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The Relationship Between Principal Longevity and Student Achievement in Middle Schools in New Jersey

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by

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Abstract

The purpose of this study was to determine the strength of the relationship between principal longevity in New Jersey public middle schools (Grades 6, 7 & 8) and students scoring at Levels 4 (meets expectations) and 5 (exceeds expectations) on the 2016-2017 Partnership for Assessment of Readiness for College and Careers (PARCC) assessment in both English language arts and mathematics. This study used existing empirical data from the New Jersey School Report Card and Data Universe. To put this relationship into better context, eight independent variables were examined in this study: principal's length of time in a school, principal's overall experience as a building principal, total number of students in a school, percentage of students who receive free and reduced lunch, percentage of students in a school with disabilities, percentage of students in a school who are English language limited, percentage of students in the school who are chronically absent, and percentage of teacher attendance. The two dependent variables in this study were: percentage of students who meet/exceed expectations in English language arts and percentage of students who meet/exceed expectations in mathematics.

As part of the conceptual framework, I built upon the work of Louis, Leithwood, Wahlstrom, Michlin & Mascall, *Investigating the Links to Improved Student Learning* (2010). I examined their summative findings in that principal turnover has a significant negative impact on student achievement. Moreover, their recommendation for further research in determining what length of continuity results in students' highest academic achievement and if there is an upper limit of a principal's tenure where academic performance declines warranted investigation.

Results from this study revealed that three of the variables were statistically significant in all simultaneous and hierarchical regression models: percentage of students who receive free and reduced lunch, percentage of students in a school with disabilities, and percentage of students in the school who are chronically absent. In all instances, both variables of interest, principal's

length of time in a school and principal's overall experience as a building principal did not have a statistically significant impact on the dependent variables, percentage of students who meet/exceed expectations in English language arts and percentage of students who meet/exceed expectations in mathematics.

Insights gained by this research can provide policy makers, school boards, superintendents, and principals with a better understanding of the degree to which various factors impact student academic achievement. Variables that most impact student academic achievement can be utilized as guidance when developing future legislation and policy and in the intricacies surrounding principal selection, training, and retention.

Keywords: Principal Longevity, Academic Achievement, New Jersey, Middle Schools, Continuity

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dissertation process. If you haven't reached the finish line yet, I trust that you will. I am certain that our paths will once again cross in our educational careers. Godspeed!

Dedication

This work is dedicated to my amazing family. I am blessed to have each of you, loving and supporting me through this amazing journey. Everything I am and everything I've achieved is because of you!

First and foremost, I would like to thank my wife and best friend Cynthia. You are the strongest woman I know and have supported and encouraged me since the day we met. You never doubted my abilities and have pushed me to be the very best I can be. Your unconditional love, as a mother and as a wife, is the foundation our family is built upon. I love you!

To my amazing boys, Tyler and Nicholas, I know that this process has taken the place of some of our time together. Thank you for your patience and understanding and for your support. I'm hopeful that my doctoral work will inspire you to value education and to become the very best at whatever you choose. With hard work, you can achieve anything you put your mind and heart to. You two are amazing! I love you!

To my mother and father, you have invested so much in me. I hope that I have made you proud. Mom, you have taught me the meaning of hard work. It has been a long journey with steep ups and downs, but you've stood by my side every step of the way. Dad, I wish we were able to celebrate this accomplishment together. Although you're not here, I'm certain you're aware and proud to be my father. I know you are watching me from heaven, smiling, making me smile back through the tears and the laughter, the good times and the bad. I find comfort in knowing you will continue to watch over me, for the rest of my life. To the rest of my family, thank you for your continued support. I hope this inspires you to realize that with hard work, anything is possible!

To all of my students, you've allowed me to find my passion and purpose in education. If I can inspire others half as much as you have inspired me, I know I have been successful.

Table of Contents

List of Tables

Chapter I

Introduction

Introduction

As with the success of any organization, the principal plays a crucial role in the success of a school. There is increasing research that has found how the principal impacts teachers, schools, and student achievement (Hallinger & Heck, 1998; Leithwood & Jantzi, 2000). These findings conclude that a principal's impact on school performance (direct or indirect) is significant (Boberg & Bourgeois, 2016; Branch, Hanushek, & Rivkin, 2013; Brockmeier, Starr, Green, Pate, & Leech, 2013; Coelli & Green, 2012; Day, Gu, & Sammons, 2016; Dumay, Boonen, & Van Damme, 2013; Egodawatte, 2012; Finnigan, 2012; Fletcher, Grimley, Greenwood, & Parkhill 2013; Kythreotis, Pashiardis, & Kyriakides, 2010; Leithwood & Azah 2017; Leithwood, Seashore-Louis, Anderson, & Wahlstrom, 2004; Miller, 2009; Mulford & Silins, 2011; Palmer, Hermond, & Gardiner, 2014; Sebastian & Allensworth, 2012; Sebastian, Huang, & Allensworth, 2017; Silva, White, & Yoshida, 2011; Supovitz, Sirinides, & May, 2010; Supriadi &Yusof, 2015; Waters, Marzano, & McNulty, 2003; Woods & Martin, 2016). Marzano, Waters, and McNulty (2005) found that the leadership behaviors of the principal account for 25% of students' achievement.

Some time ago, effectively managing the school building was the primary role of the principal. However, today principals are faced with many more challenges. As a result, public schools across the nation, particularly in New Jersey, are changing in response to these challenges and pressures that include readily available school performance data, state assessments, common core standards, NJTeach regulations (a bipartisan tenure reform bill approved unanimously by the legislature and signed into law by New Jersey Governor Christie

on August 6, 2012) and the growing popularity of public school alternatives, such as charter schools and in some states, school vouchers. These new demands weigh heavily on the school principal, creating the need for additional preparation and training and in some instances, a retreat from the profession. According to Usdan, McCloud, and Podmostko (2000), they (principals) are retiring younger and younger, saying that the job is simply not "doable."

Considering the impact principals have on student achievement, the issue of principal retention becomes a major concern. There are many articles that discuss the principal shortage and how superintendents are reporting difficulties finding principals to fill vacancies. In spite of the fact, the problem is not a shortage of certified administrators but a shortage of well-qualified administrators who are willing to work in the places of highest demand, especially in underserved communities and schools where working conditions are most challenging (Darling-Hammond, LaPointe, Meyerson, & Orr (2007). Béteille, Kalogrides, and Loeb (2012) found in their study that the average tenure for principals in low-income school districts is 3.4–5.2 years. Furthermore, one in five principals leave their school after just one year (Burkhauser, Gates, Hamilton, & Ikemoto 2012). Interactive (2013) reported that nearly one quarter of the country's principals leave their schools each year, and Fuller and Young (2009) explained how half of all newly hired principals quit within 3 years of being hired. This frequent turnover in leadership makes it difficult to meet district, state, and federal demands, retain personnel and create and maintain initiatives and a school climate focused on students' success.

Research suggests that teacher retention drops during principal transitions, especially at the end of the first year of a new principal and when a principal leaves a school (Miller, 2009). There is additional research that suggests how increased teacher turnover tends to have a deleterious effect on student achievement (Fuller, Young, & Baker, 2007). Ronfeldt, Loeb, and

Wyckoff (2013) conducted a 5-year study of 600,000 fourth and fifth grade students in New York City and found that student performance was lower in both English language arts and mathematics in schools with high rates of teacher turnover.

Stable leadership matters. Keeping school leaders in place for multiple years and improving their performance has a positive effect on student outcomes, particularly in high-poverty schools (Hull, 2012). School improvement takes time, and principals must hold their position for a minimum of 5 years to put a vision in place, improve instructional quality, and fully implement policies and practices that positively affect a school's performance (Hull, 2012). Schools that do not retain principals beyond this point will inevitably struggle to get a foothold on meaningful change. Therefore, principal continuity affects student achievement and school improvement, suggesting that a principal's continuity is critical to students' academic success (Babo & Postma, 2017; Fullan, 1991).

Conceptual Framework

The work of Louis et al. (2010), *Investigating the Links to Improved Student Learning* (2010), served as the basis of my conceptual framework. The study spanned 6 years and focused on leadership at the school, district, and state levels. The data utilized were collected from 9 states, 43 school districts, and 180 elementary, middle, and secondary schools. Their research served to confirm that leadership is second only to classroom instruction as an influence on student achievement. Other key findings relating to principal turnover include:

- On average, schools experience fairly rapid principal turnover: about one new principal every 3 to 4 years.

In the study, the authors found an average length of tenure of 3.6 years per principal, with a standard deviation of 1.34.

- Rapid principal turnover has moderately negative effects on school culture.

In the study, the authors found that 24% of the variation in student achievement can be explained by the mediated effects of principal turnover. Furthermore, principal turnover has a significant and moderately negative effect on school culture (-.37), although school culture has moderately strong, significant, effects on student achievement (.68).

- Rapid principal turnover seems not to have much effect on classroom content or instruction.

In the study, the authors found that the effects of principal turnover on curriculum and instruction are insignificant, and the measure of classroom curriculum and instruction is negatively, but very weakly, related to student achievement

- Rapid principal turnover explains a modest but significant amount of variation in student achievement across schools.

In the study, the authors explained how sustainable improvement requires several years of effort and how frequent turnover makes it unlikely for a principal to get through initial stages of change and/or implementation.

- Coordinated forms of leadership distribution have the potential to mitigate at least some of the negative consequences of rapid principal turnover.

In the study, the authors suggested that distributed leadership moderates the effects of principal turnover. They cited Hargreaves and Fink (2006), who explained how the post-succession process is moderated when the departing leader implemented a distributive leadership model where shared vision, investment, and capacity remain (to some extent) in the school building.

- Principals newly assigned to schools who initially work within the existing culture of their schools, rather than attempting to quickly, substantially change it, are more likely to avoid negative turnover effects.

Their summative findings suggest that principal turnover has a significantly negative impact on student achievement. Louis et al. (2010) explained that districts should look to retain their principals for at least 5 years and preferably longer. Principal turnover is inevitable in all schools. It is, then, important to consider what length of continuity results in students' highest academic achievement and if there is an upper limit of a principal's tenure where academic performance declines.

Statement of the Problem

There is heavy reliance on our nation's principals to ensure that students achieve (academically) at high levels and meet both state and federal mandates. Research shows that successful schools are led by dynamic, knowledgeable, and focused leaders (Waters, Marzano, & McNulty, 2003). These are leaders who maintain a focus on attracting, selecting, and maintaining quality teachers who have a direct impact on the quality of instruction. Additionally, they establish a common instructional vision where the school's culture is one grounded in high expectations and collaboration with consistent movement toward improving. Waters, Marzano, and McNulty (2003) found a significant, positive correlation (.25) between school leadership and student achievement. They went on to explain how leaders can not only have a positive impact on student achievement but can also have marginal and even a negative one.

There are many measures of an administrator's success, including various frameworks, studies, and the Professional Standards for Educational Leaders

(http://www.ccsso.org/Documents/2015/ProfessionalStandardsforEducationalLeaders2015forNPBEAFINAL.pdf). The 2015 Professional Standards for Educational Leaders (PSEL) take into account the diverse and ever-changing responsibilities of the current day educational leader and focus on students' learning and 21st century preparedness. The standards are broken into domains that encompass the essential actions, qualities, and values of effective leadership, followed by the work that is necessary in order to meet the standard. An intimate knowledge and understanding of the standards is necessary for leaders to be better guided in their work.

In Richard Elmore's 2003 report, *Knowing the Right Things to Do: School Improvement and Performance Based Accountability*, commissioned by the National Governor's Association (NGA) he stated:

> Knowing the right thing to do is the central problem of school improvement. Holding schools accountable for their performance depends on having people in schools with the knowledge, skill, and judgement to make the improvements that will increase student performance. (p. 9)

The question, then, becomes how much time is needed for principals to acquire the knowledge and skills embedded within the standards to be able to successfully implement them.

Just as teachers become more effective with experience, so do principals, especially in their first 3 years (Clark, Martorell, & Rockoff, 2009). If a principal was effective at his or her former school, it takes approximately 5 years to fully stabilize and improve the teaching staff, as well as fully implement policies and practices to positively impact the school's performance at a new school (Louis et al., 2010).

Clark et al. (2009) summarized research conducted in New York City (NYC) and found a positive impact of principal experience on school performance, with the experience profile being

especially steep over the first few years of principal experience. Additional research efforts have found that principal turnover has negative effects on school performance in three specific areas (Fuller et al., 2007).

Fuller & Young (2009) explained how research has shown that high principal turnover often leads to greater teacher turnover, negatively impacting student achievement in mathematics, English language arts, and other schooling outcomes. Principal turnover also results in increased fiscal costs. These negative impacts are most harmful to students in schools with large populations of low-performing and Black students (Béteille et al., 2012, Fuller et al., 2007; Levy et al., 2006; Ronfeldt et al., 2013).

Second, emerging research and theory has found that principal turnover has *direct* negative effects on student- and school-level achievement and that the strongest impact appears immediately after turnover occurs (Béteille et al., 2012; Burkhauser et al., 2012; Miller, 2009).

Finally, research suggests that regular principal turnover can lead to teachers not investing in any change efforts and learning to simply wait principals out (Hargreaves & Fink, 2003). As a result, it also decreases the probability of school improvement (Fullan, 1991). Thus, research suggests that principals must be in place at least 5 years for the full implementation of a large-scale change effort, including the recruitment, retention, and capacity building of staff (McAdams, 1997; Louis et al., 2010).

In summary, previous research and researchers posited that in order for school building principals to begin to implement and put into action much of what is suggested in the new PSEL standards in an effort to improve overall school performance, a minimum of 5 years on the job

seems to be required. However, there is a dearth of literature or empirical evidence to substantiate this suggested benchmark claim.

Purpose of the Study

The purpose of this study was to determine the strength of the relationship between principal longevity in New Jersey public middle (Grades 6, 7, & 8) schools and students scoring at Levels 4 (meets expectations) and 5 (exceeds expectations) on the 2016-2017 Partnership for Assessment of Readiness for College and Careers (PARCC) assessment in both English Language Arts and Mathematics. The assessment is created by a consortium featuring eight states, the District of Columbia, and the Bureau of Indian Education that work to create and deploy a standard set of K–12 assessments in mathematics and English, based on the Common Core State Standards. The sample consisted of principals from New Jersey schools that were identified as middle schools by the New Jersey Department of Education. The study was conducted to examine how the number of years a principal serves in his/her position might influence student achievement.

Research Questions

1. What is the nature of the relationship between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?
2. What is the nature of the relationship between New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

3. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?
4. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

Null Hypothesis

1. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.
2. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts.
3. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.
4. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts.

Study Design - Methodology

This research study used a non-experimental, exploratory, cross sectional, correlational design. This study involved the review of data from the New Jersey School Report Card and Data Universe (http://php.app.com/agent/) to determine which New Jersey middle schools met or

exceeded expectations in both English language arts and mathematics on the PARCC) assessment. I used multiple regression and hierarchical multiple regression to explore the relationship of predictive variables as they relate to the dependent variable in this quantitative study: students' academic achievement, as defined by scoring at Levels 4 and 5 (meeting & exceeding expectations respectively), on the 2016-2017 PARCC examination. The unit of analysis in the study was school.

New Jersey School Report Card and Data Universe were utilized to retrieve information on the following two of the predictive variables:

1. experience in district length of tenure as a principal and
2. overall experience as a principal.

Descriptive data were included in the study because of the relationship that each variable had to student academic achievement. I also had a strong interest in seeing the correlation of these predictive variables with student achievement.

The other predictive variables that were used in the study relate to district demographics that previous research in the field has determined to be significantly predictive in student performance on standardized assessments. These predictive variables were chosen for inclusion in the study to show a district's characteristics and enable me to determine the best resources and programs to advance student achievement. The variables taken from the New Jersey School Report Card included the following:

1. the total student population for each of the schools,
2. the school's percentage of students who are economically disadvantaged,
3. the school's percentage of students who are students with disabilities,
4. the school's percentage of students who are Limited English Proficient (LEP),

5. student attendance rates,
6. faculty turnover percentage, and
7. faculty attendance rates.

The New Jersey Department of Education School Report Card website (http://www.state.nj.us/education/data) and the website Data Universe (http://php.app.com/edstaff/details2.php?recordID+125590) were used to compile the demographic data for this study. The New Jersey Department of Education School Report Card for 2015-2016 website describes the percentage students meeting standards, along with the predictive variables.

Significance of the Study

The study is significant as it further explored the limited literature focusing on principal's tenure length, continuity, and education longevity relative to student academic achievement. Additionally, it will allow school districts to better understand principals' success and make informed decisions in principal placement and/or movement within the district. Furthermore, it will enable policy makers to have more insight when consulting with local schools and districts when discussing state policy agendas that address school principals along with other priorities, state policies that identify and train aspiring principals and support those already employed, and the contextual factors within states and local communities that affect how state policies or initiatives for principals are likely to unfold in practice.

Limitations of the Study

1. Caution must be exercised when making generalizations based on the findings of this study, as delimitations and limitations both apply to this quantitative analysis. Some

principals retired and/or left their positions mid-year, prior to students taking the 2016-2017 PARCC

2. The results can be generalized to the population, which the study samples.
3. The study only focused on data from 2016-2017.
4. The study only focused on achievement on the PARCC.

Delimitations of the Study

1. Data were collected and analyzed for a sample of New Jersey middle schools only and limited to the academic year 2016-2017.
2. Data were collected and analyzed for a sample of New Jersey middle schools only consisting of Grades 6, 7, and 8.

Definition of Terms

In this study I have specifically defined some of the following terms; others follow previous definitions in the literature.

Academic achievement (student) refers to the percentage of students who scored "Meeting Standards" or better on the 2016-2017 PARCC.

Adequate Yearly Progress (AYP) is the target set by each state, based on meeting the No Child Left Behind Act's overall goal that all students be proficient in reading and math curriculum standards by 2014. When schools measure AYP, the most important factors are scores on high-stakes reading and mathematics assessments administered to students annually. To make AYP, a school must meet achievement guidelines for its student population as a whole, as well as for each demographic subgroup. These groups include racial and ethnic minorities, students with disabilities, and students who are eligible for services as English-language learners (ELL).

Continuity is an uninterrupted succession while working in an educational capacity.

Failing schools are schools not making adequate yearly progress (AYP).

Interstate School Leaders Licensure Consortium (ISLLC) are standards that have been developed by the Council of Chief State School Officers, in collaboration with the National Policy Board on Educational Administration (NPBEA), to help strengthen preparation programs in school leadership (Van Meter & Murphy, 1997).

Longevity is the length of a principal's professional lifespan in a school district, totaling 10 or more years.

Mid-continent Research for Education and Learning (McREL) is a nationally recognized nonprofit organization created to help educators bridge the gap between research and practice.

Middle school, for the purposes of this study, is a school with Grades 6, 7, and 8 only.

No Child Left Behind (NCLB) is legislation that was signed into law in 2001 by President George W. Bush. Its main objective is "to close the achievement gap with increased accountability, flexibility, and choices so that no child is left behind" (Public Law 107-110, 107th Congress, 2002). NCLB articulates a precise formula for ensuring "that all groups of students, including low-income students, students from major racial and ethnic groups, students with disabilities, and students with limited English proficiency reach proficiency within 12 years" (U.S. Department of Education, 2002, p. 5).

PARCC is an end-of-year assessment aligned to Common Core standards that tests students of all achievement levels on what they have learned in English/language arts and mathematics in Grades 3–8 and high school.

Percentage of students who qualify for free and reduced lunch refers to the percentage of the total student population who, based on family income levels, meet federal guidelines for reduced prices for school lunches/meals.

Principal is the chief administrator of a school and the person responsible for all things in and around the school.

Principal leadership refers to the ability of a principal to lead a school in his or her capacity as chief executive officer (CEO).

Proficient is the student academic achievement mark that represents adequate knowledge in a given subject area.

School boards are the corporate bodies that possess the legal authority to organize and operate a school district for the state, with statutory responsibilities for policy, budget, and programs (Blumberg & Blumberg 1985).

School district denotes the boundaries of a school facility that are governed by a board of trustees, including schools in single areas, which serve the population of the community.

TEACHNJ Act (TEACHNJ) is the bipartisan tenure reform approved unanimously by the legislature and signed into law by Governor Chris Christie on August 6, 2012. The goal of the law is to "raise student achievement by improving instruction through the adoption of evaluations that provide specific feedback to educators, inform the provision of aligned professional development, and inform personnel decisions" (NJDOE, 2016, p. 2).

Tenure refers to the characteristics influencing a principal to remain in a New Jersey school district for a multiple-year period.

Total student population is the total number of students in a school district.

Total years experience in district refers to the total number of years a person has served in the same school district in the capacity of principal.

Total years experience in New Jersey is the total number of years a person has worked in education in the state of New Jersey.

Total years experience is the total number of years a person has worked in education, regardless of the state.

Turnover denotes the amount of movement that occurs in and out of an organization due to resignations, discharges, retirements, and deaths.

Uninterrupted tenure is the number of consecutive years that a principal stays in the same position within a school district.

Organization of the Dissertation

Chapter 1 is a brief overview and background of the study, including research questions, the significance of the study, and both limitations and delimitations. In addition, terms specific to the study were defined. Chapter 2 is a review and examination of the related literature. It examines the role of the principal (past/present), elements of effective leadership, the principal's effect on student achievement, and longevity in other professions. Chapter 3 provides a description of the research design and the methods used in the collection and analysis of the data used in the study. Chapter 4 provides the results of the study, including the details of the statistical analysis, resulting data, and interpretation as related to the research questions. Chapter 5 summarizes the study, identifies limitations, and suggests implications for further research.

Chapter II

Literature Review

Introduction

We are a long way from when a school's purpose was one that focused on providing character building opportunities and religious development. Fast forward some time and the focus is on 21st century skills and students' abilities to navigate and succeed in technologically advanced and competitive global markets. Nowadays, it is all too common to see and hear about the public schools crisis and new school reforms in any number of news feeds, blogs, articles, and talk shows. Both state and federal legislators continue to pass legislation that raises accountability and pushes for higher student academic outcomes. The release of *A Nation at Risk* (National Commission on Excellence in Education, 1983) was significant in creating the school reform movement that still exists today.

In response to this movement, both educators and administrators are tasked with new challenges and demands in addition to living up to increased accountability from local, state, and federal officials to meet such demands. Therefore, high performing teachers and principals are necessary to drive such a mission.

Purpose of the Review

This literature review examined research-based philosophical and theoretical articles on the topic of principal longevity relative to student achievement, organizational stability, culture and climate, staff morale, day-to-day operations and teacher transience. The purpose of the review is to highlight empirical studies that: (a) examine the history, evolution, and changing role of the school principal; (b) evaluate the necessary elements of an effective school leader; (c) investigate principal, superintendent, and business leadership longevity; and (d) consider the

effects the school leader has on student achievement while controlling for specific student predictor variables that past literature has identified as influencing student achievement (i.e., student attendance, student mobility, students with disabilities, students with limited English proficiency, and student socioeconomic status).

Literature Search Procedures

The review was guided by the Boote and Beile (2005) framework for scholarly literature review where the foundation of the review is built upon a thorough and critical examination of the state of the field, synthesizing literature, gaining new perspectives, discussing and critiquing methodologies, and explaining the scholarly significance of included research. The reviewed literature was accessed through online databases that included: ERIC, JSTOR, Academic Search Premiere, ProQuest, Google Scholar, Sage, Routledge, and peer-reviewed/scholarly journal articles and books. Each variable was individually searched for by using key words such as *principal longevity*, *leadership continuity*, *principal continuity*, *principal tenure*, *student achievement*, and so forth. The reviewed literature included experimental, quasi-experimental, and meta-analytic empirical studies. Phrase searches and other basic and advanced key search terms were utilized. The review of initial articles and texts led to the identification of additional related works and new keyword/phrase searches.

Inclusion and Exclusion Criteria for Literature Review

The following criteria and items were included in this review:

- peer-reviewed journals, dissertations, and/or government reports;
- The Wallace Foundation;
- Rand Education;
- experimental, quasi-experimental, and non-experimental groups;

- quantitative research that included: observational, experimental, and meta-analysis; and
- works published from 2010 to the present, unless considered seminal.

The School Principal

Ask a student about the "principal's office" and you will most likely get a description entailing the idea of a place you go when you are in trouble. Perhaps to some, this perception is still a reality, but the role of the school principal has evolved into a multifaceted role, navigating modern-day challenges. Aside from the role of a disciplinarian, and the regular routines and responsibilities that include effectively managing the operation of the school building, implementing district policies and initiatives, addressing personnel issues, purchasing supplies and curriculum, balancing budgets, and maintaining a collaborative and productive educational environment and/or culture, the principal's role includes much more. Habegger (2008) explained how "the job description of a school principal cannot be adequately described in a 1000 word essay, let alone in a short paragraph; today's principal is constantly multitasking and shifting roles at a moment's notice" (p. 42)

The job of the modern-day principal would almost be unrecognizable to the principals of the 1960s, 1970s, and 1980s (Alvoid & Black, 2014). The metamorphosis consists of moving away from building management and administrative matters and moving toward a focus on instructional practices. There is significant research that supports this notion including the Simkin, Charner, and Suss (2010) survey of school and district administrators, policy makers, and others that identified a focus on the principalship as being the most important and pressing educational issue, second only to teacher quality and overshadowing topics like testing, dropout rates, and college and career readiness. The 2004 Wallace Foundation study, *How Leadership*

Influences Student Learning stated, "It turns out that leadership not only matters: it is second only to teaching among school-related factors in its impact on student learning, according to the evidence compiled and analyzed" (Leithwood et al., 2004, p. 3). Louis et al. (2010) further corroborated this idea stating:

> In developing a starting point for this six-year study, we claimed, based on a preliminary review of research, that leadership is second only to classroom instruction as an influence on student learning, After six additional years of research, we are even more confident about this claim. To date we have not found a single case of a school improving its student achievement record in the absence of talented leadership. (p. 9)

Elements of Effective School Leadership

When examining the elements of effective school leadership, one must look past leadership items that would typically reside within a structural frame like teacher evaluations, operations, data review, management, and scheduling. In spite of their importance, one must also look at leadership items that reside in the human resources and symbolic frame, specifically how leadership provides direction and exercises influence. The culmination of these items is what distinguishes good leadership from great leadership. Louis et al. (2010) explained how leadership is all about organizational improvement and establishing agreed upon and worthwhile directions for the organization in question and doing whatever it takes to prod and support people to move in those directions.

Realizing better outcomes for students is no easy task. However, the Council of Chief State School Officers (2015) has developed a set of professional standards that can guide educational leaders. The Interstate School Leaders Licensure Consortium (ISLLC) standards, first published in 1996 and updated in 2008, are now known as the Professional Standards for

Educational Leaders (http://www.ccsso.org/Documents/2015/SummaryofProfessionalStandardsforEducationalLeasers2015.pdf). Developed through a collaborative dive into theory, effective practice, and research, the 10 standards describe what effective school leaders should be able to know and do to lead high-achieving staff, schools, and students in the 21st century.

Reston (2015) described the new standards as having a clearer emphasis on student learning focused on preparing students for the 21st century. They recognize human relationships in teaching and student learning and stress the importance of academic rigor. The standards reflect a positive approach to leadership that is optimistic, emphasizes development and strengths, and focuses on human potential (Reston, 2015). They are lastly described as adopting a future-oriented perspective, envisioning future challenges and opportunities.

In addition to The Council of Chief State School Officers, The Wallace Foundation (2012) has supported many research studies on school leadership and suggests that there are five key responsibilities central to effective school leadership:

- shaping a vision of academic success for all students, one based on high standards;
- creating a climate hospitable to education in order that safety, a cooperative spirit and other foundations of fruitful interaction prevail;
- cultivating leadership in others so that teachers and other adults assume their part in realizing the school vision;
- improving instruction to enable teachers to teach at their best and students to learn at their utmost; and
- managing people, data, and process to foster school improvement.

Vision. The first key leadership quality is having a vision of high academic success for all students. One might think that a vision of high academic success would, by default, be every principal's priority. The Wallace Foundation (2012) explained how for years principals were seen as school managers, and as recently as two decades ago, high standards were thought to be the province of the college bound. Wallace Foundation (2012) explained that the change came after two realizations: A strong education is a determinant of career success in a global economy and how the academic achievement between disadvantaged and advantaged students needs to narrow in order to be able to compete fairly. One way to accomplish this is when the principal enacts high standards and rigorous learning goals. According to The Wallace Foundation (2012):

> The research literature over the last quarter century has consistently supported the notion that having high expectations for all, including clear and public standards, is one key to closing the achievement gap between advantaged and less advantaged students and for raising the overall achievement of all students. (p. 7)

Leithwood and colleagues found that leaders with clearly articulated personal values are often more effective problem solvers (Hallinger & Heck, 2002). When tackling the messy problems often faced in schools, the visionary leader's values became "substitutes for information" (Leithwood as cited in Hallinger & Heck, 2002, p. 11). With the school becoming more and more similar to a corporation, principals will need to function more like a CEO. One function, in particular, is visioning or constantly monitoring the ever-changing landscape and aligning the strategies and the goals to meet the new needs. The logic behind having the vision appears to be simple and straightforward. A school with a vigorous, soaring vision of what it might become is more likely to become that; without a vision, school is unlikely to improve

(Barth, 1990). Regardless of the style of the school leader, communicating a compelling vision, conveying high performance expectations, projecting self-confidence, modeling appropriate roles, expressing confidence in followers' abilities to achieve goals, and emphasizing collective purpose was a common factor across all (Louis et al., 2010).

Climate. The link between professional community and student achievement may be explained by reference to a school climate that encourages levels of student effort above and beyond the levels encouraged in individual classrooms (Louis et al., 2010). The Louis et al. (2010) study, *Investigating the Links to Improved Student Learning*, had the following key findings:

- One action that principals take to influence instruction is setting a tone or culture in the building that supports continual professional learning (Instructional Climate).
- Principals whose teachers rate them high on Instructional Climate emphasize the value of research-based strategies and are able to apply them in the local setting.
- Setting a tone and developing a vision (Instructional Climate) for student achievement and teacher growth is present in high-performing (high student achievement) schools of all grade levels, K–12. (p. 77)

Additional research supports the creation of a widely shared sense of community, stating that the effective bonds between students and teachers associated with a sense of community are crucial in engaging and motivating students to learn in schools of any type (Leithwood et al., 2004). Furthermore, community serves as "an antidote to the unstable," giving balance and stability to children served by especially challenging schools (Leithwood et al., 2004 p. 53). Connections, identities, and commitments build students' sense of purpose, security, and empowerment and combat fatalism, which is often the result of repeated loss (Leithwood et al.,

2004). Focusing on school climate is a strategy to increase student learning and achievement, enhance school connectedness, reduce high school dropout rates, prevent bullying and other forms of violence, and enhance teacher retention rates. This idea is supported and/or endorsed by several organizations that include The U.S. Department of Education, the Centers for Disease Control and Prevention, the Institute for Educational Sciences, President Obama's Bully Prevention Partnership, the U.S. Departments of Justice and Education's School Discipline Consensus project, a growing number of state departments of education and foreign educational ministries (Cohen & Freiberg, 2013).

Several factors, including empowerment, authenticity, engagement, self-efficacy, and motivation are important factors in a positive school climate and ultimately significant mediators in students' academic success (Hughes & Pickeral, 2013). The principal must be intentional in practice and strategic in creating such an environment. However, the task is not one bestowed onto the principal alone. The principal should not work in isolation and must share the task with stakeholders, including parents, teachers, and students. They, too, must participate in cultivating and promoting the climate efforts, in order to create a student-focused environment. The idea of shared leadership means a shift from the traditional leadership model to a shared leadership model resulting in shared power and decision-making (Hughes & Pickeral, 2013). Instead of a single individual leading the efforts, other individuals, who are partners or group members, are invited to share the responsibility for leadership and develop a positive school climate (Hughes & Pickeral, 2013).

Cultivating leadership in others. In the famous words of John Donne, "No man is an island, entire of itself; every man is a piece of the continent, part of the main." (p. 13). Multiple sources indicate that in both private and public sectors, there is a need to develop leadership

across the organization in order to accomplish the group's purpose. This is especially the case in education. Louis et al. (2010) explained how principals who get high marks from teachers for creating a strong climate for instruction in their schools also receive higher marks than other principals for spurring leadership in the faculty. Furthermore, spreading leadership in the faculty results in increased student achievement. One of the findings from the Louis et al. (2010) report suggests that effective leadership from all sources, including principals, teachers, and staff members is associated with better student performance on math and reading tests. The report suggests that the theory of two heads being better than one explains how the higher performance of these schools might be explained as a consequence of the greater access they (students) have to collective knowledge and wisdom embedded within their communities (Louis et al., 2010).

Lastly, as principals create teacher and other staff leaders, they themselves do not lose authority. The higher performing schools that shared influence amongst stakeholders saw little change in their schools' overall hierarchical structure (Louis et al., 2010).

Improving instruction. Effective leaders put quality of instruction at the top of the priority list. The Louis et al. (2010) study contrasted high-scoring principals and their low-scoring counterparts and found the following:

Effective principals:

- make frequent, short and often spontaneous classroom visits quickly followed up with feedback;
- consistently expressed the desire to see teachers working, teaching, and helping one another; and
- create opportunities for teacher collaboration and learning.

Managing people, data, and processes. Effective school leaders seek out and hire highly qualified teachers. Additionally, they provide them with supports to grow and ensure that they are able to retain their best. "Indeed," writes Stanford University education policy analyst Linda Darling-Hammond, "the number one reason for teachers' decisions about whether to stay in a school is the quality of administrative support — and it is the leader who must develop this organization" (Darling-Hammond et al., 2007, p. 17).

In addition to effectively managing and retaining staff, successful principals also utilize data to plan and evaluate current practices and processes. Krasnoff (2015) explained how effective principals:

- productively utilize statistics and evidence,
- create meaningful questions from data,
- display data in different forms to evoke questions and findings,
- use data to promote collaborative inquiry among teachers, and
- use the data to identify problems and better understand their nature and causes.

Strong principals take a systematic approach to completing their jobs. The Wallace Foundation (2012) cited a tool developed by researchers at Vanderbilt University (the Vanderbilt Assessment of Leadership in Education,VAL-ED) suggesting that there are six key steps when principals are carrying out their most important responsibilities: planning, implementing, supporting, advocating, communicating, and monitoring.

> The school leader pressing for high academic standards would, for example, map out rigorous targets for improvements in learning (planning), get the faculty on board to do what's necessary to meet those targets (implementing), encourage students and teachers in meeting the goals (supporting), challenge low expectations and low district funding for

students with special needs (advocating), make sure families are aware of the learning goals (communicating), and keep on top of test results (monitoring). (p. 15)

Principal Effects on Student Achievement

M. Christing DeVita, president of The Wallace Foundation states, "Our nation's underperforming schools and children are unlikely to succeed until we get serious about leadership." (Darling-Hammond et al., 2007, p. i).

Similar to that of any other organization or business, the aforementioned research suggests that problematic conditions and low performance can arise as a result of high levels of leadership turnover in schools. Conversely, well-established, high-quality leadership yields successful leaders, programs, and students (Fullan, 2002).

Leithwood et al. (2004) explained how successful leadership can play a highly significant—and frequently underestimated—role in improving student learning. They make the following two claims, based on the available evidence, regarding the size and nature of the effects of successful leadership on student learning:

1. Leadership is second only to classroom instruction among all school-related factors that contribute to what students learn at school. The total (direct and indirect) effects of leadership on student learning account for about a quarter of total school effects.
2. Leadership effects are usually largest where and when they are needed most. The greater the challenge the greater the impact of their actions on learning. While the evidence shows small but significant effects of leadership actions on student learning across the spectrum of schools, existing research also shows that demonstrated effects of successful leadership are considerably greater in schools that are in more difficult circumstances.

> Indeed, there are virtually no documented instances of troubled schools being turned around without intervention by a powerful leader. (p. 5)

Research suggests that there is a positive correlation when examining principals' effectiveness and time on the job (as a principal). The Colorado Department of Education piloted an educator evaluation system in 2011-2012 and again in the 2012-2013 school years. Swearingen (2014) summarizes how:

> Principals become more effective as they gain more experience. Just as teachers become more effective with experience, so do principals, especially in their first three years (Clark, Martorell & Rockoff, 2009). Furthermore, no matter how effective a principal was at his or her previous school, when he or she transfers to a new school it takes approximately five years to fully stabilize and improve the teaching staff as well as fully implement policies and practices to positively impact the school's performance (Louis et al., 2010). (p. 23)

Effective principals still make significant improvements in their first few years; however, their effectiveness definitely increases over time.

Other studies have examined how principals can effect students' achievement including Waters et al. (2003) who identified 21 leadership responsibilities and calculated an average correlation between each responsibility and students' test scores. They found that test scores from a highly effective (someone who improved their demonstrated abilities in all 21 responsibilities by one standard deviation) principal's school were (on average) 10 percentage points better than a school led by an effective principal. Significant results, but Leithwood et al. (2004) stated that the extrapolations from their estimates to principal effects on student learning

in real-world conditions must be made with considerable caution. Leithwood et al. (2004) explained:

> First, the data are correlational in nature, but cause and effect assumptions are required to understand the effects of leadership improvement on student learning. Second, the estimated effects on student achievement described in the study depend on the leader's improving their capacities across all 21 practices at the same time. (p. 22)

Branch et al. (2013) found, based on value-added scores, having a highly effective principal increased students' achievement from the 50th percentile to between the 54th and the 58th percentiles in just one year, depending on the type of analysis conducted. They continued to explain that this difference in performance is the similar to the difference found when class size is reduced by 5 students. However, results are dependent on the level of the school, the demographics of the students in the school, and the initial performance of the students (Hull, 2012).

There is additional evidence that explains how principals not only impact academic achievement but other outcomes as well. When examining principals' impact on the number of days students miss, researchers found that student absences were lower in schools led by effective principals than when led by less effective principals (Hull, 2012). Furthermore, the impact was even greater in low-performing and high-poverty schools than in high-performing and low-poverty schools (Branch et al., 2013; Clark et al., 2009).

Over the long term, principals can also impact a school's graduation rate. A high school led by a highly effective principal would have a graduation rate nearly 3 percentage points higher than a high school led by an average principal, but it takes time for even highly effective principals to have such an impact (Coelli & Green, 2012). On average, the effect of principals

on their school's graduation rate starts in their second year at the school. It is not until a principal is at a school for at least 4 years that the full impact is evident (Coelli & Green, 2012).

Principals have a greater effect on student achievement in schools that are considered high poverty, high minority, and low performing than principals in less challenging schools (Hull, 2012). Branch et al. (2013) explained, "The variation in principal effectiveness tends to be largest in high-poverty schools, consistent with the hypothesis that principal ability is most important in schools serving the most disadvantaged students" (p. 1).

The organizational structure also plays a part in determining how a principal influences student achievement. For example, principals have a greater impact on elementary schools when compared to middle or high schools (Leithwood et al., 2004). Leithwood et al. 2004 explained how this can be attributed to the level of engagement and curricular knowledge a principal has in relation to their teachers. In an elementary setting,

> The curricular knowledge of successful elementary principals frequently rivals the curricular knowledge of their teachers; in contrast, secondary principals will typically rely on their department heads for such knowledge. Similarly, small schools allow for quite direct engagement of leaders in modeling desirable forms of instruction and monitoring the practices of teachers, whereas equally successful leaders of large schools typically influence their teachers in more indirect ways. (p. 10)

When engaging in the task of improving student achievement, time is needed to produce results and sustain growth. Furthermore, the lack of consistent leadership can prove disruptive to a school. Hoy and Miskel (2005) explained how a change in leadership disrupts the communication process, relationships, and other items that contribute to student achievement. To fully establish a system in which the school can build consistency, it is imperative to have a

consistent leader in place to support continuous growth and development (Brockmeier et al., 2013; McDonald, 2013). McDonald explained how it takes between 5 and 7 years to cultivate strong relationships and create a culture that will have a positive impact on student achievement. Contrariwise, principals who leave their school within the first 2 years are much less likely to have any positive impact on student achievement (McDonald, 2013).

Principals who are new to their school (first-year principals are usually expected to improve or at least maintain prior levels of student achievement. To accomplish this goal, first-year principals make decisions regarding how to allocate their time and energy and what areas they will focus on. This ultimately determines whether or not they succeed in maintaining or improving student outcomes. The ability to accomplish that goal and overcome challenges will likely influence if he or she will stay at the school. Burkhauser et al. (2012) examined the experiences of first-year principals (519) in six districts partnered with New Leaders (Memphis City Schools, Chicago Public Schools, New York City Public Schools, Washington DC Public Schools, Baltimore City Public Schools, and Oakland California Unified School District). Their report found the following:

- Over one fifth of new principals leave within 2 years, and those placed in schools that failed to meet adequate yearly progress targets are more likely to leave. They found that out of the 519 principals, 61 (11.8%) left within the first year, and 56 (10.7) left within the second and explained how some early turnover can be attributed to district leader or stakeholder concerns regarding principals' performance.
- Schools that lose a principal after one year underperformed in the subsequent year.

They found that of the 40 schools that experienced a decline in scores and hired another principal the following year, 9 schools showed improvement, 20 experienced declines, and 11 schools stayed the same.

Branch et al. (2013) suggested that the majority of the attrition is occurring at the top and bottom, the most effective and least effective principals are the ones leaving. The least effective principals are being pushed out, while the highly effective principals are being pulled to better schools and/or school districts, a pattern that is particularly more pronounced in higher poverty school districts.

Based on the aforementioned research we see that there are lingering consequences when schools lose their first-year principal. Furthermore, there is the need for adequate time for principals to establish, develop, and implement strategies that improve student and school success. Branch et al. (2013) explained that from a policy viewpoint, added attention to the selection and retention of high-quality principals would have a very high pay-off. With a better understanding of how important the principal's role plays in impacting student achievement, all with a stake in education need to make principal development and longevity a priority. A commitment to high-quality principal leadership is needed to allow for greater access to a high-quality school.

Longevity in Other Professions

One can certainly make comparisons to successful educational leaders and leaders in the business world, in particular, between school superintendents and chief executive officers (CEOs). When comparing the longevity of CEOs from large corporations to that of superintendents in large districts, there is a large discrepancy in turnover (Berlau, 2011).

Specifically, it is 2 to 1 when comparing the leadership continuity factor of America's largest 10 companies to that of the largest 10 school systems (Berlau, 2011).

Fullan (2002) explained how leaders from successful educational organizations and those from businesses have similar traits. Research has looked at how these leaders impact the businesses they manage and operate. One finding was how leaders and their leadership behavior were critical to the success of their companies (Collins & Collins, 2001). Berlau (2011, p. 22) cited a Lieberson and O'Conner (1972) study on organizational performance, which found that industry effects such as the competitive state of the industry to the size and structure of the company accounted for almost 30% of the variance in corporate profits. Additionally, CEO quality accounted for 14% of the variance in corporate profits (Manzi, 2010). Research suggests that the same types of variances can be attributed to a superintendent of a school district.

The research of Khaliq, Thompson, and Walston, (2006) looked closely at the impact that hospital CEO turnover had on U.S. hospitals. Findings included:

- As a result of turnover, 30% reported that strategic planning was halted or postponed; 29% reported a halt or delay in development of new services.
- Current CEOs report several negative effects as a consequence of their predecessors' departures in such areas as employee morale (14%) and medical staff relations (14%), accompanied by increased marketing by competitors in the hospitals' service areas (35%).
- CEOs report that the following top-level managers left their posts within one year of their predecessors' departures: vice president (97%), chief financial officer (42%), chief medical officer (77%), chief human resource officer (37%), chief operating officer (52%), and chief information officer (14%).

- Hospitals appear to have minimal difficulty finding replacements for departing CEOs, as approximately 75% have the CEO position filled within 6 months after the CEO leaves.
- The tenure of a CEO varies widely; while 42% of hospitals have had only one CEO in the past five years, 22% of hospitals have had three or four CEOs in the past 5 years. (p. 3-4).

The study explained how the degree and impact of the turnover is a function of the circumstance and how the impact on the organization is dependent on whether the change was foreseeable or abrupt and voluntary or involuntary (Khaliq et al., 2006). Nevertheless, there are measurable effects that exist that are similar to that of a superintendent leaving a school district.

Superintendent Longevity

Similar to the role of the principal, a superintendent's responsibility is shifting from school district manager to an instructional leader able to lead district reform efforts (Berlau, 2011). Similarly, 41% of school boards identified raising student achievement as the superintendent's primary mission (Byrd, Drews, & Johnson, 2006). The issue, then, becomes balancing the managerial and leadership roles that may not always align with each other. Berlau (2011) explained how superintendents need to ensure that the system operates smoothly when in a managerial role and how they need to make changes that will impact performance of the organization and improve student outcomes when in a leadership role. In order to achieve an increase in student achievement, often times a significant transformation of schools is needed (Berlau, 2011). Additionally, they must also be able to understand and balance the larger political system and consider what state legislatures, governors, and the U.S. Congress decide in the area of education (Berlau, 2011).

Plotts (2011) cited Brown, Swenson, and Hertz's (2010) portrait of today's school superintendent, explaining how politicians and policy have increased their focus on the role of

the superintendent in the recent years. One example is the capping of superintendents' salaries shortly after New Jersey's Governor Christie took office. It is no longer sufficient for superintendents to play the role of designated school leader. To avoid blame and adhere to new expectations, they need to navigate political issues, fix the here and now, and create a vision for the future. In short, the role of the superintendent is complex, difficult, and the probability of failure is high.

Natkin, Cooper, Alborano, Padilla, and Ghosh (2002) focused their research on the longevity of 292 superintendents from North Carolina and other districts in the U.S. and found that the average turnover was 6 to 7 years, regardless of the district's size or location. Factors that contributed to a superintendent's exiting were the extent of school board involvement in management, support for needed construction, consolidation of school systems, district poverty level, and superintendent's post-graduate education (Byrd et al., 2006).

Council of Great City Schools (GCS) conducted a survey with member districts. They found that the average tenure for urban superintendents was 2.75 years (up from 2.5 in 2001) and 4 years for immediate past Great City School superintendents (Byrd et al., 2006). In support of these findings, the 200 (American Association of School Administrators) survey sampled 2,262 superintendents and estimated the average tenure to be between 5 and 6 years (Byrd et al., 2006). Byrd et al. (2006) observed how the literature notes that the average tenure for urban superintendents is historically shorter than other superintendents, namely due to how diverse the role is, accounting for various factors such as geography and size.

Factors that can be attributed to the short tenure vary, but a few were recurrent throughout the literature and fell into three groups. The first group of factors focuses on the superintendent and includes retirement date, salary, number of years of academic preparation,

and total years in the district. Additional factors can include perceived stress, gender, ethnicity, and leadership style. The second group of factors focuses on the board members and includes their age, marital status, and education, as well as existence of pressure groups and evaluations. The third group focuses on school district factors that include district wealth, size and type and number of board member elections (Berlau, 2011; Byrd et al., 2006; Hipp, 2002; Parker-Chenaille, 2012; Plotts, 2011).

Clearly, superintendent longevity is a multifaceted concept. Future studies are needed to clarify and determine how and to what extent these factors ultimately affect superintendent longevity.

Principal Longevity and the Shortage

In spite of the need for skilled school leaders, the role of the principal in creating the conditions for improved student outcomes was, for the most part, ignored by policymakers throughout the 1980s and 1990s, and the ability of principals to rise to the increasing demands of each additional reform effort was taken for granted (Darling-Hammond et al., 2007).

There are many articles that discuss the principal shortage and how superintendents are reporting difficulties finding principals to fill vacancies. In spite of the fact, the problem is not a shortage of certified administrators but a shortage of well-qualified administrators who are willing to work in the places of highest demand, especially in underserved communities and schools where working conditions are most challenging (Darling-Hammond et al., 2007). In short, too few credentialed people are prepared adequately for the job, and too few qualified educators want to be principals (Usdan et al., 2000). Clifford & Ross (2012) stated that the demand for new school principals has remained relatively stable, increasing by 7% percent during a 20-year period; however, workforce turnover rates continue to increase as the

professional workforce ages. The new generation of school principals is older, more diverse, more professionally experienced, and more mobile than principals of 10 or 20 years ago (Gates, Ringel, Santibanez, Ross, & Chung, 2003).

Once a person assumes the principal role, there are several factors that contribute to the time one will stay in the profession. A study conducted by The Southern Regional Education Board (SREB; Bottoms & O'neill, 2001) identified the following successful school leader traits:

- creating a vision that is focused on improving student achievement;
- maintaining high expectations and rigors course offerings;
- attention to quality classroom instruction, research-based instructional methods, and classroom assessment;
- development of a learning environment that addresses the needs of all students;
- utilization of data when making decisions regarding classroom practices and student achievement;
- being visible and encouraging communication;
- involving all stakeholders and continuously encourage parental involvement;
- managing staff through change;
- developing professional development opportunities based on teacher and/or school needs;
- effective time management;
- creative utilization of resources;
- developing and partnering with change agents that can move the vision forward; and
- engaging in ongoing professional development.

Bottoms and O'neill (2001) explained how legislation responded to these expectations by setting higher standards and holding school leaders accountable for students' success. They continued to explain how:

> It's gotten personal. Increasingly, state accountability systems are placing the burden of school success and individual student achievement squarely on the principal's shoulders. The principal's job description has expanded to a point that today's school leader is expected to perform in the role of "chief learning officer," with ultimate responsibility for the success or failure of the enterprise. (p. 5)

Miller (2009) cited several studies that looked closer at principal turnover and found that it was a common phenomenon nationwide. Cullen and Mazzeo (2008), using administrative data from Texas, reported that about 22% of principals switch jobs from one year to the next. Papa (2007) followed several cohorts of new principals hired in New York and found that after 4 years, only 46% are still principals at the same school. Gates et al. (2003) followed a cohort of new principals and found that after 6 years, only 37% of the Illinois cohort and 21% of the North Carolina cohort remained principals at the same school. In addition, it is known that more turnover takes place at low-performing schools (Besley & Machin, 2008; Cullen & Mazzeo, 2008) and schools with more minority and limited English proficiency students (Gates et al., 2003; Papa, 2007).

Research suggests how principal longevity is a factor when considering how they are rated by their teachers. The Colorado Department of Education piloted an educator evaluation system in 2011-2012 and again in the 2012-2013 school years. The pilot found:

> Principals with over five years of experience as a principal, overall or in their current school, receive the highest rating. Considering only experienced in their current school,

principals who are new or only have one year of experience in their current school receive the lowest ratings. (p. 14)

Other Variables that Affect School Achievement

Student socioeconomic status. There are other variables that affect schools' academic achievement and will need to be controlled for. Some of which are student attendance, student mobility, percentage of students with disabilities, percent of students with limited English proficiency, and students' socioeconomic status. Starting with the Coleman report, *Equality of Educational Opportunity* (1966), and the dozens of studies that followed, it has been evidenced that socioeconomic status is correlated with student achievement. Parents from all socioeconomic backgrounds are challenged on how to best provide optimal care and education for their children. However, for families from low socioeconomic backgrounds, the challenges can be formidable.

Families with low socioeconomic status often lack the financial, social, and educational supports as compared to families with high socioeconomic status (Charles, 2013). Additionally, low socioeconomic status families may have inadequate or limited access to community resources that promote and support children's development and school readiness (Charles, 2013). Furthermore, low socioeconomic status families may have inadequate skills to assist their children in subjects such as reading and mathematics (Charles, 2013). Not having the resources or limited access to available resources can negatively impacts how families are able to make decisions regarding their young children's development and learning (Charles, 2013). As a result, children from families with low socioeconomic status are at greater risk of beginning school as compared to their peers from families with median or high socioeconomic status.

Student attendance. Researchers have noted a positive relationship between school attendance and academic success (Gottfried, 2010). When children miss a day of school, they miss an opportunity to learn. According to The National Center for Education Statistics (NCES) (2009), students who attend school regularly have been shown to achieve at higher levels when compared to students with poor attendance. Romero and Lee (2007) found that a high absenteeism rate in kindergarten was associated with negative first grade outcomes including a continuation of excessive absenteeism and lower achievement in reading, math, and general knowledge. Furthermore, students with better attendance records are cited as having stronger test performance (Gottfried, 2010). Gottfried explained how attendance can serve as measure of school quality and is important enough to be evaluated as an academic outcome. Therefore, increased attendance is not just a determinant but a direct indicator of school success (Gottfried, 2010).

Student mobility. Student mobility or "churn" or "transience" is defined as a student moving from one school to another for reasons other than being promoted to the next grade level. The move can be either voluntary (to participate in a sports program) or involuntary (expulsion). School mobility is a measure of students' mobility in a particular class, grade level, or school over time. High percentages of school mobility are detrimental to both the students who leave, as well as the students who remain (Sparks, 2016). Sparks continued to explain how student mobility is also associated with a decrease in student engagement, lower grades in English language arts and mathematics and an increase in the likelihood of dropping out of school and not graduating.

Students with disabilities. The No Child Left Behind Act of 2001 (NCLB) plays a major role in providing benefits to students with learning disabilities (LD), but may prevent the

same students from enjoying all the available opportunities as their non-disabled peers. No Child Left Behind is the latest version of the Elementary and Secondary Education Act (ESEA), the major federal education law that was first enacted in 1965. No Child Left Behind spawned during the Clinton Administration with the passage of Goals 2000 and the Improving America's Schools Act in 1994. No Child Left Behind prioritizes the educational outcomes for disadvantaged students and by imposing new requirements for standards, assessments, accountability, and parental involvement attempts to close the achievement gap between various subgroups of students, including those with disabilities (Blackorby, Chorost, Garza, and Guzman 2005).

Although No Child Left Behind clearly promotes the idea of academic achievement, agreement in how to measure this idea, especially for students with disabilities, is elusive. Blackorby et al. (2005) explained how this measurement continues to be controversial among policymakers, measurement experts, and even educators. Although formally excluded from measures of educational performance, NCLB requires all schools to test all students, including students with disabilities and 504 plans. Furthermore, the 1997 amendments to the Individuals with Disabilities Education Act laid the groundwork for holding schools accountable for the testing of students with disabilities and to report their participation and performance (Harr-Robins et al., 2012). Harr-Robins et al. further explained how this was reauthorized in 2001 by the Elementary and Secondary Education Act, establishing student with disabilities as a subgroup used in determining if schools make adequate yearly progress.

Students with limited English proficiency. Students who do not speak English as their primary language and have limited ability to read, speak, write, and understand the English language are identified as being Limited English Proficiency (LEP) or English Language

Learners (ELL). Roekel (2008) explained how the ELL body of students is the fastest growing subgroup in the student demographic, growing to approximately 10 million students. By 2015, close to 1 in 4 students (in public school) will be an English Language Learner (Roekel, 2008).

According to the No Child Left Behind Act (year), each district and school must show proficiency not only as a whole, but for each of the school's subgroups (economically disadvantaged, students of color, students with disabilities, and ELL students). Therefore, ELL students are expected to meet the same academic standards as their peers in English language arts and mathematics. Because ELL students are expected to master content in English before they are even proficient in the English language, these students receive certain accommodations during testing. Nevertheless, the accommodations provided are of limited value and result in ELL students performing very low on the state assessments. Roekel (2008) cited testimony presented to Congress explaining how ELL students' academic performance is significantly below those of their peers in nearly every measure of achievement.

Summary

In American education, the role of the principal is constantly evolving. In this chapter I have reviewed the evolution of the principal's role, moving away from building management and administrative matters toward a focus on instructional practices. It is clear that a successful principal is one who is able to handle operational management but also provide direction and exercise influence. The Professional Standards for Educational Leaders (2015) and The Wallace Foundation (2012) have suggested that the key roles fall into five key responsibilities and include shaping a vision of academic success for all students; creating a climate hospitable to education; cultivating leadership in others; improving teacher instruction; and managing people, data, and process to foster school improvement.

When principals are able to effectively put all of the aforementioned together, we find that they can have a significant impact on instruction, second only to classroom instruction (Leithwood et al., 2004). However, the ability to establish these skills takes time. Hull (2012) explained how principals become more effective as they gain more experience. Furthermore, it takes approximately 5 years to stabilize staff and implement policies and practices. Principals not only affect academic achievement but also influence students' attendance and graduation rates. We see this influence is greatest in schools that are considered high poverty, high minority, and low performing.

In order for principals to have a positive impact there needs to be continuity. We see negative effects when a principal leaves a school. McDonald (2013) explained how a principal who leaves his or her school within the first 2 years is much less likely to have any positive impact on student achievement. Therefore, it is imperative to have a consistent leader in place to support continuous growth and development (McDonald, 2013).

The Burkhauser et al. (2012) study, examining the experiences of 519 first-year principals, found that 11.8% left within the first year, and 10.7% left before the second. According to Branch et al. (2013), the attrition is happening at the top (most effective) and at the bottom (least effective). The high performing principals are being pulled to other districts, while the lower performing principals are being pushed out. Branch et al. (2013) explained that from a policy viewpoint, added attention to the selection and retention of high-quality principals would have a very high pay-off. With a better understanding of the importance the principal's role in impacting student achievement, all with a stake in education need to make principal development and longevity a priority. A commitment to high-quality principal leadership is needed to allow for greater access to a high-quality school.

The research has found that there are similarities between successful educational leaders and leaders in the business world and other professions (Fullan, 2002). One finding was how the leader's behavior was critical to the organization's success. Manzi (2010) attributed 14% of the variance seen in corporate profits to leadership quality; a similar type of variance can be attributed to a superintendent of a school district.

A compounding factor in the principal longevity equation is the shortage of qualified principals. There are many articles that discuss the principal shortage and how superintendents are reporting difficulties finding principals to fill vacancies. In spite of the fact, the problem is not a shortage of certified administrators but a shortage of well-qualified administrators who are willing to work in the places of highest demand, especially in underserved communities and schools where working conditions are most challenging (Darling-Hammond et al., 2007). In short, too few credentialed people are prepared adequately for the job, and too few qualified educators want to be principals (Usdan et al., 2000).

In summary, the extant research has found how the principal impacts teachers, schools, and student achievement (Hallinger & Heck, 1998; Leithwood & Jantzi, 2000). There is additional research that suggests how increased teacher turnover tends to have a deleterious effect on student achievement (Fuller et al., 2007). As a result, understanding the extent to which principal continuity affects student achievement and school improvement is an important consideration.

CHAPTER III
Methodology

As the principal's role and responsibilities continue to change, an extreme amount of emphasis is being placed on student academic achievement. This has created many new responsibilities that have resulted in an increased pressure to meet demands. The metamorphosis consists of moving away from building management and administrative matters and moving toward a focus on instructional practices. There is significant research that supports this notion including the Simkin et al. (2010) survey of school and district administrators, policy makers, and others that identified a focus on the principalship as being the most important and pressing educational issue, second only to teacher quality and overshadowing topics like testing, dropout rates, and college and career readiness. With such an emphasis being placed on student achievement, understanding how leadership continuity impacts that achievement is important to explore and understand. The purpose of this relational, quantitative, and explanatory study is to examine the impact of a principal's length of tenure or continuity of service on student academic achievement, as measured by the 2016-2017 PARCC assessment for Grades 6, 7, and 8 in both English language arts and mathematics. This chapter presents the methodology used in the study.

For this study, I used both multiple regression and hierarchical regression analysis to explore the relationship between a set of predictors as identified by the literature and students' academic performance in Grades 6, 7, and 8 on the 2016-2017 PARCC assessment in English language arts and mathematics. Because of the limitations in research, I chose to focus on New Jersey middle schools across all socioeconomic groups, as defined and identified by the New Jersey State Department of Education District Factor Grouping Rating Scale (DFG) (New Jersey

Department of Education, 2004). I wanted to work with all of the groups in order to investigate if there were different findings across a sampling of schools of varying socioeconomic backgrounds. By examining the relationship across different socioeconomic backgrounds, school boards and district leaders will better understand the impact principal continuity has on the academic outcomes of their schools.

The DFGs for New Jersey are broken down into eight different categories according to their socioeconomic status and are updated every 10 years when the Census Bureau releases the latest decennial census data (New Jersey State Department of Education District Factor Groups, 2004, p. 1). The District Factor Groups were first developed in 1975 for the purpose of comparing students' performance on statewide assessments across demographically similar school districts (New Jersey State Department of Education District Factor Groups, 2004, p. 1). The breakdown of middle schools used in this study are as follows: A (22 schools), B (26 schools), CD (16 schools), DE (29 schools), FG (33 schools), GH (34 schools), I (45 schools), and J (13 schools).

The study used the theoretical constructs identified in the reviewed literature, as well as the practices outlined by the New Jersey State Department of Education, the National Strategy for the Development of Statistics, PROQUEST, Data Universe, The New Jersey School Report Card, and ERIC to guide implementation, to examine whether or not principal length of tenure and continuity affects student achievement as evidenced by the PARCC in English language arts and mathematics in Grades 6, 7, and 8 (Plotts, 2011). This chapter describes the methods used, the research design, research questions, and sample population.

Research Questions

1. What is the nature of the relationship between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?
2. What is the nature of the relationship between New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?
3. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?
4. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

Null Hypothesis

1. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.
2. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts.
3. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.

4. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts.

Instrumentation

The Partnership for Assessment of Readiness for College and Careers (PARCC) is a state-led consortium creating next-generation assessments. The PARCC assessment is aligned to the Common Core State Standards (CCSS) and was first administered in the 2014-2015 school year. The PARCC assessment is composed of two sections (English Language Arts/Literacy and Mathematics). It is designed to be administered to students in Grades 3 to 8 and high school. According to Person's Final Technical Report (2016), the PARCC assessments were designed to achieve several purposes:

- provide evidence to determine whether students are on track for college- and career-readiness;
- access the full range of CCSS and measure the total breadth of student performance, and
- provide data to help inform classroom instruction, student interventions, and professional development.

In the fall of 2015, the PARCC assessment included two separate components: the Performance-Based Assessment (PBA) and the End-of-Year (EOY) assessment. Both components were administered as computer-based tests (CBT) and as paper-based tests (PBT). In order for a student to receive a summative score, a valid score in both the PBA and EOY assessments was required. In the spring of 2016, the PARCC assessment combined the Performance-Based Assessment (PBA) and End-of-Year (EOY) into one testing.

The PARCC ELA and mathematics scores are expressed as performance levels used to describe how well students meet the academic standards for their grade level. The total score is used to classify students in terms of the level of knowledge and skill in the content area as students progress in their K–12 education. These levels are called performance levels and are reported as:

• Level 5: Exceeded expectations

• Level 4: Met expectations

• Level 3: Approached expectations

• Level 2: Partially met expectations

• Level 1: Did not yet meet expectations

Students classified as either Level 4 or Level 5 are meeting or exceeding the grade level expectations, while students classified at Levels 3, 2, and 1 are not yet meeting the grade level expectations.

All students, including students with disabilities and English learners, are required to participate in the PARCC assessment and have their assessment results be part of the state's accountability systems. Federal laws governing student participation in statewide assessments include the No Child Left Behind Act of 2001 (NCLB), the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), Section 504 of the Rehabilitation Act of 1973 (reauthorized in 2008), and the Elementary and Secondary Education Act (ESEA) of 1965, as amended (Person's Final Technical Report, 2016). Four distinct groups of students may receive accommodations on PARCC assessments:

1. students with disabilities who have an Individualized Education Program (IEP);

2. students with a Section 504 plan who have a physical or mental impairment that substantially limits one or more major life activities, have a record of such an impairment, or are regarded as having such an impairment, but who do not qualify for special education services;

3. students who are English learners; and

4. students who are English learners with disabilities who have an IEP or 504 plan. These students are eligible for accommodations intended for both students with disabilities and English learners.

Reliability

Reliability focuses on weather differences in exam scores reflect true differences in what an exam is testing (knowledge, ability, skill, etc.) and is not a fluctuation due to chance. Therefore, reliability is a measure of how consistent the scores are across random conditions like the test form and/or who is assigned to score student-constructed responses.

There are many ways of estimating reliability. The type reported in Person's Final Technical Report for 2016 Administration was an internal-consistency measure. This measure was derived from analysis of the consistency in the performance of individuals across items within the test. Reliability coefficients ranged from 0 to 1. The higher the reliability coefficient for a set of scores, the more likely individuals would be to obtain very similar scores upon repeated testing occasions, if the students do not change in their level of the knowledge or skills measured by the test.

Person's Final Technical Report for 2016 Administration reported the following:

English Language Arts / Literacy

The average reliability estimates for the CBT for Grades 3–11 English language arts/literacy (ELA/L) range from a low of .91 to a high of .93. The average reliability estimates

for the PBT tests for ELA/L Grades 3–11 range from a low of .89 to a high of .94. The tests for Grades 3–5 have fewer maximum possible points than for the Grades 6–11 tests. The average reliability estimates are at least .90 except for Grades 4 and 5 PBT, which are .89 (p. 77).

Table 1

Summary of English Language Arts Test Reliability Estimates for Total Group

Grade level	Testing mode	Number of forms	Total sample size	Ave. max. possible score	Average reliability
6	CBT	5	402,155	121	0.92
	PBT	3	52,096	121	0.92
7	CBT	5	395,258	121	0.93
	PBT	3	53,335	121	0.92
8	CBT	5	388,964	121	0.93
	PBT	3	50,121	121	0.92

Mathematics

The average reliability estimates for the Grades 3–8 mathematics and end-of-course (EOC) assessments range from .86 to .93 for the CBT and from .75 to .93 for the PBT. Most of the average reliability estimates are above .90 except for some of the integrated mathematics tests. Integrated Mathematics I for PBT did not have sufficient sample sizes per form to estimate reliability (p. 78).

Table 2

Summary of Mathematics Test Reliability Estimates for Total Group

Grade level	Testing mode	Number of forms	Total sample size	Ave. max. possible score	Average reliability
6	CBT	7	404,238	66	0.93
	PBT	3	51,856	66	0.93
7	CBT	7	382,190	66	0.92
	PBT	4	52,101	66	0.92
8	CBT	7	314,017	66	0.91
	PBT	4	44,484	66	0.91

Validity

The Standards for Educational and Psychological Testing (2014), issued jointly by the American Educational Research Association (AERA), American Psychological Association (APA), and National Council on Measurement in Education (NCME) reported:

> Validity refers to the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing tests and evaluating tests. The process of validation involves accumulating relevant evidence to provide a sound scientific basis for the proposed score interpretations. (p. 11)

The PARCC uses what they term, "College- and Career-Ready determinations (CCRD)" in English Language Arts/literacy and mathematics. The CCRDs describe the academic knowledge, skills, and practices students must demonstrate to show readiness for success in entry-level, credit-bearing college courses and relevant technical courses (Person's Final Technical Report (2016).

The states participating in the PARCC assessment determined that this level means graduating from high school and having at least a 75% likelihood of earning a grade of "C" or better in credit-bearing courses without the need for remedial coursework (Person's Final Technical Report, 2016). After reviewing the standards and assessment design, the PARCC Governing Board (made up of the K–12 education chiefs in PARCC states) in conjunction with the PARCC Advisory Committee on College Readiness (composed of higher education chiefs in the PARCC states) determined that students who achieve at Levels 4 and 5 on the final PARCC high school assessments are likely to have acquired the skills and knowledge to meet the definition of college- and career-readiness (Person, 2016). According to the Person Report:

> To validate the determinations, PARCC conducted a Postsecondary Educator Judgment Study and a Benchmark study of the SAT, ACT, National Assessment of Educational Progress (NAEP), Trends in International Mathematics and Science Study (TIMSS), Programme of International Student Assessment (PISA), and Progress in International Reading Literacy Study (PIRLS) tests (McClarty, Korbin, Moyer, Griffin, Huth, Carey, and Medberry, 2015). (p.115)

Research Design

The research design utilized in this study was a quantitative, non-experimental, explanatory, cross-sectional design. It utilized multiple and hierarchical regression analysis to measure the relationship of predictive variables (i.e., principal years of tenure at a school and principal years of experience as an administrator in New Jersey), and the dependent variables (i.e., student achievement on the 2016-2017 PARCC for Grades 6, 7, and 8 in English language arts and mathematics). According to Lapan and Quartaroli (2009):

> Nonexperimental research involves variables that are not manipulated by the researcher and instead are studied as they exist. One reason for using nonexperimental research is that many variables of interest in social science cannot be manipulated because they are attribute variables, such as gender, socioeconomic status, learning style, or any other personal characteristic or trait. (p. 60)

The predictor variables in this study consisted of student variables (student mobility, attendance, percentage of special education students, percentage of English language learners, and socioeconomic status) and school variables (school size, instructional time, length of the school day). These predictor variables, all of which have been identified in the literature as having a significant influence on student achievement, were included as control variables.

Table 3

Variables/Measurements/Coding

Variable	Measure	Coding
Total student population	Scale	Number indicated
Percentage of students who are economically disadvantaged	Scale	Number indicated
Percentage of students with disabilities	Scale	Number indicated
Student mobility	Scale	Number indicated
Student attendance rate	Scale	Number indicated
Faculty attendance rate	Scale	Number indicated
Faculty turnover rate	Scale	Number indicated
Percentage of students who are Limited English Proficient (LEP)	Scale	Number indicated
PARCC ELA meets or exceeds standards	Nominal	0= No 1= Yes
PARCC math score meets or exceeds Standards	Nominal	0= No 1= Yes
Principal's (length of time in a school)	Scale	Number indicated
Principal's (overall experience)	Scale	Number indicated
District Factor Group	Categorical	A = 1 B = 2 CD = 3 DE = 4 FG = 5 GH = 6 I = 7 J = 8

Sample

The unit of analysis for this study was school. The sample was composed of sixth, seventh, and eighth grade students' achievement scores on the 2016-2017 Partnership for Assessment of Readiness for College and Careers (PARCC) at the school level. Data were recorded by the New Jersey School Report Card from 218 New Jersey middle schools across all groups within the District Factor Grouping Rating Scale (DFG). The distributions of schools across the various groups are displayed in Table 4. In order to better control for the influence of school as a nested community, only middle schools with a sixth, seventh and eighth grade configuration were included in the sampling.

Table 4

Distribution of Schools/District Factor Grouping

District Factor Group	Number of schools
A	22
B	26
CD	16
DE	29
FG	33
GH	34
I	45
J	13
TOTAL	218

Data Collection

The data used in this study were obtained from several sources. Two of the primary sources were The New Jersey School Report Card and Data Universe. The data from these sources were accessed using the following steps:

Part 1: Obtaining Data for SPSS Analysis

1. Access the Data Universe website: php.app.com/agent/educationstaff/search
2. Alphabetically sort the Job column and navigate to "Middle School Principal."
3. Select individual's name. The information on principal experience in district and educational experience in New Jersey then appears.

Part 2: Obtaining Data from the State of New Jersey School Report Card

1. Access the State of New Jersey Department of Education website: http://www.state.nj.us/education/data
2. Click on NJ School Performance Reports.
3. Click Search for a School.
4. Type in the school name in Search by School Name.
5. Click Search and then Run Performance Report.
6. Click on Academic Achievement.

After the most relevant data for the study were gathered, I entered it into the Statistical Package for Social Sciences (SPSS, Version 22.0) software to run the appropriate statistical analysis.

Data Analysis

Because all the data utilized in this study were publicly accessible, Institutional Review Board (IRB) approval was not required. The data were obtained from two authentic sources: the

New Jersey School Report Card and Data Universe, a website run by the *Asbury Park Press* that compiles public records. All data were collected utilizing web-based tools.

Descriptive correlation analysis was utilized to determine if the significance of the predictor variables contributes to the independent variable for each of the research questions. The research design in this study was quantitative and used simultaneous multiple regression and hierarchical multiple regression. These models were utilized to measure the relationship of the predictive variables to the dependent variables. According to Field (2009), "Regression analysis enables us to predict future outcomes based on the predictor variables" (p. 198). Data regarding the dependent variables and the predictive variables were compiled and entered into the SPSS Version 24.0 software program. Histograms and scatterplots were generated, as well as correlation matrices, multicollinearity statistics, and simultaneous regression analysis with all of the variables. The data were analyzed and examined to determine if relationships exist between the variables.

Simultaneous multiple regression and hierarchical multiple regression models were utilized to determine which district and school variables had a statistically significant relationship to student achievement. A multiple regression model is utilized when the researcher wants to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. A hierarchical multiple regression model (a variant of multiple regression) allows the researcher to specify a fixed order of entry for variables in order to control for the effects of covariates or to test the effects of certain predictors independent of the influence of others.

The level of significance used in this study was set at $p < .05$. I examined the unstandardized coefficient beta weights and the standardized beta weights of each predictive

variable to check the statistical significance and relative importance. Furthermore, an R^2 was used to examine the relationships between the various predictive variables and the dependent variable.

Summary

Schools are being held accountable for the performance of their students. The weight of this accountability falls on the shoulders of today's principals, pressured to meet these increasing demands. Because principals have a significant impact on student achievement, the issue of principal retention becomes one for major concern. To aid in better understanding this issue, this study examined the relationship between principal continuity and student achievement, as measured by the 2016-2017 PARCC. Chapter 4 will present the analysis results and interpret them.

Chapter IV: Analysis of the Data

Introduction

The New Jersey Department of Education (2016) utilizes two primary components when evaluating principals' performance: principal practice (measured using approved practice instruments) and student achievement (measured using teacher student growth objectives, administrator goals, and for qualifying leaders, a median student growth percentile). These multifaceted and comprehensive measures elevate the pressure and need for principals to focus their efforts on school-wide academic achievement, specifically maintaining student growth percentiles.

The ability to meet median student growth percentile is based on the individual student growth by comparing the change in his/her achievement on the state standardized assessment (PARCC – the Partnership for Assessment of Readiness for College and Careers) from one year to the student's peers (all other students in the state who had similar historical test results) (NJDOE, 2016).

The Purpose of the Study

The purpose of this study was to determine the strength of the relationship between principal longevity in New Jersey public middle (Grades 6, 7, & 8) schools and students scoring at Levels 4 (meets expectations) and 5 (exceeds expectations) on The Partnership for Assessment of Readiness for College and Careers (PARCC) assessment in both English language arts and mathematics. The assessment is created by a consortium featuring eight states, the District of Columbia, and the Bureau of Indian Education that work to create and deploy a standard set of K–12 assessments in mathematics and English, based on the Common Core State Standards. The sample consisted of principals from New Jersey schools that were identified as middle

schools by the New Jersey Department of Education. The study was conducted to examine how the number of years a principal serves in his/her position might influence student achievement.

Organization of the Chapter

This chapter contains an overview of the procedures for quantitative data analysis from the population of 200 New Jersey middle schools that represents school districts in the A–J DFGs of the State of New Jersey. It will include the procedures within the analysis and a description of the demographic characteristics of the sample. This chapter describes how the data were collected and analyzed and reports those results. The first part of the chapter provides the descriptive statistics of the sample. The second part of the study provides the procedure of data analysis using Statistical Package for the Social Sciences (SPSS, Version 24) software, including the subsequent output analysis. The final part will provide the research findings that answer the research questions and the null hypotheses.

Research Questions

1. What is the nature of the relationship between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?
2. What is the nature of the relationship between New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?
3. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?

4. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

Independent Variables and Dependent Variables

In reviewing the literature, extensive and existing research suggests that certain predictor variables influence student achievement. The outcome or dependent variables, in this case, 2016-2017 English language arts and mathematics scores, were retrieved from the NJ DOE website, N.J. School Performance Report. For this study, the variables of interest were principal's experience in district and principal's experience in New Jersey. The school variables consisted of school enrollment (school size) and the length of school day in minutes. The faculty/staff variable consisted of faculty attendance rates. The student variables consisted of percentage of students on free or reduced lunch, percentage of students with learning disabilities, percentage of students with limited language proficiency, percentage of students chronically absent, and percentage student suspensions. The aforementioned data were formatted and imported into the SPSS software. The predictor and outcome variables used in the subsequent analysis are listed in Table 5.

Table 5

Independent and Dependent Variables Used in this Study

Variable	Label	Description
Experience district - scale variable	ExperienceDistrict	Administrator's total experience (years) in current district
Experience New Jersey - scale variable	ExperienceNJ	Administrator's total experience (years) in New Jersey
School size - scale variable	SchoolsSize	Total number of student enrolled
Percent free/reduced - scale variable	FreeandReduced	The percentage of students with free or reduced price lunch
Percent special education - scale variable	SPED	The percentage of students with disabilities
Percent English language learners - scale variable	ELL	The percentage of students who are English language learners
Percent chronically absent - scale variable	ChronicallyAbsent	The percentage of students who are determined to be chronically absent
Length of school day - scale variable	LengthofSchoolDayMinutes	The length of time, in minutes, a school has students actively participating in instruction with the supervision of a certified teacher
Percent student suspension - scale variable	StudentSuspension	The percentage of students suspended (in and out of school)
Percent teacher attendance- scale variable	TeacherAttendance	Rate of teacher attendance
Total percent of students Meets/Exceeds Expectations on 2016 PARCC ELA - scale variable	SWELA	Percentage of combined meets and exceeds expectations scores on the English language arts section of PARCC

Variable	Label	Description
Total Percent of Students Meets/Exceeds Expectations on 2016 PARCC MATH - scale variable	SWMATH	Percentage of combined meets and exceeds expectations scores on the mathematics section of PARCC

Descriptive Statistics

The statistical software application SPSS Version 24 was used to perform statistical analysis on the independent staff, student, and school variables, as well as the dependent variables ELA and mathematics PARCC scores. Descriptive statistics for the independent variables are provided in Table 6.

Table 6
Descriptive Statistics

Independent variable	*N*	Minimum	Maximum	*M*	*SD*
Principal Experience District	**200**	1	47	12.83	9.248
Principal Experience NJ	**200**	1	47	17.32	9.368
School Size	**200**	139	1667	692.78	301.995
% Free and Reduced	**200**	0	93	30.12	26.269
% SPED	**200**	5	30	16.96	4.135
% ELL	**200**	0	35	2.85	4.644
% SW ELA	**200**	12.9	92	59.019	18.6548
% SW MATH	**194**	11.4	82.2	47.938	17.9662
% Chronically Absent	**199**	0.1	29.3	8.356	4.9549
Length of School Day	**198**	365	465	401.09	17.703
% Student Suspension	**198**	0	85.5	9.682	12.5197
% Teacher Attendance	**198**	89	100	96.31	1.774

There were 200 New Jersey middle schools in the study. The average school size was 693 students with a maximum of 1,667 students and a minimum of 139 students. The average school day (in minutes) was 401 with a maximum of 465 and a minimum of 365. The average percentage of students with low socioeconomic status was 30% with a maximum of 93% and a minimum of 0%. The average percentage of special education students was 17% with a maximum of 30% and a minimum of 5%. The average percentage of English Language Learners was 3% with a maximum of 35% and a minimum of 0%. The average percentage of students chronically absent was 8% with a maximum of 29 % and a minimum of less than 1%. The average percentage of student suspensions was 10% with a maximum of 86% and a minimum of 0%. The average percentage of teacher attendance was 96% with a maximum of 100% and a minimum of 89%. The average percentage for English language arts proficiency was 59% with a maximum of 92% and a minimum of 13%. The average percentage for mathematics proficiency was 48% with a maximum of 82% and a minimum of 11%. The average length of tenure (in years) for principals in district was 13 years with a maximum of 47 years and a minimum of 1 year. The average length of tenure (in years) for principals in New Jersey was 17 years with a maximum of 47 years and a minimum of 1 year.

For each of the research questions, the following procedure was used to determine the significant independent variables and their relative predictive strengths. The first step was to run a simultaneous multiple regression that included the nine independent variables outlined above. The purpose of this step was to determine which of the variables were statistically significant predictors and how the variable of interest might add value to the overall models.

The next step was to run hierarchical regressions. This began with using the strongest statistically significant independent variable that was obtained from the simultaneous multiple

regression. Subsequent regressions were performed, one at a time, by adding an additional independent variable that was next in significance to create a series of hierarchical models. The final regression from this step (Model 5) was the selected regression model that included the variable of interest (principal experience school or principal experience NJ). This model was used to determine the included variable's relative contributions in influencing 2016-2017 PARCC achievement in English language arts and mathematics.

The following statistics were noted:

1. The R^2 and R^2 changes were used to find out which variables contribute the most to the R^2 value. *F* and *p* values were also noted for each model. These values were found in the hierarchical regression summary table.
2. Also from the regression summary table, the Durbin–Watson statistic was noted.
3. Overall statistical significance for each model was calculated, which was obtained from ANOVA table.
4. Beta values associated with each statistically significant coefficient were noted in the coefficients table.
5. The collinearity statistics—more specifically the tolerance and variance inflation factor (VIF)—were determined in the coefficients table.

Analysis and Results

Research Question 1. What is the nature of the relationship between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC math scores?

In an effort to answer this research question, various statistical analyses were run via SPSS. The first regression that was run via SPSS was a simultaneous regression model with all

nine independent variables included (see Table 7). These variables were selected based on the research findings of existing literature in the field.

Table 7
Time in District/Mathematics Achievement: Simultaneous Variables Entered/Removed

Model	Variables entered	Variables removed	Method
1	% Teacher Attendance		Enter
	% ELL		
	Experience District		
	% SPED		
	Length of School Day (minutes)		
	School Size		
	% Student Suspension		
	% Chronically Absent		
	% free and reduced		

Note. Dependent variable: % SW Math. All requested variables entered.

The initial simultaneous multiple regression indicated that the model utilizing all of the variables indicates an R^2 value of .767 and an adjusted R^2 value of .755. This suggests that between 75.5 % and 76.7% of student performance on the 2016-2017 PARCC math exam can be explained by the variables in this model. The Durbin–Watson value was 1.949, indicating we met the assumption that the residuals did not correlate (see Table 8). The ANOVA results indicate that regression was statistically significant ($p < .001$) in predicting %SW Math (see Table 9).

Table 8
Time in District/Mathematics Achievement: Simultaneous Model Summary

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Durbin–Watson
1	.876[a]	.767	.755	8.9074	1.949

Note. Predictors: (Constant), % Teacher Attendance , % ELL, Experience District, % SPED, Length of School Day (minutes), School Size, % Student Suspension, % Chronically Absent, % free and reduced
Dependent variable: % SW Math

Table 9
Time in District/Mathematics Achievement: ANOVA

ANOVA

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	46750.834	9	5194.537	65.471	.000[b]
	Residual	14202.109	179	79.341		
	Total	60952.943	188			

The coefficients table (Table 10) shows that four out of the nine predictor variables that were included in the model were statistically significant. The variables found to be statistically significant were the following: % free and reduced ($p < .001$), % chronically absent ($p = .011$), % Special Education ($p = .005$), and length of school day ($p = .011$). Experience district was found not to be statistically significant ($p = .094$); however, since it is the target variable of interest, it was retained for the hierarchical multiple regression. The coefficients table also indicates that there are no issues with multicollinearity. The variance inflation factors (VIF) range from 1.029 to 2.844.

Table 10
Time in District/Mathematics Achievement: Simultaneous Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Correlations			Collinearity statistics	
		B	Std. error	β			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-7.082	40.643		-.174	.862					
	Experience District	.120	.071	.062	1.686	.094	-.012	.125	.061	.972	1.029
	School size	.002	.002	.038	.994	.321	.050	.074	.036	.879	1.137
	% free and reduced	-.554	.043	-.777	-12.767	.000	-.844	-.690	-.461	.352	2.844
	% SPED	-.529	.185	-.118	-2.863	.005	-.294	-.209	-.103	.765	1.307
	% ELL	.031	.205	.007	.151	.880	-.457	.011	.005	.531	1.882
	% Chronically Absent	-.507	.196	-.126	-2.585	.011	-.541	-.190	-.093	.549	1.822
	Length of School Day (minutes)	.099	.039	.095	2.566	.011	.088	.188	.093	.947	1.056
	% Student Suspension	.019	.081	.012	.234	.816	-.576	.017	.008	.503	1.987
	% Teacher Attendance	.421	.391	.041	1.078	.282	.220	.080	.039	.887	1.128

Note. Dependent variable: % SW Math.

Squaring the standardized beta for each of the significant predictor variables provides an effect size to determine the amount of variance of the outcome variable that can be explained by

each individual significant predictor variable. In this case, percentage free and reduced lunch was found to be the strongest contributor to the overall model, explaining 60.37% of the overall variance for student performance on 2016-2017 PARCC math. The negative beta ($\beta = -.777$, $p < .001$) indicates that as a school's free and reduced-price lunch population increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. Percent chronically absent was the next strongest predictor in the model ($\beta = -.126$, $p = .011$), accounting for 1.6% of the total overall explained variance in the model. The negative beta value indicates that as chronic absenteeism increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The predictor variable students with disabilities (percentage of students with an IEP) was found to be the third contributor to the overall model, explaining 1.4% of the overall variance in student performance on 2016-2017 PARCC math. The negative beta ($\beta = -.118$, $p = .005$) indicates that as a school's students with disabilities population increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The last predictor variable that was found to be statistically significant in this model was length of school day. The positive beta ($\beta = .095$, $p = .011$) indicates that as a school's length of day increases, so does student performance on 2016-2017 PARCC math. This predictor accounts for .9% of the total overall explained variance in the model.

Hierarchical regression. The simultaneous multiple regression model was used to measure the influence of the independent variables (predictor variables) together on 2016-2017 PARCC math achievement, whereas the hierarchical regression model was used to measure the influence of each of the independent variables (predictor variables) on the 2016-2017 PARCC achievement scores in separate block models as individual and combined independent variables

(predictor variables) were entered into the overall model. The models were built by inputting the independent variables in order of their strength, followed by the variable of interest. Model 1 = percentage of free and reduced lunch students. Model 2 = percentage of free and reduced lunch students, percentage of chronically absent students. Model 3 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities. Model 4 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities, length of school day. Model 5 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities, length of school day, and experience district (see Table 11).

Table 11
Time in District/Mathematics Achievement: Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables entered	Variables removed	Method
1	% free and reduced[b]	.	Enter
2	% Chronically Absent[b]	.	Enter
3	% SPED[b]	.	Enter
4	Length of School Day (minutes)[b]	.	Enter
5	Experience District[b]	.	Enter

Note. a. Dependent variable: % SW Math. b. All requested variables entered.

In Model 1 (see Table 12) the predictor variable was percent of free and reduced lunch students; R^2 was .716, which indicates that 71.6% of the variance in 2016-2017 PARCC math scores was explained by the percentage of free and reduced lunch students. In Model 2, the percentage of students chronically absent was added to the percentage of free and reduced lunch students; R^2 was .740, which indicates that 74% of the 2016-2017 PARCC math scores was

explained by the percentage of free and reduced lunch students and the percentage of students chronically absent. From Model 1 to Model 2 the R^2 change was .024, which indicates that the percentage of students chronically absent added 2.4% of the variance to the model. The R^2 change was statistically significant $F(17.138)$, $p < .001$. In Model 3, the percentage of disabled students was added; R^2 was .751, which indicates that 75.1% of the variance in 2016-2017 PARCC math scores was explained by the percentage of free and reduced lunch students, the percentage of students chronically absent, and the percentage of disabled students. From Model 2 to Model 3 the R^2 change was .012, which indicates that the percentage of students with disabilities added 1.2% of the variance to the model. The R^2 change was statistically significant $F(9.034)$, $p = .003$. In Model 4, length of school day was added; R^2 was .760, which indicates that 76% of the variance in 2016-2017 PARCC math scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, and length of school day. From Model 3 to Model 4 the R^2 change was .009, which indicates that length of school day added 0.9% of the variance to the model. The R^2 change was statistically significant $F(6.948)$, $p = .009$. In Model 5, the variable of interest was added, experience in district; R^2 was .765, which indicates that 76.5% of the variance in 2016-2017 PARCC math scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, length of school day, and experience in district. From Model 4 to Model 5 the R^2 change was .005, which indicates that experience in district added 0.5% of the variance to the model. The R^2 change was not statistically significant $F(3.593)$, $p = .060$. The Durbin–Watson test statistic was 1.966, which indicates that the residuals were not highly correlated to one another. Based on the results

displayed in the model summary table (Table 12) it can be concluded that the best predictive model is Model 4.

Table 12
Time in District/Mathematics Achievement: Hierarchical Regression Summary

Model Summary[f]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Change statistics					Durbin–Watson
					R^2 change	*F* change	df1	df2	Sig. *F* change	
1	.846[a]	.716	.714	9.6068	.716	478.789	1	190	.000	
2	.860[b]	.740	.737	9.2231	.024	17.138	1	189	.000	
3	.867[c]	.751	.748	9.0331	.012	9.034	1	188	.003	
4	.872[d]	.760	.755	8.8935	.009	6.948	1	187	.009	
5	.875[e]	.765	.759	8.8325	.005	3.593	1	186	.060	1.966

Note. a. Predictors: (Constant), % free and reduced; b. Predictors: (Constant), % free and reduced, % Chronically Absent; c. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED; d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes); e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience District. f. Dependent variable: % SW Math.

As shown in Table 13, all of the regression models were statistically significant. This means that the independent variables entered in the five regression models predicted the variance in students meeting/exceeding expectations on 2016-2017 PARCC math. Each model was statistically significant (Model 1: $F = 478.789$, $df = 1,190$, $p < .001$; Model 2: $F = 268.297$, $df = 2,189$, $p < .001$; Model 3: $F = 189.497$, $df = 3,188$, $p < .001$; Model 4: $F = 148.343$, $df = 4187$, $p < .001$); Model 5: $F = 121.038$, $df = 5186$, $p < .001$).

Table 13
Time in District/Mathematics Achievement: ANOVA

ANOVA[a]

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	44187.765	1	44187.765	478.789	.000[b]
	Residual	17535.214	190	92.291		
	Total	61722.979	191			
2	Regression	45645.593	2	22822.797	268.297	.000[c]
	Residual	16077.386	189	85.066		
	Total	61722.979	191			
3	Regression	46382.756	3	15460.919	189.479	.000[d]
	Residual	15340.223	188	81.597		
	Total	61722.979	191			
4	Regression	46932.329	4	11733.082	148.343	.000[e]
	Residual	14790.651	187	79.094		
	Total	61722.979	191			
5	Regression	47212.624	5	9442.525	121.038	.000[f]
	Residual	14510.355	186	78.013		
	Total	61722.979	191			

Note. a. Dependent variable: % SW Math.

b. Predictors: (Constant), % free and reduced.

c. Predictors: (Constant), % free and reduced, % Chronically Absent.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED.

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

f. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience District.

Further analysis of the coefficients table (see Table 14) shows that in Model 1, the predictor variable, the percentage of free and reduced lunch students, was statistically significant ($\beta = -.846$, $t = -21.881$, $p < .001$). The negative beta indicates that percentage of free and reduced lunch students has a negative influence on the 2016-2017 PARCC math score. As percentage of free and reduced lunch students increases, there is a decrease in performance on 2016-2017 PARCC math scores.

In Model 2, the predictor variable percentage of students chronically absent was added to the model, and the strength of the variable percentage of free and reduced lunch students decreased (-.846 to -.765). This means that the variable percentage of students chronically absent has a significant effect on the strength of the percentage of students eligible for free and reduced lunch. The percentage of free and reduced lunch students continued to be a statistically significant variable ($\beta = -.765$, $t = -18.258$, $p < .001$), and the percentage of students chronically absent was also a statistically significant predictor of 2016-2017 PARCC math score ($\beta = -.174$, $t = -4.140$, $p < .001$). The negative betas indicate that both percent free and reduced lunch and percent chronically absent have a negative influence on 2016-2017 PARCC math score. As percent free and reduced lunch and percent chronically absent increase, there is a decrease in performance on the 2016-2017 PARCC math score. Analysis of the collinearity statistics of Model 2 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .740; therefore, 1 - R^2 was .26, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 3, the predictor variable percentage of students with disabilities was added to the model, and the strength of the variable percentage of free and reduced lunch remained the same (-.765), and percentage of students chronically absent decreased (-.174 to -.132). This means that the variable percentage of students with disabilities did not have an effect on percentage of students eligible for free and reduced lunch but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable ($\beta = -.765$, $t = -18.639$,

$p < .001$) as was the percentage of students chronically absent (β = -.132, t = -3.037, $p < .001$). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC math (β = -.117 t = -3.006, p = .003). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC math scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC math scores. Analysis of the collinearity statistics of Model 3 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .751; therefore, 1 - R^2 was .249, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 4, the predictor variable length of school day was added to the model, and the strength of the variable percentage free and reduced lunch increased (-.765 to -.773), the percentage of students chronically absent decreased (-.132 to -.119), and the percentage of students with disabilities increased (-.117 to -.121). This means that the variable length of school did not have an effect on percentage of students eligible for free and reduced lunch and percentage of student with disabilities but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.773, t = -19.071, $p <$ .001) as was the percentage of students chronically absent (β = -.119, t = -2.757, p = .006). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC math (β = -.121 t = -3.155, p = .002) as was length of school day (β =

.095, $t = 2.636$, $p = .009$). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC math scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC math scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC math scores. As length of day increases, there is also an increase in performance on 2016-2017 PARCC math score. Analysis of the collinearity statistics of Model 4 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .760; therefore, 1 - R^2 was .24, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 5, the variable of interest, experience district, was added to the model. The strength of the variable percentage of students eligible for free and reduced lunch increased (-.773 to -.779), the percentage of students chronically absent remained the same (-.119), the percentage of students with disabilities decreased (-.121 to -.119), and length of school day decreased (.095 to .068). This means that the variable of interest, experience in district, did not have an effect on percentage of students eligible for free and reduced lunch and percentage of students chronically absent but did have a slight effect on percent of students with disabilities and length of school day. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable ($\beta = -.779$, $t = -19.294$, $p < .001$) as was the percentage of students chronically absent ($\beta = -.119$, $t = -2.788$, $p = .006$). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017

PARCC math (β = -.119 t = -3.112, p = .002) as was length of school day (β = .094, t = 2.618, p = .010). The variable of interest, experience in district, was not statistically significant (β = .068, t = 1.896, p = .060). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC math scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC math scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC math scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC math score. Analysis of the collinearity statistics of Model 5 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .765; therefore, 1 - R^2 was .235, which was smaller than the tolerance values for all of the predictor variables in the model.

Table 14
Time in District/Mathematics Achievement: Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Correlations			Collinearity statistics	
		B	Std. error	β			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	65.185	1.055		61.813	.000					
	% free and reduced	-.603	.028	-.846	-21.881	.000	-.846	-.846	-.846	1.000	1.000
2	(Constant)	69.173	1.398		49.495	.000					
	% free and reduced	-.546	.030	-.765	-18.258	.000	-.846	-.799	-.678	.784	1.275
	% Chronically Absent	-.699	.169	-.174	-4.140	.000	-.529	-.288	-.154	.784	1.275
3	(Constant)	76.575	2.817		27.179	.000					
	% free and reduced	-.546	.029	-.765	-18.639	.000	-.846	-.806	-.678	.784	1.275
	% Chronically Absent	-.530	.175	-.132	-3.037	.003	-.529	-.216	-.110	.703	1.422
	% SPED	-.522	.174	-.117	-3.006	.003	-.292	-.214	-.109	.872	1.147
4	(Constant)	36.844	15.326		2.404	.017					
	% free and reduced	-.551	.029	-.773	-19.071	.000	-.846	-.813	-.683	.780	1.282
	% Chronically Absent	-.477	.173	-.119	-2.757	.006	-.529	-.198	-.099	.694	1.442
	% SPED	-.540	.171	-.121	-3.155	.002	-.292	-.225	-.113	.870	1.149
	Length of School Day (minutes)	.099	.038	.095	2.636	.009	.087	.189	.094	.986	1.014

5	(Constant)	35.680	15.233		2.342	.020					
	% free and reduced	-.556	.029	-.779	-19.294	.000	-.846	-.817	-.686	.775	1.291
	% Chronically Absent	-.479	.172	-.119	-2.788	.006	-.529	-.200	-.099	.694	1.442
	% SPED	-.530	.170	-.119	-3.112	.002	-.292	-.222	-.111	.869	1.150
	Length of School Day (minutes)	.098	.037	.094	2.618	.010	.087	.188	.093	.986	1.015
	Experience District	.131	.069	.068	1.896	.060	-.004	.138	.067	.990	1.010

Note. a. Dependent variable: % SW Math.

Null Hypothesis 1. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in math.

The null hypothesis is retained based on the data analysis and findings previously discussed. In both simultaneous and hierarchical multiple regressions, experience in district was not a statistically significant predictor variable.

Simultaneous: ($\beta = .062$, $p = .094$); Hierarchical: ($\beta = .068$, $p = .060$).

Research Question 2. What is the nature of the relationship between New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

In an effort to answer this research question, various statistical analyses were run via SPSS. The first regression that was run via SPSS was a simultaneous regression model with all nine independent variables included (see Table 15). These variables were selected based on the research findings of existing literature in the field.

Table 15
Time in District/ELA Achievement: Simultaneous Variables Entered/Removed

Variables Entered/Removed

Model	Variables entered	Variables removed	Method
1	% Teacher Attendance	.	Enter
	% ELL		
	Experience District		
	% SPED		
	Length of School Day (minutes)		
	School Size		
	% Student Suspension		
	% Chronically Absent		
	% free and reduced		

Note. a. Dependent variable: % SW ELA. b. All requested variables entered.

The initial simultaneous multiple regression indicated that the model utilizing all of the variables indicates an R^2 value of .810 and an adjusted R^2 value of .800. This suggests that between 80% and 81% of student performance on the 2016-2017 PARCC ELA exam can be explained by the variables in this model. The Durbin–Watson value was 1.866, indicating we met the assumption that the residuals did not correlate (see Table 16). The ANOVA results indicate that the regression model was statistically significant ($p < .001$) in predicting % SW ELA (see Table 17).

Table 16
Time in District/ELA Achievement: Simultaneous Model Summary

Model Summary[b]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Durbin–Watson
1	.900[a]	.810	.800	8.2524	1.866

Note. a. Predictors: (Constant), % Teacher Attendance, % ELL, Experience District, % SPED, Length of School Day (minutes), School Size, % Student Suspension, % Chronically Absent, % free and reduced.
b. Dependent variable: % SW ELA.

Table 17
Time in District/ELA Achievement: ANOVA

ANOVA

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	53248.428	9	5916.492	86.877	.000[b]
	Residual	12530.826	184	68.102		
	Total	65779.254	193			

The coefficients table (Table 18) shows that four out of the nine predictor variables that were included in the model were statistically significant. The variables found to be statistically significant were the following: % free and reduced lunch ($p < .001$), % chronically absent ($p = .001$), % Special Education ($p = .003$), and length of school day ($p = .002$). Experience district was found not to be statistically significant ($p = .795$); however, since it is the target variable of interest, it was retained for the hierarchical multiple regression. The coefficients table also indicates that there are no issues with multicollinearity. The variance inflation factors (VIF) range from 1.031‑ 2.935.

Table 18
Time in District/ELA Achievement: Simultaneous Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients			Correlations			Collinearity statistics	
		B	Std. error	β	*t*	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-8.608	36.501		-.236	.814					
	Experience District	-.017	.065	-.009	-.260	.795	-.109	-.019	-.008	.970	1.031
	School Size	.004	.002	.058	1.707	.090	.091	.125	.055	.881	1.135
	% free and reduced	-.487	.039	-.694	-12.591	.000	-.867	-.680	-.405	.341	2.935
	% SPED	-.512	.170	-.114	-3.014	.003	-.333	-.217	-.097	.723	1.382
	% ELL	-.255	.170	-.065	-1.504	.134	-.473	-.110	-.048	.560	1.784
	% Chronically Absent	-.579	.166	-.156	-3.481	.001	-.617	-.249	-.112	.519	1.928
	Length of School Day (minutes)	.109	.034	.105	3.180	.002	.079	.228	.102	.947	1.056
	% Student Suspension	-.047	.072	-.029	-.653	.515	-.615	-.048	-.021	.520	1.921
	% Teacher Attendance	.528	.356	.050	1.483	.140	.213	.109	.048	.897	1.115

Note. a. Dependent variable: % SW ELA.

Squaring the standardized beta for each of the significant predictor variables provides an effect size to determine the amount of variance of the outcome variable that can be explained by each individual significant predictor variable. In this case, percentage of students eligible for free and reduced lunch was found to be the strongest contributor to the overall model, explaining 48.16% of the overall variance in student performance on 2016-2017 PARCC ELA scores. The negative beta ($\beta = -.694$, $p < .001$) indicates that as a school's free and reduced-price lunch population increases, the percentage of students meeting/exceeding expectations on 2016-2017 PARCC ELA (in the school) decreases. Percent chronically absent was the next strongest

predictor in the model (β = -.156, p = .001), accounting for 2.4% of the total overall explained variance in the model. The negative beta value indicates that as chronic absenteeism increases, , the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The predictor variable students with disabilities (percentage of students with an IEP) was found to be the third contributor to the overall model, explaining 1.3% of the overall variance in student performance on 2016-2017 PARCC ELA. The negative beta (β = -.114, p = .003) indicates that as a school's students with disabilities population increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The last predictor variable that was found to be statistically significant in this model was length of school day. The positive beta (β = .105, p = .002) indicates that as a school's length of day increases so does student performance on 2016-2017 PARCC ELA. This predictor accounts for 1.1% of the total overall explained variance in the model.

Hierarchical regression. The simultaneous multiple regression model was used to measure the influence of the independent variables (predictor variables) together on 2016-2017 PARCC ELA achievement, whereas the hierarchical regression model was used to measure the influence of each of the independent variables (predictor variables) on the 2016-2017 PARCC ELA scores in separate block models as individual and combined independent variables (predictor variables) were entered into the overall model. The models were built by inputting the independent variables in order of their strength, followed by the variable of interest. Model 1 = percentage of free and reduced lunch students. Model 2 = percentage of free and reduced lunch students, percentage of chronically absent students. Model 3 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities. Model 4 = percentage of free and reduced lunch students, percentage of chronically

absent students, percentage of students with disabilities, length of school day. Model 5 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities, length of school day, and experience district (see Table 19).

Table 19
Time in District/ELA Achievement: Variables Entered/Removed Table

Variables Entered/Removed[a]

Model	Variables entered	Variables removed	Method
1	% free and reduced[b]	.	Enter
2	% Chronically Absent[b]	.	Enter
3	% SPED[b]	.	Enter
4	Length of School Day (minutes)[b]	.	Enter
5	Experience District[b]	.	Enter

Note. a. Dependent variable: % SW ELA. b. All requested variables entered.

In Model 1 (see Table 20) the predictor variable was percentage of free and reduced lunch students; R^2 was .752, which indicates that 75.2% of the variance in 2016-2017 PARCC ELA scores was explained by the percentage of free and reduced lunch students. In Model 2, the percentage of students chronically absent was added to the percentage of free and reduced lunch students; R^2 was .780, which indicates that 78% of the 2016-2017 PARCC ELA score was explained by the percentage of free and reduced lunch students and the percentage of students chronically absent. From Model 1 to Model 2 the R^2 change was .028, which indicates that the percentage of students chronically absent added 2.8% of the variance to the model. The R^2 change was statistically significant $F(24.903)$, $p < .001$. In Model 3, the percentage of disabled students was added; R^2 was .789, which indicates that 78.9% of the variance in 2016-2017

PARCC ELA scores was explained by the percentage of free and reduced lunch students, the percentage of students chronically absent, and the percentage of students with disabilities. From Model 2 to Model 3 the R^2 change was .008, which indicates that the percentage of students with disabilities added 0.8% of the variance to the model. The R^2 change was statistically significant $F(7.740)$, $p = .006$. In Model 4, length of school day was added; R^2 was .799, which indicates that 79.9% of the variance in 2016-2017 PARCC ELA scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, and length of school day. From Model 3 to Model 4 the R^2 change was .010, which indicates that the length of school day status added 1.0% of the variance to the model. The R^2 change was statistically significant $F(9.599)$, $p = .002$. In Model 5, the variable of interest was added, experience in district; R^2 was .799, which indicates that 79.9% of the variance in 2016-2017 PARCC ELA scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, length of school day, and experience in district. From Model 4 to Model 5 the R^2 change was .000, which indicates that experience in district did not add to the variance of the model. The R^2 change was not statistically significant $F(.012)$, $p = .913$. The Durbin–Watson test statistic was 1.881, which indicates that the residuals were not highly correlated to one another. Based on the results displayed in the model summary table (see Table 20) it can be concluded that the best predictive model is Model 4.

Table 20
Time in District/ELA Achievement: Hierarchical Regression Summary

Model Summary[f]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Change Statistics					Durbin–Watson
					R^2 change	*F* change	df1	df2	Sig. *F* change	
1	.867[a]	.752	.751	9.1978	.752	591.344	1	195	.000	
2	.883[b]	.780	.778	8.6811	.028	24.903	1	194	.000	
3	.888[c]	.789	.785	8.5341	.008	7.740	1	193	.006	
4	.894[d]	.799	.795	8.3501	.010	9.599	1	192	.002	
5	.894[e]	.799	.794	8.3717	.000	.012	1	191	.913	1.881

Note. a. Predictors: (Constant), % free and reduced.

b. Predictors: (Constant), % free and reduced, % Chronically Absent.

c. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience District.

f. Dependent Variable: % SW ELA.

As shown in Table 21, all of the regression models were statistically significant. This means that the independent variables entered in the five regression models predicted the variance in students meeting/exceeding expectations on 2016-2017 PARCC ELA. Each model was statistically significant (Model 1: $F = 591.344$, $df = 1,195$, $p < .001$; Model 2: $F = 344.367$, $df = 2,194$, $p < .001$; Model 3: $F = 240.135$, $df = 3,193$, $p < .001$; Model 4: $F = 190.525$, $df = 4192$, $p < .001$); Model 5: $F = 151.638$, $df = 5191$, $p < .001$).

Table 21
Time in District/ELA Achievement: ANOVA

ANOVA

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	50027.199	1	50027.199	591.344	.000[b]
	Residual	16496.834	195	84.599		
	Total	66524.033	195			
2	Regression	51903.942	2	25951.971	344.367	.000[c]
	Residual	14620.090	194	75.361		
	Total	66524.033	196			
3	Regression	52467.663	3	17489.221	240.135	.000[d]
	Residual	14056.369	193	72.831		
	Total	66524.033	196			
4	Regression	53136.973	4	13284.243	190.525	.000[e]
	Residual	13387.060	192	69.724		
	Total	66524.033	196			
5	Regression	53137.817	5	10627.563	151.638	.000[f]
	Residual	13386.215	191	70.085		
	Total	66524.033	196	25951.971		

Note. a. Dependent variable: % SW ELA.

b. Predictors: (Constant), % free and reduced.

c. Predictors: (Constant), % free and reduced, % Chronically Absent.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

f. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience District.

Further analysis of the coefficients table (see Table 22), shows that in Model 1, the predictor variable, percentage of free and reduced lunch students was statistically significant (β = -.867, t = -24.318, $p < .001$). The negative beta indicates that percentage of free and reduced lunch students has a negative influence on the 2016-2017 PARCC ELA score. As percentage of

free and reduced lunch students increases, there is a decrease in performance on 2016-2017 PARCC ELA scores.

In Model 2, the predictor variable percentage of students chronically absent was added to the model and the strength of the variable percentage of free and reduced lunch students decreased (-.867 to -.762). This means that the variable percentage of students chronically absent had a significant effect on the strength of the percentage of students free and reduced lunch. The percentage of free and reduced lunch students continued to be a statistically significant variable ($\beta = -.762$, $t = -19.153$, $p < .001$), and the percentage of students chronically absent was also a statistically significant predictor of 2016-2017 PARCC ELA scores ($\beta = -.198$, $t = -4.990$, $p < .001$). The negative betas indicate that both percent free and reduced lunch and percent chronically absent have a negative influence on 2016-2017 PARCC ELA scores. As percent free and reduced lunch and percent chronically absent increase, there is a decrease in performance on the 2016-2017 PARCC ELA score. Analysis of the collinearity statistics of Model 2 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .780; therefore, 1-R^2 was .22, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 3, the predictor variable percentage of students with disabilities was added to the model, and the strength of the variable percentage of free and reduced lunch students remained the same (-.762), and percentage of students chronically absent decreased (-.198 to -.158). This means that the variable percentage of students with disabilities did not have an effect on percentage of students eligible for free and reduced lunch but did have a significant effect on

the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.762, t = -19.488, p < .001) as was the percentage of students chronically absent (β = -.158, t = -3.785, p < .001). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC ELA (β = -.101 t = -2.782, p = .006). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC ELA scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increases, there is a decrease in performance on 2016-2017 PARCC ELA scores. Analysis of the collinearity statistics of Model 3 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .789; therefore, 1- R^2 was .211, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 4, the predictor variable length of school day was added to the model, and the strength of the variable percentage free and reduced lunch increased (-.762 to -.770), the percentage of students chronically absent decreased (-.158 to -.145), and the percentage of students with disabilities increased (-.101 to -.110). This means that the variable length of school did not have an effect on percentage of students eligible for free and reduced lunch and percentage of students with disabilities but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.770, t = -20.082, p < .001) as was the percentage of students chronically absent (β = -.145, t = -3.537, p = .001). The

percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC ELA (β = -.110 t = -3.096, p = .002) as was length of school day (β = .101, t = 3.098, p = .002). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC ELA scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC ELA scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC ELA scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC ELA score. Analysis of the collinearity statistics of Model 4 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .799; therefore, 1 - R^2 was .201, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 5, the variable of interest, experience district, was added to the model. The strength of the variable percentage students eligible for free and reduced lunch remained the same (-.770), the percentage of students chronically absent remained the same (-.145), the percentage of students with disabilities remained the same (-.110), and length of school day remained the same (.101). This means that the variable of interest, experience in district, did not have an effect on percentage of students eligible for free and reduced lunch, percentage of students chronically absent, students with disabilities, or length of school day. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.770, t = -19.968, p < .001) as was the percentage of students chronically absent (β = -.145, t

= -3.529, p = .001). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC ELA (β = -.110 t = -3.081, p = .002) as was length of school day (β = .101, t = 3.088, p = .002). The variable of interest, experience in district, was not statistically significant (β = .004, t = .110, p = .913). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC ELA scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increases, there is a decrease in performance on 2016-2017 PARCC ELA scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC ELA scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC ELA score. Analysis of the collinearity statistics of Model 5 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .799; therefore, 1 - R^2 was .201, which was smaller than the tolerance values for all of the predictor variables in the model.

Table 22
Time in District/ELA Achievement: Coefficients Table

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Correlations			Collinearity statistics	
		B	Std. error	β			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	77.406	.999		77.500	.000					
	% free and reduced	-.608	.025	-.867	-24.318	.000	-.867	-.867	-.867	1.000	1.000
2	(Constant)	81.395	1.236		65.859	.000					
	% free and reduced	-.534	.028	-.762	-19.153	.000	-.867	-.809	-.645	.717	1.396
	% Chronically Absent	-.739	.148	-.198	-4.990	.000	-.604	-.337	-.168	.717	1.396
3	(Constant)	87.723	2.579		34.017	.000					
	% free and reduced	-.534	.027	-.762	-19.488	.000	-.867	-.814	-.645	.717	1.396
	% Chronically Absent	-.588	.155	-.158	-3.785	.000	-.604	-.263	-.125	.629	1.589
	% SPED	-.450	.162	-.101	-2.782	.006	-.326	-.196	-.092	.838	1.193
4	(Constant)	46.094	13.671		3.372	.001					
	% free and reduced	-.540	.027	-.770	-20.082	.000	-.867	-.823	-.650	.713	1.402
	% Chronically Absent	-.541	.153	-.145	-3.537	.001	-.604	-.247	-.115	.623	1.606
	% SPED	-.491	.159	-.110	-3.096	.002	-.326	-.218	-.100	.832	1.201
	Length of School Day (minutes)	.105	.034	.101	3.098	.002	.077	.218	.100	.986	1.014

5	(Constant)	46.030	13.719		3.355	.001					
	% free and reduced	-.540	.027	-.770	-19.968	.000	-.867	-.822	-.648	.708	1.412
	% Chronically Absent	-.541	.153	-.145	-3.529	.001	-.604	-.247	-.115	.622	1.608
	% SPED	-.491	.159	-.110	-3.081	.002	-.326	-.218	-.100	.831	1.203
	Length of School Day (minutes)	.105	.034	.101	3.088	.002	.077	.218	.100	.986	1.014
	Experience District	.007	.065	.004	.110	.913	-.099	.008	.004	.983	1.017

Note. a. Dependent variable: % SW ELA.

Null Hypothesis 2. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English Language Arts.

The null hypothesis is retained based on the data analysis and findings previously discussed. In both simultaneous and hierarchical multiple regressions, experience in district was not a statistically significant predictor variable.

Simultaneous: (β = -.007, p = .795); Hierarchical: (β = .004, p = .913).

Research Question 3. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?

In an effort to answer this research question, various statistical analyses were run via SPSS. The first regression that was run via SPSS was a simultaneous regression model with all nine independent variables included (see Table 23). These variables were selected based on the research findings of existing literature in the field.

Table 23
Experience NJ/Math Achievement: Simultaneous Variables Entered/Removed

Variables Entered/Removed

Model	Variables entered	Variables removed	Method
1	% Teacher Attendance	.	Enter
	% ELL		
	Experience NJ		
	% SPED		
	Length of School Day (minutes)		
	School Size		
	% Student Suspension		
	% Chronically Absent		
	% free and reduced		

Note. a. Dependent variable: % SW Math. b. All requested variables entered.

The initial simultaneous multiple regression indicated that the model utilizing all of the variables indicates an R^2 value of .766 and an adjusted R^2 value of .754. This suggests that between 75.4% and 76.6% of student performance on the 2016-2017 PARCC math exam can be explained by the variables in this model. The Durbin–Watson value was 1.945, indicating we met the assumption that the residuals did not correlate (see Table 24). The ANOVA results indicate that regression was statistically significant ($p < .001$) in predicting % SW Math (see Table 25).

Table 24
Experience NJ/Math Achievement: Simultaneous Model Summary

Model Summary[b]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Durbin–Watson
1	.875[a]	.766	.754	8.9219	1.945

Note. a. Predictors: (Constant), % Teacher Attendance , % ELL, Experience NJ, % SPED, Length of School Day (minutes), School Size, % Student Suspension, % Chronically Absent, % free and reduced
b. Dependent Variable: % SW Math.

Table 25
Experience NJ/Math Achievement: ANOVA Table

ANOVA

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	46704.625	9	5189.403	65.194	.000[b]
	Residual	14248.318	179	79.600		
	Total	60952.943	188			

The coefficients table (Table 26) shows that four out of the nine predictor variables that were included in the model are statistically significant. The variables found to be statistically significant were the following: % free and reduced lunch ($p < .001$), % chronically absent ($p = .010$), % Special Education ($p = .003$), and length of school day ($p = .012$). Experience NJ was found not to be statistically significant ($p = .104$); however, since it is the target variable of interest, it was retained for the hierarchical multiple regression. The coefficients table also indicates that there are no issues with multicollinearity. The variance inflation factors (VIF) range from 1.015‑ 2.811.

Table 26
Experience NJ/Math Achievement: Simultaneous Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients			Correlations			Collinearity statistics	
		B	Std. error	β	*t*	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-10.452	40.715		-.257	.798					
	Experience NJ	.104	.069	.055	1.501	.135	.090	.111	.054	.985	1.015
	School Size	.003	.002	.043	1.126	.262	.050	.084	.041	.886	1.129
	% free and reduced	-.546	.043	-.766	-12.641	.000	-.844	-.687	-.457	.356	2.811
	% SPED	-.550	.185	-.123	-2.967	.003	-.294	-.217	-.107	.764	1.308
	% ELL	.021	.205	.005	.101	.920	-.457	.008	.004	.533	1.876
	% Chronically Absent	-.512	.196	-.127	-2.607	.010	-.541	-.191	-.094	.549	1.821
	Length of School Day (minutes)	.099	.039	.094	2.538	.012	.088	.186	.092	.945	1.058
	% Student Suspension	.022	.081	.014	.275	.783	-.576	.021	.010	.504	1.985
	% Teacher Attendance	.456	.392	.045	1.166	.245	.220	.087	.042	.886	1.128

Note. a. Dependent variable: % SW Math.

Squaring the standardized beta for each of the significant predictor variables provides an effect size to determine the amount of variance of the outcome variable that can be explained by each individual significant predictor variable. In this case, percentage of students eligible for free and reduced lunch was found to be the strongest contributor to the overall model, explaining 58.7% of the overall variance in student performance on 2016-2017 PARCC math scores. The negative beta ($\beta = -.766$, $p < .001$) indicates that as a school's free and reduced-price lunch population increases, the percentage of students meeting/exceeding expectations on 2016-2017 PARCC math (in the school) decreases. Percent chronically absent was the next strongest

predictor in the model (β = -.127, p = .010), accounting for 1.6% of the total overall explained variance in the model. The negative beta value indicates that as chronic absenteeism increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The predictor variable students with disabilities (percentage of students with an IEP) was found to be the third contributor to the overall model, explaining 1.5% of the overall variance in student performance on 2016-2017 PARCC math. The negative beta (β = -.123, p = .003) indicates that as a school's students with disabilities population increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The last predictor variable that was found to be statistically significant in this model was length of school day. The positive beta (β = .39, p = .012) indicates that as a school's length of day increases, so does student performance on 2016-2017 PARCC math. This predictor accounts for .15% of the total overall explained variance in the model.

Hierarchical regression. The simultaneous multiple regression model was used to measure the influence of the independent variables (predictor variables) together on 2016-2017 PARCC math achievement, whereas the hierarchical regression model was used to measure the influence of each of the independent variables (predictor variables) on the 2016-2017 PARCC math scores in separate block models as individual and combined independent variables (predictor variables) were entered into the overall model. The models were built by inputting the independent variables in order of their strength, followed by the variable of interest. Model 1 = percentage of free and reduced lunch students. Model 2 = percentage of free and reduced lunch students, percentage of chronically absent students. Model 3 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities. Model 4 = percentage of free and reduced lunch students, percentage of chronically

absent students, percentage of students with disabilities, length of school day. Model 5 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities, length of school day, and experience NJ (see Table 27).

Table 27
Experience NJ/Math Achievement: Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables entered	Variables removed	Method
1	% free and reduced[b]	.	Enter
2	% Chronically Absent[b]	.	Enter
3	% SPED[b]	.	Enter
4	Length of School Day (minutes)[b]	.	Enter
5	Experience NJ[b]	.	Enter

Note. a. Dependent variable: % SW Math. b. All requested variables entered.

In Model 1 (see Table 28) the predictor variable was percentage of free and reduced lunch students; R^2 was .716, which indicates that 71.6% of the variance in 2016-2017 PARCC math scores was explained by the percentage of free and reduced lunch students. In Model 2, the percentage of students chronically absent was added to the percentage of free and reduced lunch students; R^2 was .740, which indicates that 74% of the 2016-2017 PARCC math score was explained by the percentage of free and reduced lunch students and the percentage of students chronically absent. From Model 1 to Model 2 the R^2 change was .024, which indicates that the percentage of students chronically absent added 2.4% of the variance to the model. The R^2 change was statistically significant $F(17.138)$, $p < .001$. In Model 3, the percentage of disabled students was added; R^2 was .751, which indicates that 75.1% of the variance in 2016-2017 PARCC math scores explained by the percentage of free and reduced lunch students, the

percentage of students chronically absent, and the percentage of students with disabilities. From Model 2 to Model 3 the R^2 change was .012, which indicates that the percentage of students with disabilities added 1.2% of the variance to the model. The R^2 change was statistically significant $F(9.034)$, $p = .003$. In Model 4, length of school day was added; R^2 was .760, which indicates that 76% of the variance in 2016-2017 PARCC math scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, and length of school day. From Model 3 to Model 4 the R^2 change was .009, which indicates that the length of school day status added 0.9% of the variance to the model. The R^2 change was statistically significant $F(6.948)$, $p = .009$. In Model 5, the variable of interest was added, experience NJ; R^2 was .763, which indicates that 76.93% of the variance in 2016-2017 PARCC math scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, length of school day, and experience in district. From Model 4 to Model 5 the R^2 change was .003, which indicates that experience NJ added 0.3% to the variance of the model. The R^2 change was not statistically significant $F(2.449)$, $p = .119$. The Durbin–Watson test statistic was 1.962, which indicates that the residuals were not highly correlated to one another. Based on the results displayed in the model summary table (see Table 28) it can be concluded that the best predictive model is Model 4.

Table 28
Experience NJ/Math Achievement: Hierarchical Regression Summary

Model Summary[f]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Change statistics R^2 change	*F* change	df1	df2	Sig. *F* change	Durbin–Watson
1	.846[a]	.716	.714	9.6068	.716	478.789	1	190	.000	
2	.860[b]	.740	.737	9.2231	.024	17.138	1	189	.000	
3	.867[c]	.751	.748	9.0331	.012	9.034	1	188	.003	
4	.872[d]	.760	.755	8.8935	.009	6.948	1	187	.009	
5	.874[e]	.763	.757	8.8593	.003	2.449	1	186	.119	1.962

Note. a. Predictors: (Constant), % free and reduced.

b. Predictors: (Constant), % free and reduced, % Chronically Absent.

c. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience NJ.

f. Dependent variable: % SW Math.

As shown in Table 29, all of the regression models were statistically significant. This means that the independent variables entered in the five regression models predicted the variance in students meeting/exceeding expectations on 2016-2017 PARCC math. Each model was statistically significant (Model 1: $F = 591.344$, $df = 1,195$, $p < .001$; Model 2: $F = 344.367$, $df = 2,194$, $p < .001$; Model 3: $F = 240.135$, $df = 3,193$, $p < .001$; Model 4: $F = 190.525$, $df = 4192$, $p < .001$); Model 5: $F = 151.638$, $df = 5191$, $p < .001$).

Table 29
Experience NJ/Math Achievement: ANOVA

ANOVA[a]

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	44187.765	1	44187.765	478.789	.000[b]
	Residual	17535.214	190	92.291		
	Total	61722.979	191			
2	Regression	45645.593	2	22822.797	268.297	.000[c]
	Residual	16077.386	189	85.066		
	Total	61722.979	191			
3	Regression	46382.756	3	15460.919	189.479	.000[d]
	Residual	15340.223	188	81.597		
	Total	61722.979	191			
4	Regression	46932.329	4	11733.082	148.343	.000[e]
	Residual	14790.651	187	79.094		
	Total	61722.979	191			
5	Regression	47124.508	5	9424.902	120.083	.000[f]
	Residual	14598.471	186	78.486		
	Total	61722.979	191			

Note. a. Dependent variable: % SW Math.

b. Predictors: (Constant), % free and reduced.

c. Predictors: (Constant), % free and reduced, % Chronically Absent.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED.

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

f. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience NJ.

Further analysis of the coefficients table (see Table 30) shows that in Model 1, the predictor variable percentage of free and reduced lunch students was statistically significant (β = -.846, t = -21.881, $p < .001$). The negative beta indicates that percentage of free and reduced lunch students has a negative influence on the 2016-2017 PARCC math score. As percentage of free and reduced lunch students increases, there is a decrease in performance on 2016-2017 PARCC math scores.

In Model 2, the predictor variable percentage of students chronically absent was added to the model, and the strength of the variable percentage of free and reduced lunch students decreased (-.846 to -.765). This means that the variable percentage of students chronically absent had a significant effect on the strength of the percentage of students eligible for free and reduced lunch. The percentage of free and reduced lunch students continued to be a statistically significant variable (β = -.765, t = -18.639, $p < .001$), and the percentage of students chronically absent was also a statistically significant predictor of 2016-2017 PARCC math scores (β = -.174, t = -4.140, $p < .001$). The negative betas indicate that both percent free and reduced lunch and percent chronically absent have a negative influence on 2016-2017 PARCC math scores. As percent free and reduced lunch and percent chronically absent increase, there is a decrease in performance on the 2016-2017 PARCC math score. Analysis of the collinearity statistics of Model 2 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .740; therefore, 1 - R^2 was .26, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 3, the predictor variable percentage of students with disabilities was added to the model, and the strength of the variable percentage of students eligible for free and reduced lunch remained the same (-.765), and percentage of students chronically absent decreased (-.174 to -.132). This means that the variable percentage of students with disabilities did not have an effect on percentage of students eligible for free and reduced lunch but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β

= -.765, t = -18.639, $p < .001$) as was the percentage of students chronically absent (β = -.132, t = -3.037, p = .003). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC math (β = -.117 t = -3.006, p = .003). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC math scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC math scores. Analysis of the collinearity statistics of Model 3 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .751; therefore, 1 - R^2 was .249, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 4, the predictor variable length of school day was added to the model, and the strength of the variable percentage students eligible for free and reduced lunch increased (-.765 to -.773), the percentage of students chronically absent decreased (-.132 to -.119), and the percentage of students with disabilities increased (-.117 to -.121). This means that the variable length of school did not have an effect on percentage of students eligible for free and reduced lunch and percentage of students with disabilities but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.773, t = -19.071, $p < .001$) as was the percentage of students chronically absent (β = -.119, t = -2.757, p = .006). The percentage of students with disabilities was also a statistically significant predictor of scoring on

the 2016-2017 PARCC math (β = -.121 t = -3.155, p = .002) as was length of school day (β = .095, t = 2.636, p = .009). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC math scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC math scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC math scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC math scores. Analysis of the collinearity statistics of Model 4 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .760; therefore, 1 - R^2 was .24, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 5, the variable of interest, experience NJ, was added to the model. The strength of the variable percentage of students eligible for free and reduced lunch decreased (-.770 to -.769), the percentage of students chronically absent remained the same (-.119), the percentage of students with disabilities increased (-.121 to -.124), and length of school day decreased (.95 to .92). This means that the variable of interest had a slight effect on percentage of students eligible for free and reduced lunch and the length of school day but did not have an effect on percentage of student with disabilities and percentage of students chronically absent. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.769, t = -19.008, p < .001) as was the percentage of students chronically absent (β = -.119, t = -2.780, p = .006). The percentage of students with disabilities was also a statistically

significant predictor of scoring on the 2016-2017 PARCC math (β = -.124 t = -3.235, p = .001) as was length of school day (β = .092, t = 2.563, p = .011). The variable of interest, experience NJ, was not statistically significant (β = .056, t = 1.565, p = .119). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC math scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC math scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC math scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC math score. Analysis of the collinearity statistics of Model 5 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .763; therefore, 1 - R^2 was .237, which was smaller than the tolerance values for all of the predictor variables in the model.

Table 30
Experience NJ/Math Achievement: Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Correlations			Collinearity statistics	
		B	Std. error	β			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	65.185	1.055		61.813	.000					
	% free and reduced	-.603	.028	-.846	-21.881	.000	-.846	-.846	-.846	1.000	1.000
2	(Constant)	69.173	1.398		49.495	.000					
	% free and reduced	-.546	.030	-.765	-18.258	.000	-.846	-.799	-.678	.784	1.275
	% Chronically Absent	-.699	.169	-.174	-4.140	.000	-.529	-.288	-.154	.784	1.275
3	(Constant)	76.575	2.817		27.179	.000					
	% free and reduced	-.546	.029	-.765	-18.639	.000	-.846	-.806	-.678	.784	1.275
	% Chronically Absent	-.530	.175	-.132	-3.037	.003	-.529	-.216	-.110	.703	1.422
	% SPED	-.522	.174	-.117	-3.006	.003	-.292	-.214	-.109	.872	1.147
4	(Constant)	36.844	15.326		2.404	.017					
	% free and reduced	-.551	.029	-.773	-19.071	.000	-.846	-.813	-.683	.780	1.282
	% Chronically Absent	-.477	.173	-.119	-2.757	.006	-.529	-.198	-.099	.694	1.442
	% SPED	-.540	.171	-.121	-3.155	.002	-.292	-.225	-.113	.870	1.149
	Length of School Day (minutes)	.099	.038	.095	2.636	.009	.087	.189	.094	.986	1.014

5	(Constant)	36.360	15.270		2.381	.018					
	% free and reduced	-.548	.029	-.769	-19.008	.000	-.846	-.812	-.678	.777	1.287
	% Chronically Absent	-.479	.172	-.119	-2.780	.006	-.529	-.200	-.099	.694	1.442
	% SPED	-.553	.171	-.124	-3.235	.001	-.292	-.231	-.115	.868	1.152
	Length of School Day (minutes)	.096	.038	.092	2.563	.011	.087	.185	.091	.983	1.017
	Experience NJ	.106	.068	.056	1.565	.119	.101	.114	.056	.991	1.009

Note. a. Dependent variable: % SW Math.

Null Hypothesis 3. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.

The null hypothesis is retained based on the data analysis and findings previously discussed. In both simultaneous and hierarchical multiple regressions, overall experience in the state was not a statistically significant predictor variable.

Simultaneous: ($\beta = .055$, $p = .135$); Hierarchical: ($\beta = .056$, $p = .119$).

Research Question 4. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

In an effort to answer this research question, various statistical analyses were run via SPSS. The first regression that was run via SPSS was a simultaneous regression model with all nine independent variables included (see Table 31). These variables were selected based on the research findings of existing literature in the field.

Table 31
Experience NJ/ELA: Simultaneous Variables Entered/Removed

Variables Entered/Removed

Model	Variables entered	Variables removed	Method
1	% Teacher Attendance	.	Enter
	% ELL		
	Experience NJ		
	% SPED		
	Length of School Day (minutes)		
	School Size		
	% Student Suspension		
	% Chronically Absent		
	% free and reduced		

Note. a. Dependent variable: % SW ELA. b. All requested variables entered.

The initial simultaneous multiple regression indicated that the model utilizing all of the variables indicates an R^2 value of .900 and an adjusted R^2 value of .809. This suggests that between 81% and 90% of student performance on the 2016-2017 PARCC ELA exam can be explained by the variables in this model. The Durbin–Watson value was 1.865, indicating we met the assumption that the residuals did not correlate (see Table 32). The ANOVA results indicate that regression was statistically significant ($p < .001$) in predicting % SW ELA (see Table 33).

Table 32
Experience NJ/ELA Achievement: Simultaneous Model Summary

Model Summary[b]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Durbin–Watson
1	.900[a]	.809	.800	8.2539	1.865

Note. a. Predictors: (Constant), % Teacher Attendance , % ELL, Experience NJ, % SPED, Length of School Day (minutes), School Size, % Student Suspension, % Chronically Absent, % free and reduced.
b. Dependent variable: % SW ELA.

Table 33
Experience NJ/ELA Achievement: ANOVA Table

ANOVA

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	53243.994	9	5915.999	86.839	.000[b]
	Residual	12535.260	184	68.126		
	Total	65779.254	193			

The coefficients table (Table 34) shows that four out of the nine predictor variables that were included in the model are statistically significant. The variables found to be statistically significant were the following: % free and reduced lunch ($p < .001$), % chronically absent ($p = .001$), % Special Education ($p = .003$), and length of school day ($p = .002$). Experience NJ was found not to be statistically significant ($p = .959$); however, since it is the target variable of interest, it was retained for the hierarchical multiple regression. The coefficients table also indicates that there are no issues with multicollinearity. The variance inflation factors (VIF) range from 1.013 to 2.896.

Table 34
Experience NJ/ELA Achievement: Simultaneous Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients			Correlations			Collinearity statistics	
		B	Std. error	β	*t*	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-8.412	36.536		-.230	.818					1.013
	Experience NJ	-.003	.064	-.002	-.051	.959	.023	-.004	-.002	.987	1.130
	School Size	.004	.002	.058	1.693	.092	.091	.124	.054	.885	2.896
	% free and reduced	-.488	.038	-.696	-12.704	.000	-.867	-.684	-.409	.345	1.381
	% SPED	-.510	.170	-.114	-3.003	.003	-.333	-.216	-.097	.724	1.778
	% ELL	-.252	.169	-.064	-1.486	.139	-.473	-.109	-.048	.562	1.927
	% Chronically Absent	-.580	.166	-.156	-3.483	.001	-.617	-.249	-.112	.519	1.058
	Length of School Day (minutes)	.109	.034	.105	3.169	.002	.079	.228	.102	.946	1.921
	% Student Suspension	-.047	.073	-.029	-.655	.513	-.615	-.048	-.021	.520	1.116
	% Teacher Attendance	.526	.356	.050	1.476	.142	.213	.108	.047	.896	1.013

Note. a. Dependent variable: % SW ELA.

Squaring the standardized beta for each of the significant predictor variables provides an effect size to determine the amount of variance of the outcome variable that can be explained by each individual significant predictor variable. In this case, percentage of students eligible for free and reduced lunch was found to be the strongest contributor to the overall model, explaining 48.44% of the overall variance in student performance on 2016-2017 PARCC ELA scores. The negative beta ($\beta = -.696$, $p < .001$) indicates that as a school's free and reduced-price lunch population increases, the percentage of students meeting/exceeding expectations on 2016-2017 PARCC ELA (in the school) decreases. Percent chronically absent was the next strongest

predictor in the model (β = -.156, p = .001), accounting for 2.4% of the total overall explained variance in the model. The negative beta value indicates that as chronic absenteeism increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The predictor variable students with disabilities (percentage of students with an IEP) was found to be the third contributor to the overall model, explaining 1.3% of the overall variance in student performance on 2016-2017 PARCC ELA. The negative beta (β = -.114, p = .003) indicates that as a school's students with disabilities population increases, the percentage of students meeting/exceeding expectations on PARCC (in the school) decreases. The last predictor variable that was found to be statistically significant in this model was length of school day. The positive beta (β = .105, p = .002) indicates that as a school's length of day increases, so does student performance on 2016-2017 PARCC ELA. This predictor accounts for 1.1% of the total overall explained variance in the model.

Hierarchical regression. The simultaneous multiple regression model was used to measure the influence of the independent variables (predictor variables) together on 2016-2017 PARCC ELA achievement, whereas the hierarchical regression model was used to measure the influence of each of the independent variables (predictor variables) on the 2016-2017 PARCC ELA scores in separate block models as individual and combined independent variables (predictor variables) were entered into the overall model. The models were built by inputting the independent variables in order of their strength, followed by the variable of interest. Model 1 = percentage of free and reduced lunch students. Model 2 = percentage of free and reduced lunch students, percentage of chronically absent students. Model 3 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities. Model 4 = percentage of free and reduced lunch students, percentage of chronically

absent students, percentage of students with disabilities, length of school day. Model 5 = percentage of free and reduced lunch students, percentage of chronically absent students, percentage of students with disabilities, length of school day, and experience NJ (see Table 35).

Table 35
Experience NJ/ELA Achievement: Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables entered	Variables removed	Method
1	% free and reduced[b]	.	Enter
2	% Chronically Absent[b]	.	Enter
3	% SPED[b]	.	Enter
4	Length of School Day (minutes)[b]	.	Enter
5	Experience NJ[b]	.	Enter

a. Dependent variable: % SW ELA. b. All requested variables entered.

In Model 1 (see Table 36) the predictor variable was percentage of free and reduced lunch students; R^2 was .752, which indicates that 75.2% of the variance in 2016-2017 PARCC ELA scores was explained by the percentage of free and reduced lunch students. In Model 2, the percentage of students chronically absent was added to the percentage of free and reduced lunch students; R^2 was .780, which indicates that 78% of the 2016-2017 PARCC ELA score was explained by the percentage of free and reduced lunch students and the percentage of students chronically absent. From Model 1 to Model 2 the R^2 change was .028, which indicates that the percentage of students chronically absent added 2.8% of the variance to the model. The R^2 change was statistically significant $F(24.903)$, $p < .001$. In Model 3, the percentage of disabled students was added; R^2 was .789, which indicates that 78.9% of the variance in 2016-2017 PARCC ELA scores was explained by the percentage of free and reduced lunch students, the percentage of students chronically absent, and the percentage of students with disabilities. From

Model 2 to Model 3 the R^2 change was .008, which indicates that the percentage of students with disabilities added 0.8% of the variance to the model. The R^2 change was statistically significant $F(7.740)$, $p = .006$. In Model 4, length of school day was added; R^2 was .799, which indicates that 79.9% of the variance in 2016-2017 PARCC ELA scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, and length of school day. From Model 3 to Model 4 the R^2 change was .010, which indicates that the length of school day status added 1.0% of the variance to the model. The R^2 change was statistically significant $F(9.599)$, $p = .002$. In Model 5, the variable of interest was added, experience NJ; R^2 was .799, which indicates that 79.9% of the variance in 2016-2017 PARCC ELA scores was explained by percentage of free and reduced lunch students, the percentage of students chronically absent, the percentage of disabled students, length of school day, and experience in district. From Model 4 to Model 5 the R^2 change was .000, which indicates that experience in district did not add to the variance of the model. The R^2 change was not statistically significant $F(.013)$, $p = .910$. The Durbin–Watson test statistic was 1.881, which indicates that the residuals were not highly correlated to one another. Based on the results displayed in the model summary table (see Table 36) it can be concluded that the best predictive model is Model 4.

Table 36
Experience NJ/ELA Achievement: Hierarchical Regression Summary

Model Summary[f]

Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	Change Statistics					Durbin–Watson
					R^2 change	*F* change	df1	df2	Sig. *F* change	
1	.867[a]	.752	.751	9.1978	.752	591.344	1	195	.000	
2	.883[b]	.780	.778	8.6811	.028	24.903	1	194	.000	
3	.888[c]	.789	.785	8.5341	.008	7.740	1	193	.006	
4	.894[d]	.799	.795	8.3501	.010	9.599	1	192	.002	
5	.894[e]	.799	.794	8.3717	.000	.013	1	191	.910	1.881

Note. a. Predictors: (Constant), % free and reduced.

b. Predictors: (Constant), % free and reduced, % Chronically Absent.

c. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience NJ.

f. Dependent variable: % SW ELA.

As shown in Table 37, all of the regression models were statistically significant. This means that the independent variables entered in the five regression models predicted the variance in students meeting/exceeding expectations on 2016-2017 PARCC ELA. Each model was statistically significant (Model 1: $F = 591.344$, $df = 1,195$, $p < .001$; Model 2: $F = 344.367$, $df = 2,194$, $p < .001$; Model 3: $F = 240.135$, $df = 3,193$, $p < .001$; Model 4: $F = 190.525$, $df = 4192$, $p < .001$); Model 5: $F = 151.639$, $df = 5191$, $p < .001$).

Table 37
Experience NJ/ELA Achievement: ANOVA

ANOVA[a]

Model		Sum of squares	df	Mean square	*F*	Sig.
1	Regression	50027.199	1	50027.199	591.344	.000[b]
	Residual	16496.834	195	84.599		
	Total	66524.033	196			
2	Regression	51903.942	2	25951.971	344.367	.000[c]
	Residual	14620.090	194	75.361		
	Total	66524.033	196			
3	Regression	52467.663	3	17489.221	240.135	.000[d]
	Residual	14056.369	193	72.831		
	Total	66524.033	196			
4	Regression	53136.973	4	13284.243	190.525	.000[e]
	Residual	13387.060	192	69.724		
	Total	66524.033	196			
5	Regression	53137.877	5	10627.575	151.639	.000[f]
	Residual	13386.155	191	70.085		
	Total	66524.033	196			

Note. a. Dependent variable: % SW ELA

b. Predictors: (Constant), % free and reduced.

c. Predictors: (Constant), % free and reduced, % Chronically Absent.

d. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED.

e. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes).

f. Predictors: (Constant), % free and reduced, % Chronically Absent, % SPED, Length of School Day (minutes), Experience NJ.

Further analysis of the coefficients table (see Table 38) shows that in Model 1 the predictor variable percentage of free and reduced lunch students was statistically significant (β = -.867, t = -24.318, $p < .001$). The negative beta indicates that percentage of free and reduced lunch has a negative influence on the 2016-2017 PARCC ELA score. As percentage of free and reduced students increases, there is a decrease in performance on 2016-2017 PARCC ELA scores.

In Model 2, the predictor variable percentage of students chronically absent was added to the model, and the strength of the variable percentage of free and reduced lunch students decreased (-.867 to -.762). This means that the variable percentage of students chronically absent had a significant effect on the strength of the percentage of students eligible for free and reduced lunch. The percentage of free and reduced lunch students continued to be a statistically significant variable (β =-.762, t = -19.153, p < .001), and the percentage of students chronically absent was also a statistically significant predictor of 2016-2017 PARCC ELA scores (β = -.198, t = -4.990, p < .001). The negative betas indicate that both percent free and reduced lunch and percent chronically absent have a negative influence on 2016-2017 PARCC ELA scores. As percent free and reduced lunch and percent chronically absent increase, there is a decrease in performance on the 2016-2017 PARCC ELA score. Analysis of the collinearity statistics of Model 2 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .780; therefore, 1 - R^2 was .22, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 3, the predictor variable percentage of students with disabilities was added to the model, and the strength of the variable percentage of students eligible for free and reduced lunch remained the same (-.762), and percentage of students chronically absent decreased (-.198 to -.158). This means that the variable percentage of students with disabilities did not have an effect on percentage of students eligible for free and reduced lunch but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β

= -.762, t = -19.488, $p < .001$) as was the percentage of students chronically absent (β = -.158, t = -3.785, $p < .001$). The percentage of students with disabilities was also a statistically significant predictor of scoring on the 2016-2017 PARCC ELA (β = -.101 t = -2.782, p = .006). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC ELA scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC ELA scores. Analysis of the collinearity statistics of Model 3 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .789; therefore, 1 - R^2 was .211, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 4, the predictor variable length of school day was added to the model, and the strength of the variable percentage students eligible for free and reduced lunch increased (-.762 to -.770), the percentage of students chronically absent decreased (-.158 to -.145), and the percentage of students with disabilities increased (-.101 to -.110). This means that the variable length of school did not have an effect on percentage of students eligible for free and reduced lunch and percentage of students with disabilities but did have a significant effect on the strength of the percentage of chronically absent students. The percentage of students eligible for free and reduced lunch continued to be a statistically significant variable (β = -.770, t = -20.082, $p < .001$) as was the percentage of students chronically absent (β = -.145, t = -3.537, p = .001). The percentage of students with disabilities was also a statistically significant predictor of scoring on

the 2016-2017 PARCC ELA (β = -.110 t = -3.096, p = .002) as was length of school day (β = .101, t = 3.098, p = .002). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC ELA scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC ELA scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC ELA scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC ELA score. Analysis of the collinearity statistics of Model 4 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .799; therefore, 1 - R^2 was .201, which was smaller than the tolerance values for all of the predictor variables in the model.

In Model 5, the variable of interest, experience NJ, was added to the model. The strength of the variable percentage of students eligible for free and reduced lunch remained the same (-.770), the percentage of students chronically absent remained the same (-.145), the percentage of students with disabilities remained the same (-.110), and length of school day remained the same (.101). This means that the variable of interest, experience in district, did not have an effect on percentage of students eligible for free and reduced lunch, percentage of students chronically absent, students with disabilities, or length of school day. The percentage of students eligible for free and reduced continued to be a statistically significant variable (β = -.770, t = -19.968, p < .001) as was the percentage of students chronically absent (β = -.145, t = -3.530, p = .001). The percentage of students with disabilities was also a statistically significant predictor of scoring on

the 2016-2017 PARCC ELA (β = -.110 t = -3.090, p = .002) as was length of school day (β = .101, t = 3.082, p = .002). The variable of interest, experience in district, was not statistically significant (β = .004, t = .114, p = .910). The negative betas indicate that percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities have a negative influence on 2016-2017 PARCC ELA scores. As percent students eligible for free and reduced lunch, percent students chronically absent, and students with disabilities increase, there is a decrease in performance on 2016-2017 PARCC ELA scores. The positive beta for length of school day indicates that length of school day has a positive influence on 2016-2017 PARCC ELA scores. As length of day increases, there is also an increase in performance on the 2016-2017 PARCC ELA score. Analysis of the collinearity statistics of Model 5 revealed that the average of all VIFs in this model was not significantly greater than 1, which means none of the independent variables share significant collinearity with one another. In addition, the tolerance values were not low (<1 - R^2). For this model R^2 was .799; therefore, 1 - R^2 was .201, which was smaller than the tolerance values for all of the predictor variables in the model.

Table 38
Experience NJ/ELA Achievement: Coefficients

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Correlations			Collinearity statistics	
		B	Std. error	β			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	77.406	.999		77.500	.000					
	% free and reduced	-.608	.025	-.867	-24.318	.000	-.867	-.867	-.867	1.000	1.000
2	(Constant)	81.395	1.236		65.859	.000					
	% free and reduced	-.534	.028	-.762	-19.153	.000	-.867	-.809	-.645	.717	1.396
	% Chronically Absent	-.739	.148	-.198	-4.990	.000	-.604	-.337	-.168	.717	1.396
3	(Constant)	87.723	2.579		34.017	.000					
	% free and reduced	-.534	.027	-.762	-19.488	.000	-.867	-.814	-.645	.717	1.396
	% Chronically Absent	-.588	.155	-.158	-3.785	.000	-.604	-.263	-.125	.629	1.589
	% SPED	-.450	.162	-.101	-2.782	.006	-.326	-.196	-.092	.838	1.193
4	(Constant)	46.094	13.671		3.372	.001					
	% free and reduced	-.540	.027	-.770	-20.082	.000	-.867	-.823	-.650	.713	1.402
	% Chronically Absent	-.541	.153	-.145	-3.537	.001	-.604	-.247	-.115	.623	1.606
	% SPED	-.491	.159	-.110	-3.096	.002	-.326	-.218	-.100	.832	1.201
	Length of School Day (minutes)	.105	.034	.101	3.098	.002	.077	.218	.100	.986	1.014
5	(Constant)	46.047	13.713		3.358	.001					
	% free and reduced	-.540	.027	-.770	-19.981	.000	-.867	-.822	-.649	.710	1.408
	% Chronically Absent	-.541	.153	-.145	-3.530	.001	-.604	-.247	-.115	.622	1.607

% SPED	-.492	.159	-.110	-3.090	.002	-.326	-.218	-.100	.831	1.203
Length of School Day (minutes)	.105	.034	.101	3.082	.002	.077	.218	.100	.984	1.016
Experience NJ	.007	.064	.004	.114	.910	.035	.008	.004	.992	1.008

Note. a. Dependent variable: % SW ELA.

Null Hypothesis 4. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in in English language arts.

The null hypothesis is retained based on the data analysis and findings previously discussed. In both simultaneous and hierarchical multiple regressions, overall experience in the state was not a statistically significant predictor variable.

Simultaneous: (β = -.002, p = .959); Hierarchical: (β = .004, p = .910).

Conclusion

In conclusion, the null hypotheses for all four research questions posited in this paper were retained. The results of this study indicate that no statistically significant relationship exists between principal's length of experience and academic achievement on the PARCC in English language arts and math. Of the variables included in this study, percentage of students eligible for free and reduced lunch, percentage of students chronically absent, percentage of students with disabilities, and length of school day were found to be statistically significant predictors of student achievement in all eight regressions that were conducted. Further discussion and analysis are included in Chapter V.

CHAPTER V

Conclusions and Recommendations

Introduction

Principal leadership matters, especially with today's heightened expectations surrounding education. In order to continually improve teaching and learning, principals need to be instructional and curriculum leaders, educational visionaries, experts in assessment and data, disciplinarians, community engagement specialists, public relations experts, and budget and facility managers. Recent research has taken a look at the principal and how he/she influences student academic achievement. Several groups, including The Wallace Foundation, have brought into focus the behaviors and priorities of effective principals and the measured impact of principal leadership on student learning. A discussion of the literature in Chapter 2 identified several attributes of principals that have both direct and indirect impacts on student achievement. Considering the importance the role the principal plays in academic achievement, one could assume a positive correlation with principal's longevity and students' academic achievement. However, the evidence supporting this assumption is scarce, and what little exists is inconclusive. Consequently, it was my intention to explore recent standardized test data for all New Jersey middle school students in an effort to add to this body of empirical research.

Purpose of the Research

The purpose for this study was to explain the influence of principal longevity, if any, on New Jersey middle school students' achievement in English language arts and mathematics as measured by the 2016-2017 Partnership for Assessment of Readiness for College and Careers (PARCC). The findings of this research can be utilized to assist policy makers and school districts to identify the variables that would most impact student academic achievement.

An understanding of these variables and how they influence student achievement can assist decision making at both the state and the school levels. Furthermore, it may provide opportunities for aspiring New Jersey principals moving into school-based administrative positions with better knowledge of the factors impacting student achievement on the PARCC. Additionally, the study examined the influence of other student, staff, and school variables such as percentage of students free and reduced lunch, percentage of students with disabilities, percentage of students who are English Language Learners, percentage of students chronically absent, percentage of student suspensions, percentage of teacher attendance, and the length of the school day.

Organization of the Chapter

This chapter provides a summary of the study's findings, expounds upon the results in comparison to previous research on the topic, and provides evidence-based recommendations for policy and practice, as well as suggestions for future research. This study adds to the existing literature in the field and provides educational stakeholders with data that can help make informed decisions that may influence both public school policy and administrative practice.

Research Questions and Answers

Research Question 1. What is the nature of the relationship between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?

Null Hypothesis 1. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.

Answer: The null hypothesis is retained based on the data analysis and findings previously discussed in Chapter 4. In the simultaneous multiple regression, experience in district was not a statistically significant variable ($\beta = .062$, $p = .094$). In the hierarchical multiple regression, experience in district was not statistically significant ($\beta = .068$, $p = .060$). According to this analysis, principal's time in district did not have a statistically significant effect on student academic achievement on mathematics, as measured by the 2016-2017 PARCC.

Research Question 2. What is the nature of the relationship between New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

Null Hypothesis 2. No statistically significant relationship exists between a New Jersey middle school principal's length of time in a school and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts.

Answer: The null hypothesis is retained based on the data analysis and findings previously discussed in Chapter 4. In the simultaneous multiple regression, experience in district was not a statistically significant variable ($\beta = -.007$, $p = .795$). In the hierarchical multiple regression, experience in district was not statistically significant ($\beta = .004$, $p = .913$). According to this analysis, principal's time in district did not have a statistically significant effect on student academic achievement on English language arts, as measured by the 2016-2017 PARCC.

Research Question 3. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics?

Null Hypothesis 3. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in mathematics.

Answer: The null hypothesis is retained based on the data analysis and findings previously discussed in Chapter 4. In the simultaneous multiple regression, overall experience was not a statistically significant variable ($\beta = .055$, $p = .135$). In the hierarchical multiple regression, experience in district was not statistically significant ($\beta = .056$, $p = .119$). According to this analysis, principal's overall experience did not have a statistically significant effect on student academic achievement on mathematics, as measured by the 2016-2017 PARCC.

Research Question 4. What is the nature of the relationship between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in English language arts?

Null Hypothesis 4. No statistically significant relationship exists between a New Jersey middle school principal's overall experience as a building principal in New Jersey and student academic achievement, as evidenced by the 2016-2017 PARCC scores in in English language arts.

Answer: The null hypothesis is retained based on the data analysis and findings previously discussed in Chapter 4. In the simultaneous multiple regression, overall experience was not a statistically significant variable ($\beta = -.002$, $p = .959$). In the hierarchical multiple regression, experience in district was not statistically significant ($\beta = .004$, $p = .910$). According to this analysis, principal's overall experience did not have a statistically significant effect on student academic achievement on English language arts, as measured by the 2016-2017 PARCC.

Conclusions and Discussion

The findings of this research study concluded that principal longevity did not have a statistically significant effect on the number of students who met and exceeded expectations on the 2016-2017 PARCC in both English language arts and mathematics. There is little to no existing research, which focuses on a principal's longevity and how it affects student achievement, measured by the PARCC exam. However, one study utilizing a different instrument of measure did find similar results. The McDonald (2013) study found a positive correlation between principal longevity and student achievement on the Palmetto Assessment of State Standards (PASS) but cites that the correlation was weak due to other factors likely affecting the relationship. The Mills (2017) study examined principal longevity and continuity on student achievement measured by the 2011-2012 11th grade High School Proficiency Assessment (HSPA). In this study, several models of data showed that the predictive variables (experience in district, experience in New Jersey, and total experience) did not predict the percentage of students who scored "Proficient" or better on the 2011-2012 NJ HSPA, either in language arts or mathematics (Mills, 2017).

Additional comparisons to previous studies were not possible. There is little to no existing research, which focuses on a principal's longevity. Instead, several studies have examined the impact of principal turnover. The Weinstein, Jacobowitz, Ely, Landon, and Schwartz (2009) study examined principal turnover and academic achievement. The study found statistically nonsignificant change from a founding principal to his/her successor but found statistical significance when looking at the founding principal to the third ($\beta = -5.52$, $p < 0.10$). The Louis et al. (2010) study also found statistically significant results, citing how the total effects of principal turnover explain 24% of the variation in student achievement. These findings

corroborate the findings of previous studies (Grusky,1963; Bruggink, 2001) who both reported negative consequences associated with principal turnover.

Although the variable of interest, principal longevity, was not a significant predictor of students' academic success, the findings of this study are consistent with the body of literature that reports socioeconomic status as the number one influence of student achievement (Abrams & Kong, 2012; Bracey, 1999; Caldwell & Ginther, 1996; Coleman et al., 1966; Dunlap, 2016; Graziano, 2012; Lee & Wong, 2004; Lytton & Pyryt, 1998; Plotts, 2011; Sirin, 2005; Tienken, 2012a). The Dunlap study conducted binary logistic regressions for both English language arts and mathematics, predicting students' proficiency (or above) on the NJ ASK. Dunlap found that percentage of students with low socioeconomic status had an odds ratio of .935 (ELA) and .957 (mathematics), which indicates that the odds of schools being proficient or above on NJ ASK decreased .935 (ELA) times and .957 (mathematics) for each unit increase in students with low socioeconomic status. Tienken (2012b) pointed out, "There is at least 45 years of empirical research that documents the connection between poverty and ultimate student achievement as measured by standardized tests" (p. 5).

This study found that percentage of students chronically absent was the second strongest predictor of student achievement on the 2016-2017 PARCC for both English language arts and mathematics. This supports the body of research that confirms a statistically significant relationship between student attendance and student achievement on standardized tests (Caldas, 1993; Dunlap, 2016; Roby, 2004; Romero & Lee, 2007; Sheldon, 2007). McCluskey, Bynum, and Patchin (2004) explained how the precursor to undesirable outcomes in adolescence—including academic failure, school dropout, and juvenile delinquency—is chronic school absenteeism.

This study found that principals' longevity was not significant in predicting students' academic success. Perhaps, if the study focused on the relationship between longevity and principal actions/behaviors, the findings may have been different. Waters et al. (2003) explained, "The data from our meta-analysis demonstrate that there is, in fact, a substantial relationship between leadership and student achievement" (p. 3). As mentioned earlier, The Wallace Foundation (2012) has supported many research studies on school leadership and suggests that there are five key responsibilities central to effective school leadership:

- shaping a vision of academic success for all students, one based on high standards;
- creating a climate hospitable to education in order that safety, a cooperative spirit, and other foundations of fruitful interaction prevail;
- cultivating leadership in others so that teachers and other adults assume their part in realizing the school vision;
- improving instruction to enable teachers to teach at their best and students to learn at their utmost; and
- managing people, data, and process to foster school improvement.

For a principal to successfully implement these responsibilities, there cannot be constant turnover. Furthermore, a principal would require time in the position to develop competency (especially mastery) in these leadership responsibilities, compared to a principal with little to no experience.

Recommendations for Administrative Policy

As discussed previously, percentage of students who are eligible for free and reduced lunch was the most significant variable in determining students' academic success on the 2016-

2017 PARCC. Based on the extant research, the achievement gap for students of low socioeconomic status has been and remains a major problem in our educational system with little to no improvement. Huang (2015) explained this is (in part) due to the fact that the achievement gap is a societal problem and not an individual one. An examination of the students who are of low social economic status reveal an overwhelming number of minority students who live in impoverished cities and have limited English proficient and non-educated parents. Lam (2014) explained how students in families whose income is less than one half of the poverty level score between 6 and 13 points lower on standardized tests. Considering the societal nature of the problem, a re-appropriation of local, state, and federal funds should be utilized to assist in bridging the achievement gap. Funds can be allocated to support and create systems that assist both the families and students of low socioeconomic status. Programs can include adult education, job assistance, job retention, language acquisition, and social–emotional supports. Student programs should focus on early interventions, language acquisition, and academic supports.

The Wallace Foundation (2012) indicated that recognition of principals has been long overlooked. Although research has confirmed teachers have the greatest influence on student achievement, many studies also validate the influence a principal has as well. A great teacher can make a great classroom, but it also takes a great principal to lead and support the school's vision and mission. Policy implications must support the principal's ability to be an educational leader and must avoid the overconsideration of standardized tests results in the evaluation process. Policy should use multiple criteria, including how teachers are developed and retained and how the principal is meeting the other needs of the school and the unique challenges of the

learning community. Policies need to address principal preparation and building capacity in key leadership areas that have the greatest impact on student achievement.

The NAESP has developed a policy platform around eight research-based recommendations to provide quality preparation, capacity-building, and meaningful evaluation. Federal and state policy makers should consider the following:

1. Acknowledge the core competencies of effective principals.
2. Develop comprehensive, fair, and objective principal evaluation systems.
3. Develop accountability systems that include growth models and multiple measures.
4. Hold principal preparation programs to common high standards.
5. Insist on standards-based certification, induction, and mentoring.
6. Invest in identifying and retaining effective principals.
7. Dedicate ongoing professional development that strengthens core competencies.
8. Strengthen elementary principals' knowledge of early childhood education.

Recommendations for Administrative Practice

Bottoms & Schmidt-Davis (2010) reported key leadership factors that improve student achievement and graduation rates. One of the three essential elements to improve in substantive ways and supports at-risk students included principal practice.

Based on the findings of this study and the extant literature, socioeconomic status is the strongest predictor of achievement. Therefore, principals of schools with a high percentage of free and reduced lunch students should keep in mind the leadership constructs that are necessary in order to best support the students and community, as well as keeping the staff motivated. According to deAngelis (2014):

> Schools, particularly in lower socioeconomic areas, must assess the needs of their communities and provide services that help address those requirements. Marketing plans that reach out to the parents of students through community efforts requires a change in thinking about the population being served. (p. 197)

Part of this change in thinking is effectively utilizing available resources and personnel through distributive leadership. A distributive leadership approach, where the principal and key stakeholders work collaboratively in moving the school's vision and mission forward, better allows for continuity in the event of a leadership change (Louis et al., 2010).

Building relationships where there is alignment to the vision allows for an expansion of available resources, talent, and experience. Principals who engage in distributive leadership, work closely with teachers and support their instructional methods and modifications of the curriculum and instructional approaches. Furthermore, the closer principals are to the happenings of the classroom, the more aware they are of the resources and materials needed to support instructional efforts.

In order for a principal to have this in-depth look into the classroom, frequent observations of practices and instructional methods are required. Getting into classrooms should be a daily occurrence, followed up with feedback on instructional methods and techniques. These frequent visits and follow-ups enable principals to better understand the instructional approaches being used by the staff, students' progression toward grade-level standards, and the daily constraints the teachers may be faced with.

Principals must utilize student and staff data to drive both professional development and instruction. Instruction is maximized and personalized when student performance data are disaggregated and examined. Principals must ensure that time is scheduled where teachers are

able to evaluate and monitor students' progress and lead staff efforts in designing focused and tailored instructional approaches that meet the special and specific needs of students. Observation and evaluation data, students' progress data, as well as teacher input and needs must also guide professional development that is focused on teachers' instructional skills.

Recommendations for Future Research

The following recommendations for further research can be made based on the present study's findings and limitations.

1. This study was limited to principals in New Jersey middle schools consisting only of Grades 6, 7, and 8. Perhaps future research could examine principals in different school configurations, including elementary (K–5/K–8) or high school (9–12) to see if principal longevity has a statistically significant impact on student achievement in these school configurations/grades.
2. The sample used in this study only examined one year of data from PARCC. Since multiple years of data will be available in future years, future studies should include multiple years of data. The study could be replicated to examine the relationships over time or other such determinant.
3. The study was limited in its use of the 2016-2017 PARCC as the instrument of measure. Perhaps future research can look at an alternate instrument of measure (HSPA/SAT).
4. This study was quantitative in nature. Perhaps future research can look at principal behaviors over the course of a school year from a qualitative or mixed methods study. The increase in the data would provide for a deeper examination of the research questions.

5. This study utilized nine predictive variables that the research has identified as strong predictors of student academic success. Perhaps future research can look at alternative predictive variables and how they affect student academic success.
6. Future studies of this topic should consider a principal's previous experience.
7. This study focused on the principals' tenure total. Perhaps future studies could be conducted by regrouping the principals' years of experience into bands. This may provide insight into how (if at all) the principal affects achievement at various points in their career.
8. A replication of this study may consider performing a separate analysis based on socioeconomic strata (i.e., poor, middle class, and affluent). This type of analysis could possibly mitigate the strong influence that the socioeconomic status variable has on an aggregate analysis of all school districts across all SES strata.
9. A replication of this study may consider using the variables principal experience in school and principal experience in school district as moderating variables in a multiple regression and/or hierarchical multiple regression analysis, where student academic performance serves as the outcome variable.

Conclusion

The Every Student Succeeds Act (ESSA) was signed into law December 10, 2015, putting an end to the No Child Left Behind Act (NJDOE, 2016). The new law provides recognition for the principal role and is requiring states to put principal recruitment, preparation, and professional development in place. Currently, The Interstate School Leaders Licensure Consortium (ISLLC) provides principals with measureable standards. However, current support

and evaluation systems for principals do not always map back to the standards (Sun, 2011). According to Sun (2011), states will be required to:

- Draft new accountability systems based on multiple measures that include factors other than test scores.
- Conduct needs assessments for struggling schools and learning communities facing the greatest challenges in order to tailor support and intervention when needed.
- Develop clear and concise plans for targeting federal funding in ways that meet the needs of students in the school.
- Implement programs and monitoring their progress in collaboration with educators.

The expansion of these determinants for "success" will only elevate the expectations and pressures of the modern day school principal. Furthermore, these expectations increase the areas in which they will require expertise. Having a leader in place for enough time, where he or she is properly supported with professional development is essential in meeting these tougher requirements and ensures greater longevity. Without the proper supports and time, principals will not be able to develop their own skill set and/or fully establish a school's culture of success.

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