RELATIONSHIPS AMONG PRINCIPALS' BELIEFS ABOUT DATA-DRIVEN DECISION MAKING, PRINCIPAL AND SCHOOL CHARACTERISTICS, AND STUDENT ACHIEVEMENT IN ELEMENTARY SCHOOLS

By

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This dissertation is dedicated to my husband, my children, and my mother. I also dedicate this endeavor to the many people whose collective efforts both large and small have shaped my life, allowing me to fulfill a life goal set twenty-seven years ago.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

RELATIONSHIPS AMONG PRINCIPALS' BELIEFS ABOUT DATA-DRIVEN DECISION MAKING, PRINCIPAL AND SCHOOL CHARACTERISTICS, AND STUDENT ACHIEVEMENT IN ELEMENTARY SCHOOLS

By

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The role of the elementary school principal has changed as a result of increased accountability requirements, and principals have embraced data-decision making in order to make more informed decisions regarding student achievement. Much of the available research regarding the use of data-driven decision making has addressed its use by teachers to improve instruction. Less research focuses on its use by principals to effect student achievement. The purpose of the study was to examine the relationships among principal characteristics and school demographics, principals' beliefs about the use of data-driven decision making, and student achievement. Specifically the intent of the dissertation was to determine the mediating effects of data-driven decision making on student achievement.

This census study addressed principals at public elementary schools within the state of Florida. The quantitative study utilized a web-based survey of principal beliefs about data-driven decision making. The student achievement data examined through the study utilized 2008 FCAT and NRT tests for Florida elementary schools. A series of multiple regression analyses were conducted to determine the relationship between the antecedent, outcome, and proposed

meditational variables. Results showed that the principals' beliefs regarding the use of data-driven decision making do not act as a mediator for student achievement.

The results of the study indicated that principals' in Florida elementary schools believe in the use of data-driven decision making within their schools, and they believe that the quality of the decision making within their schools has improved through its use. The results of the factor analysis indicated that four key constructs were present in Florida schools; beliefs regarding the use of data-driven decision making by teachers to affect student achievement, beliefs regarding data-driven cultures, beliefs regarding the systems that incorporate data-driven decision making, and beliefs regarding collaboration among teachers using data-driven decision making. A strong negative correlation was found between the number of students on free and reduced lunch and student achievement.

CHAPTER 1
INTRODUCTION AND OVERVIEW OF THE RESEARCH

Introduction

> I believe that the transforming movement that raises the serving quality of any institution, large or small, begins with the initiative of one individual person- no matter how large the institution or substantial the movement.--Robert Greenleaf, 1980, p. 3

On January 2, 2002, President Bush signed into law the No Child Left Behind Act of 2001 (U.S. Dept. of Ed., 2001). This act was to precipitate massive changes in the field of education, particularly in the leadership role of the public school principal with respect to school accountability and achievement for all children (Lunenberg and Ornstein, 2004). Seven years later and nearly half-way to the 2014 deadline mandating proficiency for all students on state standardized tests, the role of the principal has changed, yet improvement in student achievement is questionable (Darling-Hammond, 2007). It is important for educators not only to develop an understanding of how the role of the principal has changed, but also to determine whether or not these changes are related to an increase in student achievement for elementary school students.

One of the changes adopted by many school principals is the use of data-driven decision making as part of school leadership. Questions emerge as to the extent to which public school principals are using these skills and whether or not the use of data-driven decision making practices affect student achievement.

School Accountability

School accountability has been a political issue for the past twenty-five years, but the focus on student mastery of standards and improved academic performance for all students has grown exponentially since the turn of the century and the implementation of the NCLB Act in 2002. Under NCLB, the Federal government expanded its control, tying funding to student achievement. Public schools are required to demonstrate adequate levels of student proficiency if

they are to receive resources and funds from the Federal government (U.S. Department of Education, 2001). Under NCLB, schools are required to report student academic achievement as measured through standardized testing for a variety of racial and economic subpopulations as well as for students with disabilities. Schools are also obligated to meet state standards for academic improvement in math and reading.

To meet the needs of students and to comply with the requirements of NCLB, public schools in the state of Florida have enacted a series of reforms designed to improve academic achievement in reading and math. Standards will only be met when schools provide an academic environment focused on meeting the needs of students, improving instructional practices by teachers, providing safeguards that ensure success for all students, instituting practices for feedback and assessment, developing relationships with key stakeholders, and corrective action and problem solving (Darling-Hammond et al., 1993). Much of the reform effort in the state of Florida has manifested itself through the school improvement plan, a plan which must be developed, implemented, and monitored in every public school on a yearly basis.

Role of the Public School Principal

A significant portion of the burden for school accountability has fallen on the shoulders of the public school principal, the person who is most visible to the general public. In order to support the increased focus on accountability, the role of the principal has evolved to include that of leader, mentor, learner, politician, supervisor, advocate, and manager (Matthew and Crow, 2003). Gone are the days of the principal, who sits in the office, supervising employees and monitoring the day to day operations of the school. The successful elementary school principal takes an active role with respect to the foremost business of the school, that of educating students. Michael Fullan identifies the school principal as a “change agent” (Fullan and Striegelbauer, 1991). The many roles of the elementary school principal represent a change in

focus from management of school operations to that of a school reformer responsible for designing an academic environment that meets the needs of all students regardless of their background, abilities, or current level of performance.

How exactly does one create an academic environment that meets the needs of all students? There is a great deal of research that supports a variety of activities and conditions that are present in successful schools. Educational experts support implementation of a variety of strategies including building partners with family and community members, professional learning communities, collegiality, shared-decision making between administration and faculty, action research, targeted professional development, and a positive healthy school culture (Peterson and Deal 1999; DuFour, 2004; Reeves, 2004; Schmoker, 2003; Marzano, 2003). Others support the use of common assessments, formative assessments, goal setting, student-centered learning, teamwork, and student progress monitoring (Reeves, 2004; Schmoker, 2003; Marzano, 2003; Stiggins, 1999). In order to provide the appropriate leadership and balance for all of these many activities, the principal must also be able to engage in systems thinking (Senge, 1990).

NCLB specifically requires that the principal "have the skills to help teachers teach and students learn." (U.S. Dept. of Ed., 2001). As part of the effort to improve student achievement, principals are now taking a more active role in managing and monitoring classroom activities. In order to meet the challenges of NCLB, principals are expected to strengthen their role as the instructional leader of the school. As the instructional leader, the principal seeks to emphasize doing the right things correctly, including acting as a resource provider, instructional resource, communicator and visible presence (Smith and Andrews, 1989). As an instructional resource the principal provides specific classroom support to teachers by modeling instructional behaviors

and supporting staff development and the instructional concerns of teachers (Marzano, et al., 2005). As active instructional leaders within the school, the principal provides resources, including instructional materials, teaching tools, equipment and facilities (Marzano, et al., 2005). As the instructional leader, the principal communicates the vision of the school, focusing efforts in support of that vision (Marzano, et al., 2005). The principal monitors student performance and alignment with curriculum. According to Richard Elmore, the principal should also understand the effective practices that enhance curriculum, instruction, and assessment (Elmore, 2000).

Data-Driven Decision Making

As principals continue to strengthen their role as the instructional leader of the school, many turn to the use of data-driven decision making as a mechanism for understanding strengths and weaknesses within their school. They seek to make informed decisions based on actual data, rather than on intuition. At the school level, they may seek to evaluate the school at a higher level, analyzing the culture, programs, operations, facilities, and staff. Victoria Bernhardt (1998) postulates that we must first look at the system that produces results, and then make adjustments that "focus on continuous systemic improvement" (p.13). Bernhardt identifies four domains of information that should be collected and analyzed in order to create a complete assessment of the school. These four domains are student demographics, perceptions, school processes and student learning. For Bernhardt the emphasis is on improving student achievement, but she recommends doing this by looking at the big picture of the school, the interrelationships between the four domains, and the details within each of the four domains.

With respect to student performance, data-driven decision making represents a systematic method of collecting student data so that administrators, teachers and parents can accurately assess student learning. They can then make decisions based on the data to improve administrative and instructional systems so as to continually promote student achievement.

Educational leaders such as Douglas Reeves (2004), Richard DuFour (2004), Michael Schmoker (1999), Robert Marzano (2005), and Richard Stiggins (1999) all emphasize using data to establish baselines, set goals, conduct assessments, and adjust instructional practices in order to achieve desired results. According to Sylvia Mendez- Morse (1991), "when principals use data about trends in students' performance to adjust the curriculum or instructional practices being used, instruction is maximized." (p.5).

Statement of the Problem

Because of the increased emphasis on school accountability, the role of the principal has evolved over the past seven years. As the principal's role becomes more complex and s/he becomes more actively involved in setting goals, monitoring student progress, promoting professional learning communities, providing opportunities for collaboration and professional development, and influencing classroom instruction and alignment of curriculum with standards, the need to use data-driven decision making practices also becomes more pronounced. Much of the available research about the relationship between data-driven decision making and student achievement is qualitative in nature. There are a few studies that target the principal's use of data-driven decision making, but these do not address the role of the elementary school principal nor do they focus on the use of both FCAT SSS and FCAT NRT data. In addition, this study also supports existing research regarding the changing role of the principal as a result of NCLB.

During the past twenty years there have been several quantitative studies that address the relationship between principals' characteristics and student achievement (Halinger and Heck, 1996). An analysis of these studies indicated that those studies that utilized a mediated-effects model showed a more positive effect. The Baron and Kenny (1986) model presents a framework for testing the effect of a mediating variable on the outcome variable.

Purpose of the Study

The purpose of the study was to examine the relationships among principals' characteristics and school demographics, principals' beliefs about the use of data-driven decision making, and student achievement. Specifically the intent of the dissertation was to determine the mediating effects of data-driven decision making on student achievement.

Question 1: What are the beliefs held by elementary school principals in Florida with respect to data-driven decision making?

Question 2: Do Florida elementary school principals' beliefs about data-driven decision making mediate the effect of principal characteristics and school demographics on student achievement?

Research Hypotheses

Hypothesis 1: Principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, percentage of students on Free and Reduced Lunch) are related to the principal beliefs about data-driven decision-making.

Hypothesis 2: Principals' beliefs about the use of data-driven decision making skills are related to student achievement.

Hypothesis 3: Principals' beliefs about the use of data-driven decision making skills mediate the relationship between principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, percentage of students on Free and Reduced Lunch) on student achievement.

The Baron and Kenny (1986) model presents a framework for testing the effect of a mediating variable on the outcome variable. Each of the hypotheses test a step identified in the Baron and Kenny Model. The first hypothesis tests step one in the model. It measures the effect of data-driven decision making (the mediating variable) on school demographics and principal characteristics (the antecedent variables). The second hypothesis seeks to measure the relationship between data-driven decision making (the mediating variable) and student achievement (the outcome variable). The last hypothesis regresses student achievement (outcome

variable) on both principal characteristics and school demographics (antecedent variables) and data-driven decision making (the antecedent variable).

Instrumentation

This study used the Statewide Data-Driven Readiness Study Principal Survey developed by Dr. Scott McLeod (2005) at the University of Minnesota. The study was conducted through a combination of a web-based survey for the initial contact and a follow-up mail survey to non-respondents in order to gain a self-report by principals regarding their beliefs about data-driven decision making.

The measurement of student achievement data utilized scale scores for third, fourth, and fifth grade FCAT and NRT data for reading and math for the 2007-2008 school year, grouped by school and grade level for each year.

Definition of Terms

The following definitions were used as part of this study.

Adequate Yearly Progress (AYP) is the Federal government rating system for public schools and it can be achieved in the state of Florida when a school meets all 39 criteria.

Collegiality is a condition where teachers respect each other's abilities, share methods and techniques, and work together to improve student learning.

Data-driven decision making is the use of data to make informed decisions with respect to student progress rather than relying on intuition or incomplete data.

Florida Comprehensive Assessment Test SSS (FCAT SSS) is a criterion-referenced test that is designed to assess mastery of the Florida Sunshine State Standards.

FCAT Comprehensive Assessment Test NRT (FCAT NRT) is a norm-referenced test (based on the SAT-10) that classifies or ranks students against their peers throughout the nation.

Formative assessment occurs when feedback from the learning activity is used to adjust teaching to meet the student's needs.

Instructional leadership is represented through those practices used by the principal to improve student learning. They include allocating resources, establishing clear goals and objectives, monitoring instruction and lesson plans, aligning instruction to the curriculum and providing teacher support and evaluation.

Professional Learning Communities are organizations that promote teacher collaboration, peer observation, action research and study groups, a focus on student learning, and a commitment to continuous improvement.

School accountability is the requirement for schools to be responsible for teacher and administrative actions and their effect on student achievement. It includes the requirement to report, explain and be answerable for success or failure of school operations.

School culture is represented through the shared values, beliefs, priorities, expectations, rituals, and norms through which a school manifests itself.

Systematic progress monitoring occurs when teachers and administrators regularly to assess students' academic performance on a regular basis.

Delimitations and Limitations

Delimitations

- The sample was limited to elementary school principals in public schools that support pre/kindergarten through fifth grade.
- The study incorporated the use of FCAT SSS and FCAT NRT test data for grades three, four, and five in reading and math in public elementary schools in Florida

Limitations

- The study was limited to public schools and public school administrators in Florida. Specifically the sample was limited to elementary schools that teach grades prekindergarten or kindergarten through grade five. Magnet schools and charter schools were not included in the study.
- There was no provision for open-ended questions or input on the survey.

Significance of the Study

There is a growing body of research supporting the changes in the role of the principal in the elementary school. Much of this research focuses on the role of the principal as the instructional leader or his/her influence on school culture, professional development activities, and school improvement. There is very little research that supports the relationship between the principals' beliefs about the use of data-driven decision making skills and student achievement. Findings from this study provide additional insight to the degree of use of data-driven decision making practices by principals and the potential effect on student achievement. It also

contributes to the growing body of literature surrounding the changing role of the principal in public schools as evidenced by the use of specific data-driven decision making skills.

Because data-driven decision making is currently a popular topic, there is a wealth of literature, but little research to support the effectiveness of its use by principals. Much of this literature focuses on the use of data-driven decision making by teachers and the need for formative assessment, progress monitoring, professional learning communities, and collaboration between administrators, teachers, family members, and the community. Research that focuses on its use by administrators to effect change in student achievement is less available.

Summary

As the deadline for 100% proficiency for all students under NCLB looms ever closer, the pressure to improve student achievement becomes greater. Supovitz and Klein (2003) suggest that only when we use systematic data analysis to support student achievement will we begin to meet our goal of improved learning outcomes for all students. Educational leaders who truly understand the structure of schools and the needs of our students embrace the use of data-driven decision making practices.

Chapter 2 provides a review of the literature surrounding the use of data-driven decision making by principals and how its use can affect student achievement. Also discussed are the standards and competencies for principals that relate to data-driven decision making. Finally, the chapter provides additional information about the accountability requirements, including the use of standardized testing in the state of Florida.

CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

Chapter 1 provided an overview of the study, including a statement of the problem, the significance of the study, and the associated research questions. The purpose of the study was to determine the relationship between principal characteristics, school demographics, and student achievement in relation to the principals' beliefs about the use of data-driven decision making skills. Chapter 2 continues with a discussion of school accountability and its effect on the leadership practices of school principals. The chapter discusses the role of the principal as the instructional leader and the associated need for data-driven decision making within schools. Key attributes of data-driven decision making are also presented within the chapter. Also included in the chapter are key principal leadership studies that address the relationship between the principal and student achievement. Studies that review the principal's use of data-driven decision making and student achievement have also been included. Finally the chapter will close with a review of the research that supports the constructs set forth in the study and a discussion of the potential issues associated with research models that analyze the influence of the principal on student achievement.

Accountability

In 1983 the National Commission on Excellence in Education published A Nation at Risk (National Commission on Excellence in Education, 1983). The report implied that the public education system in the United Sates was failing to meet the needs of corporate America. The commission made thirty-eight recommendations, including 4 years of English, 3 years of mathematics, 3 years of science and one-half year of computer science for high school students; the establishment of standards and expectations for all students; standardized testing at key

transitional levels; seven hour school days in a 200-220 day school year; teaching standards; and programs to support the gifted, socio-economically disadvantaged, minority and language minority students and handicapped. Nearly twenty years later, President George W. Bush's education agenda was approved and implemented. The new agenda for education included testing and school accountability mandates, placing the focus on curriculum and instructional practices. The No Child Left Behind Act of 2001 (U.S. Department of Ed., 2001) ties Federal funding to accountability for results in student achievement. The NCLB Act requires that states test students against state standards in reading, science, and math (U.S. Dept. of Ed., 2001).

Educational experts supported the call for accountability, but focused on the underlying needs of students and teachers within the schools rather than standardized testing. As early as 1993, Linda Darling-Hammond and Jon Snyder called for schools to develop "learner centered accountability" to put in place instructional practices and systems that support feedback and assessment in order to keep students from falling through the cracks (Darling-Hammond and Snyder, 1993). In 1998, Black and Wiliam conducted an analysis of 280 research articles, identifying the need to use formative assessment to raise standards of achievement (Black and Wiliam, 1998). Richard Stiggins advocated placing an emphasis on assessment *for* learning rather than assessment *of* learning, and the resulting access to more frequent evidence of student mastery of standards (Stiggins, 1999). While assessment of learning focuses on meeting accountability requirements, assessment for learning seeks to use assessments to promote additional learning by actively involving the student in the process. Instead of focusing on standardized test results alone, educational experts suggested that schools should focus on developing a "holistic accountability" that emphasizes teacher practices, assessment, feedback and collaboration, curriculum, and leadership (Reeves, 2003). A more productive approach for

student accountability would be to develop world-class standards, curricula, and assessments that help to improve teaching (Darling-Hammond, 2007). Another approach proposed by Willard Daggett is the use of data to provide a more rigorous and relevant curriculum (Daggett, 2000).

Accountability involves acceptance of responsibility for student learning by all school staff. In 2005, Kannapel and Clements identified eight items that are an integral part of the culture for high poverty high performing schools. They include a belief that all students can learn, collaboration across the school setting, teacher acceptance of responsibility for success of failure, school, staffing, communication with parents, a caring staff, ongoing assessments that contribute to individualized instruction, and a curriculum that is aligned with instructional practices and assessments (Kannapel and Clements, 2005).

Use of Standardized Testing in Florida

The state of Florida meets the requirements set forth by the Federal government and NCLB by conducting two types of standardized testing for public school students in grades three through ten in reading, mathematics, science, and writing; criterion-referenced and norm-referenced. The purpose, structure, scoring method, and content are different for each of the two tests. The school grading system for the state of Florida is based on a criterion-referenced test, and the test results are used to determine school grades (Florida Dept. of Education, 2005). Additional funding is provided to schools that meet state requirements and receive an “A” on the school report card.

The Florida Comprehensive Assessment Test of Sunshine State Standards (FCAT SSS) is a criterion-referenced test designed to assess mastery of the Florida standards for excellence in education (Florida Department of Education, 2005). The FCAT SSS compares student performance against a predetermined performance level. Students are scored at levels one through five. A score of level one indicates that the student has not mastered the state standards.

Students with scores of level three through five are considered to have mastered the standards to an adequate level or greater.

The second standardized test used in the state of Florida is the FCAT NRT, a norm referenced test that is used to classify or rank students against their peers throughout the nation. In 2005, Florida adopted Stanford 10 which was developed by Harcourt Assessment, Inc.

The Stanford 10 is aligned with both state and national standards. Test items are classified either as basic understanding or thinking skills. About 15-20% of the Stanford 10 questions fall into the basic category that emphasizes simple recall and identification. The remainder of the questions target thinking skills such as analyzing, synthesizing, classifying, sequencing, compare and contrast, evaluation, predicting, hypothesizing, and drawing conclusions (Florida Dept. of Education, 2005).

Principal Leadership

One of the goals of the NCLB Act of 2001 is to increase accountability for school principals. The publication of school data via the school report card and the Adequate Yearly Progress (AYP) report provides parents and community members with insight into a school's progress with respect to student achievement for all subpopulations. The school report card profiles progress based on student performance and growth over a year's time in math, reading, science, and writing. The AYP report specifies the school's progress based on 39 criteria. School data is disaggregated based on racial affiliation, socioeconomic status, and classification as a student with a disability. The principal is responsible for disseminating this information to parents and key stakeholders.

According to the U.S. Department of Education, principals are responsible for program selection, curriculum, arrangement, professional development, and allocation of school resources (U.S. Department of Education, 2001). Specifically the law states that principals must have "the

instructional leadership skills to help teachers teach and students learn," and "the instructional leadership skills necessary to help students meet challenging state student academic achievement standards" (Title II, Section 2113 (c)). Because the principal is the primary administrator at the school level, the principal becomes the primary focus for public scrutiny. This visibility has contributed to the changes in the role of the principal which has evolved during the past twenty years to become that of leader, supervisor, manager, mentor, learner, advocate and politician (Mathews and Crow, 2003).

The increased complexity of the principal's role and the increased accountability has intensified the need for the principal to become a master of change. The words of Joel Barker (2005) are particularly true with respect to public schools in America, "No one will thank you for taking care of the present if you have neglected the future." Jerry Patterson (1993) argues that leadership is about changing and that school changes should include an openness to diversity, active participation, learning from mistakes, controversy, and delegation . The school principal acts as a change agent (Fullan and Striegelbauer, 1991) where "change is a process, not an event" (Fullan, 2001, p.5). According to Fullan (2001), real school change is nearly impossible because the system itself is reluctant to change and there are no definitive answers to its problems and dilemmas. Successful school leaders view change as opportunities, balancing the relationship between the group and the individual, and always understanding that change cannot be mandated because it must be internalized at the local level (Fullan, 2001). It is important for school leaders to practice the five disciplines for creating a learning organization within the school, that of personal mastery, shared vision, mental models, team learning, and systems thinking (Senge, 1990).

Professional Learning Communities

School leadership must embrace change by creating and supporting professional learning communities that are focused on mission, vision, and continuous improvement; results-oriented; and collaborative in nature (DuFour, 2003). The professional learning community offers a vehicle through which to effect maximum change, and principals must evaluate the extent to which students are learning the intended outcomes and how they are giving both students and teachers the support necessary to improve learning (DuFour, 2002). Richard DuFour (2004) defines a professional learning community as one where teachers work together to answer three key questions: 1) What do we want students to learn? 2) How will we know when each student has learned it? and 3) How will we respond when a student experiences difficulty in learning? Organizations that use the professional learning community approach promote teacher collaboration, peer observation, action research and study groups, a focus on student learning, and a commitment to continuous improvement. Teachers have a clear sense of the mission and vision for the school, and they share beliefs and values. They are life-long learners who are results-oriented. In order to develop clear answers to the questions, teachers must be able to set goals and assess student progress. Through collaboration they are able to adjust instruction to better support the needs of the students. As results-oriented life-long learners, they are able to seek out new methods and ideas in order to meet their students' learning needs. Finally, Michael Schmoker (2006) writes that learning communities must be more rigorous, and must meet regularly in order to be effective. For schools to be successful school administrators must ensure that teachers teach the same standards during the same time period using the same assessments (Schmoker, 2003).

The Principal as the Instructional Leader

Peterson and Deal (1999) argue that the role of the principal has changed from that of manager to visionary. Principals must act as a guide and a coach for professional development, a manager who provides time and resources, and an instructional leader; and they must also inspire collaboration. As visionary leaders principals must create a connection to others through a shared vision and be able to adapt to extreme pressures for change (Bennis, 2003).

Research shows that the teacher is the single most important factor that affects student achievement (Marzano, 2003). Teacher effectiveness is influenced by their choices in instructional strategies, the ability to design effective class curriculum, and their classroom management skills (Marzano, 2003). Therefore, it is critical that the principal take an active role in maximizing the instructional capacity within the school, focusing on their role as that of instructional leader. Principals who promote instructional leadership understand that effective teaching practices affect the curriculum, instruction and assessment (Elmore, 2000). As the instructional leader of the school, the principal is responsible for monitoring the use of instructional techniques, delivery of the curriculum, and classroom management techniques (Marzano, 2005). As the instructional leader, the principal must also take an active role in the implementation and monitoring of the curriculum (Schmoker, 2005). Smith and Andrews (1989) identified four key roles that the principal plays with respect to teachers: (1) resource provider, (2) instructional resource, (3) communicator, and (4) visible presence.

As an active instructional leader, the principal models instructional behaviors and supports staff development (Marzano et al., 2005). They make curriculum and instructional changes that maximize student learning (Schmoker, 1999). According to Reeves, principals can maximize instruction by providing focus, refining strategic planning, and creating an environment that supports “holistic accountability” or the systematic monitoring of instruction,

curriculum, and leadership (Reeves, 2003). As an instructional leader responsible for accountability, it is critical that the principal focus on teaching, leadership, curriculum, and parent involvement (Reeves, 2004).

Principal Leadership and Data-Driven Decision Making

The use of data to support and influence decision-making has been a key component of sound business practices for centuries, certainly in the United States since the days of Frederick Taylor in 1881. Only recently have school administrators attempted to consistently apply its use in educational environments. Data-driven decision making represents a system of data-driven practices designed to collect and interpret information necessary to make informed decisions (McLeod, 2005). These data-driven practices can be used to address not only issues related to student achievement, but also other school management issues associated with running a school. From a school administrator perspective data-driven decision making represents a tool which can be used to shape school improvement, growth, and change.

As part of the role of instructional leader, the administrator must also influence teachers to use data to refine and adjust teaching practices, resulting in improved student performance (Schmoker 2005; McLeod, 2005). School leaders must develop and use effective strategies for data collection and analysis, and must help teachers to understand and work with data to improve learning in the classroom (Creighton, 2007).

Another perspective for principal leadership is represented by Panettieri (2006), who identifies five important means for implementing data-driven practices. In addition to data collection, a school wide emphasis on outcome assessments, progress monitoring and feedback, and teacher ownership of outcomes, successful data driven decision-making relies on the administrator's ability to build a learning organization. According to Joe Kitchens (2005), one of the most important factors is to provide teachers with real time access to student data. One must

ensure that the technology is integrated, allowing teachers and administrators to use the data to predict AYP, and make adjustment during the year to intercede. The emphasis should be to "leverage data to drive ongoing student improvement."

Barriers to Successful Data-Driven Decision Making

Educational leaders have also determined several barriers to successful data-driven decision making. A recent study by Ingram (2004) identified five major areas of concern for teachers. The first barrier was a mistrust of the data by both teachers and administrators. If data-driven practices are not a part of the school culture, this distrust is more likely to occur. Time and resources always have an effect on the ability to affect change. Teachers also indicated that they needed more professional development in order to effectively use data-driven decision making. The lack of consistency for measurement was also a concern. Teachers also felt that it took too much time to collect and analyze information in order to make decisions. Perhaps the most interesting barrier identified by Ingram was teacher efficacy. Many teachers still believe that learning is the responsibility of the student, and that teachers are only responsible for instructional delivery.

Felix (2005) suggests that teachers are also affected by a lack of training, but her research also identified several other barriers that affect a school's ability to continuously improve. They are interoperability of data systems, an absence of clear priorities, outdated technology, a failure to collect data uniformly, low quality data, lack of training for data collection, and a perception that data-driven decision making is too complex. She recommends that schools use teams to assist with implementation. She also emphasizes the importance of administrative leadership to ameliorate poor conditions.

The Relationship Between Data-Driven Decision Making and Principal Leadership

There are several studies that address the relationship between data-driven decision making and principal leadership. Jonathan Supovitz and Valerie Klein (2003) conducted a study addressing the use of student performance data to influence school improvement. Several leadership attributes came out of the study. They stated "While examples of inventive data use came from both formal and informal leadership within the schools we examined, in most cases, the principal was the driving force behind strong data use…the principals' constant emphasis on data that turned the data from numbers on a page into action in the classroom." (Supovitz & Klein, 2003, p. 36).

Specifically, there are several dissertation studies that address the relationship between principal leadership and student achievement. The results of these studies are mixed.

For her dissertation study, Dr. Carla Van Fossen Mathews (2002) conducted a qualitative study of six middle school administrators in Virginia. The purpose of the study was to determine how administrators reacted to an identified need for change based on data, what influenced their decisions, and how they assessed the decisions that were made. Results indicated that the administrators who participated in the study reacted positively to the data and need for change. When made aware of the need for change, the principals became aware of the other problems that influenced the need, and they began to collaborate with team members and to create systematic processes in order to effect change. One interesting result of the study is that principals do not always follow through to assess their decisions.

Dr. Cathryn Anderegg (2007), a student at Pepperdine University, studied the use of data-driven decision making practices for teachers and administrators in the state of Alaska. She also explored the effect of staff development on both teachers and administrators. She concluded that although teachers and administrators continue to focus on intuition to make decisions, 91% of

school administrators analyze data to make policy and program decisions. She also concluded that teachers who have had annual staff development in data-driven decision making are more likely to engage in collaborative activities. They benefitted from the ongoing support from their peers, and worked more close to assess results and plan interventions.

In a study of principal perceptions regarding implementation of professional development for educational reform, elementary school principals reported a greater incidence when reviewing and analyzing student work and building partnerships for learning (Patten, 2006). Dr. Leanne Bettesworth (2006) at the University of Oregon conducted a mixed-method quasi-experimental study of the effect of staff development in statistics on the use of and efficacy for data-driven decision making for administrators. Three seminars were given to thirty-one participants in the study. Each module included a pretest, PowerPoint presentation, practice, and a post test. Results indicated that administrators did learn how to use data as part of the decision-making process, but that their confidence was low. The lack of confidence affected efficacy, limiting the overall use of data-driven decision making.

Recently Sluser (2006) at Montana State University conducted a survey studying the relationship between the administrator use of data-driven decision making and student achievement in high school mathematics. Results of the study indicated that Montana school administrators who participated in the study had a higher perception of their ability to engage in data-driven decision making. However, results did not support any significant relationship between student achievement and the use of technology for data-driven decision making.

In another dissertation study, John Arnold (2007) conducted a quantitative study in South Carolina examining the relationship between the school's capacity to use data-driven decision making and student achievement. The data for the study included 267 survey responses from

middle school principals. Specifically the study was designed to determine if there was a relationship between the data-driven decision making and improvement in student achievement. Student data used for the study was represented through the 2006 Absolute and Improvement Indices and report card data. Results of the study showed a weak, yet significant correlation between the school capacity to use data-driven decision making and student improvement.

Finally Susan Hutton (2007) conducted a quantitative study comparing Virginia principals' use of student achievement data in the decision making process. Electronic survey responses for 452 principals were analyzed and compared with current literature. Hutton's study resulted in four data-driven decision making domains including analyzing data, reporting and communicating through data, using data for school improvement, and creating a data-friendly culture.

Principal Leadership Standards

The National Association of Elementary School Principals (NAESP, 2004) incorporates the use of data into its standards for instructional leadership for elementary school principals. Standard Five requires the use of multiple sources of data as diagnostic tools to assess, identify and apply instructional improvement. The suggested strategies include use of a variety of data sources to measure performance, analysis using a variety of strategies, using data as tools to analyze student weaknesses and make adjustments to instruction, benchmarking against other schools with similar demographics, and creating a data-driven school environment. Other organizations that have created similar strategies include American Association of School Administrators (AASA, 2004) and the Interstate School Leaders Licensure Consortium (ISLLC, 1996).

Florida Principal Leadership Standards

The Florida Principal Leadership standards focus on the principal as the instructional leader and the use of data for effective decision making. These standards measure performance of principals at three levels; entry level principal, effective principal, and high performing principal. The ten standards include vision, instructional leadership, managing the learning environment, community and stakeholder partnerships, decision making strategies, diversity, technology, learning accountability and assessment, human resource development and ethical leadership, and their effects on continuous school improvement and student achievement (Florida Dept. Of Education, 2005)

With respect to data-driven decision making, the Florida Standard 8.0 Learning, Accountability, and Assessment comes closest to supporting these practices. Specific standards for entry level principals include the following:

- 8.1 Uses data to assess and monitor school improvement
- 8.2 Uses multiple sources of data to inform decisions and improvement processes
- 8.3 Monitors and assesses student progress
- 8.4 Monitors and assesses the progress of activities
- 8.6 Develops and demonstrates skills in evaluating instructional strategies and materials
- 8.7 Understands how to use diagnostic tools to assess, identify, and apply instructional improvement
- 8.8 Works with staff to identify strategies for improving student achievement appropriate to the school population

Chicago Competencies for Data-Driven School Improvement

All of the above practices also support the Chicago Competencies for data-driven school improvement identified by the Chicago School district and Dr. Scott McLeod (2005). Although still in the preliminary stages of development, these standards identify particular data-driven

practices for school administrators in the domains of essential concepts, collecting and analyzing summative assessment data, setting measurable goals, collecting and analyzing frequent formative assessment data, making changes, data transparency and safety, technology, and alignment for results. In particular, the Chicago competencies focus on the use of summative data to establish baselines, setting measurable goals, conducting frequent formative assessments, establishing professional learning communities, and making instructional and organizational changes based on formative and summative data (McLeod, 2005). Successful school administrators must also use multiple measures to assess student learning, including the concept of triangulation.

Introduction to Data-Driven Decision Making

When educational researchers address the concept of data-driven decision making, they are most often referring to instructional methodologies, curriculum, and student learning. Educational leaders such as Douglas Reeves, Richard DuFour, Michael Schmoker, Robert Marzano, and Richard Stiggins all emphasize using data to establish baselines, set goals, conduct assessments, and adjust instructional practices in order to achieve desired results (Reeves, 2003; DuFour, 2003; Schmoker, 2003; and Stiggins, 1999).

Data-Driven Decision Making and Instructional Leadership

For administrators the focus is on how they function in their role as the instructional leader for the school and how they influence teachers to use data to refine and adjust teaching practices, resulting in improved student performance. Schools must set goals with supportive feedback and assessment systems (Marzano, 2003). Teachers and educational leaders must be able to analyze and interpret data accurately in order to understand which instructional strategies can address student weaknesses (Schmoker 2003). Schmoker (2005) advocates the use of constructive data analysis from multiple sources, including common assessments. He specifically

suggests analysis of student COHORT data in order to look at school programs, instructional practices, and curriculum. Schmoker (2006) also advocates the teaching of a concise set of standards taught on a relatively common schedule.

Classroom assessments should be used to improve student achievement, self-monitor, reflect those targets that support the standards, promote student success, encourage student improvement, and use success as a motivation for learning (Stiggins, 2003). By conducting frequent assessments, teachers are able to monitor student progress and make adjustments to instruction in order to improve student performance (Reeves, 2006). Safer and Fleischman (2003) emphasize the importance of systematic progress monitoring where teachers measure progress towards goals on a reoccurring basis.

By establishing baseline data and creating measurable goals we are providing the framework for successful data-driven decision making practices. Through formative assessment, teacher collaboration, and professional learning communities we can monitor progress towards these goals. Schmoker (2003) advocates the use of S.M.A.R.T. goals that are specific, measurable, attainable, results-oriented and timely. Marzano (2003) emphasizes the importance of the school's ability to set goals with supportive feedback and assessment systems. "Challenging goals and effective feedback means that a school has a method of assessment that provides detailed information on specific learning goals for specific students on a timely basis." (Marzano, 2003, p. 35).

Data-Driven Decision Making and School Improvement

Victoria Bernhardt (1998) proposes first looking at the system that produces results, and then making adjustments that "focus on continuous systemic improvement" (p.13). Bernhardt identifies four domains of information that should be collected and analyzed in order to create a complete picture of the school. These four domains are student demographics, perceptions,

school processes and student learning. For Bernhardt the emphasis is also on improving student achievement, but she looks at both the broad picture of the school and the interrelationships between the four domains.

Data-Driven Decision Making and Culture

For any change to be effective it must become anchored in the culture of the school (Kotter, 1996). According to Noyce, Perda, and Traver (2003), data-driven practices must become a part of the culture. They suggest that when schools use data to make decisions, there becomes "an institutionalized willingness to use numbers systematically to uncover patterns and answer questions about policy, methods, and outcomes." (p52)**.**

A Model for Data-Driven Decision Making

Dr. Scott McLeod (2005) at the University of Minnesota developed a model incorporating the use of data-driven decision making that encompasses the work of Michael Schmoker (2003), Richard DuFour (2003), and Douglas Reeves (2003). According to McLeod (2005), the five essential components of data-driven decision making include establishing baseline goals, setting measurable instructional goals, conducting ongoing formative assessment, making adjustments to instruction, and implementing professional learning communities. The model also places an emphasis on data safety and transparency in the school setting (McLeod, 2005).

Another perspective is represented by Panettieri (2006), who identifies five important means for implementing data-driven practices. They include data collection, a school wide emphasis on outcome assessments, progress monitoring and feedback, teacher ownership of outcomes, and administrator ability to build a learning organization.

Data-Driven Decision Making Tools

Over the past ten years, a wide variety of tools have been developed to support schools in their quest for data. These tools range from technical tools to ideas and practices that support data-driven decision making .Some of the tools are very expensive computer programs while others utilize simple Excel spreadsheets. According to Joe Kitchens (2005), the most important factor is to provide teachers with real time access to student data. One must ensure that the technology is integrated in such as way that teachers and administrators can use the data to predict AYP, and make adjustment during the year to intercede. The emphasis should be to "leverage data to drive ongoing student improvement." (Kitchens, 2005).

Communicating Through Data-Driven Dialogue

Data-driven dialogue is a tool that can be used facilitate data-driven decision making. It focuses on using both quantitative and qualitative student performance data. According to Kathy Dale (2005), when school personnel communicate using data-driven dialogue, it results in collaborative planning and group problem solving. The process enables group members to develop a shared understanding of problems by utilizing a variety of resources. Leaders and group members analyze data and then reflect and inspect results to identify problems and create solutions. The emphasis shifts from the actual product, a decision, to the process of using information to make a meaningful decision.

Nancy Love (2004) also advocates the use of data-driven dialogue to improve decision-making. She recommends that schools create data teams to review teaching and student learning. Administrators should be able to use data-driven dialogue to facilitate collaboration and inquiry. The process of data-driven decision making promotes the use of data to provide feedback for continuous school improvement, inquiry and data literacy.

Extending Data-driven Decision Making to Data Mining

Data mining is the process of analyzing data to determine the relationships between data and school improvement. It includes uncovering patterns and looking at data through multiple levels. Schools that are successful at data mining are generally successful at using the information to make decisions.

Todd McIntyre (2005) defined three levels for schools who engage in data mining. Stage one schools only collect data in order to meet mandated requirements. Information is stored, but not used. Stage two schools begin to understand how they can benefit from data mining. Schools in this stage begin to use formative assessment in order to support instructional activities. Schools often use information to target those students with the greatest educational needs, those who's passing or failing have the greatest influence on the school grade. For example, a school might use the data to monitor its students in the bottom 30%, and make adjustments to resources and teaching methodologies in order to pass federal requirements. McIntyre makes a key point when he states that "data analysis that focuses on improving efficiency works mostly at the edges of the problem, and eventually the school will pull all of the slack out of the system." (McIntyre, 2005). Schools in stage two focus on meeting the immediate needs of groups of students, but are not looking forward to anticipate individual student needs for the future. As the percentage needed to pass AYP continues to rise, it becomes more difficult to anticipate the needs of students without moving to stage three.

In stage three, schools are able to use data analysis techniques to support ongoing student achievement. In stage three, schools not only focus on the needs of students at the lower quartile, but they are interested in achievement for all students. At this level the school focuses on developing an individual learning profile for each and every student. Teachers work with parents and students to work together to set learning goals, and progress against the goals is monitored.

When the student becomes actively involved in the process of progress monitoring, assessment for learning occurs as well.

NCLB has caused many schools to focus on groups of students, specifically through their subpopulations. Schools in stage three focus on achieving a year's worth or more of growth for all students, regardless of subpopulation or achievement level. A gain in individual student achievement is compared against their expected target, not against the goal for a subpopulation.

Other Data-Driven Decision Making Tools

Data-driven decision making does not require extensive investments in hardware, software, or complex computer systems. It does however require a significant investment in time and resources. According to Dr. Scott McLeod (2005), it is most important to provide teachers with good baseline data. Schools can develop generic data templates that their teachers can use to track student achievement. These templates can be developed using MicroSoft Excel. Dr. McLeod has developed several templates, including formative assessments in math, science, and reading; attendance; discipline; and classroom engagement (McLeod, 2005). It is important to note that spreadsheets can also be used for formative assessment at the classroom and student level as well as to analyze yearly assessment data.

The Annenberg Foundation (National Educational Association, 2003) has created the Inquiry Cycle to conceptualize data-driven decision making. Stages in this circular system include establishing desired outcomes, defining questions, collecting and organizing data, deriving meaning from the data, taking action, and evaluating.

The North East Florida Educational Consortium (2005) has developed a data analysis tool that can be used to target and improve classroom instruction. The Disaggregate Data Assess Review Target (D.A.R.T.) model allows schools to analyze and interpret assessment data, dropping down to analyze performance at the strand level.

Historically, research has questioned the impact of the principal on student achievement. Research by Philip Halinger and Ronald Heck in 1996 explored research studies that examined the contribution of the principal within the school during the period from 1980 through 1995. Results of the research indicated that approximately forty empirical studies were conducted during the fifteen year period, and that principals do have an effect on the school and on student achievement. The result is indirect and small, yet significant. The report also suggested that studies that used a mediated-effects model to address principal leadership influences show a consistent pattern of positive indirect effects (Halinger and Heck, 1996). Many of these studies use multiple regression analysis to identify the interaction effects to measure the strength of indirect effects.

Limitations

Because application of data-driven decision making in schools is so new, there are a limited number of studies that address its use in the public school setting. The bulk of the studies that have been conducted are qualitative in nature. The few studies that are empirical in nature do not use a mediated-effects model. They are consistent with the findings of Halinger and Heck (1996); many of these studies show a small indirect relationship between principal leadership and student achievement at best. Quantitative research that seeks to understand the impact of data-driven decision making practices by principals on student achievement is even less available.

Summary

Supovitz and Klein (2003) postulate that only when we use systematic data analysis to support student achievement will we begin to meet our goal of improved learning outcomes for all students. Educational leaders who truly understand the structure of schools and the needs of our students embrace the use of data-driven decision making practices. It is important for

educational leaders to understand the importance of using data to make informed decisions that result in improved student achievement. As we move forward into the future, we must continue the emphasis on data-driven decision making, and continuously improve until we enable all schools and children to benefit from its strengths. This chapter has addressed the available research regarding principal leadership and the use of data-driven decision making in schools. Chapter 3 will provide a summary of the methodology used for the study of the effect of principals' beliefs about the use of data-driven decision making skills on student achievement in elementary schools in Florida.

CHAPTER 3
METHODLOLOGY

Introduction

Chapter Three provides an overview of the research methodology associated with the study. It includes a statement of the problem, the context of the study, the research questions addressed through the study, and the population that was studied. Also discussed will be the method used for data collection, instrumentation, and data analysis.

The purpose of the study was to examine the relationships among principal characteristics and school demographics, principals' beliefs about the use of data-driven decision making, and student achievement. Specifically the intent of the dissertation was to determine the mediational effects of data-driven decision making on the relationship between principal characteristics and school demographics on student achievement. This study is important for several reasons. It adds to the existing body of knowledge about data-driven decision making. It also contributes to the understanding of the relationship between a principal's beliefs about the use of data in decision-making and student achievement. Finally, it seeks to continue the study of the relationship between principal characteristics and student achievement.

Research Questions

- Question 1: What are the beliefs held by elementary school principals in Florida with respect to data-driven decision making?
- Question 2: Do Florida elementary school principals' beliefs about data-driven decision making mediate the effect of principal characteristics and school demographics on student achievement?

Context of the Study

This study represents a census study that addressed all principals at public elementary schools within the state of Florida. The data used for the study was collected during the spring and summer of 2008. The student achievement data used for the study included 2008 FCAT SSS

and NRT testing data for Florida elementary school students. Specifically, the study used testing data for reading and math for students in grades three, four, and five.

According to the Florida Department of Education's published list, there are currently 1,890 elementary schools in the state of Florida (2008). The original list was reviewed to eliminate charter, specialized, and alternative schools, and only those schools that teach grades prekindergarten or kindergarten through fifth grades were included in the study. Principals from all schools in all districts that teach prekindergarten or kindergarten through grade five were asked to participate in the study. Brevard and Clay counties were eliminated because all of their elementary schools include sixth grade.

Participants

The following discussion presents the procedure used to obtain permission to conduct the study and to use the survey instrument. It also includes a discussion of the population and the data collection procedures that were used as part of the study.

Institutional Review Board Procedure and Approval

Data for this study were obtained through self-report by principals via a survey on data-driven decision making. The survey was based on the Statewide Data-Driven Readiness Study Principal Survey developed by Dr. Scott McLeod at the University of Minnesota (2005). Prior to the initiation of the study, permission to use the survey was obtained from Dr. McLeod. The email requesting permission and the resulting response is included in Appendix A. A request was also sent to the Florida Department of Education requesting residential addresses and emails for Florida elementary school principals (Appendix B). Before beginning the research study, approval was obtained from the University of Florida's Institutional Review Board (UFIRB) (Appendix C). The initial contact letter, email, follow up email, informed consent letter, and thank you email are included in Appendices D, E, F, G and H of this document. The follow up

mailing required a different format for the survey, and a separate IRB approval was obtained (Appendix I). Finally, an additional email was required for Volusia County Principals (Appendix J).

Population

The initial target population for the survey included all principals who work at public elementary schools in Florida. The preliminary list downloaded from the Department of Education website identified 1,890 elementary schools within the 67 districts in the state of Florida. Upon review, the list was pared down to eliminate combination, exceptional student, vocational, charter, specialized, and alternative schools. Also eliminated were schools that did not teach prekindergarten or kindergarten through grade five. By using this model, all schools in Brevard and Clay counties were eliminated. The list was further pared down to eliminate schools that did not have a principal residential or email address. A preliminary letter was sent via the U.S. Postal Service to the remaining 1,478 principals inviting them to participate in the study (Appendix D). A follow up email using SurveyMonkey was sent one week later providing the email link to the web-based survey (Appendix E). Only 1,309 of the emails were received due to the opt out function in SurveyMonkey or undeliverable addresses. At this time, Broward County administrators indicated that they required advanced permission for a study to be conducted within their school district. Although some principals from Broward County responded, the remaining principals were eliminated from the follow up list. Two weeks later, another reminder email (Appendix F) was sent to 1,058 principals. The response rate from the email survey was 415, or 28%. Two weeks later an additional mailing was sent to 928 principals at their home address (Appendices G and K). The response rate from the mailing was 89, giving a total response rate of 504 or 34%. At this time, several surveys were eliminated for a variety of reasons including no school identified, no school data available, incomplete survey (1 question

answered), the respondents worked less than two months at the school, or the school was not open during the 2007-2008 school year. The final response rate was 32% or 471 principals. The target rate of 70% for the survey was not met, however this response rate does compare with other dissertation surveys of this magnitude.

Principal Respondents Personal Characteristics

Of the 471 principals that responded, the mean time that they spent working as a principal at their school was 4.6 years. The mean time worked as a principal was 8.34 years. Finally the level of education was 2.54 on a scale of one to four. The level of education ranged from 1 representing a bachelor's degree, 2 representing a master's degree, 3 representing an Educational Specialist degree, and 4 representing a doctorate degree. The mean enrollment was 669 students. The mean for the percentage of students on free and reduced lunch was 54.6 %.

Instrumentation

Appendix K provides an example of the survey used in the study. The survey used for the study was comprised of 82 items that address principal beliefs about assessments, acting upon data, support systems, school culture, support systems and other demographic information. This survey was selected because the areas identified in the survey most closely align with those elements that have been identified with principal beliefs about the use of data-driven decision making. Specifically, these elements address collecting data, analyzing data, reporting data, using data for school improvement, and communicating data (American Association of School Administrators, 2002).

The survey used a six point Likert Scale for the first 77 questions in the survey. Participants were asked to rate their answers as disagree strongly, disagree moderately, disagree slightly, agree slightly, agree moderately, or agree strongly. The last six questions used both open-ended and multiple choice questions

The first section of the survey addressed principal beliefs about the types of data that are available for use within the school, specifically state assessments, other yearly assessments, common periodic assessments, and other periodic assessments. The second section of the survey addressed beliefs about the use of data-driven decision making by faculty and staff within the school. The third section of the survey asked questions about principal beliefs regarding the support systems within the school, including technology, technical support, resources, and professional development. The fourth section of the survey examined beliefs about the school culture with respect to the use of data to affect student achievement and school improvement. The final section of the survey asked for demographic information. It included information about the school, demographic characteristics of the school, and principal characteristics.

Student Achievement Data

The student achievement data used for the study was represented by the scale scores for each grade level (grade three, grade four, and grade five) on the FCAT SSS and NRT math and reading tests. In 2005, the state of Florida adopted the Stanford-10 (SAT-10) Achievement Test Series for norm-referenced testing of elementary school students. Florida also tests student mastery of the Sunshine State Standards with the Florida Comprehensive Assessment Test. Test data for both tests were used as part of this study. The scale scores by subject, district, school, and grade level were downloaded from the Florida Department of Education website. Respondents whose schools did not report any FCAT data were eliminated from the analysis.

Mediational Model

This study utilized the mediational model developed by Baron and Kenny (1986). The model proposes the use of mediating variables to determine the degree to which they can account for the relationship between an antecedent variable and an outcome variable. The following illustration depicts the relationship between the variables.

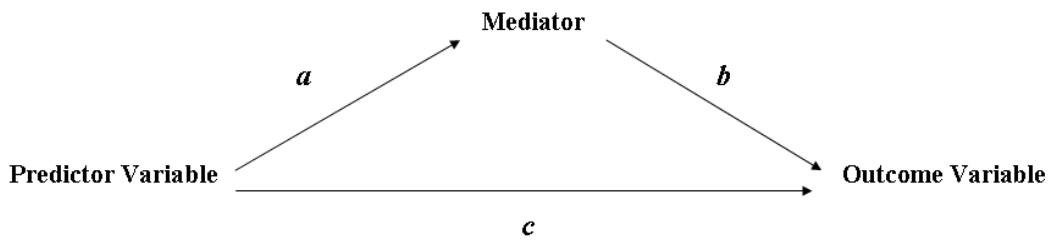

Figure 3-1. Mediational Model (Baron and Kenny, 1986)

The Baron and Kenny model utilizes three variables, with two paths leading to the outcome (dependent) variable from the predictor variable. Path *a* represents the relationship between the independent variable and the mediator. Path *b* represents the impact of the independent variable on the mediator. Finally, Path *c* represents the direct relationship between the antecedent or independent variable and the outcome or dependent variable. According to Baron and Kenny, in order for a variable to function as a mediator, the antecedent or predictor variable should have a significant positive relationship with the presumed mediator. Variations in the mediator should account for variations in the outcome variable. Finally when both are held constant, there should be no significant relationship between the antecedent and the outcome variable. The mediator variable is then considered to be the stronger variable.

This study was designed to examine the relationship between principal characteristics and school demographic variables, beliefs about the use of data-driven decision making, and student achievement. In this study the principal characteristics and school demographic variables represent the antecedent variables. Student achievement represents the outcome or dependent variable. Principal beliefs about the use of data-driven decision making represent the mechanism through which the principal characteristics and school demographic variables affect student achievement. The model below depicts the Baron and Kenny Model as applied to this study.

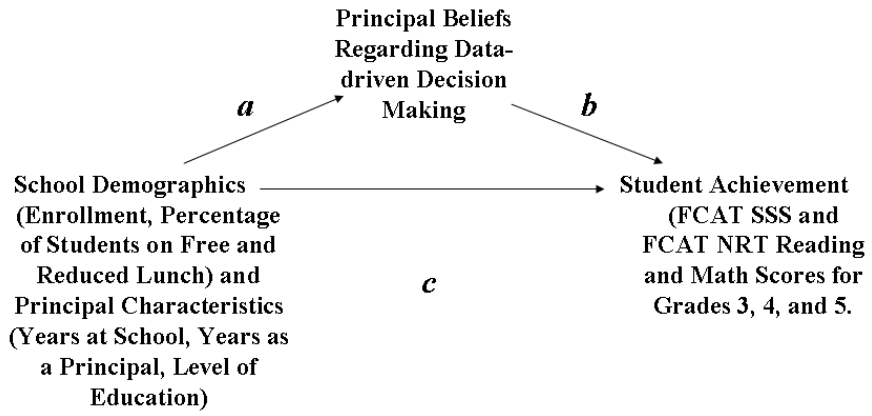

Figure 3-2. Proposed Mediational Model

The following represents a discussion of the research questions, the associated hypothesis, and the application of the Baron and Kenny model.

Question 1

What are the beliefs held by elementary school principals in Florida with respect to data-driven decision making?

Analysis for Question 1

Question 1 was analyzed through descriptive statistics for principal beliefs about data-driven decision making, including each variables measure of central tendency and variance.

Question 2

Do Florida elementary school principals' beliefs about data-driven decision making mediate the effect of school demographics and principal characteristics on student achievement?

Hypothesis 1

Principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, percentage of students on free and reduced lunch) are related to the principals' beliefs about the use of data-driven decision-making skills.

Null Hypothesis

There are no statistically significant differences between the principals' self-reported beliefs about the use of data-driven decision making skills with varying demographic characteristics (experience, years in the position, level of education) and school demographics (student enrollment, percentage of students on free and reduced lunch).

Analysis of Hypothesis 1

To test this first condition of the Baron and Kenny Mediational mode, the relationships among the principal characteristics, school demographics, and principals' self-reported beliefs about the use of data driven decision making were analyzed through a series of multiple regression analyses. Principal characteristics and school demographics represent the antecedent variables. Specifically, principal experience, years at the school, school enrollment, level of education, and percentage of students on free and reduced lunch were treated as quantitative, continuous variables.

The self-reported principals' beliefs about data-driven decision making represented the mediating variable. The structural model was as follows: $E(Y_1) = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$; where Y_1= principals' beliefs about data-driven decision making x_1= principal experience, x_2= years at the school, x_3= level of education, x_4= school enrollment, x_5= percentage of students on free and reduced lunch.

Hypothesis 2

Principals' beliefs about the use of data-driven decision making are related to student achievement.

Null Hypothesis

There are no statistically significant differences between the principals' self-reported beliefs about data-driven decision making and student achievement.

Analysis of Hypothesis 2

The second phase of the mediational model required testing of the relationship between the principals' self-reported beliefs about data-driven decision making (the mediating variable) and student achievement (the outcome variable) when controlling for the effects of principal characteristics and school demographics. Again this was measured through a regression analysis. The estimated structural model was $E(Y_2) = a + b_6Y_1$ where Y_2= student achievement and Y_1= principal self-reported use of data-driven decision making skills.

Hypothesis 3

Principals' beliefs about the use of data-driven decision making skills mediate the relationship between principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, percentage of students on free and reduced lunch) and student achievement.

Null Hypothesis

There are no statistically significant differences between principals' self-reported beliefs about data-driven decision making and student achievement.

Analysis of Hypothesis 3

The last condition of the mediational model was tested through a two-step regression analysis. Student achievement was regressed on principal characteristics and school demographics. Specifically principal experience, years at the school, school enrollment, level of education, and percentage of students on free and reduced lunch were treated as quantitative, continuous variables. The structural model to be tested for this analysis was as follows: $E(Y_2) = a + b_1x_1 + b_2x_2 + b_3x_3 \_ b_4x_4 + b_5x_5 + b_6x_6 + b_7Y_1$; where Y_2= student achievement, x_1= principal experience, x_2= years at the school, x_3= level of education, x_4= school size, x_5= percentage of students on free and reduced lunch and Y_1=principal use of data-driven decision making skills.

Data Analysis

The following analysis was conducted using SPSS statistical software. In addition to the descriptive statistics that were developed for all variables, each hypothesis was analyzed through the appropriate statistical analysis techniques. .

This study examined the relationship between the principals' beliefs about data-driven decision making and student achievement. The study explored the mediational role of data-driven decision making when controlling for the effects of principal characteristics and school demographics. Specific principal characteristics included years of experience, level of education, and years as principal at their school. School demographic variables included student enrollment and percentage of students on free and reduced lunch. Principal characteristics and school demographics represented the antecedent variables and student achievement represented the outcome variable when studying their relationships. Also, the principal characteristics and school demographic variables were treated as antecedent variables when exploring their relationship with the mediating variable, data-driven decision making. Finally, multiple regression analyses were used to analyze principal characteristics, school demographic variables and data-driven decision making as antecedent variables and student achievement as the outcome variable.

The preliminary analysis using descriptive statistics for all variables included the means, standard deviations, and frequencies. The analysis followed with a series of multiple regression analysis to determine the relationship between the antecedent variables and the outcome variables. In particular, the analysis focused on the association between data-driven decision making and student achievement, while controlling for school demographics and principal characteristics. In this study, regression coefficients were used to analyze the relationships among the principal characteristics, school demographic variables, principals' use of data-driven decision making and student achievement.

Summary

This chapter addressed the research methodology used to study the relationship between principal use of data-driven decision making and student achievement. It addressed the population, research questions, and survey instrument. The Baron and Kenny (1986) model was used for this study. The chapter also included the specific data analysis for each research question.

CHAPTER 4
RESULTS AND ANALYSIS OF DATA

Introduction

Chapter 4 provides a discussion of the results of the study and an analysis of the data. The purpose of the study was to examine the relationship between data-driven decision making by elementary school principals and school level student achievement. The study was designed to test whether the principals' beliefs act as a mediator between school demographics and principal characteristics and student achievement on the FCAT criterion- referenced and norm-referenced tests. The antecedent variables for principal characteristics included the number of years as a principal, the number of years at the school, and the level of education. The antecedent variables for school demographics included the enrollment and number of students on free and reduced lunch. The outcome variables for student achievement included scales scores for the FCAT Sunshine State Standards (criterion-referenced test) and the FCAT norm-referenced test (SAT-10) for reading and math for grades three, four, and five. Principal self-reported answers to the data-driven decision making survey were treated as the mediating variable.

An analysis of the survey instrument was conducted using a maximum likelihood estimation (MLE) analysis to develop factors and a reliability test for consistency. Descriptive statistics were performed on all variables. The mediating relationship of principal beliefs regarding data-driven decision making was examined using the mediation model proposed by Baron and Kenny (1986). Linear regression was performed on the principal characteristics and school demographics, the four factors from the survey, and student achievement scales scores for each test, subject, and grade level. Finally a two-step regression analysis was conducted on the antecedent, mediating, and outcome variables in order to determine whether a mediating effect was present.

The specific research questions and hypothesis presented in the study are as follows:

- Question 1: What are the beliefs held by elementary school principals in Florida with respect to data-driven decision making?
- Question 2: Do Florida elementary school principals' beliefs about data-driven decision making mediate the effect of school demographics and principal characteristics on student achievement?
- Hypothesis 1: Principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, number of students on free and reduced lunch) are related to the principals' beliefs about the use of data-driven decision-making skills.
- Hypothesis 2: Principal beliefs about the use of data-driven decision making are related to student achievement.
- Hypothesis 3: Principals' beliefs about the use of data-driven decision making skills mediate the relationship between principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, number of students on free and reduced lunch) and student achievement.

Analysis of the Survey Instrument

Because the topic of data-driven decision making is relatively new, there are few survey instruments available to address principal beliefs on the subject. The State-wide Data Driven Readiness Study Principal Survey was determined to be the best fit for the purpose of the study. A factor analysis was conducted on the instrument after the data collection phase was complete in order to measure the ability of the survey to reflect the various beliefs held by elementary school principals and to reduce the data to a smaller set of factors. The initial survey was pared down to eliminate questions about state assessment, other yearly assessments, common periodic assessments, and other periodic assessments as these questions were considered to be outside of the control of the elementary school principal. Fifty-seven of the remaining 63 questions were measured using a six-point Likert scale ranging from "strongly agree" to "strongly disagree." The remaining five questions asked for the name of the school, the annual enrollment, the

percentage of students on free and reduced lunch, years worked as a principal at the school, years worked as a principal and level of education.

A factor analysis using the MLE model was conducted on the 57 questions to extract relevant factors. The initial correlation matrix was analyzed to eliminate questions that produced high correlations (greater than .9) and areas where there were several significance scores greater than .05. A value of 1.204E-4 for the determinant was developed, indicating that multicollinearity was not a problem.

A Kaiser-Meyer-Olkin test was conducted to measure sampling adequacy. The KMO statistic of .932 was close to a value of 1, indicating that the factor analysis should yield distinct and reliable factors. The Bartlett Test of Sphericity was highly significant with a Chi-square value of 3121.09 with 231 degrees of freedom.

The Varimax with Kaiser Normalization rotation method was used develop orthogonal factors as the questions selected on the survey are assumed to be independent of one another. The analysis of total variance shows four factors with eigenvalues greater than 1, accounting for nearly 54.8% of the total variance. The Scree plot (Figure 4-1), analysis of total variance explained (Table 4-1), and rotated component matrix indicate that between three and four factors underlie the structure of the fifty-seven questions in the survey.

As indicated in Table 4-2, the four factors included 23 items that pertained to the underlying structure of the survey. The first factor incorporated nine questions that pertained to principal beliefs regarding the use of data-driven decision making by teachers to improve student achievement. The questions focused on principal beliefs about how teachers use data to affect curriculum, instruction, student performance, and school goals. The second factor contained another six questions that related to principal beliefs about data-driven cultures. The third factor

included six questions about supporting systems for data-driven decision-making within the school. These systems include availability and use of multiple data sources, staff meetings, allocating of resources, and professional development. Although the final factor only included two questions, they were deemed to be important to the study. Factor four supported principal beliefs about collaboration among teachers using data-driven decision-making.

Reliability Analysis

Each of the four extracted factors was analyzed for internal consistency using Cronbach's alpha test. Factors 1, 2, and 4 all tested in the acceptable range with values greater than .7 (.86, .77, and .76 respectively). The third factor, beliefs regarding supporting systems, resulted in an alpha of .4147 which was significantly below the .7 threshold. By eliminating question 70, the alpha was raised to .77, bringing the third factor into the acceptable range. Table 4-3 provides the final list of questions and factors used in the study.

Analysis and Quantitative Results

The analyses performed in this study included descriptive statistics, correlation, linear regression, and two-step multiple regression analyses. Each question will be presented followed by a discussion of the related hypothesis and statistical analysis. The initial response rate provided an *n* of 478; however this rate may vary depending upon the statistical test performed. The public elementary schools used in the sample did not always participate in both the NRT and SSS for both reading and math at all grade levels. In the multiple regression analysis, a listwise case elimination method was used.

Question 1

What are the beliefs held by elementary school principals in Florida with respect to data-driven decision making?

Analysis

The Principal Beliefs About Data-driven Decision Making survey measured principal beliefs about data-driven decision making using a Likert scale ranging from “Strongly Disagree” to “Strongly Agree” (1 to 6) on 22 questions. Each item was analyzed using the variable’s measure of central tendency and variance. Table 4-4 provides a list of the items in order from the strongest beliefs to the least strong beliefs held by principals. Each question also provides the mean and variance associated with that particular item or belief. The item means ranged from 5.79 to 4.43 with all means indicating slight, moderate, or strong agreement with the item number. A further analysis of the items which ranked in the top 10 indicated that 6 of the 10 items related to beliefs about developing a data-driven decision making culture. Three items related to beliefs about teachers’ use of data-driven decision making. The final item supported beliefs regarding collaboration among teachers using data-driven decision making. Table 4-5 provides a list of the top 10 ranked items, including frequencies for each response and the percent valid.

The remaining 12 items represented those beliefs that principals felt least strongly about. Of the 12 items in this category, six related to principal beliefs that teachers use data-driven decision making to make decisions regarding student achievement, representing 75% of that category. The means for these items ranged from 4.43 (“slightly agree”) to 5.14 (“agree moderately”). Five of the remaining items in this category related to supporting systems for data driven decision making. These items included use of multiple data sources, teacher input into data management, use of staff meetings to discuss progress, using data for professional development, and allocation of resources. The remaining item in the least strongly held beliefs category refers to the belief that when teachers meet with each other, they usually focus on improving student achievement.

Question 2

Do Florida elementary school principals' beliefs about data-driven decision making mediate the effect of principal characteristics and school demographics on student achievement?

Analysis

The purpose of this study was to determine if the principals' beliefs regarding data-driven decision making have a mediating effect on student achievement. The Baron and Kenny (1986) model presents a framework for testing the effect of a mediating variable on the outcome variable. Each of the hypotheses tests a step identified in the Baron and Kenny Model. The first hypothesis tests step 1 in the model. It measures the effect of data-driven decision making (the mediating variable) on school demographics and principal characteristics (the antecedent variables). The second hypothesis seeks to measure the relationship between data-driven decision making (the mediating variable) and student achievement (the outcome variable). The last hypothesis regresses student achievement (the outcome variable) on both principal characteristics and school demographics (the antecedent variables) and data-driven decision making (the mediating variable). In order for a mediating effect to be present, the regression of the outcome variable on the antecedent variable should be non-significant.

Hypothesis 1

Principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, percentage of students on free and reduced lunch) are related to the principals' beliefs about the use of data-driven decision-making skills.

Analysis of Hypothesis 1

The first step of the Baron and Kenny (1986) mediation model requires a test of the relationship between the antecedent variables (principal characteristics and school demographics) and the mediating variable (principal beliefs regarding data-driven decision

making). In this analysis, the antecedent variables were treated as quantitative, continuous variables. A regression analysis was conducted, regressing each of the four factors identified through the factor analysis against all of the principal characteristics and school demographic variables. The four factors were beliefs regarding the use of data-driven decision making by teachers to improve student achievement, beliefs regarding a data-driven culture, beliefs regarding supporting systems, and beliefs regarding collaboration among teachers using data-driven decision making. The antecedent variables tested were student enrollment, percentage of students on free or reduced lunch, number of years as a principal, number of years as a principal at the school, and the level of education. Table 4-6 provides descriptive statistics for the antecedent variables.

None of the four factors proved statistically significant. Factor 1 (beliefs regarding the use of data-driven decision making by teachers to improve instruction) resulted in an r^2 of .011, $F(5, 404)=.870$, $p=.501$. Factor 2 (beliefs regarding a data-driven culture) showed an r^2 of .002, $F(5,404)=1.149$, $p=.334$. Factor 3 (beliefs regarding supporting systems) resulted in an r^2 of .022, $F(5,404)=1.827$, $p=.107$. Finally, Factor 4 (beliefs regarding collaboration among teachers using data-driven decision making) indicated an r^2 of .020, $F(5,404)=1.614$, $p=.155$. All of the r^2 values were small, indicating that a very limited amount of variability in the outcome can be accounted for by the predictors. The results indicate that the first step in the mediation model did not test significant, and the overall mediational model did not fit this population. Table 4-7 provides the regression analysis for each of the four factors identified through the survey.

The following represents the estimated structural model for each of the four factors:

- Factor 1 Beliefs regarding use of data-driven decision making by teachers to improve instruction= 46.687 + -.00152 (enrollment) +-.0218 (percentage of students on free and reduced lunch) + .03233 (years as a principal at this school) +-.0266 (years as a principal) +.181 (level of education).

- Factor 2 Beliefs regarding a data-driven culture=33.875 +-.000987 (enrollment) +-.00188 (percentage of students on free and reduced lunch) + .0214 (years as a principal at this school) +-.0262 (years as a principal) +.255 (level of education).

- Factor 3 Beliefs regarding supporting systems = 24.470 + -.00136 (enrollment) + -.000388 (percentage of students on free and reduced lunch) + -.0269 (years as a principal at this school) +-.0355 (years as a principal) +.503 (level of education).

- Factor 4 Beliefs regarding collaboration among teachers using data-driven decision making = 10.207 + -.000453 (enrollment) + .00505 (percentage of students on free and reduced lunch) + .02459 (years as a principal at this school) +-.0144 (years as a principal) +.05953 (level of education).

Hypothesis 2

Principals' beliefs about the use of data-driven decision making skills are related to student achievement.

Analysis of Hypothesis 2

The second condition of the Baron and Kenny model tests the relationship between the mediating variable (principals' beliefs about the use of data-driven decision making skills) and the outcome variable (student achievement). For the purposes of the study, the four factors identified through the factor analysis were used to represent data-driven decision making skills. Student achievement was measured through the school's scale scores on the 2008 FCAT SSS (criterion referenced test) and FCAT NRT (norm-referenced test) for grades three, four, and five in math and reading. Table 4-8 provides the descriptive statistics for each of the variables.

The linear regression analysis proved significant for some areas as depicted in Table 4-9. The ANOVA table shows that the *F* ratio is significant for all areas tested, indicating that a model using data-driven decision making factors does improve the ability to predict the outcome variable of student achievement. The r^2 value however is quite low, with between 2% and 6% of the variability in the outcome accounted for by the predictors.

The estimated structural model for the data-driven decision making factors are as follows. Specific parameters are detailed in Table 4-10.

- SSS Reading Grade 3 =306.177 + 1.151 (beliefs regarding the use of data-driven decision making by teachers) + -.181 (beliefs regarding a data-driven culture) + -.210 (beliefs regarding supporting systems) + -3.136 (beliefs regarding collaboration by teachers).

- SSS Reading Grade 4 =304.321 + 1.057 (beliefs regarding the use of data-driven decision making by teachers) + -.0787 (beliefs regarding a data-driven culture) + -.089 (beliefs regarding supporting systems) + -2.758 (beliefs regarding collaboration by teachers).

- SSS Reading Grade 5 =299.969 + .930 (beliefs regarding the use of data-driven decision making by teachers) + -.147 (beliefs regarding a data-driven culture) + -.589 (beliefs regarding supporting systems) + -1.722 (beliefs regarding collaboration by teachers).

- SSS Math Grade 3 =321.204 + 1.319 (beliefs regarding the use of data-driven decision making by teachers) + -.335 (beliefs regarding a data-driven culture) + -.166 (beliefs regarding supporting systems) + -3.049 (beliefs regarding collaboration by teachers).

- SSS Math Grade 4 =300.360 + 1.148 (beliefs regarding the use of data-driven decision making by teachers) + -.114 (beliefs regarding a data-driven culture) + .02377 (beliefs regarding supporting systems) + -2.405 (beliefs regarding collaboration by teachers).

- SSS Math Grade 5 =320.348 + .917 (beliefs regarding the use of data-driven decision making by teachers) + -.202 (beliefs regarding a data-driven culture) + .05947 (beliefs regarding supporting systems) + -2.247 (beliefs regarding collaboration by teachers).

- NRT Reading Grade 3 =631.006 + .780 (beliefs regarding the use of data-driven decision making by teachers) + -.181 (beliefs regarding a data-driven culture) + -.299 (beliefs regarding supporting systems) + -1.950 (beliefs regarding collaboration by teachers).

- NRT Reading Grade 4 =648.131 + .646 (beliefs regarding the use of data-driven decision making by teachers) + -.0613 (beliefs regarding a data-driven culture) + -.164 (beliefs regarding supporting systems) + -1.842 (beliefs regarding collaboration by teachers).

- NRT Reading Grade 5 =665.878 + .709 (beliefs regarding the use of data-driven decision making by teachers) + -.100 (beliefs regarding a data-driven culture) + -.220 (beliefs regarding supporting systems) + -2.023 (beliefs regarding collaboration by teachers).

- NRT Math Grade 3 =624.711 + 1.022 (beliefs regarding the use of data-driven decision making by teachers) + -.260 (beliefs regarding a data-driven culture) + -.314 (beliefs regarding supporting systems) + -2.586 (beliefs regarding collaboration by teachers).

- NRT Math Grade 4 =651.164 + .340 (beliefs regarding the use of data-driven decision making by teachers) + -.170 (beliefs regarding a data-driven culture) + .06999 (beliefs regarding supporting systems) + -1.766 (beliefs regarding collaboration by teachers).

- NRT Math Grade 5 =669.555 + .724 (beliefs regarding the use of data-driven decision making by teachers) + -.118 (beliefs regarding a data-driven culture) + -.668 (beliefs regarding supporting systems) + -1.278 (beliefs regarding collaboration by teachers).

Overall, the relationship between principals' beliefs regarding data-driven decision making and student achievement was found to be statistically significant. As shown in Table 4-10, this is particularly true for factors 1 and 4 on both tests for reading and math in all grades, except fourth and fifth grade math NRT.

Hypothesis 3

Principals' beliefs about the use of data-driven decision making skills mediate the relationship between principal characteristics (years experience, years at a school, and level of education) and school demographics (student enrollment, percentage of students on Free and Reduced Lunch) on student achievement.

Analysis of Hypothesis 3

The last hypothesis regresses student achievement (the outcome variable) on both principal characteristics and school demographics (the antecedent variables) and data-driven decision making (the mediating variable). For the mediational model to be effective, the data-driven decision making factors must significantly predict student achievement after controlling for principal characteristics and school demographics. The third test for mediation was tested via a two-step multiple regression analysis. For the first step in the two-step regression the outcome variable (student achievement) was regressed on all of the antecedent variables (student enrollment, percentage of students on free and reduced lunch, number of years as a principal, number of years at the school, and level of education.) The second step of the regression analysis regresses the outcome variable (student achievement) on the four mediating variables (four data-driven decision making factors). The regression analysis was conducted for each of the twelve outcome variables. Table 4-11 provides descriptive statistics for the five antecedent variables and

the four mediating factors. Table 4-12 provides the results of the regression analysis for step one on each outcome variable

Each of the models tested significant for the percentage of students on free or reduced lunch for the first step of the analysis, with years at the school and enrollment also showing some effect. For the third grade SSS Reading test, the r^2 of .7159 for free and reduced lunch and enrollment was statistically significant with $F(5,404)=203.64$, $p=.000$. For the fourth grade SSS Reading test, the r^2 for free and reduced lunch showed a value of .722, testing significant with $F(5,404)=210.15$, $p=.000$. For fifth grade the r^2 (free and reduced lunch only) was .306, with an $F(5,395)=34.96$, $p=.000$, testing significant. The trend continued for SSS Math with values for $r^2= .586$ ($F(5, 404)=111.56$, $p=.000$), $r^2=.583$ ($F(5,4048)=113.02$, $p=.000$), and $r^2=.513$ $F(5,401)=84.66$, $p=.000$) for third, fourth, and fifth grade scores respectively. It is important to note that the model included annual school enrollment along with the percentage on free and reduced lunch for the third and fourth grade models.

The NRT scores continued the same trend of including Free and Reduced in all models. School enrollment was included in the models for NRT reading in the third and fifth grades. Third grade NRT Reading showed values for r^2 equal to .678 ($F(5,403)=169.5$, $p=.000$) and $r^2=.693$ ($F(5,403)=182.42$, $p=.000$), and $r^2=.684$ ($F(5,404)=174.63$, $p=.000$) for third, fourth, and fifth grade scores respectively. Finally, the NRT math scores were $r^2=.655$ $F(5,404)=53.41$, $p=.000$. Scores for fourth and fifth grade NRT Math returned an r^2 of .663 $F(5,394)=5.596$, $p=.000$ and $r^2=.267$ $F(5,398)=29.06$, $p=.000$ respectively. The other antecedent variables (school enrollment, years as a principal) accounted for much of the variance, causing the two-step regression analysis to eliminate all four data-driven decision making factors due to the very small effect sizes. Because the data-driven decision making factors were not significant, the third

hypothesis is also false, indicating that the overall mediational model does not apply to the population. Table 4-13 provides an overview of the structural components associated with the third hypothesis.

Summary of Results

The purpose of the analyses performed in this chapter was to examine the relationships among principal characteristics, school demographics, principals' beliefs regarding data-driven decision making, and student achievement as measured by the FCAT SSS and NRT reading and math tests for grades three, four, and five. Specifically, the purpose of the study was to determine important principal beliefs regarding data-driven decision making factors and the relationship between the beliefs and student achievement. The Baron and Kenny (1986) model was used to analyze the relationship between principal characteristics, school demographics, data-driven decision making and student achievement. The model was used to treat data-driven decision making as a mediating variable, such that it could mediate the relationship between the antecedent variables of school demographics and principal characteristics and the outcome variables of student achievement as measured through the FCAT NRT and SSS math and reading scores for grades three, four, and five. For a mediating component to be present, three tests must be significant; a relationship between the antecedent variable and the mediating variable, a relationship between the mediating variable and the outcome variable, and a relationship between the mediating variable and the outcome variable while controlling for the antecedent variables. Mediation will be strongest when there is no relationship between the antecedent variable and the outcome variable.

Four factors were derived using a factor analysis study; principal beliefs regarding teacher actions to improve student achievement, principal beliefs regarding a data-driven culture, support systems for data-driven decision making, and collaboration among teachers using data-

driven decision making. These four factors were tested using the Baron and Kenny (1986) model. The first test depicting the relationship between the antecedents and mediating variables failed in all twelve tests. The second test of the model, testing the relationship between the mediating variable and outcome variable, proved significant under all twelve tests. Finally the third test required for mediation failed as well. The failure of two of the three conditions required by the model indicate that the model does not apply to this population and that data-driven decision making does not act as a mediator between principal characteristics and school demographics and student achievement as measured by the FCAT NRT and SSS tests for math and reading for grades three, four, and five.

However, the findings of the analysis did indicate that there is an indirect relationship between the four factors identified through the factor analysis and student achievement. Two factors proved significant in all tests; beliefs regarding teacher use of data-driven decision making by teachers to influence student achievement, and collaboration among teachers who use data-driven decision making.

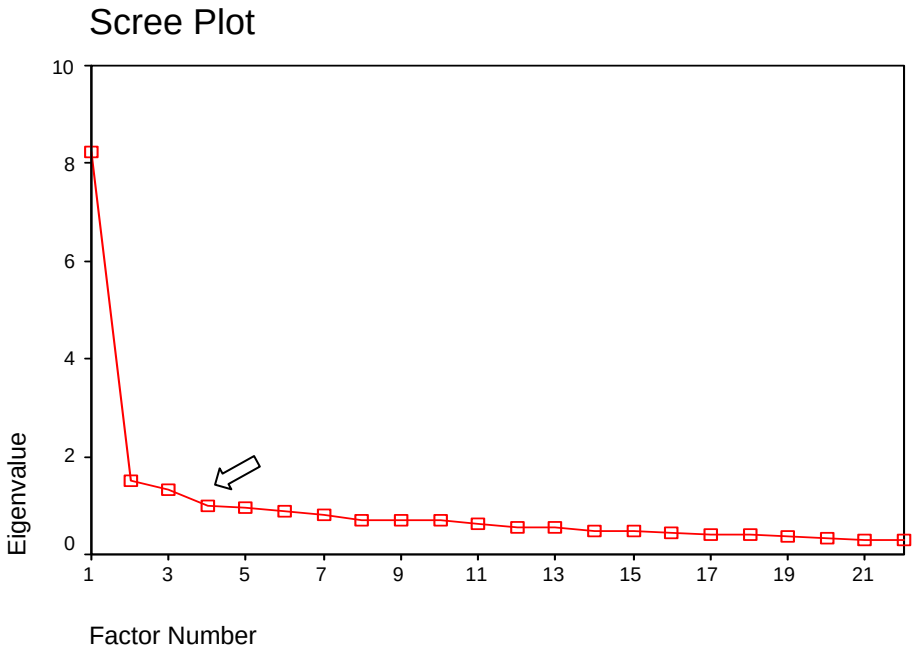

Figure 4-1. Scree Plot for Maximum Likelihood Estimation Analysis.

Table 4-1. Total Variance Explained

Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %	Rotation Sums of Squared Loadings Total	% of Variance	Cumulative %
1.00	8.26	35.93	35.93	8.26	35.93	35.93	4.26	18.53	18.53
2.00	1.53	6.63	42.56	1.53	6.63	42.56	4.03	17.51	36.04
3.00	1.46	6.33	48.89	1.46	6.33	48.89	2.65	11.53	47.57
4.00	1.02	4.44	53.33	1.02	4.44	53.33	1.32	5.76	53.33
5.00	0.98	4.24	57.57						
6.00	0.88	3.83	61.40						
7.00	0.82	3.57	64.97						
8.00	0.80	3.50	68.47						
9.00	0.71	3.10	71.57						
10.00	0.70	3.04	74.61						
11.00	0.65	2.85	77.46						
12.00	0.61	2.66	80.12						
13.00	0.57	2.47	82.59						
14.00	0.53	2.31	84.90						
15.00	0.49	2.11	87.01						
16.00	0.47	2.04	89.05						
17.00	0.44	1.90	90.95						
18.00	0.42	1.81	92.76						
19.00	0.39	1.70	94.46						
20.00	0.38	1.64	96.10						
21.00	0.31	1.37	97.47						
22.00	0.29	1.28	98.75						
23.00	0.29	1.25	100.00						

Table 4-2. Rotated Factor Matrix

Item	Factor 1	Factor 2	Factor 3	Factor 4
Teachers make changes in their instruction based on assessment results.	0.706	0.243	0.225	0.279
If teachers in my school propose a change, they bring data to support their proposal.	0.616	0.176	0.292	0.171
Teachers in this school work collaboratively to improve curriculum and instruction	0.606	0.233	0.035	0.419
Teachers conduct self-assessments to continuously improve performance	0.553	0.180	0.316	0.049
Teachers in my school use data to verify their assumptions about the causes of student behavior and performance	0.496	0.219	0.327	0.168
Teachers in my school use data from student assessment to set instructional targets and goals	0.471	0.371	0.291	0.328
Teachers in my school feel personally responsible when our school improvement goals are not met	0.469	0.148	0.255	0.160
Teachers in my school use assessment data to identify students who are not experiencing academic success	0.398	0.253	0.179	0.382
Teachers and parents communicate frequently about student performance data	0.311	0.232	0.301	0.084
Administrators model data-driven educational practices	0.156	0.785	0.184	0.113
My school adequately supports teachers' use of data to improve classroom instruction	0.196	0.690	0.182	0.054
My school's improvement goals are clear, specific, measurable, and based on student data	0.191	0.479	0.218	0.186
56. As a school we have open and honest discussions about data	0.241	0.453	0.263	0.169
Using data has improved the quality of decision-making in my school	0.197	0.422	0.175	0.204
If we constantly analyze what we do and adjust to get better, we will improve	0.076	0.317	0.029	0.102
Whole-school staff meetings focus on measured progress toward data-based improvement goals	0.090	0.294	0.617	0.204
Teachers have significant input into data management and analysis practices	0.205	0.198	0.601	0.076

Note: "Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalization." Rotation converged in 7 iterations.

Table 4-3. Table of Data-Driven Decision Making Factors and Related Survey Questions

Construct Number and Description	Item
Construct 1, Beliefs regarding the use of data-driven decision making by teachers to improve student achievement	22. Teachers in this school work collaboratively to improve curriculum and instruction.
	25. Teachers in my school use assessment data to identify students who are not experiencing academic success.
	29. Teachers in my school use data to verity their assumptions about the causes of student behavior and performance.
	31. If teachers in my school propose a change, they bring data to support their proposal.
	32. Teachers in my school make changes in their instruction based on assessment results.
	36. Teachers in my school use data from student assessments to set instructional targets and goals.
	38. Teachers and parents communicate frequently about student performance data.
	67. Teachers conduct self-assessments to continuously improve performance.
	75. Teachers in my school feel personally responsible when our school improvement goals are not met.
Construct 2, Beliefs regarding a data-driven culture	34. My school's improvement goals are clear, specific, measurable, and based on student data.
	56. As a school we have open and honest discussions about data.
	60. Administrators model data-driven educational practices.
	61. My school adequately supports teachers' use of data to improve classroom instruction.
	71. Using data has improved the quality of decision-making in my school.
	74. If we constantly analyze what we do and adjust to get better, we will improve.
Construct 3, Beliefs regarding supporting systems	43. My school uses multiple data sources to assess the effectiveness of educational programs.
	44. Teachers have significant input into data management and analysis practices.
	52. Whole-school staff meetings focus on measured progress toward data-based improvement goals.
	53. Student achievement data are used to determine teacher professional development needs and resources.
	55. Student achievement data are used to determine resource allocation.
Construct 4, Beliefs regarding collaboration among teachers using data-driven decision making.	21. Teacher teams in my school meet regularly to look at student data and make instructional plans.
	22. When teachers in my school meet with each other, they usually focus on improving student learning outcomes.

Table 4-4. Principal Beliefs Regarding Data-Driven Decision Making

Rank	Item	*N*	Mean	Std. Deviation
1	If we constantly analyze what we do and adjust to get better, we will improve	428	5.79	0.45
2	My school's improvement goals are clear, specific, measurable, and based on student data	462	5.70	0.60
3	My school adequately supports teachers' use of data to improve classroom Instruction	428	5.66	0.57
4	As a school we have open and honest discussions about data	430	5.57	0.61
5	Administrators model data-driven educational practices	428	5.55	0.66
6	Teachers in my school use assessment data to identify students who are not experiencing academic success	463	5.54	0.65
7	Using data has improved the quality of decision-making in my school	428	5.45	0.71
8	Teachers in my school use data from student assessment to set instructional targets and goals	458	5.38	0.73
9	Teacher teams in my school meet regularly to look at student data and make instructional plans	463	5.36	0.83
10	Teachers in this school work collaboratively to improve curriculum and Instruction	463	5.35	0.75
11	My school uses multiple data sources to assess the effectiveness of educational programs.	443	5.33	0.79
12	Student achievement data are used to determine teacher professional development needs and resources	374	5.29	0.73
13	Teachers in my school feel personally responsible when our school improvement goals are not met	430	5.14	0.88
14	Student achievement data are used to determine resource allocation	439	5.14	1.01
15	Whole-school staff meetings focus on measured progress toward data-based improvement goals	439	4.98	0.95
16	When teachers in my school meet with each other, they usually focus on improving student learning	463	4.98	0.90
17	Teachers in my school make changes in their instruction based on assessment results.	462	4.95	0.84
18	Teachers and parents communicate frequently about student performance data	443	4.81	0.89
19	Teachers in my school use data to verify their assumptions about the causes of student behavior and performance	460	4.78	0.85
20	If teachers in my school propose a change, they bring data to support their proposal.	459	4.63	1.06
21	Teachers have significant input into data management and analysis practices	442	4.60	1.05
22	Teachers conduct self-assessments to continuously improve performance	420	4.43	1.05
	Valid N (listwise)	340		

Note: Item responses are: 6= Strongly Agree, 5= Agree Moderately, 4= Agree Slightly, 3= Disagree Slightly, 2= Disagree Moderately, and 1=Disagree Strongly

Table 4-5. Frequency of Responses Regarding Principal Beliefs Regarding Data-Driven Decision Making

Rank	Item	Response	Frequency	Valid %
1	If we constantly analyze what we do and adjust to get better, we will improve.	6	346	80.84
		5	76	17.76
		4	5	1.17
		3	1	0.23
	Total		428	100.00
2	My school's improvement goals are clear, specific, measurable, and based on student data.	6	352	76.19
		5	83	17.97
		4	24	5.19
		3	3	0.65
	Total		462	100.00
3	My school adequately supports teachers' use of data to improve classroom instruction.	6	303	70.79
		5	105	24.53
		4	19	4.44
		3	1	0.23
	Total		428	100.00
4	As a school we have open and honest discussions about data.	6	274	63.72
		5	130	30.23
		4	25	5.81
		3	1	0.23
	Total		430	100.00
5	Administrators model data-driven educational practices.	6	269	62.85
		5	129	30.14
		4	26	6.07
		3	3	0.70
		2	1	0.23
	Total		428	100.00
6	Teachers in my school use assessment data to identify students who are not experiencing academic success.	6	285	61.56
		5	148	31.97
		4	26	5.62
		3	3	0.65
		2	1	0.22
	Total		463	100.00
7	Using data has improved the quality of decision-making in my school.	6	234	54.67
		5	165	38.55
		4	22	5.14
		3	4	0.93
		2	2	0.47
		1	1	0.23
	Total		428	100.00
8	Teachers in my school use data from student assessment to set instructional targets and goals.	6	231	50.44
		5	176	38.43
		4	43	9.39
		3	8	1.75
	Total		458	100.00

Table 4-5. Continued

Rank	Item	Response	Frequency	Valid %
9	Teacher teams in my school meet regularly to look at student data and make instructional plans.	6	249	53.78
		5	151	32.61
		4	51	11.02
		3	7	1.51
		2	4	0.86
		1	1	0.22
	Total		463	100.00
10	Teachers in this school work collaboratively to improve curriculum and instruction.	6	230	49.68
		5	176	38.01
		4	49	10.58
		3	7	1.51
		2	1	0.22
	Total		463	100.00

Table 4-6. Descriptive Statistics for Antecedent Variables for Hypotheses 1.

Variable	*N*	Mean	Std. Deviation
Annual student enrollment	418	688.18	210.84
Percentage of students on Free and Reduced Lunch	425	54.82	24.76
Years as principal at the school	420	4.70	4.04
Years worked as a principal	425	8.39	6.91
Level of education	425	2.52	0.79
Valid N (listwise)	410		

Note: For level of education, responses are 1=Bachelor's degree, 2= Master's degree, 3= Ed .Specialist degree, and 4=Doctorate degree.

Table 4-7. Regression Coefficients, Standardized Regression Coefficients, t-test Statistics and Partial Correlations for Each of the Four Factors Addressed in Hypothesis 1.

Factor	Variables	*b*	*SE*	β	*t*	*p*	Partial Corr.
Teacher use of data-driven decision making to improve student achievement.	(Constant)	46.687	1.633		28.587	0.000	
	Annual student enrollment	-0.020	0.005	-0.058	-1.101	0.271	-0.055
	Percentage of students on Free and Reduced Lunch	-0.0228	0.012	-0.100	-1.903	0.058	-0.094
	Years as a principal at the school	0.032	0.080	0.024	0.403	0.687	0.020
	Years as a principal	-0.027	0.047	-0.034	-0.563	0.574	-0.028
	Level of Education	0.181	0.338	0.027	0.535	0.593	0.027
	a. Dependent Variable: Use of data-driven decision making by teachers to improve instruction						
Data-driven decision making culture	(Constant)	33.875	0.794		42.664	0.000	
	Annual student enrollment	-0.001	0.001	-0.077	-1.474	0.141	-0.073
	Percentage of students on Free and Reduced Lunch	-0.002	0.006	-0.018	-0.337	0.737	-0.017
	Years as a principal at the school	0.021	0.039	0.033	0.549	0.584	0.027
	Years as a principal	-0.026	0.023	-0.069	-1.142	0.254	-0.057
	Level of Education	0.255	0.164	0.077	1.555	0.121	0.077
	a. Dependent Variable: Data-driven culture						
Supporting systems	(Constant)	24.470	1.149		21.302	0.000	
	Annual student enrollment	-0.001	0.001	-0.073	-1.405	0.160	-0.070
	Percentage of students on Free and Reduced Lunch	-0.000	0.008	-0.003	-0.048	0.962	-0.002
	Years as a principal at the school	-0.027	0.056	-0.029	-0.476	0.635	-0.024
	Years as a principal	-0.036	0.033	-0.065	-1.069	0.285	-0.053
	Level of Education	0.503	0.238	0.105	2.118	0.035	0.105
	a. Dependent Variable: A-R factor score 3 for analysis Beliefs regarding supporting systems						
Collaboration among teachers	(Constant)	10.207	0.457		22.330	0.000	
	Annual student enrollment	-0.001	0.000	-0.061	-1.175	0.241	-0.058
	Percentage of students on Free and Reduced Lunch	0.005	0.003	0.082	1.573	0.116	0.078
	Years as a principal at the school	0.025	0.023	0.066	1.095	0.274	0.054
	Years as a principal	-0.014	0.013	-0.066	-1.091	0.276	-0.054
	Level of Education	0.059	0.095	0.031	0.629	0.529	0.031
	Dependent Variable: A-R factor 1 score for analysis Beliefs regarding collaboration among teachers using D3M						

Table 4-8. Descriptive Statistics Regarding Data-Driven Decision Making Factors and FCAT NRT and FCAT SSS Scale Scores for Grades 3, 4, and 5 in Reading and Math

	Grade 3 Mean	Grade 3 *SD*	Grade 3 *N*	Grade 4 Mean	Grade 4 *SD*	Grade 4 *N*	Grade 5 Mean	Grade 5 *SD*	Grade 5 *N*
SSS READING	313.93	21.20	443	318.12	18.97	442	304.42	20.96	433
Teacher use of data-driven decision making	44.52	5.62	443	44.53	5.62	442	44.60	5.60	433
Culture	32.81	5.38	443	32.81	5.39	442	32.82	5.43	433
Supporting systems	24.41	3.80	443	24.42	3.81	442	24.45	3.77	433
Collaboration	10.33	1.55	443	10.33	1.56	442	10.35	1.54	433
SSS MATH	333.36	23.39	443	323.48	21.15	442	332.79	17.84	440
Teacher use of data-driven decision making	44.52	5.62	443	44.53	5.62	442	44.50	5.61	440
Culture	32.81	5.38	443	32.81	5.39	442	32.79	5.40	440
Supporting systems	24.41	3.80	443	24.42	3.81	442	24.40	3.79	440
Collaboration	10.33	1.55	443	10.33	1.56	442	10.33	1.56	440
NRT READING	632.33	14.14	442	651.88	12.37	441	667.87	12.66	440
Teacher use of data-driven decision making	44.52	5.62	442	44.53	5.63	441	44.54	5.62	440
Culture	32.80	5.39	442	32.80	5.39	441	32.86	5.24	440
Supporting systems	24.41	3.81	442	24.43	3.80	441	24.41	3.81	440
Collaboration	10.33	1.55	442	10.33	1.56	441	10.33	1.56	440
NRT MATH	627.30	16.97	443	644.18	14.91	429	668.42	17.71	434
Teacher use of data-driven decision making	44.52	5.62	443	44.53	5.65	429	44.55	5.64	434
Culture	32.81	5.38	443	32.82	5.30	429	32.86	5.27	434
Supporting systems	24.41	3.80	443	24.41	3.82	429	24.40	3.81	434
Collaboration	10.33	1.55	443	10.34	1.55	429	10.33	1.56	434

Table 4-9. Regression Model for Data-Driven Decision Making Factors and FCAT NRT and FCAT SSS Scale Scores for Grades 3, 4, and 5 in Reading and Math for Hypothesis 2.

Variable	*df*	*F*	*p*	r^2
SSS READ Grade 3	4, 438	6.411	0.000	0.055
SSS READ Grade 4	4, 437	7.307	0.000	0.063
SSS READ Grade 5	4, 428	3.511	0.008	0.032
SSS MATH Grade 4	4, 437	6.747	0.000	0.058
SSS MATH Grade 5	4, 435	5.689	0.000	0.050
NRT READ Grade 3	4, 437	5.882	0.000	0.051
NRT READ Grade 4	4, 436	6.358	0.000	0.055
NRT READ Grade 5	4, 435	7.099	0.000	0.032
NRT MATH Grade 3	4, 438	7.051	0.000	0.061
NRT MATH Grade 4	4, 424	2.509	0.041	0.023
NRT MATH Grade 5	4, 429	3.455	0.009	0.031

Table 4-10. Unstandardized Regression Coefficients, Standardized Regression Coefficients, t-test Statistics, and Partial Correlations for Hypothesis 2.

	B	*SE*	β	*t*	*p*	Partial
SSS READING Grade 3						
(Constant)	306.177	9.052		33.826	0.000	
Use by teachers to improve instruction	1.151	0.270	0.305	4.262	0.000	0.200
Data-driven culture	-0.181	0.219	-0.046	-0.827	0.409	-0.039
Supporting systems	-0.210	0.310	-0.038	-0.677	0.499	-0.032
Collaboration among teachers	-3.136	0.780	-0.230	-4.023	0.000	-0.189
SSS READING Grade 4						
(Constant)	304.321	8.069		37.716	0.000	
Use by teachers to improve instruction	1.057	0.241	0.313	4.392	0.000	0.206
Data-driven culture	-0.079	0.195	-0.022	-0.403	0.687	-0.019
Supporting systems	-0.089	0.276	-0.018	-0.322	0.747	-0.015
Collaboration among teachers	-2.758	0.695	-0.226	-3.966	0.000	-0.186
SSS READING Grade 5						
(Constant)	299.969	9.201		32.602	0.000	
Use by teachers to improve instruction	0.930	0.272	0.249	3.418	0.001	0.163
Data-driven culture	-0.147	0.220	-0.038	-0.669	0.504	-0.032
Supporting systems	-0.589	0.315	-0.106	-1.867	0.063	-0.090
Collaboration among teachers	-1.722	0.796	-0.127	-2.164	0.031	-0.104
SSS MATH Grade 3						
(Constant)	321.204	10.000		32.121	0.000	
Use by teachers to improve instruction	1.319	0.298	0.317	4.421	0.000	0.207
Data-driven culture	-0.335	0.242	-0.077	-1.384	0.167	-0.066
Supporting systems	-0.166	0.342	-0.027	-0.484	0.629	-0.023
Collaboration among teachers	-3.049	0.861	-0.203	-3.541	0.000	-0.167
SSS MATH Grade 4						
(Constant)	300.360	9.018		33.307	0.000	
Use by teachers to improve instruction	1.148	0.269	0.305	4.269	0.000	0.200
Data-driven culture	-0.114	0.218	-0.029	-0.521	0.602	-0.025
Supporting systems	0.024	0.309	0.004	0.077	0.939	0.004
Collaboration among teachers	-2.405	0.777	-0.177	-3.094	0.002	-0.146
SSS MATH Grade 5						
(Constant)	320.348	7.664		41.800	0.000	
Use by teachers to improve instruction	0.917	0.228	0.289	4.020	0.000	0.189
Data-driven culture	-0.202	0.185	-0.061	-1.090	0.276	-0.052
Supporting systems	0.059	0.262	0.013	0.227	0.821	0.011
Collaboration among teachers	-2.247	0.659	-0.196	-3.409	0.001	-0.161
NRT READ Grade 3						
(Constant)	631.006	6.051		104.282	0.000	
Use by teachers to improve instruction	0.780	0.180	0.310	4.321	0.000	0.202
Data-driven culture	-0.181	0.147	-0.069	-1.235	0.218	-0.059
Supporting systems	-0.299	0.207	-0.081	-1.445	0.149	-0.069
Collaboration among teachers	-1.950	0.522	-0.214	-3.737	0.000	-0.176

Table 4-10. Continued

	B	*SE*	β	*t*	*p*	Partial
NRT READ Grade 4						
(Constant)	648.131	5.283		122.686	0.000	
Use by teachers to improve Instruction	0.646	0.158	0.294	4.100	0.000	0.193
Data-driven culture	-0.061	0.128	-0.027	-0.478	0.633	-0.023
Supporting systems	-0.164	0.181	-0.050	-0.904	0.366	-0.043
Collaboration among teachers	-1.842	0.456	-0.232	-4.039	0.000	-0.190
NRT READ Grade 5						
(Constant)	665.878	5.430		122.636	0.000	
Use by teachers to improve Instruction	0.709	0.161	0.314	4.406	0.000	0.207
Data-driven culture	-0.100	0.134	-0.042	-0.748	0.455	-0.036
Supporting systems	-0.220	0.185	-0.066	-1.191	0.234	-0.057
Collaboration among teachers	-2.023	0.465	-0.249	-4.355	0.000	-0.204
NRT MATH Grade 3						
(Constant)	624.711	7.224		86.478	0.000	
Use by teachers to improve Instruction	1.022	0.215	0.338	4.743	0.000	0.221
Data-driven culture	-0.260	0.175	-0.082	-1.483	0.139	-0.071
Supporting systems	-0.314	0.247	-0.070	-1.271	0.204	-0.061
Collaboration among teachers	-2.586	0.622	-0.237	-4.156	0.000	-0.195
NRT MATH Grade 4						
(Constant)	651.164	6.557		99.312	0.000	
Use by teachers to improve Instruction	0.340	0.195	0.129	1.746	0.082	0.084
Data-driven culture	-0.170	0.162	-0.060	-1.050	0.295	-0.051
Supporting systems	0.070	0.225	0.018	0.311	0.756	0.015
Collaboration among teachers	-1.766	0.569	-0.184	-3.106	0.002	-0.149
NRT MATH Grade 5						
(Constant)	669.555	7.744		86.466	0.000	
Use by teachers to improve Instruction	0.724	0.229	0.230	3.157	0.002	0.151
Data-driven culture	-0.118	0.191	-0.035	-0.617	0.537	-0.030
Supporting systems	-0.668	0.264	-0.144	-2.528	0.012	-0.121
Collaboration among teachers	-1.278	0.663	-0.113	-1.928	0.055	-0.093

Table 4-11. Descriptive Statistics Regarding Principal Characteristics, School Demographics, and Data-Driven Decision Making Factors and FCAT NRT and FCAT SSS Scale Scores for Grades 3, 4, and 5 in Reading and Math

	Grade 3 *Mean*	Grade 3 *SD*	Grade 3 *N*	Grade 4 *Mean*	Grade 4 *SD*	Grade 4 *N*	Grade 5 *Mean*	Grade 5 *SD*	Grade 5 *N*
SSS READING	314.40	21.05	410	318.55	18.99	410	304.92	20.86	401
Annual enrollment	688.50	205.69	410	688.50	205.69	410	689.44	207.41	401
Percentage on FRL	54.81	24.80	410	54.81	24.80	410	54.88	24.67	401
Years at the school	4.70	4.07	410	4.70	4.07	410	4.72	4.08	401
Years as a principal	8.39	6.96	410	8.39	6.96	410	8.43	6.91	401
Level of education	2.53	0.79	410	2.53	0.79	410	2.54	0.80	401
Use by teachers to improve instruction	44.83	5.41	410	44.83	5.41	410	44.92	5.37	401
Data-driven culture	33.62	2.63	410	33.62	2.63	410	33.65	2.63	401
Supporting systems	24.36	3.82	410	24.36	3.82	410	24.39	3.79	401
Collaboration among teachers	10.32	1.52	410	10.32	1.52	410	10.34	1.50	401
SSS MATH	333.69	23.31	410	323.83	21.16	410	333.00	17.74	407
Annual enrollment	688.50	205.69	410	688.50	205.69	410	688.36	206.34	407
Percentage on FRL	54.81	24.80	410	54.81	24.80	410	54.83	24.81	407
Years at the school	4.70	4.07	410	4.70	4.07	410	4.69	4.06	407
Years as a principal	8.39	6.96	410	8.39	6.96	410	8.35	6.90	407
Level of education	2.53	0.79	410	2.53	0.79	410	2.53	0.79	407
Use by teachers to improve instruction	44.83	5.41	410	44.83	5.41	410	44.81	5.40	407
Data-driven culture	33.62	2.63	410	33.62	2.63	410	33.61	2.64	407
Supporting systems	24.36	3.82	410	24.36	3.82	410	24.36	3.81	407
Collaboration among teachers	10.32	1.52	410	10.32	1.52	410	10.31	1.52	407
NRT READING	632.63	14.08	409	652.12	12.39	409	668.20	12.57	409
Annual enrollment	688.05	205.74	409	688.77	205.86	409	688.47	205.94	409
Percentage on FRL	54.79	24.83	409	54.76	24.80	409	54.80	24.83	409
Years at the school	4.70	4.08	409	4.65	3.98	409	4.68	4.06	409
Years as a principal	8.39	6.97	409	8.35	6.93	409	8.34	6.89	409
Level of education	2.53	0.80	409	2.53	0.79	409	2.53	0.80	409
Use by teachers to improve instruction	44.83	5.41	409	44.84	5.41	409	44.82	5.41	409
Data-driven culture	33.61	2.63	409	33.61	2.63	409	33.61	2.63	409
Supporting systems	24.36	3.83	409	24.37	3.82	409	24.35	3.83	409
Collaboration among teachers	10.31	1.52	409	10.32	1.52	409	10.32	1.52	409
NRT MATH	627.61	16.95	410	644.32	15.07	400	668.73	17.80	404
Annual enrollment	688.50	205.69	410	687.15	207.01	400	689.64	206.63	404
Percentage on FRL	54.81	24.80	410	54.84	24.92	400	54.62	24.78	404
Years at the school	4.70	4.07	410	4.66	3.99	400	4.65	3.97	404
Years as a principal	8.39	6.96	410	8.30	6.91	400	8.34	6.87	404
Level of education	2.53	0.79	410	2.53	0.79	400	2.54	0.80	404
Use by teachers to improve instruction	44.83	5.41	410	44.85	5.43	400	44.84	5.42	404
Data-driven culture	33.62	2.63	410	33.60	2.66	400	33.62	2.64	404
Supporting systems	24.36	3.82	410	24.38	3.84	400	24.35	3.83	404
Collaboration among teachers	10.32	1.52	410	10.34	1.51	400	10.32	1.52	404

Table 4-12. ANOVA Table for Data-Driven Decision Making Factors and FCAT NRT and FCAT SSS Scale Scores for Grades 3, 4, and 5 in Reading and Math While Controlling for Principal Characteristics and School Demographics for Step One and Two of Hypothesis 3.

SSS Reading Model Grade 3		*df*	*F*	*Sig.*	Model Grade 4		*df*	*F*	*Sig.*	Model Grade 5		*df*	*F*	*Sig.*
1	Regression	5	203.64	0.000	1	Regression	5	210.15	0.000	1	Regression	5	34.97	0.000
	Residual	404				Residual	404				Residual	395		
	Total	409				Total	409				Total	400		
2	Regression	9	113.88	0.000	2	Regression	9	120.82	0.000	2	Regression	9	19.58	0.000
	Residual	400				Residual	400				Residual	391		
	Total	409				Total	409				Total	400		
a	Predictors: (Constant), level of education, years at the school				a	Predictors: (Constant), level of education, years at the school				a	Predictors: (Constant), level of education, annual student enrollment			
b	Predictors: (Constant), level of education, years at the school, percentage on FRL				b	Predictors: (Constant), level of education, years at the school, percentage on FRL				b	Predictors: (Constant), level of education, annual student enrollment, years the school, percentage on FRL			
c	Dependent Variable: SSS Reading Grade 3				c	Dependent Variable: SSS Reading Grade 4				c	Dependent Variable: SSS Reading Grade 5			
SSS Math Model Grade 3		*df*	*F*	*Sig.*	Model Grade 4		*df*	*F*	*Sig.*	Model Grade 5		*df*	*F*	*Sig.*
1	Regression	5	111.56	0.000	1	Regression	5	113.02	0.000	1	Regression	5	84.67	0.000
	Residual	404				Residual	404				Residual	401		
	Total	409				Total	409				Total	406		
2	Regression	9	63.04	0.000	2	Regression	9	66.23	0.000	2	Regression	9	48.02	0.000
	Residual	400				Residual	400				Residual	397		
	Total	409				Total	409				Total	406		
a	Predictors: (Constant), level of education, years at this school				a	Predictors: (Constant), level of education, years at the school				a	Predictors: (Constant), level of education, percentage on FRL			
b	Predictors: (Constant), level of education, years at the school percentage on FRL				b	Predictors: (Constant), level of education, years at the school, percentage on FRL				b	Predictors: (Constant), level of education, percentage on FRL, years at the school			
c	Dependent Variable: SSS Math Grade 3				c	Dependent Variable: SSS Math Grade 4				c	Dependent Variable: SSS Math Grade 5			

Table 4-12. Continued

NRT Reading Model Grade 3		*df*	*F*	*Sig.*	Model Grade 4		*df*	*F*	*Sig.*	Model Grade 5		*df*	*F*	*Sig.*
1	Regression	5	169.87	0.000	1	Regression	5	182.42	0.000	1	Regression	5	174.63	0.000
	Residual	403				Residual	403				Residual	403		
	Total	408				Total	408				Total	408		
2	Regression	9	94.28	0.000	2	Regression	9	102.09	0.000	2	Regression	9	98.40	0.000
	Residual	399				Residual	399				Residual	399		
	Total	408				Total	408				Total	408		
A	Predictors: (Constant), level of education, annual student enrollment				a	Predictors: (Constant), level of education, annual student enrollment				a	Predictors: (Constant), level of education, annual student enrollment			
B	Predictors: (Constant), level of education, annual student enrollment, years at the school				b	Predictors: (Constant), level of education, annual student enrollment, years at the school				b	Predictors: (Constant), level of education, annual student enrollment, years at the school			
C	Dependent Variable: NRT Read Grade 3				c	Dependent Variable: NRT Read Grade4				c	Dependent Variable: NRT Read Grade 5			

NRT Math Model Grade 3		*df*	*F*	*Sig.*	Model Grade 4		*df*	*F*	*Sig.*	Model Grade 5		*df*	*F*	*Sig.*
1	Regression	5	153.41	0.000	1	Regression	5	5.60	0.000	1	Regression	5	29.06	0.000
	Residual	404				Residual	394				Residual	398		
	Total	409				Total	399				Total	403		
2	Regression	9	86.15	0.000	2	Regression	9	3.96	0.000	2	Regression	9	16.48	0.000
	Residual	400				Residual	390				Residual	394		
	Total	409				Total	399				Total	403		
A	Predictors: (Constant), level of education, years at the school				a	Predictors: (Constant), level of education, percentage on FRL				a	Predictors: (Constant), level of education, years at the school			
B	Predictors: (Constant), level of education, years at the school, percentage on FRL				b	Predictors: (Constant), level of education, percentage on FRL, years at the school				b	Predictors: (Constant), level of education, years at the school, percentage on FRL			
C	Dependent Variable: NRT Math Grade 3				c	Dependent Variable: NRT Math Grade 4				c	Dependent Variable: NRT Math Grade 5			

Table 4-13. Regression Model for Data-Driven Decision Making Factors and FCAT NRT and FCAT SSS Scale Scores for Grades 3, 4, and 5 in Reading and Math While Controlling for Principal Characteristics and School Demographics for Step One of Hypothesis 3.

Model	Variables	*b*	*SE*	*β*	*t*	*p*	*Partial*
SSS Reading Grade 3							
1	(Constant)	361.18	3.41		105.99	0.000	
	Annual school enrollment	-0.01	0.00	-0.08	-3.01	0.003	-0.15
	Percentage on FRL	-0.73	0.02	-0.86	-30.50	0.000	-0.83
	Years at the school	0.20	0.17	0.04	1.22	0.222	0.06
	Years as a principal	0.13	0.10	0.04	1.34	0.181	0.07
	Level of education	-1.13	0.71	-0.04	-1.61	0.109	-0.08
2	(Constant)	357.09	8.05		44.35	0.000	
	Annual school enrollment	-0.01	0.00	-0.08	-2.92	0.004	-0.14
	Percentage on FRL	-0.72	0.02	-0.85	-29.67	0.000	-0.83
	Years at the school	0.22	0.17	0.04	1.32	0.187	0.07
	Years as a principal	0.13	0.10	0.04	1.36	0.173	0.07
	Level of education	-1.23	0.71	-0.05	-1.73	0.084	-0.09
	Use of D3M by teachers to improve instruction	0.14	0.16	0.04	0.91	0.364	0.05
	Data-driven culture	-0.11	0.27	-0.01	-0.42	0.672	-0.02
	Supporting systems	0.26	0.18	0.05	1.44	0.152	0.07
	Collaboration among teachers using D3M	-0.50	0.47	-0.04	-1.07	0.284	-0.05
a	Dependent Variable: SSS Reading Grade 3						
SSS Reading Grade 4							
1	(Constant)	355.58	3.04		117.01	0.000	
	Annual school enrollment	0.00	0.00	-0.05	-1.91	0.057	-0.09
	Percentage on FRL	-0.66	0.02	-0.86	-30.85	0.000	-0.84
	Years at the school	0.21	0.15	0.05	1.41	0.158	0.07
	Years as a principal	0.05	0.09	0.02	0.58	0.563	0.03
	Level of education	0.39	0.63	0.02	0.63	0.531	0.03
2	(Constant)	339.83	7.11		47.81	0.000	
	Annual school enrollment	0.00	0.00	-0.05	-1.69	0.092	-0.08
	Percentage on FRL	-0.65	0.02	-0.85	-30.22	0.000	-0.83
	Years at the school	0.22	0.15	0.05	1.49	0.137	0.07
	Years as a principal	0.06	0.09	0.02	0.72	0.474	0.04
	Level of education	0.21	0.63	0.01	0.34	0.733	0.02
	Use of D3M by teachers to improve instruction	0.20	0.14	0.06	1.42	0.156	0.07
	Data-driven culture	0.14	0.23	0.02	0.61	0.545	0.03
	Supporting systems	0.27	0.16	0.05	1.71	0.088	0.09
	Collaboration among teachers using D3M	-0.49	0.41	-0.04	-1.18	0.238	-0.06
a	Dependent Variable: SSS Reading Grade 4						

Table 4-13. Continued

Model		*b*	*SE*	*β*	*t*	*P*	*Partial*
SSS Reading Grade 5							
1	(Constant)	333.01	5.35		62.21	0.000	
	Annual school enrollment	0.00	0.00	0.01	0.33	0.740	0.02
	Percentage on FRL	-0.46	0.04	-0.54	-12.18	0.000	-0.52
	Years at the school	0.22	0.26	0.04	0.86	0.392	0.04
	Years as a principal	-0.04	0.15	-0.01	-0.23	0.818	-0.01
	Level of education	-1.83	1.10	-0.07	-1.67	0.097	-0.08
2	(Constant)	327.27	12.82		25.52	0.000	
	Annual school enrollment	0.00	0.00	0.02	0.35	0.723	0.02
	Percentage on FRL	-0.45	0.04	-0.54	-11.72	0.000	-0.51
	Years at the school	0.21	0.26	0.04	0.80	0.424	0.04
	Years as a principal	-0.04	0.16	-0.01	-0.23	0.817	-0.01
	Level of education	-1.72	1.11	-0.07	-1.56	0.120	-0.08
	Use of D3M by teachers to improve instruction	0.30	0.25	0.08	1.21	0.229	0.06
	Data-driven culture	-0.08	0.42	-0.01	-0.19	0.850	-0.01
	Supporting systems	-0.25	0.28	-0.05	-0.88	0.382	-0.04
	Collaboration among teachers using D3M	0.04	0.75	0.00	0.06	0.956	0.00
a	Dependent Variable: SSS Reading Grade 5						
SSS Math Grade 3							
1	(Constant)	371.48	4.59		80.96	0.000	
	Annual school enrollment	0.00	0.00	-0.01	-0.43	0.671	-0.02
	Percentage on FRL	-0.72	0.03	-0.76	-22.25	0.000	-0.74
	Years at the school	0.54	0.23	0.09	2.39	0.017	0.12
	Years as a principal	-0.12	0.13	-0.03	-0.87	0.385	-0.04
	Level of education	0.43	0.95	0.01	0.45	0.654	0.02
2	(Constant)	365.91	10.82		33.81	0.000	
	Annual school enrollment	0.00	0.00	-0.01	-0.33	0.740	-0.02
	Percentage on FRL	-0.71	0.03	-0.75	-21.63	0.000	-0.73
	Years at the school	0.55	0.23	0.10	2.44	0.015	0.12
	Years as a principal	-0.11	0.13	-0.03	-0.83	0.405	-0.04
	Level of education	0.34	0.95	0.01	0.36	0.718	0.02
	Use of D3M by teachers to improve instruction	0.31	0.21	0.07	1.48	0.141	0.07
	Data-driven culture	-0.41	0.36	-0.05	-1.14	0.256	-0.06
	Supporting systems	0.28	0.24	0.05	1.16	0.248	0.06
	Collaboration among teachers using D3M	-0.21	0.63	-0.01	-0.34	0.735	-0.02
a	Dependent Variable: SSS Math Grade 3						

Table 4-13. Continued

Model		*b*	*SE*	*β*	*t*	*P*	*Partial*
SSS Math Grade 4							
1	(Constant)	357.23	4.15		86.09	0.000	
	Annual school enrollment	0.00	0.00	-0.02	-0.69	0.493	-0.03
	Percentage on FRL	-0.66	0.03	-0.77	-22.50	0.000	-0.75
	Years at the school	0.43	0.20	0.08	2.12	0.035	0.10
	Years as a principal	-0.15	0.12	-0.05	-1.24	0.216	-0.06
	Level of education	1.35	0.86	0.05	1.58	0.116	0.08
2	(Constant)	331.96	9.68		34.29	0.000	
	Annual school enrollment	0.00	0.00	-0.01	-0.41	0.684	-0.02
	Percentage on FRL	-0.65	0.03	-0.76	-22.12	0.000	-0.74
	Years at the school	0.43	0.20	0.08	2.14	0.033	0.11
	Years as a principal	-0.13	0.12	-0.04	-1.07	0.287	-0.05
	Level of education	1.10	0.85	0.04	1.29	0.199	0.06
	Use of D3M by teachers to improve instruction	0.27	0.19	0.07	1.43	0.152	0.07
	Data-driven culture	0.14	0.32	0.02	0.44	0.660	0.02
	Supporting systems	0.34	0.22	0.06	1.57	0.117	0.08
	Collaboration among teachers using D3M	-0.06	0.56	0.00	-0.10	0.921	0.00
a	Dependent Variable: SSS Math Grade 4						
SSS Math Grade 5							
1	(Constant)	361.71	3.76		96.10	0.000	
	Annual school enrollment	0.00	0.00	-0.05	-1.46	0.145	-0.07
	Percentage on FRL	-0.52	0.03	-0.73	-19.67	0.000	-0.70
	Years at the school	0.15	0.18	0.03	0.82	0.415	0.04
	Years as a principal	0.01	0.11	0.00	0.10	0.920	0.01
	Level of education	0.88	0.78	0.04	1.13	0.260	0.06
2	(Constant)	355.81	8.89		40.01	0.000	
	Annual school enrollment	0.00	0.00	-0.05	-1.36	0.174	-0.07
	Percentage on FRL	-0.51	0.03	-0.72	-19.00	0.000	-0.69
	Years at the school	0.17	0.18	0.04	0.90	0.371	0.04
	Years as a principal	0.02	0.11	0.01	0.16	0.870	0.01
	Level of education	0.75	0.79	0.03	0.95	0.341	0.05
	Use of D3M by teachers to improve instruction	0.23	0.17	0.07	1.32	0.188	0.07
	Data-driven culture	-0.20	0.29	-0.03	-0.68	0.494	-0.03
	Supporting systems	0.29	0.20	0.06	1.46	0.146	0.07
	Collaboration among teachers using D3M	-0.51	0.52	-0.04	-0.98	0.329	-0.05
a	Dependent Variable: SSS Math Grade 5						

Table 4-13. Continued

Model		*b*	*SE*	*β*	*t*	*P*	*Partial*
NRT Reading Grade 3							
1	(Constant)	660.92	2.43		272.04	0.000	
	Annual school enrollment	0.00	0.00	-0.06	-2.11	0.035	-0.10
	Percentage on FRL	-0.47	0.02	-0.83	-27.67	0.000	-0.81
	Years at the school	0.05	0.12	0.01	0.40	0.689	0.02
	Years as a principal	0.13	0.07	0.06	1.84	0.066	0.09
	Level of education	-0.30	0.50	-0.02	-0.61	0.545	-0.03
2	(Constant)	664.51	5.76		115.32	0.000	
	Annual school enrollment	0.00	0.00	-0.07	-2.16	0.031	-0.11
	Percentage on FRL	-0.47	0.02	-0.83	-26.85	0.000	-0.80
	Years at the school	0.05	0.12	0.02	0.45	0.656	0.02
	Years as a principal	0.12	0.07	0.06	1.76	0.079	0.09
	Level of education	-0.26	0.51	-0.01	-0.51	0.609	-0.03
	Use of D3M by teachers to improve instruction	0.14	0.11	0.05	1.24	0.216	0.06
	Data-driven culture	-0.24	0.19	-0.05	-1.27	0.203	-0.06
	Supporting systems	0.01	0.13	0.00	0.04	0.966	0.00
	Collaboration among teachers using D3M	-0.20	0.34	-0.02	-0.60	0.551	-0.03
a	Dependent Variable: NRT Read Grade 3						
NRT Reading Grade 4							
1	(Constant)	675.42	2.08		323.97	0.000	
	Annual school enrollment	0.00	0.00	-0.03	-1.17	0.242	-0.06
	Percentage on FRL	-0.42	0.01	-0.84	-28.56	0.000	-0.82
	Years at the school	0.09	0.10	0.03	0.89	0.376	0.04
	Years as a principal	0.05	0.06	0.03	0.78	0.438	0.04
	Level of education	0.08	0.43	0.01	0.19	0.846	0.01
2	(Constant)	670.35	4.93		135.99	0.000	
	Annual school enrollment	0.00	0.00	-0.03	-1.09	0.275	-0.05
	Percentage on FRL	-0.41	0.01	-0.83	-27.69	0.000	-0.81
	Years at the school	0.10	0.10	0.03	0.95	0.344	0.05
	Years as a principal	0.05	0.06	0.03	0.79	0.430	0.04
	Level of education	0.04	0.43	0.00	0.09	0.932	0.00
	Use of D3M by teachers to improve instruction	0.11	0.10	0.05	1.12	0.265	0.06
	Data-driven culture	0.10	0.16	0.02	0.60	0.546	0.03
	Supporting systems	0.06	0.11	0.02	0.55	0.582	0.03
	Collaboration among teachers using D3M	-0.47	0.29	-0.06	-1.64	0.102	-0.08
a	Dependent Variable: NRT Read Grade 4						

Table 4-13. Continued

Model		*b*	*SE*	*β*	*t*	*P*	*Partial*
NRT Reading Grade 5							
1	(Constant)	694.32	2.15		323.14	0.000	
	Annual school enrollment	0.00	0.00	-0.07	-2.22	0.027	-0.11
	Percentage on FRL	-0.43	0.02	-0.84	-28.32	0.000	-0.82
	Years at the school	-0.01	0.11	0.00	-0.10	0.920	-0.01
	Years as a principal	0.05	0.06	0.02	0.73	0.467	0.04
	Level of education	-0.11	0.44	-0.01	-0.25	0.801	-0.01
2	(Constant)	699.76	5.07		138.00	0.000	
	Annual school enrollment	0.00	0.00	-0.07	-2.33	0.020	-0.12
	Percentage on FRL	-0.42	0.02	-0.83	-27.44	0.000	-0.81
	Years at the school	0.00	0.11	0.00	0.04	0.965	0.00
	Years as a principal	0.04	0.06	0.02	0.58	0.560	0.03
	Level of education	-0.07	0.45	0.00	-0.15	0.879	-0.01
	Use of D3M by teachers to improve instruction	0.17	0.10	0.07	1.68	0.093	0.08
	Data-driven culture	-0.25	0.17	-0.05	-1.51	0.131	-0.08
	Supporting systems	0.05	0.11	0.01	0.42	0.675	0.02
	Collaboration among teachers using D3M	-0.57	0.30	-0.07	-1.94	0.053	-0.10
a	Dependent Variable: NRT Read Grade 5						
NRT Math Grade 3							
1	(Constant)	659.40	3.02		218.11	0.000	
	Annual school enrollment	0.00	0.00	-0.02	-0.73	0.463	-0.04
	Percentage on FRL	-0.56	0.02	-0.82	-26.30	0.000	-0.79
	Years at the school	0.17	0.15	0.04	1.12	0.262	0.06
	Years as a principal	-0.06	0.09	-0.03	-0.70	0.485	-0.03
	Level of education	-0.06	0.63	0.00	-0.10	0.917	-0.01
2	(Constant)	664.31	7.14		93.07	0.000	
	Annual school enrollment	0.00	0.00	-0.02	-0.79	0.427	-0.04
	Percentage on FRL	-0.55	0.02	-0.81	-25.46	0.000	-0.79
	Years at the school	0.18	0.15	0.04	1.20	0.232	0.06
	Years as a principal	-0.07	0.09	-0.03	-0.80	0.424	-0.04
	Level of education	0.01	0.63	0.00	0.01	0.991	0.00
	Use of D3M by teachers to improve instruction	0.28	0.14	0.09	1.98	0.049	0.10
	Data-driven culture	-0.40	0.24	-0.06	-1.72	0.087	-0.09
	Supporting systems	0.01	0.16	0.00	0.09	0.927	0.00
	Collaboration among teachers using D3M	-0.44	0.42	-0.04	-1.06	0.288	-0.05
a	Dependent Variable: NRT Math Grade 3						

Table 4-13. Continued

Model		*b*	*SE*	*β*	*t*	*P*	*Partial*
NRT Math Grade 4							
1	(Constant)	651.01	4.48		145.35	0.000	
	Annual school enrollment	0.00	0.00	0.02	0.33	0.741	0.02
	Percentage on FRL	-0.13	0.03	-0.22	-4.22	0.000	-0.21
	Years at the school	-0.17	0.22	-0.04	-0.74	0.460	-0.04
	Years as a principal	0.26	0.13	0.12	2.03	0.043	0.10
	Level of education	-0.69	0.93	-0.04	-0.74	0.459	-0.04
2	(Constant)	662.95	10.48		63.26	0.000	
	Annual school enrollment	0.00	0.00	0.01	0.26	0.793	0.01
	Percentage on FRL	-0.12	0.03	-0.20	-3.84	0.000	-0.19
	Years at the school	-0.13	0.22	-0.04	-0.59	0.555	-0.03
	Years as a principal	0.25	0.13	0.11	1.90	0.058	0.10
	Level of education	-0.65	0.93	-0.03	-0.69	0.488	-0.04
	Use of D3M by teachers to improve instruction	0.23	0.21	0.08	1.10	0.271	0.06
	Data-driven culture	-0.52	0.35	-0.09	-1.50	0.134	-0.08
	Supporting systems	0.29	0.24	0.07	1.25	0.213	0.06
	Collaboration among teachers using D3M	-1.19	0.62	-0.12	-1.92	0.055	-0.10
a	Dependent Variable: NRT Math Grade 4						
NRT Math Grade 5							
1	(Constant)	688.97	4.67		147.61	0.000	
	Annual school enrollment	0.00	0.00	0.05	1.16	0.247	0.06
	Percentage on FRL	-0.35	0.03	-0.49	-10.70	0.000	-0.47
	Years at the school	0.27	0.23	0.06	1.16	0.248	0.06
	Years as a principal	-0.07	0.13	-0.03	-0.51	0.610	-0.03
	Level of education	-1.92	0.96	-0.09	-2.00	0.046	-0.10
2	(Constant)	695.05	11.08		62.71	0.000	
	Annual school enrollment	0.00	0.00	0.05	1.06	0.288	0.05
	Percentage on FRL	-0.34	0.03	-0.48	-10.28	0.000	-0.46
	Years at the school	0.26	0.23	0.06	1.11	0.268	0.06
	Years as a principal	-0.08	0.14	-0.03	-0.62	0.537	-0.03
	Level of education	-1.72	0.97	-0.08	-1.77	0.077	-0.09
	Use of D3M by teachers to improve instruction	0.31	0.22	0.09	1.42	0.156	0.07
	Data-driven culture	-0.33	0.36	-0.05	-0.92	0.360	-0.05
	Supporting systems	-0.32	0.25	-0.07	-1.31	0.191	-0.07
	Collaboration among teachers using D3M	-0.12	0.64	-0.01	-0.18	0.855	-0.01
a	Dependent Variable: NRT Math Grade 5						

CHAPTER 5
DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS

Discussion

The role of the public school principal has evolved since the implementation of the NCLB Act of 2001. Not only has the principal become the primary focus for public scrutiny of school success or failure, but s/he has also become the primary person responsible for programs, resources, professional development, and staffing. The increased pressure for accountability has resulted in a need for the principal as the school leader to analyze and understand all activities within the school. Many public school principals have turned to data-driven decision making as a tool to provide visibility not only into student performance, but into the effectiveness of other school operations as well.

How has this evolution in the role of the public school principal affected student achievement? Principal leadership studies during the past twenty years have yielded little information regarding the relationship between the principals' actions and student achievement, however research conducted by Hallinger and Heck does show that principals create a measurable effect on school improvement and student achievement (Hallinger and Heck, 1998). In addition, the question arises as to the importance of data-driven decision making as a tool for principals to use in order to improve student achievement.

Study Purpose

The purpose of the study was to examine the relationship between data-driven decision making by elementary school principals and school level student achievement. In particular, the study was designed to determine the effect of the principals' beliefs about data-driven decision making on student achievement. This chapter will provide a discussion and interpretation of the

results of the study as well as recommendations for future research, implications for public schools and their leaders, and conclusions.

Target Population

The target population for the study included principals from Florida public elementary schools. The study addressed all public elementary schools in all counties in the state of Florida that are not charter or specialized schools and that teach prekindergarten or kindergarten through grade five. The target population included 1468 public elementary schools in Florida. Public elementary schools from Brevard and Clay counties were eliminated because they serve kindergarten through sixth grade. The final response count for the survey and school achievement data was 471, representing 32% of the elementary school principal population.

For this study, a survey was conducted to determine principal beliefs about data-driven decision making. The State-wide Data Driven Readiness Study Principal Survey was determined to be the best fit for the purpose of the study. The survey also included questions designed to determine school demographics and principal characteristics including school enrollment, percent of students on free and reduced lunch, years of experience as a principal, years of experience as a principal at that school, and level of education. The study incorporated FCAT NRT and FCAT SSS data for the year 2008 from the Florida Department of Education. Specifically grade level scale scores for each school for math and reading FCAT SSS and FCAT NRT tests for grades three, four, and five were used.

Summary and Discussion of Results

This study was designed to answer two research questions regarding principal beliefs about data-driven decision making. In addition to determining which beliefs are held by public elementary school principals in the state of Florida, the study also tested the relationship between the principals' beliefs regarding the use of data-driven decision making and student achievement.

Specifically, the research tested whether data-driven decision making by principals acted as a mediator for student achievement. The study also examined the effect of school enrollment, percentage of students on free and reduced lunch, years as a principal, years as a principal at the school, and level of education on student achievement. In addition, a factor analysis was conducted on the survey instrument. The following provides a discussion and analysis of the results of the study.

Factor Analysis

Because data-driven decision making is relatively new in schools, there are few models that address its use in the public school setting from a principal's perspective. The results of the factor analysis of the data-driven decision making principal survey generated four themes or constructs that reflect elementary school principal beliefs about data-driven decision making in their schools. Specifically the four themes were beliefs regarding the use of data by teachers to improve instruction, beliefs regarding a data-driven culture, beliefs regarding supporting systems, and beliefs regarding collaboration among teachers using data-driven decision making.

These four themes represent a unique representation of actual beliefs held by principals about the activities that involve data-driven decision making in their schools. The results of the factor analysis not only add to the body of knowledge regarding a theory for data-driven decision making in schools, but they also provide principals with a practical illustration of those particular activities which have value in a public elementary school setting. Elementary school principals who are interested in implementing or evaluating the prevalence of data-driven decision making in their schools may benefit from the results of the factor analysis.

The original data-driven decision making survey included 82 items. The first 20 items were eliminated from the factor analysis because they did not specifically address data-driven decision making activities within the school. The last five items were also eliminated from the

factor analysis because they addressed school demographics and principal characteristics. The remaining 57 items were analyzed using the maximum likelihood estimation (MLE) model. The results of the factor analysis utilized 23 of the original 57 items included in the study. The factor analysis was conducted using both a principal components model and the MLE model. The results from the MLE model provided the best fit because it resulted in higher correlations for the resulting four factors listed above. One additional question was eliminated as a result of the reliability analysis. .

The principal components model also loaded the questions into four factors, but the correlations were too low to be considered viable. It is interesting to note that the four factors that resulted from the principle components model were much closer to the data-driven decision making factors found in recent literature. One possible reason for the difference in constructs is that these factors often emphasize data-driven decision making as part of the school improvement process, continuous improvement, and school reform (Schmoker, 2005; Reeves, 2002), not necessarily the day-to-day activities that occur in the public elementary school. The factors identified through the principle components model include beliefs regarding teacher actions to improve instruction, beliefs regarding the use of data to support school goals, use of data for self-improvement by teachers, and overall beliefs regarding data-driven cultures.

In the MLE factor analysis used for this study, the first factor, beliefs regarding the use of data-driven decision making by teachers to improve student achievement, targeted the principals' beliefs about the day-to-day actions of teachers. Nine items loaded into this construct. Items in this category included the use of data to make changes to instruction and curriculum, improve performance, set instructional goals and targets, communicate and identify student needs. Also included in this factor was the belief that teachers feel personally responsible when school

improvement goals are not met. All nine of the items in this category relate to the principals' perceptions regarding the teachers' use of data-driven decision making practices, indicating the perceived importance of the teachers' actions and how their use of data-driven decision making affects student achievement.

Six items loaded into the second factor, beliefs regarding a data-driven culture. Included in this factor are beliefs about support for teachers, data transparency, quality of decision making in the school, school improvement goals, and modeling by administrators. This factor also included an item that addressed the importance of analysis in order to improve. All six items in this category reflect the perceived importance of incorporating data-driven decision making into the culture of the school. Data-driven decision making implies change, and for change to last, it must become a part of the culture.

The third factor addressed in the factor analysis is the principals' beliefs regarding data to provide support systems for the school. The five items that loaded into this category include beliefs about the use of data to communicate, determine staff development needs, allocate resources, and support data-driven dialogue. The category also includes beliefs about the use of multiple resources to assess educational programs. The items in this category reflect the importance of integrating data-driven decision making into the overall network of the school's operations, not just the classroom.

The fourth factor addressed the principals' beliefs regarding collaboration among teachers using data-driven decision making. Although only two items loaded into this category, the scree plot and the correlations supported the inclusion of this factor. The two beliefs addressed in this category include beliefs about the degree to which principals believe that teacher teams meet regularly to look at student data and make instructional plans and beliefs

about when teachers in the school meet with each other, they usually focus on improving student learning. This category reflects the principals' beliefs that collaboration among teachers is key to the successful implementation of data-driven decision making in the classroom.

At least three of the domains identified through the MLE factor analysis are supported by leading educational experts. Research by Marzano (2005), Schmoker (2005), and Stiggins (1999) emphasize the importance of the teacher with respect to student achievement. The factor analysis domain of principal beliefs regarding teacher use of data-driven decision making to improve student achievement supports this research. The domain of data-driven culture is supported by Panettieri (2006), who points out the importance of not only collection of data, but also a school wide emphasis on outcome assessments, progress monitoring and feedback, and teacher ownership of outcomes, and the administrator's ability to build a learning organization. School leaders must develop and use effective strategies for data collection and analysis, and must help teachers to understand and work with data to improve learning in the classroom (Creighton, 2007). Research by DuFour (2006) and Schmoker (2005) highlights the importance of collaboration among teachers, another domain identified through the survey.

Items within three of the four domains also align with a recent dissertation study by Susan Hutton (2007) that included a literature review of research relating to principal use of student achievement data in decision-making. According to Hutton, the literature fell into the domains of analysis of data, using data to communicate, using data for school improvement, and data-driven cultures.

Although some portions of the factor analysis are similar to other studies, the constructs that resulted from this study are unique in their relationship to each other. Each set of beliefs held by principals represents a set of important activities that must occur within the school for data-

driven decision making to be successful. Yet each set of items supports other items in other categories. For example, collaboration by teachers who meet regularly in teams to discuss student data and make instructional plans also reflects their use of data to set instructional goals and targets. Whereas many models for data-driven decision making represent separate functions (AASA, 2002; Hutton, 2007; Reeves, 2002), the four domains represented through this set of constructs are interrelated. The four themes represented through the factor analysis represent a simple way for principals or other school administrators to analyze the use of data-driven decision making within the school from a global perspective. It also provides them with both a macro and a micro view of data-driven decision making activities.

1. What are the beliefs held by elementary school principals in Florida with respect to data-driven decision making?

Results from the study indicate that elementary school principals in the state of Florida value data-driven decision making in their schools, and that they believe it is an effective tool to improve student achievement. The item means ranged from 4.43 to 5.79, indicating that on average principal's agreed with every item in the survey.

Once again principals identified the importance of a data-driven culture in their schools reflecting a belief that data-driven decision making must be an integral part of the school culture in order for it to be effective. This category represented the strongest beliefs held by principals, with means ranging from 5.79 to 5.37. All six items were ranked seven or higher, representing 60% of items in the top 10 category. Principals also verified the importance of teacher actions with respect to data-driven decision making by ranking beliefs about teacher use of data to identify students in need, set instructional targets, and work collaboratively to improve curriculum and instruction very high. Principals also believed strongly that teacher teams meet

regularly to look at student data and make instructional plans, implying confidence in the use of data-driven decision making as part of the team planning process within their schools.

Principals were less confident about the systems that were in place to support data driven decision making within their schools. The means for items in this category ranged from 5.32 to 4.98 for four of the five factors in this category. Principals indicated moderately strong beliefs in the use of multiple data sources, the use of data to allocate resources and determine professional development needs, and as a means for dialogue during staff meetings. These moderately high ratings by principals indicate that they believe in the use of data to facilitate staff discussions and to make decisions that affect allocation of resources and staff development activities. The principals' beliefs regarding the teachers' ability to have significant input into data management and analysis practices ranked second from the bottom. This low ranking may indicate a belief that data-driven practices are standardized within their school or district.

Principals were least confident in their beliefs regarding the teachers' use of data-driven decision making within their schools. Six of the nine items in this category fell in the bottom half of the list. Five of the six items addressed the use of data to make changes and to communicate frequently with parents. The perception may be that although teachers may use data at the beginning of an endeavor to identify student needs and set instructional goals and targets, they are less confident in the teachers' continued use of data throughout the learning process to drive change. Finally, although principals believed strongly in collaboration by teacher teams, they felt less strongly about the belief that when teachers meet with each other they focus on improving student achievement.

The principal beliefs regarding data-driven decision support the standards identified by the National Association of Elementary School Principals (NAESP, 2004). Standard Five ties to

the items relating to principal beliefs regarding teacher use of data-driven decision making to improve student achievement, requiring the use of multiple sources of data as diagnostic tools to assess, identify and apply instructional improvement. The suggested strategies include use of a variety of data sources to measure performance, analysis using a variety of strategies, using data as tools to analyze student weaknesses and make adjustments to instruction, benchmarking against other schools with similar demographics, and creating a data-driven school environment. One interesting note is that when answering the survey, principals indicated that they felt strongest about their beliefs about the importance of a data-driven culture. However, the standards emphasize data-driven decision making to change instruction and improve student achievement. The high rating by principals regarding culture may indicate their understanding that in reality one must make data-driven decision making a part of the school culture in order for it to be long-lasting and effective.

In summary, elementary school principals expressed strong beliefs about the use of data-driven decision making in their schools to support student achievement. They felt strongest about the importance of establishing a data-driven culture. They also indicated that they believe strongly that teachers use data-driven decision making to identify at-risk students and to set instructional goals and targets. Principals were less confident about the teachers' use of data to make continuous change based on student data. Results also supported a perception that while teachers may use data-driven decision making to evaluate their students, they do not necessarily personalize its use to their personal professional development needs or to the school improvement activities.

The challenge will be for principals to continue to drive data-decision making practices into all school operations. The ability to maximize the effectiveness and efficiency of school

resources becomes more important as the bar for student achievement continues to rise and the available resources continue to dwindle. At a global level, the principal must effectively balance the needs of the students to make informed decisions when allocating limited staff resources and materials, designing and supporting instructional programs, and providing effective staff development activities. Within the school, the principal must expand their role as instructional leader to ensure that teachers continuously use data to evaluate and support the needs of all students.

The constructs identified through the factor analysis and the results of the additional descriptive statistics that were performed on the 22 items add to the existing body of knowledge regarding data-driven decision making in elementary schools in Florida. One limitation associated with the study was that the principals' beliefs were represented via a self-reported survey. It is assumed that members of the target population had similar definitions for and understanding of data-driven decision making. It is also assumed that their self-reported answers accurately represented the principals' beliefs about data-driven decision making.

2. Do Florida elementary school principals' beliefs about data-driven decision making mediate the effect of principal characteristics and school demographics on student achievement?

Results of the study indicate that data-driven decision making does not mediate student achievement. Specifically, data-driven decision making was not able to overcome the effects of school demographics and principal characteristics on student achievement. This study was designed to examine the relationship between principal characteristics and school demographic variables, beliefs about the use of data-driven decision making, and student achievement. In this study the principal characteristics and school demographic variables represented the antecedent variables. Student achievement represented the outcome or dependent variable. Principal beliefs about the use of data-driven decision making represented the mechanism through which the

principal characteristics and school demographic variables affect student achievement. According to the Baron and Kenny model (1986), in order for a variable to function as a mediator, the antecedent or predictor variable should have a significant positive relationship with the presumed mediator. Variations in the mediator should account for variations in the outcome variable. Finally when both are held constant, there should be no significant relationship between the antecedent and the outcome variable. The mediator variable is then considered to be the stronger variable.

The three hypotheses were tested using a series of linear regression analyses. Because the results from the test of the first hypothesis were not significant, it can be assumed that principal beliefs about data-driven decision do not act as a mediator for student achievement for elementary school principals in the state of Florida. The results from the test of the second hypothesis indicated that all twelve of the measures of student achievement tested significantly against the data-decision making factors, supporting step two of the Baron and Kenny model. The test of the third criteria for the Baron and Kenny model indicated that each of the twelve regression models showed a significant relationship between at least one of the antecedent variables (principal characteristics and school demographics) and student achievement. All four of the data-driven decision making factors were excluded from the model in all but one case, the scale score for third grade NRT math. Thus, the third criteria set forth by the Baron and Kenny model was not met. The principals' beliefs regarding the use of data-driven decision making by elementary school principals in the state of Florida do not act as a mediator for student achievement.

With respect to the antecedent variables, the percentage of students on free and reduced lunch tested significant in all of the twelve tests that were run. The partial correlation values for

each test ranged from -.19 to -.83. In all but two cases, the values were stronger than -.5, indicating a strong negative relationship between student achievement and the number of students on free and reduced lunch. A deeper look at the relationship between the percentage of students on free and reduced lunch and student achievement indicates that correlations are highest for reading for both tests The partial correlations for all measures of the FCAT SSS were higher than the NRT, particularly in the area of math. The models also showed that the student enrollment can also be a factor in student achievement, particularly for reading. The analyses for third grade SSS reading, third grade NRT reading, and fifth grade NRT reading was significant with respect to the number of students enrolled at the school. The results of these analyses represent a cause for concern and raise the question as to whether we are indeed closing the gap and truly leaving no child left behind in reading and math in the state of Florida.

Although data-driven decision making does not mediate student achievement, results from the study do indicate that an indirect relationship exists between data-driven decision making and student achievement. The finding that there is an indirect relationship between principal beliefs regarding data-driven decision making and student achievement supports the need for further research on leadership theory, specifically with respect to the relationships between the principal and data-driven decision making and the principal and student achievement.. Although no mediated effect was found, continued research regarding the effect of data-driven decision making on student achievement may shed additional light on the potential role of data-driven decision making within the school.

Implications and Recommendations

Data-driven decision making represents a mechanism through which to make informed decisions that are based on data rather than intuition. The results of the study indicate that data-

driven decision making is present in Florida elementary schools. The following discussion presents practical implications for the results of the study.

Principals Hold Strong Beliefs Regarding Data-Driven Decision Making

By agreeing with all 22 items on the data-driven decision making survey, principals indicated that they believe that data-driven decision making has a place in the elementary school. They also indicated that they believe that the quality of decision-making within their school has improved as a result of data-driven decision making. Principals should continue to support and influence the use of data-driven decision making in their schools so that they can better understand the ever changing academic environment within their school and the needs of their students.

Elementary school principals have a great deal of responsibility for the curriculum and instruction of Florida's students. In addition to the every day management and administrative tasks associated with running a large organization within a school, they also have responsibility for the integrity of the instructional program and the resulting student achievement. Data-driven decision making represents an important tool for principals to use to better understand the needs of students, teachers, parents, community members, and other stakeholders, make decisions that improve school effectiveness and efficiency, and communicate results. From a management perspective, principals should further support the use data-driven decision making to determine allocation of resources and professional development for teachers. They should increase their emphasis on the use of multiple sources of data when engaging in data-driven decision making.

Culture is an Important Part of Data-Driven Decision Making

The high ranking of beliefs regarding a data-drive culture indicates that principals believe that data-driven decision making must be anchored in the culture of the school. Principals who are implementing data-driven practices must pay attention to culture and recognize that change

takes time. Principals should model data-driven decision making in their everyday activities, especially in their role as the instructional leader who works closely with teachers. Principals should also ensure that the school has a climate of data safety where student achievement data is only used to improve student achievement and not used to evaluate teacher performance. Data transparency is also important to developing a data driven culture where all stakeholders are kept informed about student achievement results.

Supporting Data-Driven Decision Making for Teachers

Research shows that the teacher is the single most important factor that affects student achievement (Marzano, 2003). Because the results of this study indicate that the principals' beliefs regarding data-driven decision making have at best an indirect effect on student achievement, it would make sense for principals to seek to influence the one person who has a strong effect, the classroom teacher. Principals should seek to help teachers to incorporate data-driven decision making practices into their daily routines. They should develop data-driven strategies that assist with choices in instructional strategies, the class curriculum, and assessments. Because principals are less confident in their beliefs regarding teacher use of data-driven decision making to affect student achievement, they should monitor and promote its use in the classroom. In order to maximize their role as the instructional leader of the school, the principal should seek to influence the continual use of data to evaluate current performance and then make changes to instruction and curriculum, set instructional goals and targets, and communicate results. Principals should also provide opportunities for collaboration among teachers as this is critical for successful implementation of data-driven decision making within the professional learning community.

Closing the Gap

The strong negative relationship between the percentage of students on free and reduced lunch and student achievement should be a cause for concern for school leaders as it raises the question as to whether Florida schools are indeed closing the achievement gap. Principals should seek to use data-driven decision making to gain insight into the status of these students within their schools, and should seek to evaluate, augment, and monitor the effectiveness of the instructional programs that support these students. Results of this study indicate that reading is more strongly affected by socioeconomic status, and principals should prioritize efforts to support this subject area.

Recommendations for Future Research.

Additional research on the topic may allow better understanding of the relationship between data-driven decision making by principals and student achievement.

1. There is a need for additional research that reviews the use of data-driven decision making and student achievement results over a longer period of time, not just one year. This research could also be expanded to include other measures within standardized tests, not just the scale scores.

2. Further research utilizing different surveys to collect information regarding principal beliefs may provide more detailed information that allows for a better understanding of how beliefs regarding data-driven decision making affect student achievement.

3. It may be useful to replicate the study using a different measure of student achievement. This particular study used standardized test results in an effort to be consistent with the Florida school grading system. Of particular interest would be an analysis using other forms of summative data.

4. Additional research that targets the principal's actions regarding data-driven decision making rather than beliefs about the topic might provide information that more closely reflects how data-driven decision making activities within schools affects student achievement.

5. There is a need to understand how the principal uses data-driven decision making to make decisions that ultimately affect student achievement. Additional research utilizing methods other than a self-report by principals might provide additional insight into the use of data-

driven decision making by principals. These other methods of data collection could include artifacts or interviews and focus groups with other stakeholders.

6. Additional qualitative research may provide further detail and depth relating to the thinking processes that are used by principals with respect to data-driven decision making within their schools.

7. Qualitative research that includes other stakeholders in the data-driven decision making process may also enhance understanding of the impact of the principal's use of data-driven decision on school operations and student achievement.

Summary

The role of the elementary school principal has changed as a result of increased accountability requirements, and principals have embraced data-decision making in order to make more informed decisions regarding student achievement. The results of the study indicated that principals' in Florida elementary schools believe in the use of data-driven decision making within their schools, and they believe that the quality of the decision making within their schools has improved through its use. The results of the factor analysis indicated that four key constructs were present in Florida schools; beliefs regarding the use of data-driven decision making by teachers to affect student achievement, beliefs regarding data-driven cultures, beliefs regarding the systems that incorporate data-driven decision making, and beliefs regarding collaboration among teachers using data-driven decision making.

Does the use of data-driven decision making by principals improve student achievement? The results of this study indicated that although there is an indirect relationship between data-driven decision making and student achievement, the principals' beliefs were not strong enough to act as a mediator for student achievement. More research is needed regarding the use of data-driven decision making by principals and its effectiveness as a leadership tool.

The strong negative relationship between the number of students on free and reduced lunch and student achievement represents a cause for concern. The results of this study indicate that the

principals' beliefs regarding data-driven decision making were not strong enough to overcome the effect of this relationship. What does overcome the negative relationship between the percentage of students on free and reduced lunch and student achievement? Educational leaders have long searched for the answer to this question, and additional research is still needed. The true benefit of data-driven decision making is that through its use, school leaders have increased visibility into the many issues that face our children. Data-driven decision making acts as a lens through which to view the current situation, allowing principals to make the best possible choices that connect the realities of today with the possibilities of tomorrow.

APPENDIX A
PERMISSION TO USE THE DATA-DRIVEN DECISION MAKING READINESS PRINCIPAL SURVEY

AT&T Webmail Page 1 of 1

AT&T Webmail en Español
Signed in as: v_white@bellsouth.net | Sign out
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Monday, October 6, 2008

Compose | Check Mail
20% of 500 MB

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INBOX [48]
Drafts
MailGuard
SentMail
Trash empty
MY FOLDERS add/edit

» Message Center
» Folder Manager
» Mailbox Manager
» Address Book
» Calendar
» Options
» Help

Drive
Save up to 50% on Drive. Search over 15,000 sites with

French Fry Cutters
French Fry Cutters are on sale. Cutlery.

Driving
Find Local Equestrian Information. View Top Results.

Fun Quizzes & Tests
Love & Personality Questions? Take Our

INBOX

Message: 69 of 343 < Previous | Next >

Reply | Reply All | Forward | Report Spam | Print
Delete | Close
Move to folder: INBOX > GO

From: "Scott McLeod" <mcleod@iastate.edu> > Save Address > Reminder
To: <v_white@bellsouth.net>
Cc: <daquinn@coe.ufl.edu>
Subject: RE: Data-driven decision making survey
Date: Sunday, May 4, 2008 5:17:07 PM [View Source]

Vicki, we would be delighted to grant you permission to use this survey for your dissertation. David mentioned that you had some need for the survey and for some reliability statistics for it as well (which we don't have yet but hope to soon). We also would be glad to host an online version of the survey for you – you can modify as desired. We already have it in our online survey system so it's easy to clone one for you...

Good to hear from you again. Glad you're making progress!

SCOTT

Scott McLeod, J.D., Ph.D.
Associate Professor, Iowa State University
Coordinator, Educational Administration Program
Director, CASTLE
UCEA Associate Director, Communications and Marketing
www.scottmcleod.net/contact
www.dangerouslyirrelevant.org
www.schooltechleadership.org
www.edleadership.org

From: v_white@bellsouth.net [mailto:v_white@bellsouth.net]
Sent: Sunday, May 04, 2008 4:00 PM
To: mcleod@iastate.edu
Cc: daquinn@coe.ufl.edu
Subject: Data-driven decision making survey

Dear Dr. McLeod,

I am a doctoral candidate in the Educational Leadership program at the University of Florida and a student of Dr. David Quinn. As you may recall, we spoke on the phone last summer about data-driven decision making. I am currently working on my proposal for my dissertation. The purpose of my study is to examine the relationships among principal and school characteristics, principal beliefs about the use of data-driven decision making, and student achievement. Specifically the intent of the dissertation is to determine the mediating effects of data-driven decision making on student achi! evement.

In the course of my literature review, I came across the Statewide Data-Driven Readiness Study, Principal Survey that you developed. I believe that this survey represents an excellent fit for the purposes of my study, and I would like your permission to reproduce and use the Statewide Data-driven Readiness Study, Principal Survey in my study. Likewise, I am interested in any new research that you might have regarding the instrument.

I appreciate your consideration of my request for permission to use your instrument. If you have any questions, please feel free to contact me via email or phone (386) 689-6870.

Sincerely,
Vicki White
Doctoral Candidate

> Change your options to hide images within all messages.

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Message: 69 of 343 < Previous | Next >

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Sign Out | E-mail | Address Book | Calendar | E-mail Options

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http://webmail.att.net/wmc/en-US/v/wm/48E9DFEB000ECA0900006369222307036 29B0... 10/6/2008

APPENDIX B
REQUEST FOR PRINCIPAL EMAIL AND RESIDENTIAL ADDRESSES

White, Vicki

From: Sancho, Teresa [Teresa.Sancho@fldoe.org]
Sent: Tuesday, May 06, 2008 10:01 AM
To: WHITE,VICKI C; White, Vicki
Subject: Elem Principals
Follow Up Flag: Follow up
Flag Status: Red

Vicki,

Without cost to you the Master School Identification (MSID) file is available for you to download into Excel and be selective with only the information you want. Please go to the following link and follow the instructions below.

Master School Identification File (MSID)
http://doeweb-prd.doe.state.fl.us/EDS/MasterSchoolID/index.cfm

> You can download a list of PreK-12 public schools in Florida from the Master School Identification (MSID) file for 2007-08. The link to the file is below. Once you click onto the link, click on the 'download' button at the bottom of the page. There will be a list of downloads on the next page, click on the 'Active Schools' download button, open the file and save it in excel. This file contains school names, principal names and addresses for active public schools in Florida. This is a working file so you can sort and delete information as needed. The following are school types that are in the 'type' column; (1=elementary 2=middle 3=senior high 4=combination 5=adult 7=other types).

If you would still like a list of elementary school principals with their home addresses the cost is of $15.00 and a check should be made payable to the Florida Department of Education and sent to my attention at the address below. As soon as payment is received your request will be processed and emailed to you within three business days,

Teresa Railey Sancho
Florida Department of Education
325 West Gaines Street, Suite 852
Tallahassee, Florida 32399-0400
Ph/Fax: 850-245-9075 / 9097
teresa.sancho@fldoe.org

Please take a few minutes to provide feedback on the quality of service you received from our staff. The Department of Education values your feedback as a customer. Commissioner of Education Dr. Eric J. Smith is committed to continuously assessing and improving the level and quality of services provided to you. Simply click on the link to the "DOE Customer Survey." Thank you in advance for completing the survey.

DOE Customer Survey

-----Original Message-----

From: WHITE,VICKI C [mailto:vcwhite@ufl.edu]
Sent: Sunday, May 04, 2008 5:14 PM
To: Sancho, Teresa
Cc: vcwhite@volusia.k12.fl.us
Subject:

APPENDIX C
INSTITUATIONAL REVIEW BOARD APPROVAL

UF | Institutional Review Board
UNIVERSITY of FLORIDA

PO Box 112250
Gainesville, FL 32611-2250
352-392-0433 (Phone)
352-392-9234 (Fax)
irb2@ufl.edu

DATE: May 28, 2008

TO: Vicki White
310 Condict Drive
New Smyrna Drive, FL 32169

FROM: Ira S. Fischler, PhD, Chair ISF:dl
University of Florida
Institutional Review Board 02

SUBJECT: **Approval of Protocol #2008-U-0535**

TITLE: The Relationship Between Principal Beliefs About Data-driven Decision Making, Principal and School Characteristics, and Student Achievement in Elementary Schools

SPONSOR: None

I am pleased to advise you that the University of Florida Institutional Review Board has recommended approval of this protocol. Based on its review, the UFIRB determined that this research presents no more than minimal risk to participants, and based on 45 CFR 46.117(c), authorizes you to administer the informed consent process as specified in the protocol.

If you wish to make any changes to this protocol, ***including the need to increase the number of participants authorized***, you must disclose your plans before you implement them so that the Board can assess their impact on your protocol. In addition, you must report to the Board any unexpected complications that affect your participants.

If you have not completed this protocol by **May 27, 2009**, please telephone our office (392-0433), and we will discuss the renewal process with you. It is important that you keep your Department Chair informed about the status of this research protocol.

ISF:dl

APPENDIX D
INITIAL CONTACT LETTER

(Initial contact Letter)

Department of Educational Policy and Administration
P.O. Box 117049
University of Florida
Gainesville, FL 32611-7049

Dear Principal,

I am a doctoral candidate studying educational leadership at the University of Florida. As part of my dissertation requirements, I am researching the principal's beliefs about data-driven decision making and the effect on student achievement. As the pressure for school accountability increases, the principal's role has become more complex. The purpose of this study is to obtain information about how elementary school principals perceive data-driven decision making and how these perceptions affect student achievement on state standardized tests.

Because you are an elementary school principal in the state of Florida, your opinion is very important to my research. Your name was obtained from the Department of Education website. If you choose to participate in this voluntary survey, your answers will be kept confidential and will be released only as part of group results in which no individual's answers can be identified.

During the next few days, you will receive an email requesting that you participate in the survey and providing a link to the web based survey. Please take the time to complete the survey. It should require approximately 15 minutes of your time.

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284. If you have any questions or concerns about your rights as a research participant, you may contact the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

Thank you in advance for your support of this research endeavor.

Sincerely,

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2008-U-0535
For Use Through 05/27/2009

Vicki Conrad White
Doctoral Candidate
University of Florida

APPENDIX E
INITIAL EMAIL LETTER

(Initial email letter)

Department of Educational Policy and Administration
P.O. Box 117049
University of Florida
Gainesville, FL 32611-7049

Dear Principal,

I am a doctoral candidate studying educational leadership at the University of Florida. As part of my dissertation requirements, I am researching the principal's beliefs about data-driven decision making and the effect on student achievement. Because you are an elementary school principal in the state of Florida, your opinion is very important to my research.

Please click on the website link below to access the survey. It should take about 15 minutes of your time. You do not have to answer any question that you do not wish to and you may exit the survey at any time. Your participation is strictly voluntary. Your identity will be kept confidential to the extent provided by the law. Your name will not be connected to the completed questionnaire nor will your name be used in my report.

https://www.surveymonkey.com/s.aspx?sm=boDicgpie82qM03o5ryVnw_3d_3d

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284. If you have any questions or concerns about your rights as a research participant, you may contact the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

Thank you in advance for your support of this research endeavor.

Vicki Conrad White
Doctoral Candidate
University of Florida

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2008-U-0535
For Use Through 05/27/2009

APPENDIX F
FOLLOW-UP EMAIL LETTER

(Follow up web email reminder)

Department of Educational Policy and Administration
P.O. Box 117049
University of Florida
Gainesville, FL 32611-7049

Dear Principal,

You should have recently received a web-based survey through email and a letter requesting your participation in my dissertation study. If you have already responded to the survey, please disregard this email and accept my thanks for your contribution to the body of research supporting principal leadership with respect to data-driven decision making

I am sending this follow-up email in the hopes that you will reconsider participation in the survey. If you have not responded to the web-based survey, please click on the following link to access the survey.

https://www.surveymonkey.com/s.aspx?sm=boDicgpie82qM03o5ryVnw_3d_3d

I am again seeking your time and assistance in the completion of the survey for my dissertation. I appreciate your assistance. Thank you in advance for your time.

Sincerely,

Vicki Conrad White
Doctoral Candidate
University of Florida

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2008-U-0535
For Use Through 05/27/2009

APPENDIX G
FOLLOW-UP INFORMED CONSENT LETTER

(Informed Consent Letter- Follow up mail letter)

Department of Educational Policy and Administration
P.O. Box 117049
University of Florida
Gainesville, FL 32611-7049

Dear Principal,

I am a doctoral candidate studying educational leadership at the University of Florida. As part of my dissertation requirements, I am researching the principal's beliefs about data-driven decision making and the effect on student achievement. You previously received a personal letter and a web-based survey that was designed to measure principal beliefs about data-driven decision making. I am sending this follow-up copy of the survey in the hopes that you will reconsider participation in the survey.

I am asking that you complete the seventy-seven item survey using a pencil or pen. It will require approximately 15 minutes of your time. You do not have to answer any question that you do not wish to. Your participation is strictly voluntary. Your identity will be kept confidential to the extent provided by the law. Your name will not be connected to the completed questionnaire nor will your name be used in my report.

There are no personal risks or other direct benefits to you as a participant in this study. You are free to withdraw your consent to participate and may discontinue participation at any time without consequence.

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284. If you have any questions or concerns about your rights as a research participant, please contact the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

Please sign and return this copy of the letter in the enclosed envelope. A second copy is provided for your records. By signing this letter, you give me permission to report your responses anonymously in the final manuscript to be submitted to my faculty supervisor as part of my course work.

Thank you for taking time to participate in the survey. Your time and attention are much appreciated.

Sincerely,

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2008-U-0535
For Use Through 05/27/2009

Vicki Conrad White
Doctoral Candidate, University of Florida

I have read the procedure described above. I voluntarily agree to participate in this study and I have received a copy of this description.

_____ _____

Signature of Participant Date
(Thank you email)

APPENDIX H
THANK YOU LETTER

Department of Educational Policy and Administration
P.O. Box 117049
University of Florida
Gainesville, FL 32611-7049

Dear Principal,

Thank you for your time and assistance in completing the survey for my dissertation. Please accept my thanks for your contribution to the body of research supporting principal leadership with respect to data-driven decision making.

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284.

Sincerely,

Vicki Conrad White
Doctoral Candidate
University of Florida

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2008-U-0535
For Use Through 05/27/2009

APPENDIX I
IRB FOLLOW-UP APPROVAL LETTER

Department of Educational Policy and Administration
P.O. Box 117049
University of Florida
Gainesville, FL 32611-7049

Dear Principal,

I am a doctoral candidate studying educational leadership at the University of Florida. As part of my dissertation requirements, I am researching the principal's beliefs about data-driven decision making and the effect on student achievement. You previously received a personal letter and a web-based survey that was designed to measure principal beliefs about data-driven decision making. I am sending this follow-up copy of the survey in the hopes that you will reconsider participation in the survey.

I am asking that you complete the survey using a pencil or pen. It will require approximately 15 minutes of your time. You do not have to answer any question that you do not wish to. Your participation is strictly voluntary. Your identity will be kept confidential to the extent provided by the law. Your name will not be connected to the completed questionnaire nor will your name be used in my report.

There are no personal risks or other direct benefits to you as a participant in this study. You are free to withdraw your consent to participate and may discontinue participation at any time without consequence.

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284. If you have any questions or concerns about your rights as a research participant, please contact the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

Please sign and return this copy of the letter in the enclosed envelope. A second copy is provided for your records. By signing this letter, you give me permission to report your responses anonymously in the final manuscript to be submitted to my faculty supervisor as part of my course work.

Thank you for taking time to participate in the survey. Your time and attention are much appreciated.

Sincerely,

Approved by
University of Florida
Institutional Review Board 02
Protocol # 2008-U-535
For Use Through 05-27-2009

Vicki Conrad White
Doctoral Candidate, University of Florida

I have read the procedure described above. I voluntarily agree to participate in this study and I have received a copy of this description.

Signature of Participant _____ Date _____

APPENDIX J
IRB APPROVAL TO SEND EMAIL TO VOLUSIA COUNTY PRINCIPALS

Web Mail v1.0.24

UF UNIVERSITY of FLORIDA

Logged in as:
WHITE,VICKI C

Check Mail | Compose Mail | Address Book | Edit Folders | Preferences | Logout

Help | About | Send Feedback

<< ^ >> delete reply (all) forward report spam Select a Folder: Move Copy

Sender: IRB2 <irb2@ufl.edu> Add to address book
To: "WHITE,VICKI C" <vcwhite@ufl.edu>
CC:
Date: Thu Jul 31 10:57:59 EDT 2008
Subject: Re: UFIRB #2008-U-535

Vicki,

The Chair of IRB said your request is *OK, though if Vicki can include copies of the preliminary (and previously blocked) material, it would be best.*

Denise

WHITE,VICKI C wrote:

Hi,
As we discussed in our conversation this morning, I would like to send the following email to the principals in my county (Volusia). They have not received the web survey, letters, or reminders because our districe is configured to reject any correspondance from SurveyMonkey. Please let me know if I can send the email. THanks. If you need to speak with me, my cell phone is (386) 689-6870.
Vicki White

Dear (principal),

Sometime in the next few days, you will receive a letter and a survey at your home address. The letter requests your participation in my dissertation study. The letter also states that you have received prior communication from me. Because our district server has been configured to reject email surveys from SurveyMonkey, you have not received my prior requests for participation in the study. Please accept my apologies for the wording of the letter. I would appreciate any time that you can give to complete the survey. If you have any questions, please call me at (386) 689-6870.

APPENDIX K
DATA-DRIVEN DECISION MAKING SURVEY

Principal Beliefs About Data-driven Decision Making

1. Informed Consent- Principal Belief's About Data-driven Decision Making

* You do not have to answer any question that you do not wish to. Your participation is strictly voluntary. Your identity will be kept confidential to the extent provided by the law. Your name will not be connected to the completed questionnaire nor will your name be used in my report.

There are no personal risks, compensation, or other direct benefits to you as a participant in this study. You are free to withdraw your consent to participate and may discontinue participation at any time without consequence.

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284. If you have any questions or concerns about your rights as a research participant, please contact the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

By clicking YES you acknowledge that you have read the procedure described above and that you voluntarily agree to participate in this study.

- ◯ YES to continue
- ◯ NO

2. Exit this Survey

Thank you for your time. Please exit the survey by clicking the "Exit this Survey" button in the upper right hand corner of this page.

3. Principal Survey-Introduction

Instructions:
Thank you for participating in this survey. Please select the answer that best reflects your beliefs about data-driven decision making.

* STATE ASSESSMENTS

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
1. State assessment results are timely enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
2. State assessment results are detailed enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
3 . State assessments are aligned with state curriculum standards	◯	◯	◯	◯	◯	◯
4. State assessment results are easy to understand and interpret	◯	◯	◯	◯	◯	◯

4. Principal Survey-Other Yearly Assessments

Page 1

Principal Beliefs About Data-driven Decision Making

* 5. My school uses other yearly assessments (e.g., Terranova, ITBS, NWEA) besides those from the state.

- ◯ Yes
- ◯ No

5. Principal Survey- Other Yearly Assessments

* OTHER YEARLY ASSESSMENTS

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
6. Results from these other yearly assessments are timely enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
7. Results from these other yearly assessments are detailed enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
8. These other yearly assessments are aligned with state curriculum standards	◯	◯	◯	◯	◯	◯
9. Results from these other yearly assessments are easy to understand and interpret	◯	◯	◯	◯	◯	◯

6. Principal Survey- Common Periodic Assessments

* 10. Teachers in my school collaborate and create common periodic assessments to monitor student progress during the school year.

- ◯ Yes
- ◯ No

7. Principal Survey- Common Periodic Assessments

* COMMON PERIODIC ASSESSMENTS

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
11. Results from these common assessments are timely enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
12. Results from these common assessments are detailed enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
13. These common assessments are aligned with state curriculum standards	◯	◯	◯	◯	◯	◯
14. Results from these common assessments are easy to understand and interpret	◯	◯	◯	◯	◯	◯

8. Principal Survey- Other Periodic Assessments

Principal Beliefs About Data-driven Decision Making

* 15. Teachers in my school use other (i.e., not teacher-created) periodic assessments (e.g., Scantron, STAR, DIBELS, CBM) to monitor student progress during the school year.

- ◯ Yes
- ◯ No

9. Principal Survey- Other Periodic Assessments

* OTHER PERIODIC ASSESSMENTS

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
16. Results from these other periodic assessments are timely enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
17. Results from these other periodic assessments are detailed enough to adequately inform teachers' instruction	◯	◯	◯	◯	◯	◯
18. These other periodic assessments are aligned with state curriculum standards	◯	◯	◯	◯	◯	◯
19. Results from these other periodic assessments are easy to understand and interpret	◯	◯	◯	◯	◯	◯

10. Principal Survey- Acting on Data

* ACTING UPON DATA

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
20. Teacher teams in my school meet regularly to look at student data and make instructional plans	◯	◯	◯	◯	◯	◯
21. When teachers in my school meet with each other, they usually focus on student learning outcomes	◯	◯	◯	◯	◯	◯
22. Teachers in this school work collaboratively to improve curriculum and instruction	◯	◯	◯	◯	◯	◯
23. Teachers in my school are given adequate time for collaborative planning	◯	◯	◯	◯	◯	◯
24. Teachers in my school regularly discuss assumptions about teaching and learning	◯	◯	◯	◯	◯	◯
25. Teachers in my school use assessment data to identify students who are not experiencing academic success	◯	◯	◯	◯	◯	◯
26. Teachers in my school know what instructional changes to make when data show that students are not successful	◯	◯	◯	◯	◯	◯
27. Teachers in my school use assessment results to measure the effectiveness of their instruction	◯	◯	◯	◯	◯	◯
28. Teachers in my school are encouraged to try out new teaching strategies	◯	◯	◯	◯	◯	◯
29. Teachers in my school use data to verify their assumptions about the causes of student behavior and performance	◯	◯	◯	◯	◯	◯
30. Teachers in my school have clear criteria for determining the success of instructional activities	◯	◯	◯	◯	◯	◯
31. If teachers in my school propose a change, they bring data to support their proposal	◯	◯	◯	◯	◯	◯

Principal Beliefs About Data-driven Decision Making

32. Teachers in my school make changes in their instruction based on assessment results	○	○	○	○	○	○
33. Our district's goals are focused on student learning	○	○	○	○	○	○
34. My school's improvement goals are clear, specific, measurable, and based on student data	○	○	○	○	○	○
35. Teachers in my school have access to good baseline data from which to set annual instructional goals	○	○	○	○	○	○
36. Teachers in my school use data from student assessments to set instructional targets and goals	○	○	○	○	○	○

11. Principal Survey- Support Systems

* SUPPORT SYSTEMS

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
37. Teachers in my school can easily access the information they need from school and district data systems	○	○	○	○	○	○
38. Teachers and parents communicate frequently about student performance data	○	○	○	○	○	○
39. Student performance data available to me are accurate and complete	○	○	○	○	○	○
40. Student performance data are easily available to the individuals that need them	○	○	○	○	○	○
41. Parents and community members know what our school is doing and what is needed to improve student achievement	○	○	○	○	○	○
42. Successful educational practices are widely shared in the district	○	○	○	○	○	○
43. My school uses multiple data sources to assess the effectiveness of educational programs	○	○	○	○	○	○
44. Teachers have significant input into data management and analysis practices	○	○	○	○	○	○
45. Teachers in my school know how to use technology to monitor student progress	○	○	○	○	○	○
46. Teachers in my school have adequate access to the technology necessary to monitor student progress	○	○	○	○	○	○
47. My professional development has helped me use data more effectively	○	○	○	○	○	○
48. Teachers in my school have received adequate training to effectively interpret and act upon yearly state assessment results	○	○	○	○	○	○
49. Professional development has improved my teachers' skill in developing classroom assessments	○	○	○	○	○	○
50. Teachers have significant input into plans for professional development and growth	○	○	○	○	○	○
51. Student achievement data are used to inform school and district improvement initiatives	○	○	○	○	○	○
52. Whole-school staff meetings focus on measured progress toward data-based improvement goals	○	○	○	○	○	○
53. Student achievement data are used to determine teacher professional development needs and resources	○	○	○	○	○	○
54. School and classroom improvement efforts are aligned with state standards	○	○	○	○	○	○
55. Student achievement data are used to	○	○	○	○	○	○

Principal Beliefs About Data-driven Decision Making

12. Principal Survey- School Culture

* SCHOOL CULTURE

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly
56. As a school we have open and honest discussions about data	○	○	○	○	○	○
57. Teachers have the knowledge and skills necessary to improve student learning	○	○	○	○	○	○
58. Student achievement data are used primarily for improvement rather than teacher evaluation	○	○	○	○	○	○
59. Administrators in this school trust the professional judgments of teachers	○	○	○	○	○	○
60. Administrators model data-driven educational practices	○	○	○	○	○	○
61. My school adequately supports teachers' use of data to improve classroom instruction	○	○	○	○	○	○
62. I buffer my school from distractions to our school improvement efforts	○	○	○	○	○	○
63. Our success as educators should be determined primarily by our impact upon student learning	○	○	○	○	○	○
64. Teachers in my school routinely use data to inform their instructional practices and understand student needs	○	○	○	○	○	○
65. Teachers in my school have a sense of collective responsibility for student learning	○	○	○	○	○	○
66. My school uses data to uncover problems	○	○	○	○	○	○
67. Teachers conduct self-assessments to continuously improve performance	○	○	○	○	○	○
68. I am a valued member of my district's data-driven reform efforts	○	○	○	○	○	○
69. Teachers in my school have access to high-quality student assessments to evaluate student progress	○	○	○	○	○	○
70. Our success or failure in teaching students is primarily due to factors beyond our control rather than to our own efforts and ability	○	○	○	○	○	○
71. Using data has improved the quality of decision-making in my school	○	○	○	○	○	○
72. By trying different teaching methods, teachers can significantly affect students' achievement levels	○	○	○	○	○	○
73. There is a strong sense of trust among teachers and administrators in my school	○	○	○	○	○	○
74. If we constantly analyze what we do and adjust to get better, we will improve	○	○	○	○	○	○
75. Teachers in my school feel personally responsibility when our school improvement goals are not met	○	○	○	○	○	○
76. Students in our school believe that they will succeed at learning if they keep trying	○	○	○	○	○	○

13. Principal Survey- Other

Principal Beliefs About Data-driven Decision Making

* **Questions 77-81 ask you for information that will help us better analyze your responses. This information will be kept private and confidential and will NEVER be shared with your school organization or with the Department of Education.**

77. What is the name of your school?

78. What is the annual student enrollment at your school

79. What was the percentage of students on free or reduced lunch at your school last year?

80. How many years have you worked as a principal at this school?

81. How many years have you worked as a principal?

82. Please mark the option that best describes your level of education.

- ◯ Bachelor's degree
- ◯ Master's degree
- ◯ Ed. Specialist's degree
- ◯ Doctorate degree

14. Principal Survey- Thank You!

Thank you for your time and assistance in completing the survey for my dissertation. Please accept my thanks for your contribution to the body of research supporting principal leadership with respect to data-driven decision making.

If you have any questions about this research study, please contact me at (386) 424-0810 or my faculty advisor, Dr. David Quinn, at 352-392-2391, ext 284.

Vicki White
Doctoral Candidate
University of Florida

Page 6

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BIOGRAPHICAL SKETCH

Vicki Lynn Conrad White was born in 1958 in Libertyville, Illinois. The oldest of three children, she grew up mostly in Indiana and Illinois, graduating from Jefferson High School in Lafayette, Indiana in 1976. She earned her B.A. in elementary education from Purdue University in 1979. After graduating, Vicki taught fifth grade in Roselawn, Indiana. She returned to school in fall 1980, and graduated with an M. Ed. from the University of Illinois in 1982.

After receiving her M.Ed., Vicki worked for Control Data Corporation as an Education Analyst in Sunnyvale, CA. During the next fifteen years, she worked in a series of marketing, training, and management positions for Intel Corporation, Conner Peripherals, Seagate Technology, and Archive Corporation. Mrs. White received an M.B.A. from the University of Phoenix in 1991.

Vicki White returned to the education field in 1997 when she became a media specialist at Read-Pattillo Elementary School. She has worked for the school 11 years, most recently as a Teacher on Assignment in an administrative capacity.

Upon completion of her Ph.D. program, Vicki White will continue in her role at Read-Pattillo Elementary School. Vicki has been married to Douglas James White for twenty-one years. They have three children: Douglas James, age 20, Margaret Ellen, age 18, and Jennifer Lynn, age 16.

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