture decreases. Additionally the results suggest that culture differences exist among schools based on the degree of student poverty.

A nested regression model was run in which school culture was regressed on eight independent variables of the model including school poverty. The model was run so that school leadership was added in Block 2. I used the results of the nested model to determine the indirect, direct and total effects. The total effect of poverty on school

culture is -.139 (p-values $<\alpha = .01$). Leadership, however, mediates 75.54% of the total effect that poverty has on school culture. The mediation effects of leadership on poverty are strong, thus indicating that since the majority effect of poverty on culture runs through leadership, one might surmise that improving leadership in poverty ridden schools could minimize the impact of poverty. Kannapel and Clements (2005) indicate that school culture is one factor that can be influenced by principal leadership. Thus, while the results of this study indicate that differences in culture exist between high poverty and low poverty schools, leadership significantly mediates the differences that exists.

The above finding is also supported by the work of Clotfelter et al. (2007) who say that improving the quality of resource inputs (e.g. school leadership) can help overcome the educational disadvantages associated with poverty. Similarly, Heck (1992) says that many of the environmental factors encountered by low-income students can be overcome through "strategic school organization" (p. 5) and strong principal leadership. Thus, I anticipate that leadership can temper poverty's negative effect on a school's culture.

Question 4. Does a school's culture differ as a function of leadership and doe s that difference vary among higher poverty schools versus lower poverty schools? The final research question examines whether culture differs as a function of leadership and whether the differences can be attributed to the influence of poverty. Key to the examination of this question is the relationship that exists between leadership and school culture. A correlation analysis finds that the two are highly correlated (.9046).

In order to obtain a broader understanding of how the variables relate to one another, I performed a nested regression analysis. As indicated above, the nested model regresses school culture onto the eight independent variables that includes poverty for Block 1 of the model. Next for Block 2 of the model, I added the school leadership variable. The addition of the school leadership variable strengthened the model as demonstrated by an increase in the R^2 value from .1635 to .8314. The model that includes school leadership accounts for 66.79% of the model's explained variance and thus indicates that leadership has a significant effect on school culture. As established above, poverty has a significant and negative relationship with school culture, as well as a negative effect on culture (-.139). Poverty has a similarly negative effect on leadership (.121).

Additionally in examining the effects of the nested regression model, I found that leadership as determined by the model's beta coefficients has a mediating effect on the independent variables, including poverty. This suggests that leadership is the vehicle by which the independent variables operate through in order to impact culture, which is evidence of a causal relationship between leadership and school culture. Leithwood and Levin's (2005) research speaks to a causal relationship that exists between school leadership and components of school culture and student outcomes.

Additionally, Pitner's (1998) Mediated Effects with Antecedent Model speaks about the factors that interact or mediate leadership's relationship to influence student achievement. The research provides additional evidence of leadership's effect on culture and thus provides a foundation for understanding the mediating effects that leadership has on other variables within the research model.

Furthermore, the results show that most of the effects that the independent variable have on school culture occur as a result of the meditating effect of leadership. That is to say, leadership is driving the influence of the variables.

The idea that leadership drives other factors to impact student achievement is supported by the literature reflecting components of the causal model for this study. In terms of leadership and the impact that it has on school culture, Kannapel and Clements (2005) say that principal leaders coordinate components (e.g. school culture) that contribute to improved student achievement outcomes. Further Leithwood and Levin (2005) say that leaders impact student achievement by influencing factors such as school culture which directly influence student achievement.

The authors' hypothesis is that the other variable (e.g. culture) serves as the mediating variable to student achievement. Their theory conflicts with the result of this study, which finds that leadership is the mediating variable that all other independent variables must go through to impact student achievement. Additionally, the results of this study elevate the importance of leadership, particularly when interjecting a variable like poverty that adds additional complexity in combating student achievement disparities.

While the analysis results find that poverty negatively impacts student achievement, it also shows that this effect can be mitigated by having effective leadership in place. . Further because leadership does impact culture as confirmed by both research and the results of this study, I assert that having effective leadership and a healthy school culture are factors that begin to lay a foundation for improved achievement outcomes. This implies that by not having effective leadership in high poverty schools, allows for a

less healthy school culture and thus allows poverty to have a more negative effect on student achievement. The negative impacts of poverty on student achievement are reflected in many research studies (Borman & Rachuba, 2001; Kennedy, Jung, Orland, & Myers, 1986; Lippman et al., 1996; Myers, 1985) that speak to the disadvantages of high poverty schools.

The finding in this study suggests that schools that have a lower percentage of student poverty are most likely to also have better school cultures, which occur as a result of effective leadership. This indicates that school culture is a function of school leadership and that schools having lower percentages of student poverty have a greater likelihood of having higher functioning school cultures than do schools with greater percentages of student poverty. The finding is supported by the Alliance for Excellent Education (2013), which indicates that high poverty schools often struggle to successfully implement aspects of school culture (i.e. school climate).

Other Research Findings

In addition to the findings related to the research questions, this study also revealed other findings noteworthy of reporting. The research results show that when combined with school leadership, student teacher ratio has a positive effect on student achievement. Leadership accounts for 4.24% of the mediating effect, thus indicating that teacher ratio contributes most toward its total effect (.278) on achievement as indicated by its direct contribution (.267). The benefits of reduced class size, particularly for low income students is a practice supported by the research of Witmore-Schawzenback (1998). The author's research finds that reduce class sizes for low income students is a predictor for improved academic outcomes.

Additionally, Educators' Years in School and number of White Students show suppression effects. This indicates that leadership has a negative relationship with these independent variables (Number of White Students and Educators' Years in School), yet controls or suppresses the effects associated with these independent variables. Lancaster (1999) says the suppression effect allows for a more accurate estimate of the relationship between the independent variables and student achievement.

Limitations

The limitations of the study can be attributed to using secondary data, as was the case of the Teaching and Learning Conditions survey data. Specifically the data was limited to the initial collection criteria and thus presented some difficulty in assessing other data not originally required by the initial researchers. Other limitations of the data were related to the scale used for the Teaching and Working Conditions Survey. The School Working Conditions Survey uses a Likert scale that limits the respondents' response choice to either a 1, 2, 3, or 4. However, despite the above mentioned limitations, these features provided some benefit in the analysis that allowed for ease in correlating responses across participants and ensuring a reliable and valid rating scale.

Other limitations related to the survey is that it limited results to the perceptions of teachers and principals participating in the study and does not include the input of other stakeholders (assistant superintendent, parents, students, etc.). Nonetheless, the results are restricted to persons found by the researchers to have the most significant impact on student achievement outcomes and the learning environment (Wallace, 2004 and Hallinger and Heck, 1996) and thus increases face validity.

Delimitations

In terms of the delimitations of this study, one might assume that a natural path might be to focus on the impact that leadership has on all students. This study chooses instead to highlight those who are most vulnerable as measured by both poverty and student achievement results. Research (Hallinger & Heck, 1996; Leithwood et al., 2004; Leithwood & Jantzi, 2000) exists that confirms the effects that leadership has on influencing general student achievement. Kannapel and Clements (2005) say that poor children are overrepresented among the number of students scoring below the proficiency level on state assessments. Because of this, the study further concentrates on strategies that focus on improving the learning and achievement outcomes for students who are both poor and low achieving.

Theoretical and Policy implications

In general, the findings related to this study provide an additional spotlight of the weightiness of poverty and its ability to inhibit outcomes and deter supportive resources. When examining the literature about poverty and student achievement, much of the research speaks about paths to improving achievement for low income students to be closely linked to the resources that are provided to the student groups. Yet, the same research also references the difficulties faced by the schools that serve this student group as they work to obtain the best resources or be assigned the most effective staff.

Strategies to combating these issues, particularly around staff assignment, are related to the human resource policies that detail the practices for assigning school principals and teaching staff. Clotfelter et al, (2007) say that principals, like teachers, leave high poverty schools as they become more experienced in exchange for

opportunities to go to a more academically "advantaged schools" (p.20). This suggests that school districts award placement in low poverty, high achieving schools to the more experienced, and often most effective staff. While inexperienced and ineffective staff are deployed to high poverty low, achieving schools. This research study supports this theory by showing an inverse correlation between leadership quality and school poverty.

The implications of the finding related to the absence of effective school leaders in the schools where they are most needed provides support for a change in human resource practices, one that would assign the most effective leaders to high poverty schools. This theory of action is advocated by Gamoran and Long (2006) who say that current policies should be revised in a way that redistributes the best resources to high poverty high schools.

The issue of resource allocation and its link to improved achievement outcomes for students in high need schools is supported by a depth of research (Loeb et al., 2009; Papa, Lankford &

Wykoff, 2002; Branch et al., 2009), which speaks to the disadvantages of schools that educate high percentages of low income students in terms of leadership. In keeping with the literature, the findings of this study confirm that attending a high poverty school is significantly linked to limited access to the best resources – namely school leadership.

Andrews and Soder (1987) also advocate for approaches that would ensure students who attend high poverty schools have access to the most effective leadership. They find that while principal leadership does little to influence student achievement for white and low poverty students, leadership (whether strong or weak) significantly and consistently influences the student achievement outcomes for minority and high poverty

students, with the greatest differences occurring among students eligible for free lunch. Thus policy implications as related to school leadership would include practices that consider school leaders' effectiveness results (i.e. leadership scores) coupled with student need data to determine principal assignment as an alternative to seniority, as is typical for most school districts. While it is unlikely that this will be an easy feat, especially within a unionized culture, districts may also need to consider other incentives (e.g. pay, access to high quality teaching staff) that encourage school leaders to accept more challenging assignments.

Other considerations applicable to the research findings should also include an examination of policies that advocate for diversified school options that would be available to low income students. Researchers (Borman & Rachuba, 2001; Gamoran & Long, 2006; Lippman et al., 1996) find that when poverty is concentrated, it can inhibit student achievement gains. This is again supported by the current research findings, which shows both a negative correlation between poverty and student achievement, as well as negative effects associated with the presence of poverty that cannot be overcome even when adding the mediating variable of leadership.

Additionally, because researchers (Aladjem et al., 2005; Shah, 2012) conclude that students are most likely to attend schools in their neighborhood, it is assumed that students from high poverty neighborhoods will likely attend schools with other low-income students. Aud et al. (2010) say that low income students who often attend schools in a neighborhoods where a high degree of poverty exists, attend schools with fewer higher income classmates. Borman & Rachuba (2001) find that when students, regardless of income, attended high-poverty schools, their achievement was negatively

influenced. The researchers attribute the negative impact on student achievement to be explicitly linked to attending a high poverty school.

In contrast, Borman & Rachuba (2001) say that when both low-income and higher income students attended low-poverty schools, the student achievement outcomes were generally more positive. The authors say that schools' compositions (as measured by race and socio-economic makeup) can be used to predict student achievement and is a more accurate indicator of student achievement than the student's individual race. This suggests that the characteristics associated with a school, particularly race and income are more likely to impact student outcomes. The theory is one that is additionally supported by the outcomes of this study, which point to the impact of race (specifically Black) that is negatively correlated to student achievement; and poverty which was found to have significant negative effects on student achievement.

As a result of the study's findings, school systems should investigate implementing programs that allow low income students to be educated with higher income students. Such models exist in the way of magnet programs for which selection is not typically based on the neighborhood that students live, but a more random selection process providing an increased probability that low income students can attend schools that are more economically and racially diverse. It is anticipated that this option, and those that produce similar diversity, may provide additional opportunities for this student group to be exposed to the advantages (i.e. quality principal resources) of their higher income counterparts.

Recommendation and Future Research

While the results of this research assist in validating existing research related to the availability of effective school leadership resources in high need schools, it also continues to affirm the negative impact of poverty. Because of the pervasiveness of poverty within our school systems and the need to continue to develop strategies to both impact poverty and increase student achievement outcomes for disadvantaged groups, there still exists the need to explore other research areas related to this topic that will assist in expanding our learning related to this topic. As such, it is recommended that future research be conducted that explores whether poor students attending low poverty schools have higher achievement outcomes than a similar cohort of peers attending high poverty schools. This is important to examine as both the research and the findings related to this study confirm that poverty on its own has significantly negative effects on student achievement regardless of the other variables or the mediating effects of leadership. As a result it is hypothesized that removing or decreasing the influence of poverty and promoting more economic diversity within schools may create school environments that are more conducive to improving student achievement outcomes for low income students.

Further, because the research study also confirms that leadership can affect the effects of poverty on student achievement, it is important to continue further research to examine other aspects of the school system (e.g. teacher practices) that can be combined with leadership to further reduce the impact of poverty on student achievement.

Conclusion

Overall, this study's findings reinforce existing research about poverty \and its negative correlation to student achievement. Further the research finds that within schools in the state of North Carolina that school leadership negatively correlates with poverty. These findings demonstrate that schools with higher percentages of student poverty are less likely to have either positive school leadership or healthy school cultures, which are factors found to predict higher student achievement outcomes (Hallinger & Heck, 1998; Leithwood et al, 2004; Michigan State University, 2004).

The results of this study also demonstrate that even when a positive relationship exists, as in the case of the relationship between leadership and student achievement, that poverty continues to have a negative influence irrespective of the influence of the other variables. However, this study also demonstrates that effective leadership can mitigate the negative influences of poverty. In essence, despite the degree of school poverty, school leadership can make a difference in influencing the school culture. This is good news for schools and school districts looking for strategies that assist in combating the national crisis related to student achievement outcomes for disadvantaged students. Because improved school cultures have been found to be correlated with improved student achievement outcomes, one can assume that by getting effective principals in all schools, healthy school cultures can develop and in turn foster growth in student achievement.

For school districts serving high percentages of low income students, it seems imperative to reexamine the hiring practices that assist in assigning school leadership to schools with high percentages of low income students. Specifically, I recommended that

school districts develop criteria for measuring leadership effectiveness and use this information combined with data related to student need to assist in assigning leaders to high poverty schools. This strategy, along with strategies like the implementation of magnet programming that diversify the student body, can assist districts in ensuring that disadvantaged groups have access to the most qualified school principals and dilute the impact of poverty thereby resulting in improved student achievement outcomes for this student group.

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Appendix A

Informal Request for Use of Dataset

From: "Andrew Sioberg" <asioberg@newteachercenter.org>
To: alyssaheywood@comcast.net
Cc: "Keri Church" <kchurch@newteachercenter.org>
Sent: Tuesday, May 29, 2012 2:59:04 PM
Subject: Re: follow up

Hey Alyssa,

Attached is a copy of the template for data request as we had discussed. If you read through it, you will see it is designed for NC data. If there are other data sources you are interested in acquiring, you would need to change the template to reflect those needs. I am championing that you use the NC database since it represents every school across an entire state and is publicly shared. Some data bases will require more formal permissions to use but can be done. Additionally, I have cc'd my good colleague, Keri Church who handles all the formal requests for data. Any questions about data acquisition, process, permission, and such are technically addressed by her. If you have additional questions, just let one of us know and good luck on your next steps.

On Tue, May 29, 2012 at 3:47 PM, Andrew Sioberg<asioberg@newteachercenter.org> wrote:
no problem, Alyssa. Happy to help. I have already reached out to get the template for you. When I get it i will send it to you straight away. Don't forget to speak with Errika or Eddie...and as I think about it Bill Hileman with PFT is also a very well informed person on the survey process and its appropriate use to drive school improvement planning.

On Tue, May 29, 2012 at 3:45 PM, <alyssaheywood@comcast.net> wrote:
Dear Andrew:

Thank you so much for taking the time to speak with me about my dissertation interest. I found the information that you provided to be very helpful. I look forward to exploring these resources and having a future discussion about my data needs as they relate to the research previously conducted by the New Teacher Center. Again, I really appreciate the time that you took to speak with me.

Best regards,

Alyssa Heywood

Appendix B

New Teacher Center Data Request Form

We ask that you address the following in your request:

1. What is your affiliation? If applicable: who is your advisor?
2. Be clear on the research question you are addressing and why/how the 2010 North Carolina Teacher Working Conditions data is necessary and how it will be utilized to answer your question.
3. Be specific about the data you need (whole state set, or select districts and survey year if applicable). Also please address if you need demographic information provided by the respondents as part of the database.
4. If demographics are requested you must also address the following question below.
    a. What assurances will you make to protect the anonymity of individual responses while in possession of the data and in any publication?*
5. Ensure that you send any final product/publication to the New Teacher Center at least one week prior to publication.

*You do not need to be overly extensive in your responses to these questions, but we do ask that you ensure the anonymity of the survey responses is protected.

If you have further questions, please contact the Keri Church, Associate Director of the Teaching and Learning Conditions Initiative at: kchurch@newteachercenter.org