AN EXAMINATION OF THE RELATION BETWEEN SELF-PERCEIVED LEADERSHIP PRACTICES OF HIGH SCHOOL PRINCIPALS AND STUDENT ACHIEVEMENT

by

AMANDA RUTH RYAN

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Student: Amanda Ruth Ryan

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Dr. Gerald Tindal	Chair
Dr. Keith Hollenbeck	Member
Dr. Edward Kame'enui	Member
Dr. Patricia A. Gwartney	Outside Member

and

Kimberly Andrews Espy	Vice President for Research & Innovation/Dean of the Graduate School

Original approval signatures are on file with the University of Oregon Graduate School.

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DISSERTATION ABSTRACT

Amanda Ruth Ryan

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Title: An Examination of the Relation Between Self-Perceived Leadership Practices of High School Principals and Student Achievement

The current study explored the relation between the self-perceived leadership practices of Portland Metro area high school principals ($N = 28$) and the achievement levels of Hispanic and non-Hispanic White high school students on the Oregon Assessment of Knowledge and Skills (OAKS) high school math test. The Leadership Practices Inventory (LPI) self-report was used to measure frequency of leadership practices. Differential performance across categories of race and ethnicity were analyzed and compared against high school principal self-reported scores on the LPI. This study expanded on existing research by connecting principal leadership practices to student achievement by subgroup with a focus on achievement of Hispanic and non-Hispanic White students at the secondary level. Pearson product-moment correlation coefficients were computed to assess the relation between the self-reported leadership practices of high school principals and student proficiency category percentages. Multiple regressions were used to determine the relative predictive nature of the practices of an exemplary leader in relation to the percentage of Hispanic and non-Hispanic White students who exceeded, met, or did not meet standards on the 2010-2011 OAKS high school math test. School demographic factors of percentage of students of color, percentage of students

receiving free or reduced price lunch (FRPL), and percentage of students enrolled in English Language Learner (ELL) programs were also analyzed to determine if these contextual factors had an impact on leadership practices. Results support no predictive nature of student achievement on principal self-assessment of leadership practices nor do they support a relation between school demographic factors and principal leadership.

CURRICULUM VITAE

NAME OF AUTHOR: Amanda Ruth Ryan

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene, Oregon
Lewis and Clark College, Portland, Oregon
Scripps College, Claremont, California
Barnard College, Columbia University, New York, New York

DEGREES AWARDED:

Doctor of Education, 2013, University of Oregon
Master of Arts, Teaching, 2004, Lewis and Clark College
Bachelor of Arts, Psychology and Art History, 1998, Scripps College

AREAS OF SPECIAL INTEREST:

Educational Leadership
Educational Equity
Teacher Preparation
Student Leadership

PROFESSIONAL EXPERIENCE:

Art teacher, Hillsboro High School, Hillsboro, Oregon, 2004 to present

Adjunct faculty, Graduate School of Education, Pacific University, 2011 to present

Dean of students, Hillsboro High School, Hillsboro, Oregon, 2010 to 2011

Activities director, Hillsboro High School, Hillsboro, Oregon, 2006 to 2010

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Dedicated to my grandfather, Frank Herron Spears, who set the bar high, and to my mother, husband, and daughter for helping me to reach for it.

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CHAPTER I

INTRODUCTION

In the United States, public education is the base of democracy, a necessity for economic recovery, and an essential component of our national commitment to equal opportunity for all individuals. Federal school improvement legislation such as the No Child Left Behind Act (NCLB; 2001) and Blueprint for Reform (2009) link quality school leadership to increased student academic performance. According to U.S. education secretary Arne Duncan, "There's no such thing as a high-performing school without a great principal . . . You simply can't overstate their importance in driving student achievement, in attracting and retaining great talent to the school" (Sebastian & Allensworth, 2012). The U.S. Department of Education's recent efforts to radically transform schools with the most underachieving students includes replacing principals of failing schools as one of its central strategies (Beteille, Kalgorides, & Loeb, 2012).

Despite the importance placed on school leadership, little is known about how school principals' practices impact student learning (Grissom & Loeb, 2009; Heck & Hallinger, 2010; Leithwood & Jantzi, 2005; Sebastian & Allensworth, 2012). The nature of the job of a school principal has changed over the past century to include a variety of responsibilities and duties that range from data-driven reform implementation to maximizing instructional time through bell scheduling (Clifford, Behrstock-Sherratt, & Fetters, 2012; May, Huff, & Goldring, 2012) yet there continues to be disagreement about how to measure and evaluate this crucial work (Camburn, Huff, May, Huff, & Goldring, 2012; Valentine & Prater, 2011). Because school principals are held responsible for the achievement of all students, including closing observed achievement

gaps between groups of students (National Center for Education Statistics [NCES], 2011; USDOE, 2001) it has become important to understand the impact of principal leadership on student academic achievement.

Current Challenges Faced by School Leaders

Educational leaders guide their schools through many challenges. Curriculum standards, achievement benchmarks, program requirements, and other policy directives from local, state, and federal sources generate complex requirements for schools (Clifford, Behrstock-Sherratt, & Fetters, 2012). Principals also must respond to increasing diversity in student demographics and abilities, which may require collaboration with other social agencies that also serve students. Rapid developments in technologies for teaching and communication necessitate adjustments to the internal workings of schools, for example the creation of curriculum databases in order to expedite idea sharing between teachers (Robinson, Lloyd, & Rowe, 2008). These are just a few of the conditions that make schooling more challenging and leadership more essential in the 21st Century (Leithwood & Jantzi, 2005).

Implementation of NCLB in 2001 and the resulting concentrated focus on standards and accountability changed the education environment considerably (Rice, 2010; Sack, 2005). Ultimately, the mounting pressure from federal and state agencies for all students to meet standards of academic performance across multiple subject areas rested on the shoulders of school principals.

A critical component of NCLB is the requirement that *all* students, regardless of race, special education status, English language proficiency, or socio-economic status, achieve to high levels, specifically "to ensure that all children have a fair, equal, and

significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments" (US DOE, 2001). The disaggregation of student achievement data by race, ethnicity, special education status, and socio-economic status has required school leaders to critically evaluate student performance across subgroups and has driven the discussion of equity in education.

Perhaps the fundamental measure of success for school leaders is the academic success of traditionally marginalized students (Sack, 2005). Across the nation non-Hispanic white students outperform students of color on performance assessments (NCES, 2011; Oregon Department of Education [ODE], 2012). Although achievement gaps between White and Black students have narrowed over the past 30 years, gaps between White and Hispanic students have remained the same or widened (NCES, 2011; ODE, 2012).

Changing Definitions of Principal Leadership

Prior to the implementation of NCLB, much of the literature on principal leadership focused on whether school principals had a direct effect on student academic achievement (Flath, 1989; Leithwood 1994; Leitner, 1994). Researchers were interested in how principals directly influenced the academic performance of students apart from teachers. Authors sought to address the question, *what do successful principals do to improve student achievement*? (Hallinger & Heck, 1998; Leithwood, 1994; Leithwood & Riehl, 2003) Various *direct-effects* models used primarily bivariate analyses such as correlations, *t*-tests, or chi-square tests and did not provide consistent evidence of leadership effects on student outcomes (May et al., 2012). Many found that any effect

principals had on student achievement was mediated through other variables, such as teacher quality and school culture (Leitner, 1994; Hallinger & Heck, 1998 Heck & Hallinger, 2010; Leech & Fulton, 2008; Robinson, Lloyd, & Rowe, 2008). This claim makes sense because the construct of *leadership* frequently involves achieving results by influencing the work of others (Yukl, 2006).

After the implementation of NCLB, there was a sense of urgency to determine the precise relation between principals and student achievement. There was a shift in the literature at this time to account for the observed relation between principals and student achievement by measuring how other variables moderate, or mediate, the impact of principal leadership (Heck & Hallinger, 2010; Leithwood, Harris, & Hopkins; 2008; Ross & Gray, 2006). Studies measuring student growth in relation to principal impact on other conditions of teaching and learning began to emerge. Multiple researchers found the effect of principal leadership on increases in student performance was mediated by school context variables such as teacher practices and school climate (Heck & Hallinger, 2010; Leech & Fulton, 2008; Robinson, Lloyd, & Rowe, 2008). This positive effect was observed across multiple content areas, particularly in the case of reading, writing, and math (Hallinger, Bickman, & Davis, 1996; Hallinger & Heck, 1998; Robinson, Lloyd, & Rowe, 2008).

In this study, I examined the relation between self-reported principal leadership practices and the achievement of Hispanic and non-Hispanic White students. I was specifically interested in how the context of student achievement and school demographics influence principal leadership practices. I measured principal leadership practices using the Kouzes and Posner (1993) Leadership Practices Inventory (LPI) and

student achievement using the Oregon Assessment of Knowledge and Skills (OAKS) math scores for high school students from the 2010-2011 school year. The specific research questions were:

(1) What is the relationship between the *Leadership Practices Inventory* (LPI) subtests of (a) Model the Way, (b) Inspire a Shared Vision, (c) Challenge the Process, (d) Enable Others to Act, and (e) Encourage the Heart;

(2) What is the relative predictive nature of the percentages of Hispanic and non-Hispanic White students who exceeded, met, or did not meet standards on the OAKS math assessment in relation to high school principal LPI sum scores; and

(3) Do the non-performance school contextual variables of percentage of students of color, percentage of students on free or reduced price lunch, or percentage of students in English Language Learner programs in each school contribute to the nature of principal LPI sum scores?

CHAPTER II

LITERATURE REVIEW

To locate studies relating to principal leadership and student achievement, I searched the following electronic databases: ERIC, Google Scholar, Academic Search Premier, PsychNet, WebScience. Table 1 listed the terms used, both alone and in combination, in searching these databases.

Table 1

Literature Search Process

Search Engines and Sites	Keywords	Number of Articles Found
ERIC	Leadership *and* Student Achievement; Leadership Practices Inventory	80
Google Scholar	Leadership *and* Student Achievement; Achievement Gap; Math; Equity	212
Academic Search Premier	Leadership *and* Student Achievement; Leadership Practices	165
PsycINFO	High School Principal Leadership and Equity; School Leadership *and* Student Achievement	80

As a result of these searches, over 500 articles, dissertations, and reports were located and examined. Titles and abstracts were screened to ensure each study contained one or more of the following attributes: (a) a description of the relation between school principal leadership practices and student achievement, (b) a description of research related to principal effectiveness, (c) a description of the components of principal leadership, (d) a description of the relation between school leadership and business

management, (e) studies utilizing the Leadership Practices Inventory (LPI) as a measure of leadership aptitude, or, (f) specific information relating to the validity of the measures used in this study. Of these studies, 45 were included in the literature review.

The Changing Role of the School Principal

The roles and responsibilities of the school principal have changed significantly in the past century, resulting in the contemporary principal having a wider sphere of influence than in the past (Clifford et al., 2012). Around the beginning of the 20th century, as schools grew from one-room schoolhouses to schools with multiple grades and classrooms, the need arose for someone to manage these more complex organizations. This need was initially filled by teachers who maintained teaching duties while also handling the school's management needs.

These principal teachers became full-time administrators as schools continued to grow (Ubben, Hughes, & Norris, 2001). Most principals soon stopped teaching because of the many demands management responsibilities placed on their time. As managers, principals were responsible for financial operations, building maintenance, student scheduling, personnel, public relations, student discipline, coordination of the instructional program, and other overall school matters (Valentine & Prater, 2011). The management role included some curriculum and instruction supervision, but overall school management and maintaining the status quo was the primary role principals played until the early 1980s (Valentine & Prater, 2011). It was assumed if the principal carried out these managerial functions competently, the school would operate effectively and students would achieve academic goals (Leithwood & Duke, 1999).

During the 1980s, the effective schools movement began to describe the principal as an *instructional leader* (Valentine & Prater, 2011). An explicit model of principal instructional leadership was called for as researchers explored the components of effective instructional leadership (Valentine & Prater, 2011). Bridges (1982) claimed instructional leadership focused on establishing school-wide goals, defined the purpose of schooling, provided resources for learning, supervised and evaluated teachers, coordinated staff development, and created collegial relationships with and among teachers. Valentine and Bowman (1988) found principal instructional leadership to be based on two factors: instructional improvement, which included the degree to which the principal positively influenced the instructional skills of teachers through supervision, knowledge of effective teaching, and a commitment to quality instruction; and curricular improvement which referred to the principal's efforts to promote an outcome-based curriculum based on student needs and systemic program review.

Contemporary principals play multiple roles: school manager, instructional leader, and the leader of school reform (Murphy, Elliott, Goldring, & Porter, 2006; Ubben, Hughes, & Norris, 2001). Clifford, Behrstock-Sherratt, and Fetters (2012) characterized this new nature of principals' practice as context-driven. A single leader assumed multiple leadership roles depending on context (Seashore-Louis, Leithwood, Wahlstrom, & Anderson 2010). A contemporary principal may be a traditional manager in some contexts and an adaptive leader in others. The variety of conceptions of principal leadership, including traditional manager, supervisor of standards, adaptive leader, instructional leader, and leader among leaders are displayed in Table 2.

Table 2

Changing Concepts of Principal Leadership (Clifford et al., 2012)

Leadership Type	Approach to Principal Leadership	Definition of Effectiveness
Traditional Manager	Leaders uphold traditions in school and community and work to create a more efficient system to attain goals. School and district administrators are the sole leaders.	Provides efficient management of student and staff time and financial resources.
Supervisor of Standards	Leaders shape staff and student behaviors to meet organizational or societal standards and ensure people adhere to established norms. School and district administrators are the sole leaders.	Develops a system of rewards and sanctions, ensuring teachers and students meet standards for quality performance and achievement.
Adaptive Leader	Leaders work closely with each teacher and adjust leadership approaches to move individuals toward achievement of organizational goals. School and district administrators are the sole leaders.	Knows and understands strengths, weaknesses, and styles of different groups of teachers and adapts leadership styles to match teacher developmental needs and assist in professional growth.
Instructional Leader	Leaders encourage teachers to problem solve and revise practice by facilitating self-reflection and collaborative learning. School administrators lead curriculum improvement, monitor progress, and give teachers a role in the process.	Establishes a strong vision and high expectations and programs to model good instruction, coach teachers, and provide opportunities for teachers to engage in reflection and problem solving.
Leader Among Leaders	Leaders recognize their limitations and the limitations of their position and the capacity of others to lead. Leaders work to establish organizational systems that distribute leadership and support organizational learning.	Facilitates democratic decision-making and processes to take place among communities of professionals.

A school principal may perform managerial tasks such as creating a school-wide standardized testing schedule, supervisory tasks such as the observation and evaluation of

school staff, and instructional leadership tasks such as assisting teachers with curriculum development. Because the role of principal varies across, and even within schools, it is difficult to define principal leadership in the frame of a static role and, therefore, difficult to measure principal effectiveness (Hallinger & Heck, 1998).

The construct of principal leadership is complicated by how principals distribute their efforts within schools. At the high school level, the focus of any activity may differ across teachers, grades, departments, and programs within the same school (Sebastian & Allensworth, 2012). Despite the necessity for principals to ensure all students meet proficiency on standardized tests, evaluating principal quality has been difficult because of the wide scope of responsibility and the context-driven leadership practices of the school principal (Clifford et al., 2012; Hallinger & Heck, 1998; Leitner, 1994). The changes in principals' responsibilities and the nature of their work have raised new questions about how to define principal effectiveness (Clifford et al., 2012).

Research on Principal Leadership and Student Achievement Prior to the High-Stakes Accountability Movement

Prior to the implementation of NCLB in 2001, interest in school effectiveness and improvement was the driving force behind research on the impact of school administrators on student achievement (Hallinger & Heck, 1998). Many studies conducted before this time focused on whether school administrators had a direct effect on student outcomes (Hallinger, Bickman, & Davis, 1996; Hallinger & Heck, 1998; Leitner, 1994). Direct effects research proposed a leader's practices could have a direct impact on school outcomes that could be reliably measured apart from other related variables such as quality of instruction and student socio-economic status (Hallinger &

Heck, 1998). Indirect effects, or *mediated effects*, research hypothesized that leaders achieved their impact on school outcomes through other variables, such as hiring quality teachers and creating a school culture that was focused on student achievement (Hallinger & Heck, 1998; Hallinger, Bickman, & Davis, 1996). In these studies, the process of *how* a principal realized an impact on student achievement remained elusive due to the complexity of the principal's leadership role.

An absence of direct effects of principal leadership on student achievement. Overall, studies in which researchers sought to infer a direct impact on student achievement resulted in findings of no significant relationship (Hallinger & Heck, 1998) or findings of mixed or weak effects (Leitner, 1994; Witziers, Bosker, & Kruger, 2003). This result was attributed to the conceptual and methodological tools employed by researchers, particularly the complexity of isolating a unit of analysis in a school (Hallinger & Heck, 1998). The nested structure of schools represented a hierarchical structure including various subgroups of students, individual teachers, principals, and superintendents. Students brought individual differences to the classroom, teachers shaped the classroom environment, principals oversaw teachers, and superintendents created district improvement plans. These structures could be even more complex in comprehensive high schools that may include teams of teachers, student cohort groups, and small learning communities (Seashore-Louis, Anderson, & Wahlstrom, 2004).

In an attempt to determine a relation between principal instructional management behaviors and student achievement, Leitner (1994) investigated the work of principals in 27 elementary schools by asking teachers to complete an Instructional Management Rating Scale (IMRS, Hallinger, 2011). The IMRS was a behaviorally anchored rating

scale that asked teachers to what extent a principal performed specific instructional management behaviors on a 5-point scale. The construct of instructional management was divided on the IMRS into three dimensions: defining the school's mission, managing the instructional program, and promoting a positive school climate (Hallinger, 1983).

Leitner (1994) found no significant positive relationship between principal instructional management practices and increases in student achievement found Student achievement gain was determined by a regression analysis in which achievement (as measured by autumn and spring standardized test scores) was regressed on prior achievement and socio-economic status (SES) for two years of data. Only principals in at least their third year of the principalship were invited to participate due to the author's assumption that it takes principals at least two years to establish patterns of instructional management behavior with staff (Leitner, 1994).

Leitner (1994) did find that student learning was influenced by environmental and organizational characteristics. In particular, results indicated that principals working in schools with students from higher socioeconomic status displayed more instructional management behaviors, particularly those related to defining the school's mission and promoting a positive school climate, than their colleagues working in schools with more socioeconomically disadvantaged students. He called for further research to surface more information about this relation.

Hallinger, Bickman, and Davis (1996) found that school principals influenced student achievement through actions that supported the school's learning climate, such as conducting frequent classroom observations, reviewing and interpreting test score data with faculty, and providing multiple opportunities for teacher collaboration during the

school day. The researchers called for exploration of the indirect paths through which principals influenced student learning. Hallinger, Bickman, & Davis (1996) called the fact that principals' impact on student achievement is indirect, rather than direct, irrelevant in that it can be assumed that achieving results through others is the essence of managerial work. This marked an important transition in the literature from direct-effects to indirect-effects research.

Hallinger & Heck (1998) conducted a meta-analysis of research dating from 1980 to 1995 and found a measureable positive indirect effect of leadership on student achievement. The authors organized the studies into three categories: (a) direct effects of leadership practice on student achievement, (b) mediated effects on student achievement, and (c) *reciprocal effects* studies, in which relationships between leadership efforts and school environmental factors were interactive. The authors found that mediated and reciprocal effects studies had the greatest effect sizes.

Principal Leadership Impact on Student Achievement in the Context of High-Stakes Accountability

Growing pressure to increase student achievement after the passage of No Child Left Behind generated new thinking about the role of the principal in raising individual and school performance (Rice, 2010). Studies of leadership post-NCLB involved four major components: (a) a tension between the influence of transformational and instructional leadership models, (b) a focus on equitable achievement outcomes across subgroups, (c) an interest in the growth of student achievement over time, and (d) an analysis of the impact of specific leadership practices on student achievement gains (Leithwood, Harris, & Hopkins, 2008).

Transformational and instructional leadership. Transformational leadership is the ability of a leader to engage with staff in ways that inspire them to improve (Robinson, Lloyd, & Rowe, 2008). Literature on principals as transformational leaders painted principals as change agents (Robinson, Lloyd, & Rowe, 2008; Valentine & Prater, 2011). This characterization arose from the idea that principals should not only perform tasks related to the daily operational management of a school such as monitoring scheduling and budgets, but also in relation to further developing the educational system by transforming the school culture. The all-encompassing type of school reform necessary to ensure that all students met achievement benchmarks frequently required leaders to focus on systemic, transformational changes in their schools (Robinson, Lloyd & Rowe, 2008).

In a meta-analysis of 27 quantitative, five qualitative and one mixed-methods study of the effects of transformational leadership in school contexts, Leithwood and Jantzi (2005) described transformational leadership as behaviors that fell into three broad categories: setting directions, helping people, and redesigning the organization. These categories were larger in scope than those affiliated with instructional leadership, which focused on the goal of effective teaching. The behaviors of transformational leadership required principals to influence a wide variety of factors in the school setting.

In contrast to the big-picture scope of transformational leadership, instructional leadership, developed during the effective schools movement of the 1980s, viewed the principal as the primary source of educational expertise (Ubben, Hughes, & Norris, 2001). Aimed at standardizing the practice of effective teaching, the principal's role in this context was to maintain high benchmarks for teachers and students, supervise

classroom instruction, coordinate the school's curriculum, and monitor student progress (Leitner, 1994). In short, instructional leadership referred to the actions that a principal took, or delegated to others, to promote growth in student learning (Flath, 1989). Strong instructional leaders were characterized as being hands-on with curriculum and instruction, worked directly with teachers, and were frequently present in classrooms (Robinson, Lloyd, & Rowe, 2008). Although a focus on instructional leadership waned in the 1990s in favor of transformational leadership practices (Robinson, Lloyd, & Rowe, 2008), interest was re-invigorated by the accountability movement. There was an emphasis on the role of the principal in facilitating instructional quality in order to ensure that all students met proficiency standards (Hallinger, 2005).

Instructional leadership was deemed important if schools were to improve, particularly in the context of teacher quality (Robinson et al., 2008; Valentine & Prater, 2011). Dealing with accountability in the context of systemic change, principals had to face the implications of the standards movement, curriculum frameworks, and new forms of assessment. As the challenge of school reform demanded the principal to become an agent of change, however, the managerial role of instructional leader lost its centrality (Marks & Printy, 2003). Transformational leadership emerged as the model needed by principals to lead schools through reform (Valentine & Prater, 2011). Transformational leadership emphasized the ingredients of change—ideas, innovation, influence, and consideration for the individual in the process, necessary to achieve results in 21st century schools (Leithwood, 1994).

Authors of multiple meta-analyses (Leithwood & Jantzi, 2005; Robinson, Lloyd, & Rowe, 2008; Waters, Marzano, & McNulty, 2003) have explored the differences

between instructional and transformational leadership to determine which style had the greatest impact on student achievement. Of the 33 studies reviewed by Leithwood and Jantzi (2005), about half found that principal transformational leadership had a small influence on student academic outcomes. Specifically, they found that leaders who engaged in behaviors involving setting directions, helping teachers, and redesigning the organization for student academic success had the greatest impact. The authors called for continued examination of the impact of specific transformational leadership behaviors on student academic achievement.

In an analysis of findings from 27 published studies of the relationship between leadership in elementary, middle, and high schools and student academic outcomes, Robinson, Lloyd and Rowe (2008) found that the average effect of instructional leadership (*ES* = 0.42) on student outcomes was three to four times that of transformational leadership (*ES* = 0.11). This meta-analysis included studies of 16 elementary schools, 4 high schools, and 7 of a mix of elementary, middle, and high schools. The authors found five common leadership dimensions across each of the studies, including establishing goals and expectations, strategic resourcing, evaluating teaching and curriculum, participating in teacher development, and ensuring an orderly environment (Robinson, et al., 2008). These five dimensions included both instructional and transformational leadership practices.

A combination of both instructional and transformational leadership practices was found to be necessary for student academic success (Leithwood & Jantzi, 2005; Robinson, et al., 2008; Valentine & Prater, 2011). Principals must be instructional leaders who were involved in curriculum development, teacher evaluation, and coaching, as well

as transformational leaders who promoted a school-wide vision of success in order create schools that resulted in high academic achievement for a diverse range of students (Leithwood & Jantzi, 2005). Although transformational leadership was essential for reform-oriented school improvement, it was insufficient to achieve the high-quality teaching necessary for all students to meet mandated benchmarks (Marks & Printy, 2003; Valentine & Prater, 2011).

An *integrated leadership* approach combined instructional and transformational leadership practices in order to increase student achievement (Marks & Printy, 2003). A combination of these two leadership styles produced the best results due to the complexity of the 21st century school and the variety of student learning needs. Leadership is most evident during times of change, and the nature of change is the critical determinant of the most beneficial kinds of leadership (Leithwood, 1994). For example, in order for principals to quickly change practices of underperforming teachers they need to exercise transformational leadership practices, such as creating a common vision for success, and instructional leadership practices, such as supervising classroom instruction. The environment of high stakes testing and sanctions against schools that did not meet benchmarks required principals to be both instructional and transformational leaders (Marks & Printy, 2003).

A study that analyzed the work of principals in Florida found that principals engaged in over 40 different kinds of tasks daily (Horng, Klasik, & Loeb 2010). Principals spent most of their time on activities in two categories: almost 30 percent was spent on administrative activities including student supervision, scheduling, and compliance issues; and just over 20 percent was spent on organizational management

tasks that included personnel and budget matters. In contrast, less than 10 percent of principal time is spent on instructional-related activities such as classroom observations and professional development for teachers and staff.

A related study showed that it was not just the allocation of time, but also principals' sense of their effectiveness at these various kinds of tasks that made them effective (Grissom and Loeb 2009). Again, organizational management emerged among the various roles and responsibilities as the key predictor of principal effectiveness using measures derived from multiple constituents and on multiple dimensions. In contrast, few positive (and some negative) relationships were found between school outcomes and the other four dimensions of task effectiveness. Particularly noteworthy here was the absence of a positive relationship between principal efficacy in instructional management and school outcomes.

These findings did not necessarily contradict the body of research that argued for principals as instructional leaders, but this new evidence did help nuance that argument by broadening the definition of instructional leadership to include organizational management skills. Grissom and Loeb (2009) concluded that:

> Principals devoting significant time and energy to becoming instructional leaders in their schools are unlikely to see improvement unless they increase their capacity for organizational management as well. Effective instructional leadership combines an understanding of the instructional needs of the school with an ability to target resources where they are needed, hire the best available teachers, provide teachers with the opportunities they need to improve, and keep the school running smoothly (p. 32)

This research suggested that greater attention should be given to the development of organizational management skills in the preparation, hiring, and ongoing professional development of principals.

Leadership practices. Analyses of the impact of specific leadership practices became more prevalent in the literature after the high stakes accountability of NCLB emerged. These studies sought to determine a relation between a variety of principal leadership practices and student achievement. Some common practices across studies indicated that the following principal practices are associated with student achievement:

1. Creating and sustaining an ambitious commonly accepted vision and mission for organizational performance;
2. Engaging deeply with teachers and data on issues of student performance and quality of instructional services;
3. Efficiently managing resources;
4. Creating safe learning environments for students and staff;
5. Developing strong and respectful relationships with parents, communities, and businesses to mutually support education;
6. Acting in a professional and ethical manner (Waters, et al., 2003; Witzier, et al., 2003; Robinson, et al., 2008).

In an attempt to address the paradoxical differences between qualitative and quantitative evidence on leadership impacts, Robinson, Lloyd and Rowe (2008) conducted a meta-analysis focused on identifying the relative impact of different types of leadership rather than "leadership" as a construct in and of itself. The researchers identified 27 studies comparing the impact of transformational and instructional

leadership. From these studies, they conducted a detailed analysis of the items included in the measures of leadership grouped in the sampled studies and derived five groupings, or leadership dimensions:

1. Establishing goals and expectations (transformational), includes the setting, communicating, and monitoring of learning goals and expectations, and the involvement of staff, and others in the process so there is clarity and consensus about goals;
2. Resourcing strategically (instructional), involves aligning resource selection and allocation to priority teaching goals. Includes provision of appropriate expertise through staff recruitment;
3. Planning, coordinating, and evaluating teaching and the curriculum (instructional);
4. Promoting and participating in teacher learning and development (instructional); and
5. Ensuring an orderly and supportive environment (instructional), including protecting time for teaching and learning by reducing external pressures and interruptions and establishing an orderly and supportive school environment (Robinson et al., 2008).

The leadership dimension that was most strongly associated with positive student outcomes was that of promoting and participating in teacher learning and development (*ES* = .84). Leaders' involvement in teacher learning provided a deep understanding of the conditions required to enable staff to make and sustain the changes required for improved outcomes.

Goal setting was also significantly associated with positive student outcomes (*ES* = .42). Goal setting had an indirect effect on students by focusing and coordinating the work of teachers. Leadership made a difference to students through the degree of emphasis on clear academic and learning goals (Robinson et al., 2008). Goal content was also as important as the generic process of goal setting.

In a meta-analysis of school leadership studies from the early 1970s through the early 2000s, Waters, et al., (2003) identified 21 leadership practices that were significantly linked with student achievement. Studies chosen for inclusion must have had student achievement measured by standardized norm-referenced tests as a dependent variable and teacher perceptions of leadership as an independent variable. The principal leadership practices with the highest correlations to student achievement included (a) being a change agent, (b) fostering shared beliefs and a sense of community, (c) establishing clear goals, and (d) inspiring and leading new and challenging innovations.

Waters et al. (2003) found that not only could leadership have a positive impact on student achievement, but certain leadership practices were also correlated with decreases in student achievement. In some studies, the researchers found an effect size for leadership and achievement of *ES* = .50, which translated into one standard deviation difference in demonstrated leadership ability being associated with as much as a 19 percent point increase in student achievement. In other studies the researchers found correlations as low as *r* = -.02, indicating that schools where principals demonstrated higher competence in certain leadership areas had lower levels of student achievement. Two primary variables were attributed to this difference. The first was the focus of change, or whether leaders properly identified and focus on improving the school and

classroom practices that were most likely to have a positive impact on student achievement in their school. The second was whether leaders understood the magnitude of change they were leading and adjust their leadership practices accordingly (Waters et al., 2003).

In a quantitative meta-analysis designed to estimate the effect size of educational leadership on student achievement, Witzier, Bosker, and Kruger (2003) found that studies that used a multi-dimensional analysis of leadership that included a variety of leadership practices were more likely to have positive, significant relationships between leadership and student outcomes. This meta-analysis was unique in that it attempted to define which mediating factors might account for the variation in effect sizes in order to better understand the potential impact of these factors on student achievement. The authors estimated positive effects related to the following leadership behaviors:

1. Defining and communicating a mission;
2. Supervising and evaluating the curriculum;
3. Monitoring student progress;
4. Coordinating and managing the curriculum;
5. Visibility;
6. Promoting school improvement and professional development;
7. Achievement orientation; and
8. Providing advice and support to teachers

Witzier et al. (2003) found only small effects (Cohen's d <. 10) for each of the leadership behaviors above, which indicated that not more than one percent of the variation in student achievement was associated with differences in leadership. The

authors claimed that this small effect may be very relevant, however, due to the impact that one individual may have on many others and called for further research on the relation between specific leadership behaviors and student achievement. The impact of one individual on many others was later deemed the *ripple effect* (Clifford et al., 2012) and reflected the broad impact and context-dependent nature of principals' practices. At the center of the ripple effect was the principal's practice, which included knowledge, disposition and actions. In this model, principals influenced teacher quality, which influenced instructional quality, which influenced student achievement. Principals were then influenced by school conditions and district and community contexts.

A focus on growth. Sustaining school cultures that positively affect student learning requires diligent effort. Using a longitudinal, multilevel model, Heck & Hallinger (2010) examined the effects of leadership on school improvement over several years. Specifically, they examined the effect of changes in distributed leadership upon changes in school improvement capacity and growth in student learning over a four-year period. *School improvement capacity* was defined as the social and academic organization of schools that served as a mediating factor on the effects of leadership, including the quality of the school's implementation of the state's curricular standards, academic expectations for students, sustained focus on academic improvement, equitable distribution of resources, continuous professional learning, open communication, and parent support for student learning (Heck & Hallinger, 2010). The study incorporated key variables actively targeted in current school improvement efforts in its model of leadership and student learning. Background and context variables incorporated into the

study included school size, teaching staff stability, principal stability, and student composition.

Three hypotheses drove the Heck & Hallinger study: (a) teacher perceptions of initial school improvement capacity would be positively related to initial levels of student achievement; (b) changes in school improvement capacity over time would result in measurable changes in students' growth rates in reading and math; and (c) leadership effects on student learning outcomes would be indirect, operating through the school improvement capacity construct. To test these hypotheses, the authors collected survey data from students, parents, and teachers in 197 elementary schools over a four-year period of time. Math and reading scores on the Stanford Achievement Test were collected over three successive years.

Four assumptions framed the authors' approach to leadership in the Heck and Hallinger study (2010):

1. The practice of leadership involved developing a vision for change and then motivating people to achieve that vision;
2. Leadership in schools tended to be distributed and therefore measurement should not be limited to the actions of those in formal management roles;
3. Effective school leadership created conditions that supported teaching and learning and built capacity for professional learning and change; and
4. Leadership that increased the school's capacity for improvement impacted student achievement positively.

The authors found a significant ($p < .05$) positive relation between distributed leadership and school achievement and growth rates. Prior to this study, most of the

evidence-based research on principal leadership was drawn largely from case studies and cross-sectional surveys. This study was one of the first large-scale empirical studies with a focus on transformational leadership to investigate how leadership impacts performance improvement in schools over time.

Principal tenure. A challenge to determining the impact of principal leadership on student achievement over time is the short tenure of many principals (Beteille, Kalogrides, & Loeb, 2012). Though leadership change can be beneficial in some cases, frequently replacing principals may create instability in schools that can potentially weaken improvement efforts (Loeb, Kalogrides, & Horng, 2010). Many districts face high leadership turnover rates, ranging from 15 to 30% each year throughout the country with higher rates of turnover in schools serving a higher percentage of low-income students, students of color, and students with low academic achievement (Beteille et al., 2012). It is clear that leadership has an impact on student achievement, however, in the case of new principals, what is the impact of student achievement and school contextual variables on leadership practices?

In an analysis of principal turnover, Beteille et al., (2012) found that principals did not leave schools after a period of academic downturn as the researchers had hypothesized, however they did find that principals were more likely to transfer to a school with higher student SES, fewer students of color, and higher student academic achievement given the opportunity. Additionally, the authors found a negative relationship between principal turnover and math achievement scores.

School contextual variables. The leadership practices of an effective principal may vary according to school context (Clifford, et al., 2012; Goldring, Huff, May, &

Camburn, 2007; Wahlstrom, Seashore-Louis, Leithwood, & Anderson, 2010). Each school has different characteristics, therefore perhaps the most effective principals are able to quickly evaluate these factors and leverage the ones that are most likely to impact instruction and learning in their schools. (May et al., 2012). Researchers found that how principals spend their time varies from school to school, even within a single district (Heck & Hallinger, 2010). Principals in schools in neighborhoods with higher socio-economic status spend their time on higher-level school initiatives, while principals in lower SES schools spend more time on instructional leadership and student discipline (Goldring, et al., 2007; May et al., 2012). Research on how school context influences principal leadership practices is still in its infancy (Clifford, et al., 2012; Goldring, Huff, May, & Camburn, 2007; Wahlstrom, Seashore-Louis, Leithwood, & Anderson, 2010).

Equitable achievement outcomes. A fundamental goal of NCLB was to close achievement gaps between white students and students of color (Barton & Larson, 2012). Educational equity is defined as "raising the achievement of all students while narrowing the gaps between the highest and lowest performing students as well as eliminating the racial predictability and disproportionality of which student groups occupy the highest and lowest achievement categories" (Singleton & Linton, 2006, p. 46). Research on educational leadership has become focused on equitable outcomes for all students in the world of educational accountability (Lee, 2002). Demographic changes, coupled with the expectations that required all students to achieve benchmarks demanded that school leaders pursue equitable achievement outcomes (Barton & Larson, 2012).

In a review of research on equity issues facing five student categories (special needs, religious, cultural and racial minorities, socioeconomic status, sex, and sexual

orientation) Ross and Berger (2009) found that many principals successfully influenced the achievement of diverse student groups by creating an inclusive school mission with staff that included a specific focus on equitable achievement. School leaders enhanced equity by using specific strategies within four domains: curriculum interpretation, instructional practices, assessment and evaluation, and community involvement (Barton & Larson, 2012). Thus, educational equity is "an operational principal that enables educators to provide whatever level of support is needed to whichever students require it" (Singleton & Linton, 2006, p. 47). As a focus on educational equity emerged, researchers worked to determine which leadership practices were most effective to increase student achievement.

The focus on equitable achievement catalyzed by NCLB brought increased efforts to reduce the achievement gap between White students and students of color across the United States (Barton & Larson, 2012). In Oregon, there was an intensified focus on narrowing the achievement gap between White and Hispanic students due to the growing population of Hispanic students and persistent achievement gap between these two subcategories of students (ODE, 2012).

Hispanic and non-Hispanic White achievement gap in Oregon. People of Hispanic heritage continue to be the fastest-growing population in Oregon (Oregon Commission on Hispanic Affairs, 2009; United States Census Bureau, 2012). Over the past few decades Oregon schools have seen increases in Hispanic enrollment and decreases in White enrollment, however this shift has not been equally distributed throughout the state (ODE, 2012). Ten of Oregon's 213 school districts enroll 50 percent of the state's Hispanic students; seven of these districts are in the Portland metropolitan

area, including Beaverton, Portland, Hillsboro, Woodburn, Reynolds, Forest Grove, Tigard-Tualatin, and Gresham-Barlow (ECONorthwest, 2009). Oregon's Hispanic students were more than twice as likely to be economically disadvantaged, were more likely to change schools, and to be taught by inexperienced teachers than their White counterparts, creating significant barriers to academic success (ECONorthwest, 2009). Figure 1 depicts the achievement gap between Hispanic and non-Hispanic White students on the high school mathematics subtests of the Oregon Assessment of Knowledge and Skills (OAKS). Although both groups made gains in achievement from the 2009-2010 to the 2010-2011 school years, there continues to be approximately a 20% gap between non-Hispanic White and Hispanic students meeting benchmarks.

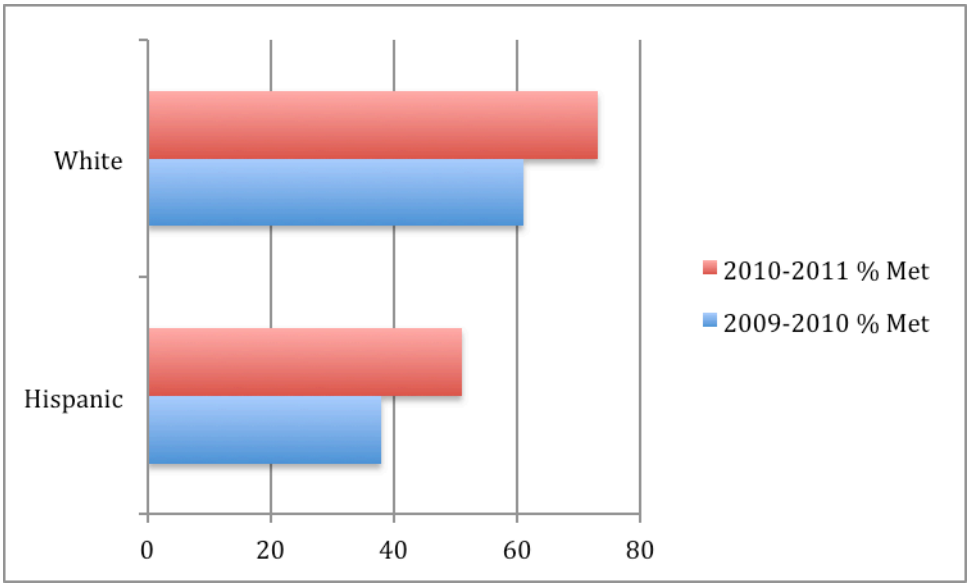

Figure 1. Percentage of Oregon students meeting benchmarks on the high school OAKS math test by ethnicity.

Racial achievement gaps in math performance. Understanding mathematics is essential for individual and societal advancement, yet despite years of reforms designed

to close racial achievement gaps in student educational outcomes, student mathematics performance continues to be correlated with race and increases as students move from elementary to high school (Mickelson, Bottia, & Lambert, 2013). The gap between White and Black students increased by eleven points between grades 4 and 12 and the White/Hispanic gap grew by 10 points (NCES, 2011). In order to truly eradicate achievement gaps and prepare students for 21st century careers, we must focus on ensuring that all students meet and exceed standards for math achievement (Darling-Hammond, 2007).

Analysis of the Use of Self-Report Surveys to Measure Principal Leadership Practices

Principals' practices can significantly impact teaching and learning in their schools in a variety of ways therefore it is critical to understand the validity of tools that measure principal leadership practices (Camburn, et al., 2010). The education field has relied heavily on self-report surveys to measure the work of principals yet little is known about their validity (Hallinger & Heck, 1998). The low cost, low respondent burden, and ease of administration of self-report surveys make their use prevalent among leadership researchers (Camburn et al., 2010).

A considerable body of education research has established the predictive validity of self-report survey measures (Bryk & Schneider, 2002; Camburn & Han, 2011; Camburn et al., 2010). Bryk and Schneider (2002) found that levels of trust among teachers, principals, and parents measured by teacher surveys were positively associated with school-level improvements in reading and mathematics achievement. Camburn and Han (2011) found 49 studies that examined the relationship between classroom

instruction and student achievement using evidence on instruction from large-scale surveys. Many of these studies reported positive associations with achievement that were predicted by investigators, again corroborating the validity of the survey measures used.

In a study that compared self-reported survey measures of specific principal leadership practices against comparable daily log measures, Camburn et al. (2010) found evidence of the validity of the principal survey used. The survey measured principals' practices in four broad areas of leadership by asking principals how frequently they performed specific tasks. Correlations between log and survey measures of all 4 dimensions exceeded .50. Although the researchers found significant evidence in support of the validity of the principal survey, they called for further research to improve the efficacy of survey measurement of principal leadership practices. They also suggested that empirical research that furthers understanding of how school principals allocate their time across different leadership domains would be of value.

Linking School Leadership and Executive Leadership Research

Hallinger & Snidvongs (2008) suggested that the solution to the dilemma of how to measure the effectiveness of school leaders was to turn to measures of successful corporate leadership practices. Although school systems and businesses are different in a variety of ways, they share several similarities such as having a results-driven environment, needing for an effective vision to guide effort, and providing accurate customer communication. Hallinger and Snidvongs (2008) suggest that school leaders and administrator preparation programs might benefit from an understanding of corporate management and leadership techniques.

The Leadership Practices Inventory measures several of these leadership techniques and has been used in multiple studies to examine the relation between leadership and specific outcomes in a variety of industries, such as non-profit agencies, healthcare, business, and government (Kouzes & Posner, 2002). Leech and Fulton (2008), for example, used the LPI to explore the relationship between teachers' perceptions of the leadership behaviors of secondary school principals in a large urban school district and their perceptions of the level of shared decision making practiced in their schools (Leech & Fulton, 2008). The relation between teachers' perceptions of principal leadership (as measured by the LPI) and the level of shared decision-making was measured by teachers' responses to the Shared Educational Decisions Survey-Revised (Ferrara & Repa, 1993). Specifically, Ferrara and Repa (1993) examined teachers' perceptions of their school's culture with regard to shared-decision making in the areas of planning, policy development, curriculum and instruction, student achievement, pupil personnel services, staff development, and budget management and found little correlation between teacher's perception of principal leadership and shared decision-making. In an effort to explain the findings the researchers hypothesized that the five leadership practices represented in the LPI may not include the appropriate leadership behaviors that influenced the teachers' perceptions of shared decision-making in their schools. However, the authors hypothesized that the practices may impact other dimensions of school culture, paving the way for future study.

Niemann and Kotze (2006) used the Leadership Practices Inventory to find a positive relationship between principal leadership practices and a school culture conducive to teaching and learning. The authors sampled thirty elementary and secondary

school principals and asked each to rate himself, and asked four staff members to rate the principal on leadership practices. Linear regressions and regression fit graphs were used to analyze the data obtained from the surveys. The authors found that the leadership practices of setting a shared vision, perceiving challenges as opportunities, fostering collaboration, and empowering staff members were correlated to staff members' perceptions of a sound organizational culture.

Summary of Literature Review and Moving Forward

Scholars studying leadership in educational settings have found positive indirect effects of principal leadership on student learning (Waters et al., 2003; Witzier et al., 2003; Robinson et al., 2008). Although the effect sizes in these studies was small, researchers have suggested that the level of impact is meaningful because the effects of better schooling (e.g., improved curriculum, high academic expectations, effective teaching and leadership) were likely to accumulate during students' time at a particular school (Heck & Hallinger, 2010).

There were three issues that make a specific analysis of previous literature difficult. These include a) the difficulty of defining the construct of leadership, b) the difficulty of measurement of leadership, c) units of analysis vary across studies and include schools, principals, and students. Many of the studies in the literature review did not give a definition of leadership. Instead, researchers provided a variety of constructs associated with leadership, such as influence on curricular choices, teacher professional development, and organizational management. The variety of activities associated with principal leadership listed in the literature made it difficult to determine how to define principal leadership. The lack of a concrete definition of principal leadership, as well as

the disagreement between studies in the literature about the significant practices of principal leadership make the measurement of leadership difficult. Inconsistencies of units of analysis across studies also make the measurement of leadership inconsistent.

A variety of studies assert that principals' involvement in a number of significant activities helps to explain much of the relation between leadership and student achievement (May, et al., 2012), although there is disagreement regarding which of these activities have the greatest influence. I have reviewed the literature for a range of leadership models, including instructional leadership, transformational leadership, and a variety of leadership practices and have discovered five salient concepts that appear regularly throughout the literature. I counted the frequency of each concept that had a positive effect between principal leadership and student achievement. The activities that appeared the most frequently fell into five main categories:

1. Framing and sustaining the school's vision or mission (Hallinger & Heck, 1998; Leithwood & Jantzi, 2005; Leithwood et al., 2004);
2. Performing instructional leadership functions such as monitoring instruction and providing feedback, analyzing student data, and supporting teachers' professional development (Hallinger, 2005; Robinson et al., 2008; Valentine & Prater, 2011);
3. Enhancing the organizational structures in their schools, such as developing teacher leadership and collaborative decision-making (Grissom & Loeb, 2009);

4. Improving the culture and climate in their schools (in areas such as student and teacher expectations and communication between school members) (Hallinger & Heck, 1998;); and
5. Investing in personnel by hiring and retaining qualified teachers (Heck & Hallinger, 2010; Harris, Rutledge, Ingle, & Thompson, 2010; Leithwood et al., 2004).

These results pointed to the importance of leaders' actions to shape school conditions that indirectly improved student learning and therefore served as the focus of my study.

It is also important to remember that principals operate within a school context. School contextual factors such as student socio-economic status, ethnicity, and percentage of English Language Learners influence classroom practice, student achievement, and principal leadership practices (Clifford, Behrstock-Sherratt, & Fetters, 2012). An illustration of this relationship is displayed in Figure 2. Principals exercise leadership, which influences teacher practices, which influences student achievement. However, this is not a straight linear relationship. Student achievement data also influences how teachers teach and how principals lead (Beteille, Kalogrides, & Loeb, 2012), and each of these factors is influenced by the context of the school.

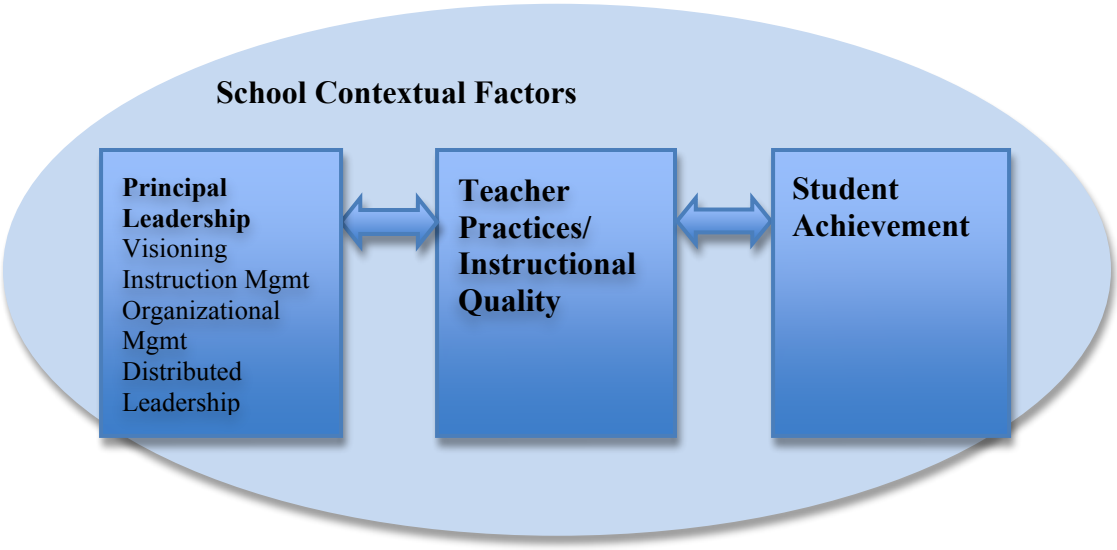

Figure 2. Model for influence of principal leadership practices within school context.

Despite the national focus on narrowing achievement gaps for students of color, few studies linked principal leadership practices with student achievement desegregated by race and ethnicity. Likewise, few studies examined the impact of principal leadership at the high school level. This was attributed to the complexity of high school structures including a multitude of teachers, support staff, and students (Hallinger & Heck, 1998).

My study attempted to determine if a relation exists between proficiency categories of Hispanic and non-Hispanic White students and self-reported principal leadership attributes and in an analysis of schools in one academic year. I grounded it in three related problems found in the literature. First, although many studies have attributed a link between principal leadership and student achievement outcomes, few empirical studies (Hallinger, 2011) have investigated the impact of school contextual variables on principal leadership practices. Second, despite the responsibility assigned school principals to decrease racial achievement gaps, few studies examined the link between

principal leadership practices and the achievement of students of color (Barton & Larson, 2011). Finally, although researchers have linked leadership to positive outcomes related to business goals (Barlow, Jordan, & Hendrix, 2003; Kouzes & Posner, 2002), there are few studies that utilize business leadership metrics to measure leadership capacity in public school leaders (Hallinger & Snidvongs, 2008).

The initial question that drove my study was "Is there a relation between principal leadership practices and student achievement?" According to the literature, principals who utilize a leadership approach that integrates transformational and instructional leadership, set a clear vision and goals, and foster collaboration had a greater impact on student achievement (Marks & Printy, 2003; Robinson et al., 2008; Waters et al., 2003). The Leadership Practices Inventory (LPI) includes measures of each of these constructs.

I hypothesized that there would be a relation between self-reported principal leadership practices and student achievement because of the demonstrated relation between the leadership practices measured by the LPI and successful corporate leadership (Hallinger & Snidvongs, 2008) as well as the literature showing a relation between several of the leadership practices measured on the LPI and student achievement (Marks & Printy, 2003; Robinson et al., 2008; Waters et al., 2003). I also hypothesized that school context variables such as percentage of students on Free or Reduced Price Lunch, percentage of students enrolled in English Language Learner programs, and percentage of students of color would have an impact on principal leadership practices.

CHAPTER III

METHODS

In this chapter, I describe my study's setting and participants, sampling technique, research design, and description of factors of interest.

Setting and Participants

A total of 28 high school principals in the Portland Metropolitan area completed a survey on their leadership practices. Survey results were examined in relation to student proficiency data.

Setting Description. The Portland metropolitan area is an urban area in the state of Oregon centered on the city of Portland, Oregon. The U.S. Census Bureau's definition for this area includes the following counties: Clackamas County, Oregon; Columbia County, Oregon; Multnomah County, Oregon; Washington County, Oregon; Yamhill County, Oregon; Clark County, Washington; and Skamania County, Washington. (U.S. Census Bureau, 2012). The Oregon portion of the metropolitan area is the state's largest urban center.

Sample. I used a convenience sample that included public high schools in the Portland Metro area, specifically from Multnomah, Clackamas, and Washington counties. The population frame includes all 290 Oregon high schools. I consulted data from the Oregon Department of Education and found 44 high schools in Multnomah County, 23 high schools in Washington County, and 22 high schools in Clackamas County for a total of 89 public high schools (ODE, 2012). Only public schools with populations of 650 students or greater were included in the sample because this was a natural cut point in this sampling frame. Of the 89 schools included in the sampling frame, 50 had populations

fewer than 650 students and were thus omitted, resulting in a final sample of 39 schools (Appendix A). The majority of schools in the sample were suburban. The unit of analysis was the individual school building.

Research Design

This study used a descriptive, non-experimental design to gather information about principal leadership and student academic proficiency. Descriptive research does not necessarily seek to explain relationships, test hypotheses, or make predictions but seeks to observe and describe the behavior of a subject without influencing it in any way (Babbie, 1995).

Factors of interest. In this section, I describe how the main conceptual variables defined earlier were operationalized. I collected three factors of interest: (a) self-reported high school principal leadership practices, (b) student math proficiency on a state assessment test, and (c) school demographic variables of percentage of students of color, percentage of students who qualify for Free or Reduced Price Lunch (FRPL), and percentage of students enrolled in English Language Learner (ELL) programs. The Free or Reduced Price Lunch Program is an indicator of student socio-economic status. In Oregon, the threshold for students eligible for reduced-price lunch was an annual income of $41, 348 for a family of four. The threshold for students eligible for free lunch was an annual income of $29, 055 for a family of four (ODE, 2012).

Measurement of principal leadership practices. I used the Leadership Practices Inventory, Third Edition (LPI; Kouzes & Posner, 1993) to measure the leadership practices of high school principals. The LPI survey was developed through a triangulation of qualitative and quantitative research methods and studies. In-depth

interviews and written case studies from personal leadership experiences generated the conceptual framework, which consists of five leadership practices:

1. *Model the Way*: Finding your voice by clarifying personal values and setting the example by aligning actions with shared values;

2. *Inspire a Shared Vision*: Envisioning the future by imagining exciting and ennobling possibilities and enlisting others in a common vision by appealing to shared aspiration;

3. *Challenge the Process*: Searching for opportunities by seeking innovative ways to change, grow, and improve and experimenting and taking risks by constantly generating small wins and learning from mistakes;

4. *Enable Others to Act*: Fostering collaboration by promoting cooperative goals and building trust and strengthening others by sharing power and discretion; and

5. *Encourage the Heart*: Recognizing contributions by showing appreciation for individual excellence and celebrating the values and victories by creating a spirit of community (Kouzes & Posner, 1993).

The LPI is a questionnaire with 30 behavioral statements, six for each of the five practices, that takes 10 to 20 minutes to complete. The leader rates the frequency with which he or she engages in each behavioral statement on the following scale (a) *1 = Almost Never,* (b) *2 = Rarely*, (c) *3 = Seldom*, (d) *4 = Once in a While*, (e) *5 = Occasionally*, (f) *6 = Sometimes*, (g) *7 = Fairly Often*, (h) *8 = Usually*, (i) *9 = Very Frequently*, (j) *10 = Almost Always*. Subscores for each practice are determined by averaging the leaders' ratings for the six items associated with each of the five practices.

The LPI was developed from case studies of 2,500 business managers about their personal-best experiences as leaders. Content analyses of these case studies suggested a pattern of behaviors and actions used by people when they were most effective as leaders (Kouzes & Posner, 1993). As evidenced in the previous chapter, the work of principals that related to each of the five leadership practices can have a positive impact on student achievement, such as creating a common vision and fostering collaboration (Hallinger & Heck, 1998), creating conditions for distributed leadership (Heck & Hallinger, 2010), and seeking innovative ways to accomplish goals (Marks & Printy, 2003; Witziers, et al., 2003). Due to the prevalence of self-report surveys in leadership and educational research, and the fact that the LPI measures aspects of leadership associated with student success, I chose this instrument to measure principal leadership.

Principals also completed three survey questions on personal demographic information based on studies highlighted in the literature review, including start date as principal in current building and race/ethnicity (Appendix B). I also entered data on principal sex obtained from the Confederation of School Administrators school directory data. These demographics will be analyzed along with the LPI results to describe the sample.

Analysis of instrument reliability. The LPI has been widely used in a variety of industries in order to analyze leadership practices and has proven reliability and validity. More than 250,000 leaders and nearly one million observers have completed it. Since the LPI was first used in 1985, surveys from more than 100,000 respondents have been analyzed to determine the relation between The Five Practices and a variety of

measurable outcomes. More than 250 doctoral dissertations and master's theses have used the LPI in their research (Kouzes & Posner, 2010).

Kouzes and Posner (2010) examined the reliability of the LPI through analysis of internal reliability (see Table 3). All five leadership practices had consistently strong internal reliability coefficients with all scales above the .75 level.

I chose the LPI to measure principal leadership practices because of the parallel nature of the constructs measured by this instrument and the 5 major practices of principal leadership indentified in the literature review. Additionally, I opted for a survey tool that was not directly sensitive to the specifics of educational leadership (for example, the LPI does not measure constructs of instructional leadership). There were three reasons for this: first, because of the proven reliability and validity of the LPI, second, I am curious if a tool developed for measuring corporate leadership continues to be valid in an educational setting, and third, there are few tools for measuring educational leadership that are as widely used as the LPI.

Table 3

Cronbach's Alpha Analysis of Internal Reliability of the Leadership Practices Inventory (Kouzes & Posner, 2010)

Respondents	Model the Way	Inspire a Shared Vision	Challenge the Process	Enable Others to Act	Encourage the Heart
All respondents (N = 1,152,716)	.85	.92	.86	.86	.92
Self (N = 282,867)	.84	.91	.86	.86	.91
Observers (N = 869, 849)	.85	.92	.87	.87	.92
Managers (N = 133,015)	.82	.91	.85	.90	.86

Measurement of student math proficiency. Standardized proficiency tests are commonly used to measure the effect of principal leadership on student achievement (Hallinger, 2011). Student math proficiency in this study was measured by the percentage of Hispanic or non-Hispanic White students who received *exceeds, meets, or does not meet* scores on the Oregon Assessment of Knowledge and Skills (OAKS) math test as reported by the Oregon Department of Education.

The OAKS is a criterion-referenced test based on the Oregon Content Standards, which identify what students in Oregon should know in the content areas of English language arts, mathematics, health, physical education, science, second language, social sciences, and fine arts. The types of scores produced from the OAKS differ from those produced by national, norm-referenced tests (ODE, 2009). Norm-referenced tests assess a student's broad knowledge, measuring performance against a relevant comparison group,

criterion-referenced tests measure specific skills in relation to pre-determined standards of academic performance (ODE, 2009). Math scores produced from the OAKS are based on a proficiency scale with numbers ranging from approximately 150 to 300. This scale is similar to those on other standardized, criterion-referenced tests such as the Scholastic Aptitude Test where each point on the scale is at an equal distance from the previous point on the scale. Changes up or down can be charted and viewed as comparable from year to year (ODE, 2009). For the 2010-2011 school year scores of 236-250 were considered to meet the standard set for mathematics skill application (*meets*) and scores of 251 and above were considered to exceed these standards.

Demographic measures. School demographic information was also collected, including percentage of students in the free and reduced-price lunch program, percentage of students of color, and percentage of English Language Learners in each school. These data were gathered from the Oregon Department of Education 2010-2011 school report card for each school in the sample.

Race and ethnicity reporting. For the purposes of this study, I looked at scores from Hispanic and non-Hispanic White students. I explain how much of the school population is represented by each of these demographic subgroups. Beginning in the 2010-2011 school year, districts were required to collect student data based on federal guidelines for race and ethnicity reporting (ODE, 2012). These guidelines allowed respondents to self-select his or her race and ethnicity with the option to select more than one race category. The guidelines recommended asking a two-part question, the first part consisting of a question about the respondent's ethnicity, specifically whether the student is Hispanic/Latino. The second part asks the respondent to select one or more races

(ODE, 2010).

Description of Survey Design, Administration and Scoring

In the following section I describe the processes for designing, administering and scoring the online survey.

Survey design. I entered the survey instructions and the 30-item LPI as described in Kouzes & Posner (1993) into the online survey platform www.surveymonkey.com. I also included 3 demographic questions related to participants' race, ethnicity, and start date as principal in their current school building. Finally, I included one open-ended question for comments (Appendix B). Each question appeared on a separate web page in order to maximize readability (Dillman, Smyth, & Christian, 2009).

Data collection. I used the Confederation of Oregon School Administrators school directory for 2011-2012 to find contact information for the principals in my sample. I sent each principal a recruitment letter with information on how to access the survey online via US mail (Appendix C), to arrive upon the return from December 2011 holiday vacation. No subjects completed the survey after receiving the recruitment letter. On January 10, 2012, four days after subjects should have received the recruitment letter, I sent a recruitment email with a link to the survey (Appendix D), which resulted in 11 responses. Seven days later I sent a reminder email (Appendix E) that resulted in 7 additional responses. Five days later, I sent a final reminder to subjects who had not completed the survey. This final email resulted in the final responses, for a total of 34 surveys initiated and 30 surveys completed, resulting in a 72% response rate. These data were uploaded to SPSS (version 17.0; SPSS Inc., 2008).

To ensure confidentiality and maximize participation, each principal was assigned an identification code to access the survey through the online survey program, www.surveymonkey.com. One principal did not enter the associated access code, resulting in a total of 29 surveys that could be used for data analysis.

Data Analysis

I used Pearson's correlation to determine the relation between each of the leadership practice subscores and regression analyses to determine the relative predictive nature of student math proficiency on principal LPI scores. I also used regression analyses to determine if principal LPI scores were impacted by non-performance variables, including the school demographic characteristics of percentage of students receiving free and reduced-price lunch, percentage of students of color, or percentage of students in English Language Learner programs. I used two-tailed tests for each analysis because my hypothesis of a relation between student achievement and principal leadership practices was non-directional.

CHAPTER IV

RESULTS

Descriptive statistics are provided for the factors of interest used in the analysis. The first research question was answered using correlation coefficients between the five practices (subtests) of the Leadership Practices Inventory (LPI) in order to determine multi-collinearity. If multi-collinearity was found for the five subtests of the LPI, then only the test's total score would be used in the regression statistics for the second and third question. The second research question was analyzed through three multiple regression analyses between the LPI sum and student OAKS proficiency percentages as follows (a) Hispanic exceeded and non- Hispanic white exceeded (b) Hispanic met and non-Hispanic white met, (c) Hispanic did not meet and non-Hispanic white did not meet. The third research question extended the second analysis by regressing the school demographic (non-performance) variables of (a) percentage of students of color, (b) percentage of students on Free or Reduced Price Lunch, and (c) percentage of English Language Learners on principal sum LPI scores.

Cases Included and General Description

I prepared descriptive statistics for the 2010-2011 OAKS high school math test for each category of measurement. Table 4 displayed the means, standard deviations, minimum and maximum percentage of Hispanic and non-Hispanic White students who *met*, *exceeded*, or *did not meet* standards on the 2010-2011 OAKS high school math assessment. A total of 39 schools were sampled. Mean scores for the six student groups evaluated show a gap between the scores of non-Hispanic White and Hispanic students. An average of 15% more non-Hispanic White students exceeded standards and 9% met

standards than Hispanic students, and a mean of 21% more Hispanic students did not meet standards than non-Hispanic White students. These findings were consistent with an average achievement gap ($M = 20$) between non-Hispanic White and Hispanic students (NCES, 2011).

Table 4

Descriptive Statistics of OAKS Math Assessment Results, N=39 High Schools

	Hispanic			Non Hispanic White		
Statistic	*Exceeds*	*Meets*	*Did Not Meet*	*Exceeds*	*Meets*	*Did Not Meet*
M	8.3	51.7	38.3	23.7	60.8	17.3
SD	7.0	12.9	15.3	15.2	9.9	7.0
Minimum	0.0	31.0	7.0	4.0	45.0	5.0
Maximum	29.0	81.0	62.0	95.0	95.0	35.0

The mean score for the LPI sum was high ($M = 251$, $SD = 21$) out of a possible sum score of 300. Table 5 shows the lack of range within the principal's reported leadership practices. The minimum frequency rating on any individual question was 5 and the maximum frequency rating was 10.

Table 5

Descriptive Statistics of LPI Principal Self-Assessment Scores, N = 29

Statistic	*Model the Way*	*Inspire*	*Challenge*	*Enable*	*Encourage*	Total LPI Score
∑	240	223	223	248	197	7038
M	8.57	7.96	8.25	8.86	7.04	251.36
SD	0.84	1.04	1.00	0.59	0.92	21.02
Minimum	7.0	6.0	6.0	8.0	5.0	203
Maximum	10.0	10.0	10.0	10.0	8.0	290

Question One: Analyzing the LPI Subtests for Multicollinearity

Question one was designed to rule out multicollinearity among the LPI subtests. Multicollinearity is a situation where there is close to a near perfect linear relationship among some or all of the independent variables in a regression model (Mason & Perreault, 1991). In practical terms, this means that there is some degree of redundancy or overlap among variables. Although multicollinearity is not a fatal flaw, it makes interpretation more difficult. Multicollinearity also causes a loss in power. When there is overlap among some of the variables, it takes more data to disentangle the individual effects of these variables (Mason & Perreault, 1991).

I used a correlation analysis to determine collinearity. In general, if the correlation was .90 or larger, the variables would be too closely related to be used in the same regression analysis (Mason & Perreault, 1991) and would be thought to have collinearity. Table 6 shows that all of the correlations reached the .90 threshold with a range of .973 to .990. Because of the high correlations, the individual subtests of the LPI were not

considered viable as separate variables within the next regression analysis. Instead, only the LPI Total Score was utilized.

Table 6
Correlations Between Subset Scores on Leadership Practices Inventory

	Model the Way	Inspire	Challenge	Enable
Inspire	.98**			
Challenge	.99**	.99**		
Enable	.99**	.98**	.98**	
Encourage	.97**	.96**	.97**	.97**

**. Correlation is significant at the 0.01 level (2-tailed)

Question Two: Predictive Nature of Performance Indicators

Question two addressed the relative predictive nature of Hispanic student and non-Hispanic White OAKS scores for high school students in relation to principal scores on the Leadership Practices Inventory (LPI). I ran three multiple-regression analyses of student performance percentages and LPI sum scores: a) Hispanic Exceeded and non-Hispanic White Exceeded b) Hispanic Met and non-Hispanic White met, c) Hispanic Did Not Meet and non-Hispanic White Did Not Meet. Results indicated no significant relation between OAKS student proficiency percentages and principal LPI sum scores. Table 7 shows that all predictor variables were non-significant, with a *p*-value range of .16 to .93. While the highest, the unstandardized coefficients indicated that Hispanic Exceeded percentage (β= .66) had a low positive prediction and Hispanic Met percentage was the least predictive (β= -.03). Interestingly, four of the six variables were negative in their prediction power meaning that as the percentage of students in each category of OAKS proficiency increased, principal LPI sum scores decreased.

Table 7

Regression of Student Proficiency Percentages on LPI Sum Scores

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	β	Std. Error	Beta		
Constant	255.06	7.58		33.66	.00
Hispanic Exceeded	.66	.69	.20	.95	.35
Non-Hispanic White Exceeded	-.39	.27	-.31	-1.5	.16
Constant	279.76	25.49		10.98	.00
Hispanic Met	-.03	.33	-.02	-.09	.93
Non-Hispanic White Met	-.43	.46	-.21	-.93	.36
Constant	243.76	12.01		20.31	.00
Hispanic Did Not Meet	-.05	.37	-.04	-.13	.90
Non-Hispanic White Did Not Meet	.55	.81	.18	.67	.51

Table 8 provides further information pertaining to the regression analysis, including partial and semi-partial correlations. Results indicated no significant relation between high school principal LPI sum scores and OAKS student proficiency percentages. The semi-partials indicated that the non-Hispanic White categories accounted for more of the variance than did the Hispanic categories.

Table 8

Part and Partial Correlations: Student Proficiency Percentages on LPI Sum

Model	Correlations		
	Zero-order	Partial	Semi-Partial
Hispanic Exceeded	.07	.19	.18
Non-Hispanic White Exceeded	-.22	-.28	-.28
Hispanic Met	-.12	-.02	-.02
Non-Hispanic White Met	-.22	-.18	-.18
Hispanic Did Not Meet	-.09	-.03	-.03
Non-Hispanic White Did Not Meet	.16	.13	.13

Question Three: Adding Non-Performance Variables to the Regression

Question three asked if adding the non-performance (school context) variables of (a) percentage students of color, (b) percentage of students qualifying for free or reduced-price lunch, or (c) percentage of students in English Language Learner programs to the analysis contributed to variance in principal LPI sum scores. The details of each of these non-performance factors are provided in the Methods section (see page 41).

Table 9 displayed the Pearson correlation coefficients for all of the performance and non-performance indicators. The LPI Total correlations ranged from a negative, weak correlation with non-Hispanic White Exceeded percentages (r= -.22) to a weak positive correlation with Non-Hispanic White Did Not Meet percentages (r = .16). None

of the correlation coefficients related to LPI sum scores were statistically significant. For Pearson correlation statistics of each individual LPI question and student proficiency categories, please see Appendix G.

Table 9

Pearson correlation coefficients for all of the performance and non-performance indicators

	LPI Total	Hispanic Exceeded	Hispanic Met	Hispanic Did Not Meet	Non-Hispanic White Exceeded	Non-Hispanic White Met	Non-Hispanic White Did Not Meet	Students of color	FRL
Hispanic Exceeded	0.07								
Hispanic Met	-0.12	-0.02							
Hispanic Did Not Meet	0.09	-.47**	-.88**						
Non-Hispanic White Exceeded	-0.22	.47**	0.23	-.43**					
Non-Hispanic White Met	-0.22	-0.26	.47**	-0.29	0.07				
Non-Hispanic White Did Not Meet	0.16	-.39*	-.49**	.62**	-.56**	-.33*			
Students of Color	-0.01	-0.30	-0.28	.40*	-.38*	0.01	.33*		
FRL	0.07	-.52**	-0.17	.40*	-.68**	0.20	.57**	.66**	
ELL	-0.01	-.47**	-.37*	.55**	-.47**	0.00	.52**	.75**	.78**

I ran a final regression with the non-performance indicators as the independent variables and the LPI sum scores as the dependent variable. Analysis by these three non-

performance indicators did not contribute to the predictive nature of principal's LPI self-ratings F (.24), p =.98.

Table 10 provides information pertaining to the multiple regression model including the three non-performance indicators. The three non-performance factors were non-significant, ranging from ELL percentage (p = .80) with the standardized coefficient (β=-.11) to Students of Color percentage (p = .93) with the standardized coefficient (β=-.03).

Table 10

Regression of Non-Performance Variables on LPI Sum Scores

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
Constant	248.60	11.75		21.52	.00
Percentage Students of Color	-.08	.43	-.06	-.19	.85
Percentage FRPL	.21	.38	.17	.56	.58
Percentage ELL	-.598	2.28	-.09	-.26	.80

Table 11 shows the partial and semi-partial correlations associated with the three non-performance variables of percentage of students of color, percentage of students on free or reduced-price lunch, and percentage of students enrolled in English Language Learner programs. The semi-partials indicated that percentage of students qualifying for

Free or Reduced Price Lunch (.11) accounted for more of the variance than the other variables.

Table 11

Part and Partial Correlations: Non-Performance Variables on LPI Sum

Model	Correlations		
	Zero-order	Partial	Semi-Partial
Percentage Students of Color	-.01	-.04	-.04
Percentage FRPL	.07	.11	.11
Percentage ELL	-.01	-.05	-.05

Overall, the principals in my study rated the frequency with which they used each of the leadership practices in the highest ranges. Half of the respondents had a sum score of 255 or higher out of a total possible score of 300. This means that half of the principals surveyed rated themselves an average score of 8.5 out of 10 on each question.

Despite the fact that the principals surveyed rated themselves within the highest frequencies for each leadership practice, OAKS student score percentages demonstrated unpredictable variance. In the population sampled, the percentage of non-Hispanic White students who exceeded or met standards was about 20% higher than the percentage of Hispanic students who exceeded or met standards on the 2010-2011 OAKS high school math test. This is consistent with national averages on state assessments.

School contextual variables did not significantly predict principal LPI sum scores F(.10), $p = .96$. Percentage of students of color in each school was the least significant predictor of principal leadership ($p = .85$), percentage of students enrolled in ELL

programs was also not significant (p = .80), and percentage of students on Free or Reduced Price Lunch was the most predictive, yet still not significant, factor (p = .58)

CHAPTER V

DISCUSSION

School leadership has an impact on student academic achievement (Hallinger & Heck, 1998; Leithwood et al., 2008; Waters et al., 2003). High school principals affect student performance in various ways including policy interpretation, resource allocation, and community relations (Clifford et al., 2012). They manage day-to-day priorities and direct big-picture goals (Heck & Hallinger, 2010). The work of the 21st century high school principal has become increasingly complex in a climate of high stakes testing, accountability measures and diversity of student learning needs, yet little is known about which specific leadership practices of high school principals result in the highest levels of student achievement (Waters et al., 2003). Through my literature review I determined that self-report surveys are one way to empirically assess leadership practices. I chose the Leadership Practices Inventory because it measures many of the leadership constructs found to be related to student achievement outcomes as evidenced by the literature. Thus, my study evaluated the LPI in relation to student achievement percentages on the OAKS Math assessment as well as non-performance variables associated with school context.

Results Summary

Overall, the principals in this study rated the frequency with which they used each of the leadership practices in the highest ranges (see LPI scores in Appendix F). Half of the respondents had a sum score of 255 or higher out of a total possible score of 300. This means that half of the principals surveyed rated themselves as using each of the leadership practices at the highest frequencies with an average score of 8.5 out of 10 on each question. Despite the fact that the principals surveyed rated themselves within the

highest ranges of leadership practices, student scores demonstrated unpredictable variance. In the population sampled, the percentage of Non-Hispanic White students who exceeded or met OAKS Math standards was about 20% higher than the percentage of Hispanic students who exceeded or met standards on the 2010-2011 OAKS high school math test. This is consistent with the 26% gap between national averages on state assessments between Non-Hispanic White and Hispanic students (Hemphill, Vanneman, & Rahman, 2011). The State of Oregon also reported a 26% gap between Non-Hispanic White and Hispanic students on the Nation Assessment of Education Performance (Hemphill et al., 2011).

Adding non-performance school demographics to the regression analysis did not significantly contribute to understanding the variance. ANOVA statistics of LPI scores and non-performance variables was non-significant (p=. 97). This indicates that the inclusion of non-performance variables did not help to explain the variance in principal leadership scores.

Limitations

Consideration of these findings, however, requires consideration of the limitations associated with the study that may have impacted the results obtained. Threats to internal, external, statistical conclusion, and construct validity (Parker, 1990) are presented in the following paragraphs.

Threats to internal validity. One threat to internal validity was the short tenure of some survey respondents in the schools they led. At the time of survey administration in the winter of 2011, 41% (twelve) of respondents were within the first two years as principal at their schools. Researchers vary on the time it takes a new principal to

academically impact her school (Seashore-Louis, et al. 2010) however many agree that it takes at least two years for a principal to establish patterns of leadership behaviors (Hallinger, 2011; Hallinger & Heck, 1998; Leitner, 1994). The OAKS assessment scores analyzed were from tests administered in the spring of 2011, making it difficult to infer a relation between the self-reported leadership scores of these first-year principals and the test scores from students in their building. The scores of these principals remained in the analysis, however, to gain more information about overall principal's beliefs about their leadership attributes.

Another threat to internal validity was the small sample size ($N = 39$ schools) due to the context-specific nature of this study. This is a common threat in educational research due to the small sample sizes within and between school districts (Parker, 1990). It was important for me to control for such variables as geographic location, level of schooling, and school size, therefore limiting the sample size. Small sample size also contributes to lower statistical power, which influences results (Parker, 1990).

Threats to external validity. One threat to external validity in my study is the use of a convenience sample. Non-random sampling is problematic because study results are not generalizeable to the population as a whole (Babbie, 1995). Most educational research possesses little external validity because of this use of convenience samples, which are the most readily available. One way to minimize this threat is to hold extraneous variables constant, or to restrict their range (Parker, 2001). To minimize this threat I chose to control for school size, type, and location by selecting only principals who work in large (650 or more students), public high schools in the Portland Metropolitan area.

Threats to construct validity. There is one significant problem associated with data quality in survey research: there is no method to determine the accuracy of the responses (Dillman et al., 2009). The survey research conducted in this study has an inherent threat of response-bias, or the tendency of respondents to answer survey items in a way other than what the items were designed to measure (Alreck & Settle, 1995). For example, a respondent may choose the option that will show him or her in the best possible light. This may be the case in this study. Principals may, for example, have wanted to be seen favorably and consequently rated themselves higher on questions to depict their leadership skills and styles more positively than may have been accurate. This is not uncommon, for most people believe they have better than average leadership skills and even highly competent individuals show some systemic bias in their self-appraisals (Miller & Geraci, 2011)**.**

Even though responses were initially anonymous, respondents may have been concerned about appearing more competent on leadership constructs than they actually were. As stated by one respondent in the comments section of the survey *Being a principal is a very complex job and in any given situation a principal may or may not hit all 30 marks that you have described.* Although efforts were made to ease principals' concerns that these data would not be used for evaluation purposes, some principals may have thought that their survey responses would be used in an evaluative manner.

Question One: Analyzing the LPI Subtests for Multicollinearity

Research question one was *what is the relationship between the Leadership Practices Inventory (LPI) subtests of (a) Model the Way, (b) Inspire a Shared Vision, (c) Challenge the Process, (d) Enable Others to Act, and (e) Encourage the Heart*? I used a

Pearson's Correlation to determine the relation between scores on the subtests of the Leadership Practices Inventory (*Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act, and Encourage the Heart*). Because the correlations between the five LPI subtests were all greater than .90, the LPI subtests did not appear to measure separate constructs as expected. My study did not find five distinct constructs within the LPI; instead I found that the five constructs represented a singular construct of leadership. The construct validity of a variable refers to whether the variable is adequately defined and accurately measured by the instrument, procedures, manipulations, and methods used in the study (Parker, 1990). A valid construct must be uniquely operationally defined (Parker, 1990). In the case of this study, the leadership practices could not be assumed to measure different aspects of leadership due to multicollinearity.

The high school principals who participated in the survey rated themselves at the highest frequencies on the leadership attributes measured by the *Leadership Practices Inventory* with a mean sum score of 251 out of a maximum possible score of 300. Principals rated themselves highest on questions related to the LPI subtests of *Enable Others to Act* with all self-rankings falling between 8, *usually*, and 10, *almost always* (*M* = 6.36). Principals rated themselves lowest on questions related to the leadership practice *Encourage the Heart,* which relates to celebrating accomplishments and creating a sense of community, with self-rankings falling between 5, *occasionally*, and 8, *usually* (*M* = 5.05). This was the only leadership practice for which no principals ranked themselves as a 10 (almost always) on any of the associated questions.

When determining the psychometric properties of the Leadership Practices Inventory for self-ratings and peer ratings, Kouzes and Posner (1993) found that empirical tests of leaders (rating themselves using the LPI-Self form) and their followers (rating the leaders using the LPI-Observer form) did not reveal statistically significant differences on items related to the practices of Challenging the Process and Modeling the Way. However, Coworkers/Peers rated their leaders as engaging more on Inspiring a Shared Vision than the leaders rated themselves. Coworkers/Peers reported fewer frequencies of the practices related to Enabling Others to Act than leaders evaluated themselves. Coworkers/Peers also reported more Encouraging from the Heart than did the leaders. These findings indicate that the LPI is designed to measure separate constructs of leadership, it just did not in my study.

My LPI finding should not be unexpected, though. Self-assessments of skill tend to be more flawed than one would suspect (Dunning, Heath, & Suls, 2004; Ehrlinger, Johnson, Banner, Dunning, & Krueger, 2008). Although self-assessments tend to correlate positively with performance, meta-analyses suggest that relationship is weak (.29) (Dunning, 2006). The correlation between self-assessments of skill with objective performance for managerial competence is even smaller (.04) (Dunning et al., 2004). This is because people rarely have all the information they need to render accurate self-judgments (Dunning et al., 2004). People's perceptions of their skills, knowledge, personality, and character often do not mesh with objective measurements. These misjudgments can take on two different forms. First, people's general evaluations of their skills and character - such as whether they are good leaders or verbally skilled - tend not to be closely aligned to objective performances in tasks that should reflect those skills

and traits. Second, people's offer specific predictions about how they will behave in a particular future situation often differ systematically from their actual behavior when that situation arrives (Dunning, 2006).

Complete strangers armed with minimal information about a person can rate that person's skills and abilities almost as well as he or she can, despite the fact that the individual has a lifetime of self-information to draw upon. Borkenau and Liebler (1993) showed participants videotapes in which target individuals walked into a room, sat behind a table, read a weather report, and then walked back out of the room, actions that took a total of about 90 seconds to complete. Participants were able to provide intelligence ratings that predicted the target's scores on IQ tests almost as well as the target's self-ratings.

To boost the likelihood that a person will more accurately self-evaluate is to be explicit in the description of the requirements for success so that the gap between the ideal and actual performance is obvious (Nemec, 2010). Well-defined criteria for acceptable and excellent performance can improve the accuracy of a self-assessment (Nemec, 2010). Providing information up front about the average performance of principals might reduce the better than average effect phenomenon.

Question Two: Predictive Nature of Performance Indicators

Question two was *what is the relative predictive nature of the percentages of Hispanic and non-Hispanic White students who exceeded, met, or did not meet standards on the OAKS math assessment in relation to high school principal LPI sum scores*? A very low correlation was found between student OAKS proficiency percentages and principals' self-rankings on the LPI. No significant results were found regarding the

predictive nature of student achievement on principal leadership self-assessment. This means that we cannot determine if student achievement can predict principal leadership self-assessment of leadership practices.

Conclusions of previous researchers indicate that leadership has an impact on student achievement (Hallinger & Heck, 1998; Marks & Printy, 2003; Robinson et al., 2008; Waters et al., 2003). In particular, the leadership practices of principals in the following categories aligned with the practices of the LPI have shown the greatest impact on student achievement, including: (a) principals' involvement in framing and sustaining their schools' vision or mission (Inspire a Shared Vision) (Hallinger & Heck, 1998; Leithwood et al., 2004); (b) instructional leadership functions such as monitoring instruction and providing feedback, analyzing student data, and supporting teachers' professional development (Model the Way) (Hallinger, 2005; Knapp, Copland, Plecki, & Portin, 2006); (c) principals' work to enhance the organizational structures in their schools, through such actions as developing teacher leadership, collaboration in decision making (Enable Others to Act) (Waters et al., 2003; Witzier et al., 2003; Robinson et al., 2008); (d) their efforts to improve the culture and climate in their schools in areas such as student and teacher expectations and communication between school members (Challenge the Process) (Hallinger & Heck, 1998; Knapp et al., 2006); and (e) their investment in personnel by hiring and retaining qualified teachers (Enable Others to Act) (Harris et al., 2010; Leithwood et al., 2004). What has not been determined, however, is how the school context of achievement and student demographics impacts the leadership practices of principals. Of special interest is the predictive nature of student achievement on principal leadership practices for principals new to a school building. Future study

should inquire into how the existing academic achievement of students in a building upon the start of a new principal impacts that principal's leadership.

Question Three: Adding Non-Performance Variables to the Regression

Do the non-performance school contextual variables of percentage of students of color, percentage of students on free or reduced price lunch, or percentage of students in English Language Learner programs in each school contribute to the nature of principal LPI sum scores? Adding these non-performance school context variables did not contribute to the predictive nature of student proficiency percentages on LPI sum scores.

The analysis of these school demographic variables in relation to principal LPI sum scores was not significant, $p = .97$. These findings are opposite from the findings of studies identified in the literature review in which a relation was found between school contextual variables and principal leadership as related to student academic performance (Leithwood, 1994; Marks & Printy, 2003; Mickelson et al., 2013)

Importance of context to explain principal practice. Leaders' practices tend to relate more closely to school context than their individual characteristics (Goldring et al., 2007). Contextual factors such as school size, level, and student poverty level influence what principals can do and accomplish (Goldring et al., 2007; Seashore-Louis et al., 2010). One theory behind this thought is that principals in higher performing schools may simply have more time and capacity to focus on a variety of issues associated with student success because they don't have the same sanction-driven level of urgency and pressure to set goals or drive instructional reform as principals in the lowest performing schools (Hallinger et al., 1996). Principals working in schools with students from higher socioeconomic status displayed more instructional management behaviors than their

colleagues working in schools with more socioeconomically disadvantaged students (Leitner, 1994).

The urgency to improve teacher practices in order to benefit student achievement often requires transformational leadership (Robinson et al., 2008; Valentine & Prater, 2011). It is important to remember that principals work within a context of a variety of stakeholders, including students, parents, and teachers. The transformational leadership practices required to improve conditions for students are not always received positively. One participant in my study noted the context-driven nature of her work:

> I work very well with parents, students and high performing teachers. I do not have enough patience with marginally performing teachers and I often end up in conflict with those who do not want to grow or change. I have a grow or go model that makes some people uncomfortable. Teachers either love me or hate me. Parents and students have been very supportive.

The task of gaining support from these essential stakeholders can be met with a variety of leadership styles. This participant describes her "grow or go" style, which may alienate teachers who refuse to change their practices. Because of this context-driven nature of principal work it is difficult to isolate the specific practices that result in improved student achievement.

The implications of the descriptive and inferential findings obtained from this study have the potential to guide and extend future research focused on the relationship(s) between principal leadership and academic performance. Although the generalizability of these findings is limited, they provide evidence that using the LPI to assess specific principal leadership practices related to closing the math achievement gap as measured by

Oregon high school students' performance on the mathematics subtest of the OAKS should be reconsidered and/or re-evaluated.

Principal Tenure

Another important finding from this study that was not directly related to the research questions was the short tenure as principal of the participants. 12 out of 28 study participants were new in the role of principal in their school buildings. I did not determine how many participants were completely new to the role of principal itself and how many had been principal in a different building and were simply new to their current school. One participant explained in the comments section that he had been a principal for twelve years in a total of three different buildings. He was serving in his first year as principal in his current building at the time of survey administration. This anecdotal information points to the larger issue of short principal tenure in school buildings and begs the question of why this participant had served an average of four years per building. Another participant indicated that she was new in her current building but had been principal for a total of 6 years. She did not indicate if those 6 years were spent in one or a variety of buildings. It would be interesting to determine if there is a difference between the duration of principal service in one building versus the length of service across buildings on student achievement data.

Implications

The primary implication from the results of this study is that the LPI-Self may not be the most efficient measure of principal effectiveness as it relates to student achievement. This finding is contrary to the literature on the LPI as a measure of successful outcomes-based leadership practices as well as the literature on the types of

leadership practices that positively impact student achievement. Although I chose the LPI specifically because of its proven validity in measuring best practices of executive leadership, perhaps using an instrument that is more sensitive to practices specific to education would be beneficial. The idea that corporate and educational leadership may require different skill sets is contrary to the school reform movement that advocates for installing business leaders in schools. The Broad Foundation is an example of a program designed to place executive leaders in school leadership positions. The foundation's mission is "to raise student achievement by recruiting, training and supporting executive leadership talent from across America to become the next generation of urban school district leaders" (Broad Foundation, 2013). More research is needed to determine linkages between the best practices of executive and school leaders.

Two other implications that arise from the results of this study relate to principal evaluations and equitable achievement. The first is for high school principal evaluation systems. In response to federal initiatives such as Race to the Top, state and district level policymakers are working to redesign principal evaluation systems. Implicit definitions of principal effectiveness are often imbedded in these performance evaluations (Clifford et al., 2012). In a review of state principal evaluation frameworks, Clifford et al., (2012) found two perspectives of principal effectiveness: a *practice* perspective, which defines principal effectiveness by the quality of a principal's leadership or administrative practices, and an *impact* perspective, which defines principal effectiveness by the principal's impact on her school. This study endeavored to relate the two perspectives by measuring principal leadership practices in an attempt to determine the impact of the frequency of use of these leadership practices on student performance.

The state of Oregon is piloting an administrator evaluation system in the 2012-2013 school year that links the evaluation of administrators with student learning (ODE, 2012). This evaluation system includes a variety of evidence-based measures to evaluate principal effectiveness based on both practice and impact, including standards of professional practice, professional responsibility, and student learning and growth, including reducing achievement gaps between the highest and lowest performing student groups (ODE, 2012). Included in the proposed measures of principal evaluation are OAKS test results and principal self-reflection. The principals surveyed in the current study ranked themselves within the highest frequencies for each leadership practice, indicating that it will be necessary for an effective principal evaluation system to include a variety of measures in addition to principal self-evaluation.

Dunning et al., (2004) recommend against relying upon self-assessments for evaluation purposes, cautioning that in business settings managers should not assume that employees have achieved the level of expertise that they claim. Instead, they should provide independent tests of competence (such as the opinions of other people) because others often assess our competence better than we do (Dunning, 2006). Perhaps principal leadership evaluations should be more heavily weighted toward peer and staff review rather than self-assessment. Peer evaluation can be beneficial in three specific ways: people tend to like giving and receiving peer feedback, peer evaluations offer an opportunity to practice applying performance rating criteria, and provide multiple input sources to the person being evaluated (Nemec, 2010).

These three benefits of peer evaluation could have potential implications for principal performance review. First, feedback might be better received from a peer than a

superior and thus have more of an impact on performance. Second, if the same tool is used for peer evaluation and self-evaluation, principals could become more practiced in using the evaluation tool and thus become more accurate in self-assessments. Perhaps principals who are more familiar with the use of an evaluation tool and the requirements for above-average performance would be more likely to evaluate themselves accurately.

Possibilities for Future Research

This study was designed to explore the relation between the self-reported leadership practices of high school principals and the percentage of students *Meeting*, *Exceeding, or Not Meeting* proficiency standards on the Oregon Assessment of Knowledge and Skills in high school math. To further explore the relation between principal leadership and student achievement I propose three paths for future research.

My first proposal is to replicate the methodology of this study, but with a larger population of schools randomly sampled across the United States. According to the National Center for Education Statistics (NCES; 2011), there were 24,651 public high schools in the United States. This research was conducted from a very small portion of that population and the use of a convenience sample minimized the generalizeability of the findings. To more fully comprehend the relation between principal leadership practices and student achievement it would be necessary to include a wider range of schools. If principals across the United States all rate themselves at the highest possible frequencies for leadership practices on the LPI it could be determined that self-report surveys may not be the best measure of principal leadership.

A second proposal for future research would be to include a rating of principal leadership skills from not only the principals themselves, but also from teachers, parents,

and students. This 360-degree evaluation could be performed using the Leadership Practices Inventory Observer survey, developed to capture leadership behaviors of managers as observed by others (Kouzes & Posner, 1993). Including additional metrics for measuring leadership from a variety of sources may help to minimize the threats to construct validity.

Finally, future research should include a more comprehensive analysis of school contextual variables. There is a growing body of research showing that the qualities of an effective principal may vary according to each individual school (Clifford, et al., 2012; Goldring et al., 2007; May et al., 2012; Wahlstrom et al., 2010). Each school has different characteristics, therefore perhaps the most effective principals are able to quickly evaluate these factors and leverage the ones that are most likely to impact instruction and learning in their schools. (May et al., 2012). Researchers found that how principals spend their time varies from school to school, even within a single district (Heck & Hallinger, 2010). Principals in schools in neighborhoods with higher socio-economic status spend their time on higher-level school initiatives, while principals in lower SES schools spend more time on instructional leadership and student discipline (Goldring et al., 2007; May et al., 2012). Consideration of these variables could provide additional insights to the roles of principals as school leaders and of the characteristics of effective leaders in general. I am particularly interested in the context-driven nature of principal leadership and if the school context inherited by a new principal impacts the type of leadership practices used by that principal to drive improvements in student achievement.

Conclusions

Drucker (2001) aptly summarized the essence of leadership in the statement "management is doing things right; leadership is doing the right things" (p. 161). The role of the school principal is a daily negotiation of these *right* things in an effort to achieve the important goal of academic success for all students. At the high school level this work is particularly complex as the focus of any activity may differ across teachers, grades, departments, and programs within the same school (Sebastian & Allensworth, 2012). The necessity by government mandate that all students meet benchmarks on standardized tests has placed increased pressure on school leaders to discover which specific leadership practices result in increases in student achievement (Heck & Hallinger. 2010).

A principal who participated in my study articulated the complexity of the work of a high school leader in the following response to the final, open-ended, survey question:

> Thank you for the opportunity to participate in the survey. I find a tension of being creative and innovative and responding to mandates of the district, state and national government... in many respects, I play both role as a leader and middle manager. This can be frustrating as it is "limiting" to some degree... for instance, we focus a lot on standardized testing but am suspicious of the real value of these tests. Good luck...

It is this tension between the necessary functions of a school principal that makes the work an art rather than a science. Organizational conditions can sometimes wear down educators' good intentions and actually prevent the use of effective leadership practices (Leithwood et al., 2004). In some contexts, for example, high-stakes testing has encouraged a drill-and-practice form of instruction among teachers rather than encouraging them to developing deep understanding on the part of their students.

Successful leaders develop their schools as effective organizations that support and sustain the performance of teachers as well as students, therefore principals must constantly evaluate not only the work of teachers but also gauge the frame of mind of their staff (Leithwood et al., 2004).

The principal's role in school effectiveness should be viewed through a conceptual framework that places the principal's leadership behavior in the context of the school organization (Heck & Hallinger, 2010). Research that investigates the relation between specific school principal leadership practices and student achievement within the context of a variety of school settings across the United States will be an important next step for understanding the complex relation between school leadership and student outcomes.

Because of their relative ease of use and lower administration costs, principal self-report surveys will continue to figure prominently in principal leadership research for the foreseeable future (Camburn et al., 2010). It will be important to triangulate future research using self-reports of principal leadership practices with surveys of staff, students, and parents in order to obtain the full picture of effective principal leadership practices for student achievement.

APPENDIX A

DEMOGRAPHICS FOR SAMPLED HIGH SCHOOLS

$N = 39$

District	School Name	Number of Students	Percentage of Students on Free or Reduced Price Lunch	Percentage of Students of Color	Percentage of English Language Learners (ELL)
Beaverton	Beaverton	1,729	34.8	39.4	7.3
	Aloha*	1,935	49.3	46.5	7.6
	Southridge	1,924	21.2	35.5	2.4
	Sunset	1,976	25.4	39.5	6.0
	Westview*	2,629	27.3	46.1	5.2
Hillsboro	Glencoe*	1,634	38.4	34.5	3.1
	Century*	1,660	39.0	41.6	5.2
	Hillsboro*	1,486	50.7	48.4	8.8
	Liberty*	1,290	47.1	44.4	7.5
Forest Grove	Forest Grove*	1,970	58.3	46	6.6
Sherwood	Sherwood*	1,386	17.5	14	0.4
Tigard-Tualatin	Tigard	2,028	33.8	31.1	4.2
	Tualatin	1,850	49.7	28.0	3.2
Centennial	Centennial*	1,867	57.9	42.1	8.9
Gresham-Barlow	Gresham*	1,754	41.7	36.8	6.4
	Sam Barlow	1,805	31.4	22.1	2.4

Portland Public	Cleveland	1,570	26.6	28.1	3.1
	Lincoln*	1,410	12.3	24.7	1.3
	Franklin*	1,036	46.0	41.2	6.1
	Grant	1,619	23.0	35.5	0.5
	Wilson*	1,435	20.7	22.6	2.5
	Benson Polytechnic*	986	60.9	72.6	3.5
	Madison*	910	64.2	61.0	12.3
Parkrose	Parkrose	1,031	68.3	60.3	12.6
David Douglas	David Douglas	3,070	75.0	51.8	11.9
Reynolds	Reynolds	2,617	65.0	51.6	8.6
Canby	Canby*	1,620	32.1	27.6	4.8
Estacada	Estacada*	673	53.5	14.4	1.7
Gladstone	Gladstone*	724	38.8	20.9	1.4
Lake Oswego	Lake Oswego*	1,256	8.2	20.4	0.5
	Lakeridge*	1,072	9.8	14.3	0.3
North Clackamas	Milwaukie*	1,187	70.2	34.5	9.1
	Clackamas*	2,268	30.3	32.9	6.8
	Rex Putnam	1,278	40.1	22.7	5.6
Molalla River	Molalla*	786	41.7	23	4.6
Oregon City	Oregon City*	2,196	35.1	16.4	1.6
Oregon	Sandy*	1,258	42.3	17.1	2.2

Trail					
West Linn-Wilsonville	West Linn*	1,542	12.0	14.8	0.4
	Wilsonville*	1,043	24.1	24.3	3.0

* Indicates school principal study participation

APPENDIX B

PRINCIPAL SURVEY

Section I. Kouzes and Posner Leadership Practices Inventory - Self

Section II. Demographic Questions

Instructions: Please answer the following questions as accurately as possible.

1. Are you Latino or Hispanic?
    a. Yes
    b. No

2. Please select one of the following races:
    a. Am. Indian/Alaskan Native
    b. Asian
    c. Black or African American
    d. Native Hawaiian or Other Pacific Islander
    e. White

3. Start date as principal in current building (mm/yyyy):

4. Is there anything else you would like me to know?

APPENDIX C

FIRST PRINICPAL REQUEST E-MAIL

Dear Principal X,

Greetings! My name is Amanda Ryan and I am a D.Ed. student from the Education Methodology, Policy and Leadership Department the University of Oregon and an employee of the Hillsboro School District. I am writing to invite you to participate in my dissertation research study about principal leadership practices. You are one of 41 people selected to be in this study because you are the principal of a large high school in the Portland-Metro area. I have also sent an invitation to participate via the US mail.

If you decide to participate in this study, you will need to complete a short survey online. This survey is based on The Leadership Practices Inventory designed by Kouzes and Posner (1993) and also includes several demographic questions. The survey shouldn't take more than 10 minutes to complete and all answers will be kept strictly confidential. Remember, participation is voluntary. I am hoping you will choose to participate because your input is extremely valuable to the success of this study. If you have any questions about the study, please email me at amandaryan98@gmail.com.

Please access the survey at https://www.surveymonkey.com/s/principal_leadership

Your personal access code is XXX.

Thank you very much. I know you are very busy and I truly appreciate your time.

Sincerely,

Amanda Ryan

APPENDIX D

SECOND PRINCIPAL REQUEST E-MAIL

Dear Principal X,

Just a reminder to please take a minute to fill out a quick survey on leadership practices for my dissertation research. I would be very appreciative of your time. I only have 41 principals in my sample so every response counts!

Best,

Amanda Ryan

https://www.surveymonkey.com/s/principal_leadership

access code: XXX

APPENDIX E

FINAL PRINCIPAL REQUEST E-MAIL

Hello,

This is one final plea to please take 10 minutes out of your busy day to fill out the following survey for my dissertation research on high school principal leadership. The survey will close this Friday. Due to my small sample size, I need as many responses as possible and would be very appreciative of your help.

Please remember to enter your access code when prompted.

https://www.surveymonkey.com/s/principal_leadership

Your access code: 2110

Thank you very much,

Amanda Ryan

APPENDIX F

DESCRIPTIVE STATISTICS FOR RESPONDENTS' SELF-RANKINGS ON EACH LPI ITEM, $N = 28$

Question	*M*	*SD*	Minimum	Maximum
I Set a Personal Example of What I Expect of Others	9.46	0.7	8	10
I Seek Out Challenging Opportunities that Test my Skills and Abilities	8.36	1.1	6	10
I Praise People for a Job Well Done	8.82	1.1	5	10
I spend time and energy making certain that the people I work with adhere to the principles and standards we have agreed on.	8.39	1.3	5	10
I describe a compelling image of what our future could be like.	7.57	1.3	6	10
I challenge people to try out new and innovative ways to do their work.	8.25	1.4	5	10
I actively listen to diverse points of view	8.79	0.9	7	10
I make it a point to let people know about my confidence in their abilities	8.18	1.4	5	10
I follow through on the promises and commitments I make.	9.54	0.8	7	10
I appeal to others to share an exciting dream of the future.	7.57	1.9	3	10
I search outside the formal boundaries of my organization for innovative ways to improve what we do	7.68	2.2	2	10
I treat others with dignity and respect	9.71	0.7	7	10
I make sure that people are creatively rewarded for their contributions to the success of our projects	8.14	1.6	5	10
I ask for feedback on how my actions affect other people's performance	7.07	1.8	4	10
I show others how their long-term interests can be realized by enlisting in a common vision	7.18	1.5	5	10

I ask “What can we learn?” when things don’t go as expected	8.43	1.2	5	10
I support the decisions people make on their own.	8.39	1.2	6	10
I publicly recognize people who exemplify commitment to shared values.	8.61	1.2	6	10
I build consensus around a common set of values for running our organization	8.25	1.5	4	10
I paint the “big picture” of what we aspire to accomplish	8.75	1.1	5	10
I develop cooperative relationships among the people I work with	9.11	1.0	6	10
I talk about future trends that will influence how our work gets done	7.68	1.4	5	10
I speak with genuine conviction about the higher meaning and purpose of our work	9.37	0.8	7	10
I experiment and take risks, even when there is a chance of failure.	8.32	1.6	5	10
I ensure that people grow in their jobs by learning new skills and developing themselves.	8.39	1.3	5	10
I give the members of the team lots of appreciation and support for their contributions	8.43	1.3	5	10
I make certain that we set achievable goals, make concrete plans, and establish measurable milestones for the projects and programs that we work on	8.29	1.1	6	10
I give people a great deal of freedom and choice in deciding how to do their work	8.39	1.1	6	10
I find ways to celebrate accomplishments	8.00	1.4	5	10
I am clear about my philosophy of leadership	8.57	1.3	4	10
Sum	251.36	21.0	203	290

APPENDIX G

PEARSON CORRELATION OF RESPONSES TO INDIVIDUAL LPI QUESTIONS AND STUDENT ACHIEVEMENT SCORES

**Significant at the 0.05 Level*

***Significant at the 0.01 Level (N=28)*

		Hispanic Exceeded	Hispanic Met	Hispanic Total	NHW Exceeded	NHW Met	NHW Total	Difference Between NHW and Hispanic
Freedom	*r*	.019	-.388*	-.353	-.288	.537**	-.378	.099
	Sig (2-tailed)	.924	.041	.066	.137	.003	.047	.615
Personal Example	*r*	-.071	.066	.032	-.391*	-.200	-.240	-.186
	Sig (2-tailed)	.719	.738	.873	.039	.308	.219	.343
Praise	*r*	.418*	.037	.210	.291	-.075	.045	-.248
	Sig (2-tailed)	.027	..853	.282	.133	.705	.822	.202
Adhere to Standards	*r*	.192	.330	.388*	.002	-.041	.100	-.447*
	Sig (2-tailed)	.328	.086	.042	.993	.837	.611	.017
Dream of the Future	*r*	.208	-.365	-.251	-.315	-.431*	-.160	.232
	Sig (2-tailed)	.288	.056	.198	.102	.022	.417	.235
Risk Taking	*r*	-.020	-.323	-.308	-.414*	-.231	-.292	.227
	Sig (2-tailed)	.921	.094	.111	.028	.236	.131	.246
Innovation	*r*	.145	-.020	.042	-.417*	-.164	.029	-.073
	Sig (2-tailed)	.461	.918	.831	.027	.405	.883	.712
Support Decisions	*r*	-.195	-.050	-.128	-.338	-.448*	.455*	-.107
	Sig (2-tailed)	.321	.802	.516	.079	.017	.015	.588
Paint the Big Picture	*r*	.176	-.177	-.090	.018	-.379*	-.158	.023
	Sig (2-tailed)	.369	.367	.647	.927	.047	.422	.908

Cooperation	*r*	-.051	.046	.021	-.106	.414*	.101	.037
	Sig (2-tailed)	.795	.818	.924	.592	.029	.608	.853

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