2009-11-17

A Comparison Study Between Instructional and Transformational Leadership Theories: Effects on Student Achievement and Teacher Job Satisfaction

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A dissertation submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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December 2009

ABSTRACT

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This study examined the impact that school leaders have on teacher job satisfaction and student achievement. The threefold purpose of this study was to (1) compare transformational and instructional leadership theories, (2) examine the unique impact that school leaders have on student achievement and teacher job satisfaction after controlling for school context and principal demographics, and (3) find which specific leadership practices are associated with increased student achievement and teacher job satisfaction.

Participants were 558 teachers from 37 elementary schools in the Intermountain West. Teachers completed the Teachers' Job Satisfaction Scale (TJSS), and were randomly assigned to complete the Multifactor Leadership Questionnaire (MLQ) or the Principal Instructional Management Rating Scale (PIMRS). Student achievement was measured by the Iowa Test of Basic Skills (ITBS) and the Criterion Referenced Test (CRT). Multiple regression and hierarchical linear modeling were used to find the relationships between these measurements.

Results indicated that instructional leadership explained more of the variance in student achievement and teacher job satisfaction than transformational leadership. Leadership predicted a meaningful but nonsignificant amount of variance in student achievement, and a large significant amount of the variance in teacher job satisfaction. The control variables of school context and principal demographics tended to explain more of the variance in achievement scores, while leadership explained a majority of the variance in teacher job satisfaction. The leadership functions that were associated with increased student achievement were monitor student progress, protect instructional time, provide incentives for teachers, provide incentives for learning, and contingent reward. The leadership functions that were associated with increased teacher job satisfaction were supervise and evaluate instruction, maintain high visibility, provide incentives for teachers, promote professional development, provide incentives for learning, and individualized consideration. The implications of these findings, as well as the limitations of this research, will be discussed.

Keywords: instructional leadership, transformation leadership, student achievement, teacher job satisfaction

ACKNOWLEDGEMENTS

Special thanks to the members of my committee that have provided valuable insight, contributions, and feedback: Drs. Bruce Brown, Paul Calderella, Pam Hallam, Rob Ridge, and Julianne Holt-Lunstad. Dr. Brown, you have been very supportive and flexible as I have explored alternative fields within psychology. Thanks also to my cohorts in the psychology department, and those within the education department that have so kindly accepted me. I would also like to acknowledge the elementary schools and district administrators that assisted me in this project. Thank you.

Many have contributed to this accomplishment outside the circles of academia. Much of what I have accomplished has been through the support of my parents. Thank you for what you have taught me and helped me to become. Unending thanks as well to my siblings, in-laws, and grandparents who have helped and supported me along the way. As always, thank you Meredith for your love and support through this whole experience. Thank you for your patience as I have spent many hours away from home working on this project. I hope that I can be worthy of your love and faith in me. I dedicate this to you and to our baby William: I pledge to do my best to preside in love and righteousness, the essence of what leadership really is.

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Introduction

A principal has considerable influence over the various aspects of an elementary school. Previous research has demonstrated that the leadership style of the school principal can strongly influence various elements of the school environment, the attitudes of the classroom teachers and staff, as well as student learning and academic achievement (Bogler, 2005). Two of the dominant theories in the field of educational leadership are instructional leadership and transformational leadership. Although there is considerable overlap between the two models, distinct differences are evident.

Instructional leadership is a broad construct that claims effective leaders are those who focus primarily on teacher instruction and student learning. Although there are differences among researchers about the particular indicators of instructional leadership, the theoretical foundation is somewhat uniform (Burch, 2007; Reitzug, 2008). Instructional leaders develop and communicate school goals, coordinate and supervise the school curriculum, monitor and evaluate student progress, and provide incentives for teachers and students (Hallinger, 2003; Ovando & Ramirez, 2007). This leadership style of focusing on teaching and learning has had a dominant influence in the educational literature for the past three decades, with substantial evidence of its effectiveness in teacher and student outcomes (Hallinger & Heck, 1998; Ylimaki, 2007).

The transformational leadership model contains several leadership attributes and behaviors that facilitate organizational change (DuBrin, 2006). Although primarily studied in the business setting, this model of leadership encompasses several types of organizational settings including education (Bass, 1998). Principals who are transformational leaders are able to identify and articulate a school vision, motivate others through example, support a culture of

intellectual stimulation, and provide support and development to the individual staff members (Leithwood, 1994; Robinson, Lloyd, & Rowe, 2008). Those investigating the effects of transformational leadership have found positive outcomes in the school environment, teacher relations, and indirect effects on student outcomes (Bogler, 2002; Leithwood & Jantzi, 2000).

Both leadership models have gained support in the literature, and both have been recommended as the proposed model of leadership for school principals (Leithwood, Jantzi, & McElheron-Hopkins, 2006; Robinson et al., 2008). Results from a meta-analysis have shown that instructional leadership accounts for higher gains in student academic achievement than transformational leadership (Robinson et al.). Conversely, transformational leadership has been proposed by some researchers as the ideal leadership style for school principals because of the lack of a uniform conceptual model of instructional leadership and the recent changes in school reform that call for a leader with transformational abilities (Leithwood et al., 2006; Murphy, Hallinger, & Mitman, 1983). While both models have extensive empirical support, a direct comparison between these leadership models has yet to be examined. The purpose of this research is to compare transformational and instructional leadership, finding which model best predicts student academic achievement and teacher job satisfaction.

The current study involved 558 teachers from 37 elementary schools throughout 3 school districts in the Intermountain West. After consent was obtained from the appropriate administrators at the district and school levels, teachers completed an on-line survey measuring their principal's leadership style (Multifactor Leadership Questionnaire [MLQ] or Principal Instructional Management Rating Scale [PIMRS]) and their job satisfaction (Teachers' Job Satisfaction Scale [TJSS]). Student achievement was measured by the annual scores from the Iowa Test of Basic Skills (ITBS) and the Criterion Referenced Test (CRT). School results of the

ITBS and CRT are available to public access, thus no individual data were collected from students. Principal and school demographic information was also collected as control variables.

The primary purpose of this study was to directly compare transformational and instructional leadership and find which theory best accounts for student achievement and teacher job satisfaction. Multiple regression analysis and hierarchical linear modeling (HLM) were used to find which leadership measurement best explains the variance in student achievement scores and teacher job satisfaction. It was hypothesized that instructional leadership would explain more of the variance in student achievement than transformational leadership, while the inverse would be true of teacher job satisfaction. In addition to comparing leadership theories, this study also examined the extent to which leaders impact job satisfaction and student achievement after controlling for school context and principal demographics, and which specific leadership practices have the greatest impact on teacher job satisfaction and student achievement.

Literature Review

Leadership Theory

Leadership theories have gone through several trends throughout the past century. Each theory of leadership tends to match the economic and historical context of the time. A summary of the major themes in leadership theory from the beginnings of psychology to the current trends in transformational leadership are presented in the following sections. Leadership theories within the context of school administration have been a more recent endeavor with instructional leadership and transformational leadership dominating most of the research in the literature (Robinson et al., 2008).

Scientific management. The initial research in leadership theory began at the turn of the twentieth century, where the economy was in full swing and reaping the benefits of the industrial revolution. The once agricultural based economy was shifting more and more to an industrial base (Carson & Bonk, 2000). The industrial movement was primarily driven by new technology and manufacturing mechanics, and began to look to science for increased efficiency and productivity (Carson & Bonk). The science of psychology, particularly industrial/organizational psychology, began to examine elements of productivity and effective leadership (Rogelberg, 2007). The beginning of leadership theory was initially called scientific management and placed a heavy emphasis on production, efficiency, control, and quantification (Stone & Patterson, August 2005). A pioneer in this new field of scientific management was Frederick Taylor with his time-and-motion studies (Rogelberg, 2007). To Taylor there was no such thing as skill, rather work was a series of unskilled step-by-step operations that almost anyone could master (Taylor, 1911). In this way almost anyone that learned the necessary operations could become a "first-class man deserving first class pay" (Drucker, 1991, p. 75). This view of the workforce

emphasized operations and mechanics, which in turn focused on a leadership style which was mechanical and efficiency-driven. Taylor even writes in his introduction to *The Principles of Scientific Management*, that the purpose of the book was to "convince the reader that the remedy for … inefficiency lies in systematic management, rather than searching for some unusual or extraordinary man" (p. 7).

Hugo Münsterberg criticized Taylor for not including the psychological aspects of industrial management, claiming that not all men work in the same way (Münsterberg, 1914). Even though Münsterberg was more interested in the mental processes of the individual worker, his theories were still mechanistic. Another primary concern for Münsterberg was getting the right people in the right jobs. Although this approach may seem more humanistic, the primary concern was still on production. Münsterberg stated "how poorly the work of the world is done, because too few men stand in the place where they might do their best" (Münsterberg, p. 418). According to Münsterberg, production is more than getting workers to work efficiently; it is getting the *right* workers who *can* work efficiently. Münsterberg also examined psychotechnics, time and motion, employee fatigue, and many facets of advertising (Münsterberg).

Another contribution to scientific management was a series of studies performed in the late 1920's at the Hawthorne Plant of the Western Electric Company (Mayo, 1930). Elton Mayo, also at Harvard, sought to discover the physical and environmental influences of the workplace on productivity. The major finding of this study was that almost any environmental change increased short-term productivity due to the workers awareness of others monitoring performance, later called the Hawthorne effect (Mayo, 1933; Rogelberg, 2007). Leadership theory based on Mayo's work suggests that leadership is manipulating the environment and monitoring production to create the most efficient organization.

Taylor, Münsterberg, and Mayo began the initial research in leadership theory, which emphasized organizational effectiveness based on scientific methods. Although the early scientific management theories differed, the basis was controlling workers and the environment to maximize efficiency. The machine metaphor was commonly used, which undermined the humane and relational aspects of leadership. Leadership was mechanistic management. The focus on mechanistic management was a result of the economic conditions of the time. The industrial focus was on mass production with an assembly line mentality. Leadership focused on production at the cost of people. According to scientific management a leader was a scientist, because "the best management is a true science" (Taylor, 1911, p. 7).

Trait theory. Although the theories of scientific management proved to be productive, a shift occurred. The shift went in the direction of looking for ideal leaders or "extraordinary man," exactly what Taylor cautioned against (1911, p. 7). Scientists began to look for stable characteristics that distinguished leaders from non-leaders (e.g. intelligence, physical appearance). Three factors had a large influence on the shift to trait theory. First, political interventions and regulations were implemented to reduce the harmful treatment of employees. Second, psychological measurement and assessments of traits began to be developed. Third, the American Dream became real as common men became successful because of certain traits or skills.

The humanistic view of common labors can be seen with the development of employee safety laws passed at the beginning of the 1900's. Many smaller laws were passed by Congress to regulate the number of hours employees could work, safety conditions, child labor laws, and workers' compensation in the early 1900-1910's (Mathis & Jackson, 2008). These laws led to the Fair Labor Standards Act of 1938, which set minimum wages, regulated over-time hours, and

limited child labor (Mathis & Jackson). Society began to look down on the machine metaphor of the labor market and leadership theory followed. This pendulum swing may have also come as a response to the mechanistic view of leadership created by early psychology. Workers were not machines but humans with traits and individual qualities.

The rise of assessments and measurement in the early 1900's provided the tools for trait theory to immerge. The popularization of intelligence testing (Binet, 1905) and personality factors (Cattell, 1956) gave rise to the examination of common traits in leaders. Testing and assessments began to be used for employee selection and promotion decisions (Mathis & Jackson, 2008). This method-focused approach further developed the trait theory movement in leadership.

One of the largest impact on the shift to trait theory was the *Gilded Age* with the rise of powerful tycoons (Carson & Bonk, 2000). Many of these successful businessmen were not only idolized for their vast financial empires, but for their traits and skills. Leadership theory began to shift to explore the traits of these extraordinary men, such as Andrew Carnegie, John D. Rockefeller, and Henry Ford (Conte & Karr, 2001). A new theory of leadership emerged as the common man could become an influential leader in industry by virtue of his skills (Stone & Patterson, August 2005).

The stable traits of leaders soon became the focus of study for the first half of the twentieth century. Mann (1959) examined the extensive literature on trait theory and summarized that adjustment, extroversion, dominance, risk taking, and sensitivity were predictive of effective leadership, with the best predictor being intelligence. Stogdill (1948) noted that desirable traits for leaders are capacity, achievement, responsibility, participation, and

status. Other studies have also explored height, athletic ability, attractiveness, and speech fluency (Dunkerley, 1940; Terman, 1904).

Although trait theory was researched extensively, it began to lose steam as research findings contradicted, researchers made extreme conclusions, and results did not apply to various settings (Antonakis, Cianciolo, & Sternberg, 2004; Bass, 1990). The question was consistently asked: Do leadership traits hold true across settings? Toward the end of the trait theory movement, Mann (1959) concluded that leadership is the joint function of personality and the particular setting.

Behavior theory. The behavioral theory of leadership made a relatively easy shift from trait theory. The shift was mainly due to the current trends in psychology. Naturally behaviorism was the movement of the day, so leadership shifted from finding the right traits to finding the right behaviors (Bass, 1990).

Researchers looked at the differences in task- and relation-oriented leaders. Blake and colleges (1962) produced the managerial grid, which categorizes five leadership styles based on leaders' emphasis on people or production. The first category is the *impoverished* style, which encompasses leaders who have low concern for both people and production. These leaders simply do enough to preserve their job, try not to stand out, and are content with their current position. The second style is the *country club* style, which includes leaders who have a low concern for production but a high concern for people. These leaders are mostly concerned about keeping employees happy, in hopes that it will improve performance. The third style is *produce or perish*, which includes leaders who have a low concern for people and a high concern for production. Produce or perish leaders have more concern for organizational outcomes than individual needs, and typically use an authoritarian style of leadership. The fourth is called the

middle-of-the-road style, which is a leader who balances company and employee needs. The fifth style is the ideal form of leadership and is called the *team* style. These leaders have a high concern for both production and people by encouraging teamwork and cooperation. These leaders help align individual needs with company production.

McGregor (1960) proposed a dichotomous style of leadership in regards to leaders orientation to people. *Theory X* leaders assume that workers are lazy and need to be constantly supervised and motivated. These leaders do not give employees much freedom, but focus attention on providing the right incentives so employees will work. *Theory Y* leaders feel that employees can be self-motivated and can be trusted with responsibility. This theory also suggests that employees work best when they are given autonomy and are empowered (McGregor, 1944).

Contingency theory. Later research began to show inconsistencies in trait and behavioral theories. For example, in military settings the authoritarian style of leaders was shown to be more effective than democratic styles (Bass, 1990). Similar to trait theory, behavior theory was not complex enough to account for the many contextual factors involved with leadership. More researchers bought into the idea that leadership is a joint function of personality and context (Mann, 1959).

The political and economic context can help explain the shift as well as the inconsistencies in the research. The 60's and 70's were a time of great social change compared to the steadiness of the 50's. With the changes and fluctuations in the economy, new situations presented themselves. A major economic change was a shift from a blue collar labor market to a White collar labor market (Stone & Patterson, August 2005). With the increase of technology, new jobs were being created. Globalization and international commerce became more popular,

which in turn made markets more complex. More women entered the workforce and with political influences, such as the Equal Employment (EEO) laws, the workforce became more diversified (Mathis & Jackson, 2008). EEO laws also stopped much of the testing and assessment used to hire and promote employees, placing further limits on trait theory. One concrete type of leadership style did not seem to fit the diverse workforce present in the 60's and 70's. These conditions led to the development of the contingency theory of leadership, which considers both behavioral and situational factors.

One of the biggest advocates of contingency theory was Fiedler (1966), who examined the situational factors that influence a leader's power. Three factors were found to be most influential: situational favorableness, power of position, and structure of the tasks (Bass, 1990; Fiedler). Task-oriented leaders were found to be more effective in high and low situations of favorableness, while relational-oriented leaders are more effective between those extremes. A situation is favorable if the leader has power in the situation, and if the task structure is simple and clear. This theory is more conducive to the thought that leadership can be learned rather than a set of innate traits. House and Kerr (1973) also explored other situational factors and furthered the work of Feilder.

Contingency theories of leadership have been criticized for having a number of weaknesses. There seems to be little agreement when a certain style of leadership is most appropriate in a given circumstance (Kirby, Paradise, & King, 1992). Additionally, contingency theory's emphasis on the leadership *style* may not be capturing the *substance* of leadership (Sergiovanni & Staratt, 1988). Theorists in the transformational leadership camp have argued that the focus of effective leadership should not be on the environmental factors nor on the leader-follower relations, but on outcomes (Bass, 1985a; Burns, 1979; Kaiser, Hogan, & Craig,

2008) Avolio and Bass (1988, p. 36) have also noted, "transformational leaders do not necessarily react to environmental circumstances-they create them." These and other proponents of transformational leadership recognize that context plays an important role in leadership, they also believe that transformational leaders can manipulate the environment.

Transformational leadership theory. The transition to a service economy and the constant change in commerce has greatly influenced the emergence of transformational leadership theory. The economic shift from a manufacturing economy to a service economy has brought more focus to human capital. Much of what a company now sells is not so much a product but its people. With this shift leadership theory has became more people friendly. Transformational leadership theory recognized the need for leaders to leverage their human capital by including the leadership factors of individual consideration and intellectual stimulation (Bass, 1990). The economy is constantly changing with new advances in technology and new markets. Adaptability to change is necessary for an organization to survive, and by definition transformational leaders are those that can transform or change an organization (DuBrin, 2006).

Burns (1979) initially introduced the concepts of transformational and transactional leadership when describing political leaders. Later, Bass (1985a) developed these concepts and created a uniform measurement of transformational and transactional leadership, in addition to a non-leadership category. Transformational leaders offer a vision and purpose that transcend short-term exchanges, which motivates followers to do more than originally intended (Bass, 1998). In contrast, transactional leaders focus on the proper exchange of resources, which are typically short-term transactions. These exchanges focus on the leader clarifying job specifications and offering the appropriate reward for fulfilling these requirements (Osborn & Marion, 2009). It is not to be understood that transactional and transformational leadership are

direct opposites of a continuum, rather transformational and transactional leadership are separate concepts (Judge & Piccolo, 2004). Additionally, transformational leaders are also considered to be good transactional leaders. Transformational leadership is simply an expansion of transactional leadership (Twigg, Fuller, & Hester, 2008). Passive/avoidant leadership, or non-leadership, is also a separate concept where there is an absence of leadership. Transformational, transactional, and passive/avoidant leadership each contain several dimensions.

Transformational leadership employs four characteristic dimensions, which include inspirational motivation, individualized consideration, intellectual stimulation, and idealized influence (charisma) (Avolio, Waldman, & Yammarino, 1991). *Inspirational motivation* is the degree to which leaders inspire followers with a strong vision of the future. Inspirational motivation includes clear communication of expectations followers want to meet, and motivation through goals based on a shared vision. *Individualized consideration* is the degree to which leaders understand the individual needs of their followers, and develop individuals through coaching. This is accomplished by establishing a supportive climate, as well as providing opportunities for growth. *Idealized Influence* (charisma) is the degree to which leaders influence others by example. These charismatic leaders appeal to people on an emotional level and display conviction. Idealized influence involves trust, admiration, and respect. Followers identify with the leader and wish to emulate them. *Intellectual Stimulation* is the degree to which leaders encourage innovation and divergent thinking. In this dimension leaders create a climate of creativity by challenging norms and taking calculated risks.

Different from transformational leadership, transactional leadership is based on a simple exchange relationship with followers (Bass & Avolio, 1994). For example, transactional leaders will simply specify job requirements and set conditions for an exchange, such as pay or other

compensation. Transactional leadership has three dimensions which are contingent reward, management by exception-active, and management by exception-passive. *Contingent reward* is the degree to which leaders establish productive transactions with followers. Leaders high in contingent reward clearly indicate expectations and establish appropriate rewards for meeting those expectations. *Management by exception* is the degree to which leaders take corrective action when followers fail to meet the expectations of a leader-follower exchange. Generally, leaders scoring high in management by exception do not intervene when followers are performing as expected. Management by exception-active and management by exception-passive differ in the timing of the leader's intervention. Active leaders anticipate problems and monitor follower behavior to take corrective action before problems become serious. Passive leaders wait until problems are serious before taking corrective action.

The final category in the transformation leadership theory is passive/avoidant leadership. The main dimension of passive/avoidant leadership is *laissez-faire leadership*, the absence or avoidance of leadership. These leaders avoid responsibility, are disorganized, and offer little in terms of direction or support. Although laissez-faire leadership may seem similar to management by exception-passive, it should be treated as a different dimension because it represents the absence of leadership (Bass, 1998). Transformational leadership theory originally categorized management by exception-passive with the transactional leadership style. However, due to factor analysis results management by exception-passive has been included with laissez-faire leadership dimension to form the passive/avoidant leadership category (Avolio & Bass, 2004).

Transformational leaders have been shown to be more effective than transactional leaders because of their ability to promote purpose and vision, which transcends short term exchanges.

Empirical results have shown that transformational leaders have helped organizations increase production, profitability, group effectiveness, organizational sales, market shares, creativity, and employee moral (Bass, 1998; Bass & Avolio, 1994; Geyer & Steyrer, 1998; Gong, Huang, & Farh, 2009; Matzler, Schwarz, Deutinger, & Harms, 2008). Followers of transformational leaders were found to have higher job satisfaction, psychological well-being, motivation, and more positive attitudes and emotions through the workday than transactional leaders (Bono, Foldes, Vinson, & Muros, 2007; Judge & Piccolo, 2004; J. Mullen & Kelloway, 2009; Nielsen, Randall, Yarker, & Brenner, 2008). Transformational leaders also received higher performance appraisals, higher rated leader effectiveness, and higher ratings on objective performance measures than transactional leaders (Geyer & Steyrer, 1998; Hater & Bass, 1988). Judge and Piccolo (2004) conducted a meta-analysis and found high correlations between transformational leadership and follower satisfaction, follower motivation, and leader effectiveness (.53 - .71). There were also high negative correlations between laissez-faire leadership and follower satisfaction and leader effectiveness (-.54 and -.58 respectively). Also, transformational leadership has been found to be positively related to employee performance and customer loyalty (Liao & Chuang, 2007).

Leadership Theories in Education

Within the realm of educational leadership there have many models proposed, however, few have been developed and empirically tested. Leithwood and Jantzi (2006) noted that many of the new theories of leadership tend to fall into the trap of *leadership by adjective*, where a new adjective is simply added to the term leadership. These new theories give the false impression that something new has been created, when in reality an old theory receives a new appendage

and a new name. Because of this, only the most extensively researched models of leadership will be considered in this paper, which are transformational leadership and instructional leadership.

Transformational leadership. As research in transformational leadership established momentum throughout the 1990s, researchers in education began to apply this leadership theory to the school context. Bass (1990) has argued that transformational leadership is universal across organizations, which would suggest that this theory of leadership should transition nicely into education. In his book *Transformational Leadership: Industrial, Military, and Educational Impact*, Bass (1998) discussed the implications for leadership in education. Although there was not much detail in regards to educational impact, Bass did claim that the theory of transformational leadership applies to the school context. However, only one educational study was cited in the book, specifically that college presidents who displayed transformational leadership were seen as more effective when handling a financial crisis (Neumann, 1992). Recognizing the need for more research in this area, Bass has called for additional research on the applicability of transformational leadership in the school setting.

Leithwood (1992) continued the work of Bass (1985a) in making a home for transformational leadership theory in education. The research by Leithwood and colleagues follows many of the same principles of transformational leadership with a few modifications to the school context. Additional changes have also been made with more modern conceptualizations, such as Griffith's (2004) model. The main changes to the traditional model developed by Bass are with the dimensions of individualized influence and inspirational motivation; Leithwood breaks down these dimensions into more specific behaviors, while Griffith combines the two dimensions into charisma/inspiration (see Table 1).

Table 1

Three Conceptualizations of Transformational Leadership Theory

Bass' (1985b) Theory of Transformational Leadership	
Transformational Leadership	
Idealized Influence	The degree to which leaders influence others by example. These charismatic leaders appeal to people on an emotional level and display conviction. Idealized influence involves trust, admiration, and respect. Followers identify with the leader and wish to emulate them.
Inspirational Motivation	The degree to which leaders inspire followers with a strong vision of the future. Inspirational motivation includes a clear communication of expectations, and motivation through goals.
Intellectual Stimulation	The degree to which leaders encourage innovation and divergent thinking. In this dimension leaders create a climate of creativity by challenging norms and taking calculated risks.
Individualized Consideration	The degree to which leaders understand the individual needs of their followers, and develop individuals through coaching. This is accomplished by establishing a supportive climate, as well as providing opportunities for growth.
Transactional Leadership	
Contingent Reward	The degree to which leaders establish productive transactions with followers. Leaders high in contingent reward clearly indicate expectations and establish appropriate rewards for meeting those expectations.
Management-by-Exception: Active	The degree to which leaders take corrective action when followers fail to meet the expectations of a leader-follower exchange. These leaders do not intervene when followers are performing as expected.
Passive/Avoidant Leadership	
Management-by-Exception: Passive	Passive leaders fail to intervene until problems become serious. Active and passive leaders differ in the timing of their intervention, while active leaders anticipate problems, passive leaders wait until problems are serious before taking corrective action.
Laissez-Faire Leadership	The absence or avoidance of leadership. These leaders avoid responsibility, are disorganized, and offer little in terms of direction or support.

Table 1 Continued

Leithwood's (1994) Theory of Transformational Leadership	
Transformational Leadership	
Identifies and articulates a vision	The ability of the school principal to identify new opportunities, and collaboratively develop, articulate and inspire the school staff with a vision of the future.
Fosters the acceptance of group goals	Promote cooperation among staff and assisting them to work together toward common goals.
Conveys high-performance expectations	Principal establishes expectations for excellence, quality and high performance on part of the staff.
Provided appropriate models	Sets an appropriate example for the staff to follow and is consistent with the values communicated.
Provided intellectual stimulation	Challenges staff to reexamine some of the assumptions about their work and to rethink how it can be performed. Giving autonomy to the staff to have divergent thinking.
Provided individualized support	Respect for individual members of the staff. Shows concern for the personal feelings and needs of the staff
Transactional Leadership	
Contingent Reward	The principal effectively communicates to the staff what to do to be rewarded for their efforts. Establishes appropriate expectations and transaction with staff.
Management-by-Exception	The principal's response to problems arising from others in the school. These principals actively monitor the staff to take corrective action when problems arise. More passive principals only react to problems when they become more serious and are brought to their attention.

Table 1 Continued

Griffith's (2004) Theory of Transformational Leadership	
Transformational Leadership	
Charisma/Inspiration	School goals are well articulated Goals give teachers a sense of direction Principal is able to get teachers to work together Principal encourages staff discussions to improve teaching
Intellectual Stimulation	Principal encourages new ideas Provides opportunities for others to improve the school's improvement plan Principal makes an effort to involve teachers in the decision making process
Individualized Consideration	Encourages open communication through respect Principal supports teachers in their decisions Principal solicits suggestions for school improvement Principal gives encouragement Principal communicates expectations and provides feedback Creates an environment that allows teachers to cooperate

Transformational leadership has been suggested as the ideal leadership style for schools considering substantial reform, as change management is a strength of transformational leaders (Leithwood & Jantzi, 2006). This is accomplished because transformational leaders affect employee motivation and commitment, which can lead to the extra effort required by teachers to make the necessary changes for school reform (Leithwood, 1994). It has also been noted that in order for school reform to be successful there needs to be appropriate power relationships among stakeholders. Administration, staff, parents, and students need to be actively involved in the decision making process. Transformational leadership involves incorporating stakeholders into the mission of the organization by creating the vision and climate necessary for change (Leithwood, 1992).

School principals who exhibit transformational leadership have been associated with positive outcomes such as improvements in the school environment, teacher and staff relations, and student achievement (Bogler, 2005; Griffith, 2004). In 665 primary schools in England, Leithwood and Jantzi (2006) tracked national literacy exams, transformational leadership and other school variables over four years. Transformational leadership had strong direct effects on teachers' motivation and the school environment, but failed to explain the variance in students' achievement gains on the national exams.

Leithwood, Jantzi and McElheron-Hopkins (2006) tracked student outcome data while implementing a school improvement model in seven school districts in Canada. Transformational leadership accounted for the largest proportion of variance ($R^2 = .23$) in perceived student outcomes in comparison to parental participation, out of school support, and the various elements of the school improvement process. Although there were significant findings for perceived student outcomes, there was not a significant relationship between transformational leadership and actual achievement scores ($r = .11$). In an earlier study of 2,465 Canadian teachers, Leithwood and Jantzi (2000) found transformational leadership had significant direct effects on organizational conditions (.65) using path analysis. However, there were weak but significant indirect effects on student engagement, as measured by participation (.07) and identification (.10). These findings suggest a strong relationship exists between transformational leadership and aspects of the school environment and teacher relations, but a weaker relationship with actual student outcomes.

Additional researchers have found similar conclusions as Leithwood. Ross and Gray (2006) collected data from 205 elementary schools in Canada and found that transformational leadership has strong direct effects on teacher commitment and teacher self efficacy, but weaker

indirect effects on student achievement. Teacher self-efficacy was measured by questionnaire items addressing how well teachers thought the students could learn and their capability and effectiveness as teachers. Teacher commitment was measured by items dealing with teacher commitment to the school mission, to the school, and to the school-community partnerships. Student achievement was the percentage of students who reached the national standard on the mandated provincial test administered by the Education Quality and Accountability Office (EQAO). Another study in Canada also found a connection between transformational leadership and self-efficacy. Dussault, Payette, and Leroux (2008) surveyed principals and teachers from 40 high schools and found a positive correlation between the principal's level of transformational leadership and teachers' self-efficacy.

Koh, Steers, and Terborg (1995) examined the transformational leadership of secondary school principals in Singapore. Transformational leadership accounted for 20% of the variance in teacher commitment, 30% of the variance in teacher satisfaction, but a nonsignificant amount of variance (5%) in student achievement. Teacher commitment assessed teacher's loyalty and desire to remain with the organization. Teacher satisfaction was specifically the teachers' satisfaction with the school principal. Student achievement was measured by the percentage of students that obtained at least five out of seven passing credits.

Bogler (2005) looked at the relationship between transformational leadership and teacher job satisfaction in Israeli teachers. There was a significant relationship between transformational leadership and teacher job satisfaction. However, this relationship was mediated by the teachers' occupational perceptions. Occupational perceptions were measured by a questionnaire about how teachers describe the status, autonomy, and opportunities for development of a school teacher. Another study examined similar variables, teacher commitment and job satisfaction, in

560 school teachers from Tanzania (Nguni, Sleegers, & Denessen, 2006). Teacher commitment was measured using three factors, which were value commitment, commitment to stay, and organizational citizenship behavior. Value commitment consisted of the teacher being committed to the goals and values of the school and exerting extra effort to accomplish the goals. Commitment to stay mainly consisted of the teachers' dedication to stay at their current school. Organizational citizenship behavior asked teachers about their behaviors that contribute to a cooperative environment. Regression analysis showed that transformational leadership accounted for a moderate amount of value commitment (18%), organizational citizenship behavior (12%), and a low, but significant, amount of commitment to stay (3%). Transformational leadership accounted for 15% of the variance in teacher job satisfaction.

Silins (1992) tracked a school improvement program in Canada. Although no student data were collected, teachers' perceptions of improvements in the school reform program were measured. Transformational leadership was associated with positive perceptions of school improvement, while transactional leadership was negatively associated with school improvement. Transformational leadership was also associated with positive perceptions of instructional changes and student outcomes. Another early study looked at transformational leadership among principals in the Southern United States (Kirby et al., 1992). Just over 100 school educators evaluated their supervisors' transformational leadership, as well as the satisfaction and effectiveness scales on the Multifactor Leadership Questionnaire (MLQ). Transformational leadership was positively related to satisfaction (r = .80) and leader effectiveness (r = .71).

Griffith (2004) examined 117 schools in one large metropolitan school district within the US. Surveys were administered to school staff assessing their principals' transformational

leadership and job satisfaction. Standardized test scores were also used to measure student achievement progress. This was done by calculating the change in each students test scores from grades 3 to 5. These change scores were summed so that each school had a positive or negative overall achievement score depending on the direction of the change. Job satisfaction was assessed through three general questions of satisfaction about the work teachers perform and school conditions, as well as teacher turnover rates. Path analysis results demonstrate that transformational leadership directly affected staff job satisfaction with a standardized regression coefficient of .88, while transformational leadership indirectly affected student achievement progress mediated by staff job satisfaction (.36). It is interesting to note that although there was a positive relationship between transformational leadership and job satisfaction, there was a negative relationship between teacher turnover rates and transformational leadership. Griffith noted that many factors contribute to turnover rates outside the influence of the school principal, which may explain the contradiction between findings.

Several themes are apparent from these research studies. Transformational leadership has a direct effect on teacher commitment, job satisfaction, school climate, and perceptions of student and school outcomes. Transformational leadership also has indirect effects on student engagement and student achievement. Although there is substantial evidence supporting transformational leadership in education, there have been a number of criticisms. First, transformational leadership lacks an educational emphasis, and lacks a focus on curriculum and instruction (Marks & Printy, 2003). Second, transformational leadership provides a general description of leadership qualities, but does not indicate specific behaviors that make a successful principal. Thirdly, leaders exercising transformational leadership have only shown minimal impact students' academic achievement, with most studies showing indirect effects

(Barker, 2007). Lastly, a competing theory, instructional leadership, has shown in some instances to a more effective model of school leadership (Robinson et al., 2008).

Instructional leadership. Another theory that has also received much attention in the literature is instructional leadership. Researchers examining school effectiveness or program improvement in the late 70s noticed that a skillful principal was a key factor in accounting for successful change or school improvement (Hallinger, 2003). Instructional leadership was conceptualized by these various researchers and dominated the educational literature for the next two decades. Although extensive research has been conducted using instructional leadership, there have been differing models measuring instructional leadership (Burch, 2007; Reitzug, 2008; Ubben & Hughes, 1987). Although there are differences in instrumentation, there is considerable overlap between the various models present in the literature. In addition to the general overlapping themes, more specific variations of instructional leadership will also be presented. A summary of the different conceptualizations of instructional leadership is presented in Table 2.

Instructional leadership has been broadly defined as leadership functions related to teacher instruction and student learning (Marks & Printy, 2003). Although there are differences among researchers about the particular indicators of instructional leadership, six consistent themes are found throughout the literature (Hallinger, 2003; Leithwood, 1994). The six themes describe an instructional leader as one who (1) focuses on instruction and learning, (2) develops and communicates school goals, (3) coordinates and supervises the school curriculum, (4) monitors and evaluates student progress, (5) maintains high visibility and a hands-on approach, and (6) provide incentives for teachers and students (Hallinger, 2003; Ovando & Ramirez, 2007).

Leithwood (1994; 2006) summarized instructional leadership as having four main tenants. First, instructional leadership focuses primarily on the role of the principal in developing, directing, and supervising the curriculum and instruction in the classroom. This style of leadership has the principal very much in control of the classroom experience with a strong and directive presence in the school. Secondly, instructional leaders are more hands-on with their teachers in order to improve teaching and learning. Third, instructional leaders are goal-oriented. Lastly, instructional leaders establish high expectations and standards for teachers and students.

McEwan's (2003a) model of instructional leadership identifies seven broad phases or steps leaders need to accomplish in order to have a successful school. The steps consist of (1) establishing and implementing academic standards, (2) being an instructional resource for the staff, (3) creating a school culture and climate conducive to learning, (4) communicating the vision and mission of the school, (5) setting high expectations for the staff and administration, (6) developing teacher leaders, and (7) establishing/maintaining positive relationships with students, staff and parents. This and other recent models of instructional leadership have included more transformational aspects of leadership, such as communicating a school vision, creating a school culture and climate conducive to learning, promoting teacher development, establishing individual relationships with the staff and community, supporting collaboration among teachers and influencing followers through being an example.

Blase and Blase (2000) identified two basic themes of principals demonstrating instructional leadership, (1) talking strategies and (2) promoting teachers' professional development. The talking strategies consist of the conversational elements of the principals' duties, as well as relationships with the staff and community. Instructional leaders display

effective communications by making suggestions and giving feedback to improve teaching and learning, modeling effective teaching, and soliciting advice from staff and members of the community. Principals also display strategies to promote teachers' professional development. Principals can promote development through supporting collaboration among teachers, developing coaching relationships among educators, apply adult learning and growth strategies to all the phases of staff development, and implementing research for data based decisions.

Hallinger (2003) developed a specific conceptualization of instructional leadership consisting of three dimensions: defining the school's mission, managing the instructional program, and promoting a positive school learning climate. Defining the school's mission includes working with the staff to ensure that the school has clear and measurable goals, and that those goals are clearly communicated throughout the school community. These goals are primarily concerned with the academic progress of the students. Managing the instructional program requires the school principal to be deeply involved in the school's curriculum. This also involves the supervision of the instruction in the classroom. Although this is difficult to manage in secondary schools, it is still the responsibility of the school principal to develop the academic foundation of the school. The school principal is also in charge of the school's climate. This includes making sure that there is a high standard of excellence and expectations are adopted by the school community. This is done by providing incentives for students and staff, as well as protecting the time needed for classroom instruction rather than for administrative duties. Hallinger's work on instructional leadership led to the development his widely used measurement of instructional leadership called the Principal Instructional Management Rating Scale (PIMRS), which was used in the present study.

More recent research has broadened the focus of instructional leadership to include the contributions of other staff members. Collaborative among teachers, creating opportunities for professional growth, and the development of professional learning communities have been included in this new focus (Marks & Printy, 2003; Reitzug, 2008). This shift has stirred a new line of research looking at different conceptualizations of leadership, which researchers are calling *shared* instructional leadership (Marks & Printy, 2003; Ylimaki, 2007) and *distributed* leadership (Hulpia, Devos, & Rosseel, 2009; Mayrowetz, 2008; Scribner, Sawyer, Watson, & Myers, 2007). Although this shift is important to note, the instructional leadership theory used in the current study does not include the additional dimensions attributed to these newer conceptualizations. Rather these newer conceptualizations will be considered different theories of leadership, which show promise but lack an established measure and extensive empirical support (Mayrowetz, 2008; Reitzug, 2008).

Table 2

Four Conceptualizations of Instructional Leadership Theory

Leithwood's (1994) Theory of Instructional Leadership	
Focus on instruction	Principals focus primarily on the role of the principal in developing, directing and supervising the curriculum and instruction in the classroom. This style of leadership has the principal very much in control of the classroom experience with a strong and directive presence in the school.
Hand-on approach	Principals are more hands-on with their teachers in order to improve teaching and learning
Goal oriented	Principals are able to set and articulate goals. Principals are also able to give incentives to motive staff and students to accomplish the school goals.
High expectations	Instructional leaders establish high expectations and standards for staff and students.
McEwan's (2003a) Theory of Instructional Leadership	
Academic Standards	Establish, implement and achieve academic standards
Model of Instruction	Be an instructional resource for the staff
School Climate	Create a school culture and climate conducive to learning
School Vision	Communicate the vision and mission of the school
High Expectations	Set high expectations for the staff and administration
Teacher Development	Develop teacher leaders and coach teachers in order to promote professional development
Positive Relationships	Establish and maintain positive relationships with students, staff and parents

Table 2 Continued

Blase's (2000) Theory of Instructional Leadership	
Talking strategies	Making suggestions Giving feedback Modeling effective teaching Soliciting advice and opinions Giving praise
Promoting teachers' professional development	Emphasizing the study of teaching and learning Supporting collaboration among teachers Developing coaching relationships among educators Encouraging the redesign of school programs Apply adult learning and growth strategies to all the phases of staff development Implementing research for data based decisions
Hallinger's (2003) Theory of Instructional Leadership	
Defining the school mission	Frame the school goals Communicate the school goals
Managing the instructional program	Supervise and evaluate instruction Coordinate the curriculum Monitor student progress
Promoting a positive school climate	Protect instructional time Maintain high visibility Provide incentives for teachers Promote professional development Provide incentives for learning

Hallinger and Heck (1996, 1998) conducted review of the instructional leadership literature published between 1980 and 1995. Of the 41 studies in their analysis, 31 measured school principals' instructional leadership with the traditional framework. These 31 studies all examined leadership affects on student outcomes through academic achievement scores or school effectiveness. The results from these studies showed mixed findings with 13 studies showing statistically significant effects, 10 studies showing no effects, and 8 studies showing mixed or indirect effects on student outcomes. These conclusions made from these findings were to look at different models and antecedent variables that may contribute to the complex connection between leadership and student outcomes. However, many of the findings suggest that the school principal does have some influence over student outcomes, usually through teacher or organizational means.

Hallinger, Bickman, and Davis (1996) measured the reading achievement of students in 87 US elementary schools. Results indicated that the principals' instructional leadership had an indirect effect on student reading achievement, and direct effects on school climate variables. Hallinger et al. proposed a model that places the principal's leadership in the context of the school's environment, with both antecedent variables and mediating variables that influence the relationship between leadership and student achievement.

Heck (2000) examined principals' instructional leadership in Hawaii's 243 public elementary and secondary schools. The principals' leadership significantly influenced students' reading, math, and language scores from the Stanford Achievement Test. It should be noted that the model used in this study included other school quality factors in addition to instructional leadership (i.e., school climate factors). These results held up after controlling for prior

achievement, student gender and ethnicity, community and school-level socioeconomic status, as well as language and special education factors.

Van de Grift and Houtveen (1999) examined instructional leadership in Dutch principals. Achievement scores for language, arithmetic and information processing were collected in 174 elementary schools. Results indicated that leadership had a small but significant effect on student achievement scores. Leitner (1994) also found similar results using the PIMRS in 27 elementary schools. The scores on the PIMRS were significantly related to on math, language, and reading achievement scores during two separate years. In summary, the results from research examining instructional leadership have found significant effects on student achievement, although many of the effects were considered small. The relationship between instructional leadership and student achievement are often mediated by other school-level factors such as school climate or class-room level factors such as teacher efficacy and job satisfaction (Hallinger & Heck, 1996).

Although there seems to be considerable evidence for the effectiveness of instructional leadership (Blase & Blase, 2000; Hallinger & Heck, 1998), some criticisms have arisen. Instructional leadership was primarily designed for smaller elementary schools, and lacks applicability to secondary schools (Leithwood, 1994). Because of the size and complexities of secondary schools, many principals cannot have direct teacher supervision as instructional leadership proposes. The principal would need to become a subject matter expert in nearly every discipline to accurately influence teacher's curriculum and instruction. Also, instructional leadership has been criticized for being too directive and principal-focused, which largely ignores the contributions of teachers and other community members (Robinson et al., 2008; Ylimaki, 2007).

Contrasting transformational and instructional leadership. Although there is overlap between instructional and transformational leadership, there are some distinct differences. Two distinct differences are the distribution of leadership responsibility and the involvement of the staff members in the decision making process (Leithwood & Jantzi, 2000). Transformational leadership does not assume that the principal is the only leader who creates conditions for a successful school. Others on the staffing team beside the school principal are empowered to make contributions to the visions and climate of the school. Transformational leadership is also geared toward the needs of the individual staff member rather than coordinating the staff to a set curriculum and supervising their instruction.

Hallinger (2003) proposed three criteria that differentiate transformational and instructional leadership: Top-down or bottom-up approaches to school improvement, a focus on first-order or second-order changes, and a transactional or transformational relationship with staff members. Instructional leaders generally direct from the top-down. The top-down approach is characterized as more managing and supervising than bottom-up approaches, so that the principal is the main driver of school improvement. Transformational leadership, on the other hand, proposes a more distributed or bottom-up leadership. Rather than controlling from above, the principal stimulates change through the participation of the individual staff members. Thus, rather than managing *people through change,* transformational leadership brings about *change through people*.

The second distinction centers on the contrast of transactional vs. transformational forms of leadership. Instructional leadership can be seen as transactional in the sense that the principal manage and reward staff members toward a predetermined set of goals. In contrast,

transformational leaders create a common vision, create a consensus among staff members, and inspire followers to accomplish this vision through a more autonomous process.

The third distinction involves how leaders solicit change and manage school reform. Many of the first-order changes in school reform, changes with the core curriculum and teaching methods, require supervision and control. Instructional leaders tend to focus more on the first-order changes, rather than the second-order changes. However, a lack of attention to the second-order changes has lead to the failure of many change initiatives (Leithwood, 1994). Second-order changes involve the survival of the first-order changes, such as developing a shared vision, creating a supportive school climate, and distributing leadership to other teachers and staff. Transformational leadership focuses on these second-order changes rather than focusing on controlling and supervising the classroom curriculum and instruction.

Since Hallinger's (2003) work new conceptualizations of instructional leadership have evolved in the literature. These newer conceptualizations keep instructional leadership practices at the core of the theory, but have developed additional practices that could be considered more transformational. In fact, Waters and Cameron (2005) have even added the dimension of individualized consideration in their conceptualization of instructional leadership. Another example is the shift to see instructional leaders as more distributed in their leadership practices, empowering teacher-leaders to be more involved in the decision-making process (Mangin, 2007). Instructional leaders also provide teachers with development opportunities and facilitate professional learning communities (Leithwood et al., 2009). Although the gap between these theories is narrowing, there are still meaningful differences. The primary difference seems to be the specificity of instructional leadership and the direct application it has to the educational setting, which can be seen in the origin of the two theories.

In contrast to instructional leadership, transformational leadership had its inception in business and later transitioned into education (Bass, 1985b; Leithwood, 1992). The premise of instructional leadership was founded in early school reform practices where the emphasis was for school principals to directly influence classroom curriculum and instruction (Leithwood, 1994). Under this method principals advocated certain classroom instruction and supervised teachers closely to ensure that the curriculum was properly implemented. This management-oriented leadership tends to be effective when the purpose of the change is known and when there is a specific agreed upon practice to accomplish the purpose (Rowan, 1990). In the education setting, research evidence has shown the importance of establishing the instructional leadership practices over the general leadership principals offered by transformational leadership.

Although transformational leadership has considerable empirical support in the business setting, it has not been as successful in predicting student achievement as instructional leadership. Robinson et al. (2008), in a recent meta-analysis compared instructional and transformational leadership. This study compared the findings from 22 published studies that examined the relationship between leadership and student outcomes. Student outcomes for these studies primarily consisted of standardized test scores, while four studies examined student well-being, academic self-concept, or school engagement. The results from these studies were converted to a z score and used as the effect size statistic. A total of 12 studies used the instructional leadership framework, 5 studies used transformational leadership framework, and the remaining 5 studies used a variety of different leadership theories. The mean effect size estimates for instructional leadership (*ES* = .42) was nearly four times as that of transformational leadership (*ES* = .11), and higher than the other theories of leadership (*ES* = .30). Although caution is needed in interpretation of these findings, it seems that the impact of instructional

leadership on student outcomes is greater than that of transformational leadership. The authors suggest that general and abstract leadership theories do not give the specific leadership practices that have an impact on student outcomes. This parallels Marks and Printy's (2003) criticism that transformational leadership lacks an educational emphasis and does not specifically spell out the practices of a successful principal.

Robinson et al. (2008) conducted a similar investigation and found five key leadership dimensions that had the largest effect on student achievement. These dimension included (1) establishing goals and expectations (*ES* = .42), (2) strategic resourcing (*ES* = .31), (3) planning, coordinating, and evaluating teaching and the curriculum (*ES* = .42), (4) promoting and participating in teacher learning and development (*ES* = .84), and (5) ensuring an orderly and supportive environment (*ES* = .27). It is interesting to note that teacher development had the largest impact on student achievement, with an estimated mean effect size that was twice to three times as large as the other leadership dimensions. The type of teacher development described by Robinson et al. involves more than just providing opportunities for learning, but describes leaders that directly participate in formal and informal professional learning.

Although the meta-analysis by Robinson et al. (2008) is very informative, there are important limitations that should be notes with this type of research. Because of the limited number of studies, the criterion for student achievement was very loose. Studies were included that did not directly measure student achievement scores, but rather the perceptions of student outcomes. Additionally, there were considerably fewer studies looking at transformational leadership than instructional leadership. Finally, each of these studies were performed in a unique context that may contribute to differing outcomes.

This last point of differing school context is especially important. For example, one contextual factor that seemed to have an impact was whether or not the study was conducted within the US. The effect size for instructional leadership (*ES* = .42) was based on eleven studies from the US, and one study from New Zealand that had a lower effect size of 0.12. The other theories of leadership (*ES* = .30) had four studies from the US and one study from Hong Kong that also had a lower effect size of 0.27. Transformational leadership (*ES* = .11) only had one study that was within the US with an effect size of 0.68, which is higher than the mean effect size of both instructional leadership and the other leadership theories. The other four studies that were used to calculate the mean effect size of transformational leadership were all conducted outside the US, with one from Singapore that had a -0.22 effect size. Using the average effect size from the 22 studies, the mean effect sizes from studies performed within the US and outside the US were calculated (see Table 3). It seems from these calculations that the school setting has a large impact on the studies' outcomes, with an average effect size of 0.48 in studies that were done in the US compared to the 0.16 effect size in non US studies. Similar differences in the context of the country was found in a meta-analysis of 37 studies from 1986-1996, where the effect size nearly tripled when excluding countries outside the US (Witziers, Bosker, & Kruger, 2003). These limitations suggest the importance of further confirming evidence from a study that directly compares these two leadership theories in the same context and with the same operationalization of student achievement. The purpose of the current study was to do just that.

Table 3

Mean Effect Size for Leadership Theories in US and non US Settings

	Leadership Theory			
Setting	Instructional	Transformational	Other	Total
US studies	0.46 (11)	0.68 (1)	0.31 (4)	0.48 (16)
Non US studies	0.12 (1)	0.08 (4)	0.27 (1)	0.16 (6)

Note. The data represent the mean effect sizes with the number of studies in parenthesis.

The School Principal

The principal as a leader. Research has noted the pivotal role and the significant influence of the school principal (A. Wood, 2005). It has been proposed that the school principal has more of an influence on a school than any other staff member, and a critical factor for school reform and school effectiveness (Bookbinder, 1992; Deal & Peterson, 2009; C. Mullen & Hutinger, 2008). According to Kantrowitz, Mathews, and Bondy (2007), the key to a school's success is the *Principal Principle*. Even distributed leadership theorists, who focus on the leadership capacities of the staff members, still acknowledge the pivotal role of the school principal (Leithwood et al., 2009). Due to the considerable influence of the school principal, the leadership style of the school principal should have considerable impact on school outcomes. The influence of the principal's leadership can be categorized into several key functions that a principal performs that can impact the success of his or her school.

The principal has certain responsibilities or functions that impact school effectiveness. These functions remain relatively constant across location, school size and grade level (Ubben & Hughes, 1987). The key functions or factors of influence identified by the research include setting direction, creating a healthy school environment, managing the instructional program,

supervising student outcomes, eliciting stakeholder involvement, and developing school teachers (Leithwood et al., 2009; Nettles & Herrington, 2007). Leadership theories within education often focus the attention to how principals can best perform these functions to create successful school outcomes. Although these functions often overlap in practice, each function will be discussed separately.

Functions of a school principal.

Setting direction. The direction of the school often begins with the school principal. Setting direction includes identifying and articulating a school vision, framing and communicating school goals, creating high performance expectations, and motivating others through creating purpose or establishing a school mission (Hallinger, 2003; Leithwood et al., 2009). Goals, mission statements, and performance expectations are job functions that allow the school principal to be a leader.

The importance of a setting direction through a clear vision and school goals in establishing a successful school is well supported in the literature (Johnson & Asera, 1999; Nettles & Herrington, 2007). Hallinger (2003) suggests that successful school leaders will create a shared sense of purpose in the school by establishing a school mission and communicating a clear vision. Defining a school mission includes establishing clear, measurable goals that focus on student outcomes (Hallinger, 2003). Although the mission does not have to be primarily the product of the school principal, the principal is responsible that a mission is established and that it is communicated to the staff and students (Hallinger, 2003).

McEwan (2003a) suggests several strategies for communicating the mission and vision of the school to the staff, students, and parents. For the staff to receive communications effectively principals could have open-door policies, social events, effective staff meetings, build leadership

teams, one-on-one conversations with teachers, bulletins and newsletters, and by being a visible presence in the building. Personal involvement and interaction with students, school assemblies, being a role model, school newsletters and other written communications with students are important in communicating the mission and vision. Parents are also a major factor in student success and must have a sense of the school mission and vision (Jimerson et al., 2006). Principals may communicate the mission and vision of the school through letters to parents, newsletters, web sites, board and other community meetings, parent teacher conferences, back-to-school nights and other activities. Communicating the mission and vision to staff, students and parents will enable the principal to also elicit more stakeholder involvement and create a healthy school climate (Halawah, 2005).

Creating a healthy school environment. The principal is responsible for the environment of the schools to allow for effective teaching and learning. Although several factors contribute to school climate, the school principal is the main facilitator of a healthy school climate (Schoen & Teddlie, 2008). The principal may influence school policies that can promote success and remove barriers for learning. Policies that can promote a successful school environment include establishing standardized grade scales, promoting an appeals process and giving appropriate discipline for misbehavior (McEwan, 2003a). Setting and communicating standards and expectations can also create a safe and orderly environment (Nettles & Herrington, 2007). Part of creating a safe environment for learning includes increasing the time allotted to actual teaching rather than administrative tasks and increasing student attendance (McEwan, 2003a; Ubben & Hughes, 1987).

Creating a safe and orderly environment directly influences the school culture. McEwan (2003b) identifies building culture as one of ten effective traits of school principals. The culture

building principal is defined as one "who communicates and models a strong and viable vision based on achievement, character, personal responsibility and accountability" (McEwan, 2003b, p. 89). The principal's role in building school culture includes developing the core values of the school, communicating and modeling these values, rewarding and supporting behaviors that enhances the culture, and building traditions to perpetuate the school culture (McEwan, 2003b).

The principal may influence the school environment through the leadership behaviors they employ. Deal and Peterson (1999, 2009) examined several case studies of principals who were able to develop successful learning environments. Several themes emerged in their findings, which include developing a student-centered mission and purpose that motivated stakeholders. Also, these principals strengthened elements of the existing climate and added new traditions and values that promoted a healthy climate. Additionally, principals would hire new staff and socialize current staff to uphold and contribute to the values of the school climate. Finally, principals would sustain the school climate by integrating the values of the climate in school activities and programs. Several of these behaviors are typical of transformational leaders.

Research findings suggest that transformational leadership does have a strong and direct influence on the school climate (Hallinger et al., 1996). Leithwood and Jantzi (2000) found a strong correlation between organizational climate and transformational leadership (r = .68) in elementary and junior high schools in Canada. Other variables did not have as strong a relationship with transformational leadership suggesting that principals' leadership style has a larger influence over the school climate than other factors. In a later study, Leithwood and Jantzi (2006) found similar results that transformational leadership had strong to moderate direct effects on the school environment. The school environment was measured by teachers' perceptions of

the work conditions and classroom practices, which produced path analysis coefficients of 0.68 and 0.21 respectively.

Kelley, Thornton, and Daugherty (2005) made a connection between leadership effectiveness and a healthy school climate. Another interesting finding was that when teachers perceived that the principal varied in their leadership approaches, they tended to also indicate lower levels of school climate, indicating the importance of a consistent approach in leadership style. Much of the research on principals' leadership has noted that principals have more of a direct effect on school climate factors than on student outcome factors (Barnett & McCormick, 2004; Grayson & Alvarez, 2008; Hallinger & Heck, 1998; Kruger, Witziers, & Sleegers, 2007). This suggests that principals may benefit from focusing on the school-level factors, such as school climate, which will in turn influence student-level factors.

Managing the instructional program. Elmore (2000) claims that the purpose of school leadership is to improve instructional performance. Hallinger (2003) also noted that one of the three factors that correlated with effective school principals is managing the instructional program. In a meta-analysis of effective leadership practices, the leadership function of planning, coordinating, and evaluating teaching and the curriculum had one of the largest effects on student achievement (Robinson et al., 2008). In Leithwood's (2009) recent summary of effective leadership, managing the instructional program was listed as one of the four key leadership functions. One of the primary findings in the instructional leadership literature is that school effectiveness is contingent on the principals' focus on classroom instruction (Blase & Blase, 2000; Hallinger & Heck, 1998).

Although it is not expected that the principal become an expert in all subject matters or even spend much time in the classroom teaching, the principal is ultimately responsible for the

school's instruction. The responsibilities associated with the instructional program include supervising and evaluating the classroom instruction, coordinating the curriculum, staffing the instructional program, providing resources, managing the committees and meetings, staying current on best practices, and monitoring the students' progress (Hallinger, Taraseina, & Miller, 1994; Leithwood et al., 2009). These functions seem to be more of the managing side of principal leadership.

Supervising student outcomes. Principals have the responsibility to monitor the progress of student behavior and student achievement on a school wide level. These functions are often delegated, but accountability for these matters rest on the shoulders of the principal (Leithwood et al., 2009; Scribner et al., 2007). High performance and behavioral expectations held by the school principal have been associated with effective schools (Leithwood & Jantzi, 2000; Nettles & Herrington, 2007). The responsibility to supervise student outcomes fall under two categories of what Bookbinder (1992) calls the dual emphasis of administrative and educational roles of the school principal. Under the dual emphasis a principal must monitor school progress through tracking of school records and working with staff to evaluating student progress. Thus, a major part of supervising student outcomes is being able to measure student outcomes.

Research has shown considerable support for the practice of data-based decision making (Carrigg & Kurabinski, 2009; Mandinach & Honey, 2009; Young, Shatzer, West, Caldarella, & Young, 2009). The use of data to make informed decisions is by no means a new idea in the education setting. Teachers and principals for years have being keeping track of student test scores, academic records, behavioral referrals, absenteeism statistics, and other school records. The concept that is new is that school administrators are being held to higher levels of accountability to use these data in the decision making process (Mandinach & Honey, 2009).

Additionally, with the introduction of the No Child Left Behind Act of 2001 (US Department of Education, 2009), school principals are not only accountable to improve students' test scores, but are also expected to use assessment data to make several other decisions regarding school improvement (Simon, 2004). This is what inspired US Secretary of Education Spelling (2005) to say:

> Information is the key to holding schools accountable for improved performance every year among every student group. Data is our best management tool. I often say that what gets measured, gets done. Once we know the contours of the problem, and who is affected, we can put forward a solution. Teachers can adjust lesson plans. Administrators can evaluate curricula. Data can inform decision making. Thanks to No Child Left Behind, we're no longer flying blind. (p. 1)

Based on their research comparing school districts that incorporate data-based decision making to those that do not, Carrigg and Kurabinski (2009) noted several important ways data can be linked to school improvement. First, the emphasis for districts and schools to focus on data collection has created opportunities for administrators to focus on evidence rather than instinct when making decisions about programs and school policy. Second, the use of data to make decisions can be more convincing to stakeholders and elicit more buy-in. Qualitative assessments of classroom practices have led administrators and teachers to challenge and improve current practices, which in turn raises expectations. Fourth, students' academic assessments can be used to pinpoint areas that are in need of instructional improvement at the classroom, school, and district level.

Eliciting stakeholder involvement. Because of the many functions of the school principal, it is assumed that a single principal is unlikely to be successful at performing all the

necessary functions to create a successful school (Leithwood et al., 2009; Mangin, 2007). As a result principals may benefit from dispersing and distributing leadership functions across school community members and teachers (Mayrowetz, 2008). This has lead to an increased effort to increase the outside involvement of parent and the community, as well as leadership roles for teachers (Mangin, 2007).

Another factor of effective leadership is the principal's ability to involve outside resources in the learning process. Parental and community involvement have been related to increased academic achievement and improved student behavior (Cox, 2005; Jimerson et al., 2006; Nettles & Herrington, 2007). Cox (2005) concluded through a meta-analysis that the best methods for home to school interventions included a form of two-way communication between the school and home. Many of these communications are the result of policy and school programs implemented from the school principal (Yap & Enoki, 1995).

Principals that are able to practice more supportive or shared forms of leadership are able to create a more collective and collaborative community that can contribute to school success. Recently, research in this area has supported the idea that schools are able to functions better and principals better able to distribute responsibility when a professional learning community (PLC) is developed (DuFour, DuFour, & Eaker, 2009; C. Mullen & Hutinger, 2008; Vescio, Ross, & Adams, 2008; D. Wood, 2007). PLCs are educators that continuously seek and share learning, as well as sharing a collective responsibility to improve teaching and learning (Bullough & Baugh, 2008). Evidence suggests that teachers and principals in low performing schools are more likely to work in isolation than as a collaborative group in a PLC (Doolittle, Sudeck, & Rattigan, 2008). Vescio et al. (2008) conducted a meta-analysis and found that PLCs positively impact teaching practices and student outcomes. A reason for the success of PLCs is the ability

of teachers and other staff members to collaborate with best practices and indentify meaningful solutions to problems within the school (D. Wood, 2007). Another outcome of PLCs is teacher development. By establishing PLCs principals are able to provide meaningful opportunities for teachers to learn and share information.

Developing school teachers. A principal has stewardship over the school teachers. Part of that stewardship is to ensure the well being and development of each teacher. Teacher development can happen in a number of ways, such as providing formal training, forming teacher study groups, modeling appropriate practices, and developing PLCs (DuFour et al., 2009; Leithwood et al., 2009; C. Mullen & Hutinger, 2008). Additionally, principals must examine the performance of teachers, give feedback regarding classroom instruction, and make decisions about teachers' roles and staffing, along with performing teacher evaluations (Ovando & Ramirez, 2007).

McEwan (2003a) has proposed that one of the steps of effective principals is to develop teacher leaders. This process of developing teachers also has an impact on the rest of the principal's responsibilities. When principals are able to turn teachers into leaders, teachers share the responsibility of creating a safe environment, shaping the school climate, developing the mission and vision of the school, training other teachers and improving student outcomes.

Blase and Blase (2000) propose that two strategies of effective principals are talking strategies and promoting teachers' professional development. Promoting teacher development includes supporting collaboration among teachers, developing coaching relationships among educators, and applying adult learning and growth strategies to all the phases of staff development. Another aspect of teacher development is acquiring of outside resources for the

school. This can include professional trainings, development materials, and funding to pay for the trainings and material (Nettles & Herrington, 2007).

It would seem that developing teachers is simply just a good practice, but would provide little benefit to the bottom line of education. However, research findings suggest the opposite is true. The meta-analysis by Robinson et al. (2008) found the most impactful leadership practice on student achievement was promoting and participating in teacher learning and development, with an effect size of 0.84. This effect size was two to three times that of other leadership practices (Robinson et al., 2008). Leithwood et al. (2009) has suggested a key leadership function of principals is to provide individual support to teachers and contribute to their professional development. Other researchers have also noted the impact of positive principal-teacher relations in successful schools (Barnett & McCormick, 2004).

The responsibilities and research presented in this section demonstrate the impact the school principal can have on numerous aspects of the school. Indeed, "as the principal goes, so does the school" (Blumberg & Greenfield, 1986, p. 223). Due to the considerable influence of the school principal, the leadership style of the school principal should also have considerable impact on school outcomes. The purpose of this research is to demonstrate the effects of the school principals' leadership on teachers' job satisfaction and student achievement, which will be the topic of the next two sections.

Job Satisfaction

The leadership style of a principal can impact the performance and satisfaction of the school teachers (Bogler, 2001; Grayson & Alvarez, 2008; Hulpia et al., 2009). Teachers tend to be more satisfied when they are included in the decision-making process, have more control over their classroom practices, and have effective supervisors that provide support and mentoring

(Hulpia et al., 2009; Ingersoll, 1999; Tillman & Tillman, 2008). Also, teacher job satisfaction seems to improve when teachers are healthy and ambitious, perform well in their classroom, and when their students' are successful academically (Bogler, 2005; Klusmann, Kunter, Trautwein, Ludtke, & Baumert, 2008). These findings lend support that principals can have a direct, as well as an indirect effect on the satisfaction of their teachers.

Although there has been much research demonstrating increased satisfaction of those with a transformational leader (Bono et al., 2007; Judge & Piccolo, 2004), there is limited research in the school context. Relatively few studies have investigated the relationship between transformational leadership and teacher job satisfaction. The limited research does suggest that transformational leadership can positively affect teachers' job satisfaction.

Bogler (2001) examined transformational leadership and teacher job satisfaction in several school districts in Israel. With a sample of 745 Israeli teachers, a positive relationship between principals' transformational leadership and teacher's job satisfaction was found. Path analysis results showed that teacher's job satisfaction was influenced by principals' transformational leadership ($\beta = .33$) and transactional leadership ($\beta = -.13$). The overall correlation between transformational leadership and teacher job satisfaction was 0.56, and -0.21 for transactional leadership. Bogler (2002) also conducted a discriminant analysis looking at the characteristics of teachers with high job satisfaction versus those with low satisfaction. Those with high satisfaction were typically female teachers in large schools, viewed their teaching job as a profession, perceived their school principal as transformational and were Jewish. While those with low satisfaction tended to be men from large schools in the inner city, perceived their principal as a more transactional leader, and viewed teaching as more of a job than a profession.

Nguni, Sleegers and Denessen (2006) recently looked at the effects of transformational leadership and teacher job satisfaction in the developing country of Tanzania. Regression analysis showed that transformational leadership does have a strong effect on teacher job satisfaction. Specifically, transformational leadership explained 15% of the variance in teacher job satisfaction. Korkmaz (2007) examined several school variables from a sample of 630 high school teachers in Turkey. There was a high correlation between teacher job satisfaction and the leadership style of the school principal (r = 0.58). Using a path analysis, the variable most significantly affecting teacher job satisfaction was transformational leadership, with a standardized regression coefficient of 0.56. These results match the meta-analysis of 18 studies in business that found that transformational leadership correlated with follower job satisfaction with a correlation of 0.58 (Judge & Piccolo, 2004).

Griffith (2004), with a sample of 117 schools, surveyed school staff on their principal's transformational leadership and their job satisfaction. As an alternative measurement of job satisfaction teacher turnover rates were also collected. Transformational leadership directly affected staff job satisfaction (standardized regression coefficient = .88), but effected teacher turnover rates in a negative direction (-.41). One possible limitation of the study was the measurement of job satisfaction. Rather than measuring several domains of job satisfaction, only three general questions of satisfaction was used. Also, teacher turnover rates gave contradictory findings to the direct measure of teacher job satisfaction. As an explanation to the seeming contradictory findings, it is proposed that many factors contribute to turn over rates besides just job satisfaction (Griffith, 2004; Ingersoll, 1999).

Although these are the primary studies examining transformational leadership and teacher job satisfaction, other researchers have looked at factors related to job satisfaction. Koh, Steers

and Terborg (1995) found a strong relationship between transformational leadership and teachers' satisfaction with the school principal. Although satisfaction with the school principal is an element of job satisfaction, the construct of job satisfaction encompasses more than just relationships with a supervisor. Principals who displayed transformational leadership had teachers that reported a higher occupational perception, meaning they has a positive perception of their job and perceived teaching as a respected profession (Kirby et al., 1992). Although not empirically tested, Ubben and Hughes (1987, p. 103) have noted that in theory the school climate and norms can directly affect "teacher attitudes and behaviors, and even teacher and administrator attrition rates." Additionally, transformational leadership has been shown to improve teacher collaboration, which may contribute to teacher job satisfaction (Deal & Peterson, 1990; Leithwood, 1992).

The connection between instructional leadership and teacher job satisfaction is even more limited than transformational leadership. This can be due to the emphasis of instructional leadership, which deals more with the instructional management practices of the principal. This emphasis on instruction would seemingly impact student outcomes and not teacher job satisfaction (Hallinger, 2003; Mangin, 2007), while transformational leadership would impact job satisfaction because it considers aspects of motivation and individual concern for teachers (Leithwood & Jantzi, 2006; Osborn & Marion, 2009).

Although no research was found that directly links instructional leadership with teacher job satisfaction, other leadership models similar to instructional leadership have. Evans and Johnson (1990) examined the relationship between principals' leadership behaviors, teacher job satisfaction, and teacher job related stress. The leadership behaviors of the principal significantly predicted teachers' job-related stress, and predicted a small portion of teacher job

satisfaction in the negative direction. The leadership behaviors measured in this study were limited to goal emphasis, principal support, interactions, and work facilitation, which overlaps slightly with instructional leadership. A more recent study looked at 434 teachers in China and found an average correlation of 0.50 between principals' leadership behaviors and teacher job satisfaction (Bolin, 2007). Tillman and Tillman (2008) found principal supervision had a 0.41 correlation with teachers' work satisfaction with a sample of 81 US teachers. Although these studies did not use the theoretical models of instructional leadership described in this study, there have been established relationships between the instructional management of principals and teacher job satisfaction.

Student Outcomes

An important question in the literature is whether principals' leadership style has an effect on student outcomes. This essential question is basically asking, does a principal really matter? The answer may have consequences as to how much principals can be held accountable for students' achievement at their school. The conclusion the research has come to is that the better question is, do principal directly or indirectly influence student outcomes (Witziers et al., 2003)?

Research generally suggests that the direct effects of principals' leadership style on student achievement are minimal and many times nonsignificant (Koh et al., 1995; Ross & Gray, 2006). However, principals' leadership does have an indirect effect on student achievement (Ross & Gray, 2006; Witziers et al., 2003). In a meta-analysis of 37 studies on leadership effects on student achievement, Witziers et al. (2003) found that there is a positive and significant relationship. However, this relationship was very small with a Cohen's *d* effect size of 0.08, and a Fisher's Z_r effect size of 0.04. When limiting the analysis to studies done within the US and in

elementary schools the effect size increases to 0.22 ($Z_r = 0.11$). Witziers et al. also looked at the mediating effects of context factors and concluded that leadership has an indirect effect on student achievement.

Additional studies have also concluded that principal leadership can influence student outcomes through the mediating effects of teacher satisfaction and school climate (Hallinger et al., 1996; Ross & Gray, 2006). For example, Hallinger et al. (1996) found no direct effects of principal leadership on students' reading achievement, but did find an indirect effect through actions that shaped the school's learning climate. Ross and Gray (2006) looked at principals' transformational leadership style to find its effects on 3^{rd}-6^{th} grade test scores. No direct effects on students' test scores were found, however, mediating effects were found through teacher commitment and self-efficacy. Principals high in transformational leadership influenced student achievement through improving teachers' beliefs about their abilities and increasing their commitment to the goals of the school. Leithwood and Jantzi (2000) collected data in 123 elementary and junior high schools on leadership style, organizational climate and student engagement. Leadership had strong significant effects on organizational climate ($r = .68$), and smaller effects on two measures of student engagement ($r = .19$ and $.23$). The authors suggest that principals have a large influence over the organizational conditions of the school, but only indirectly affect measures of school effectiveness, such as student engagement.

Robinson et al. (2008) conducted a more recent meta-analysis looking at the link between leadership and student achievement, and found a stronger effect than Witziers et al. (2003). Robinson et al. (2008) were more discriminatory in the selection of their 22 articles, eliminating studies that used principal self-ratings and that were not peer-reviewed, and including studies between 1996 and 2006. The effect sizes ranged from 0.11 to 0.42 depending on the type of

leadership model used. These findings give support to the idea that leadership may have a direct effect on student achievement, although it may be small or moderate.

Additional researchers suggest that even with a small effect, the role of principal in regards to student outcomes is still meaningful. This is evident when Nettles and Herrington (2007) called for more research examining a connection between the impact of the school principal and student outcomes. They also stated that there has a been a recent tendency in the literature to focus " not on actual student outcomes but rather on the peripheral results of principal practices" (Nettles & Herrington, p. 724). The reasoning to secure the connection between leadership and student outcomes is that principal should be held responsible for student performance, and although the relationship is small, it is sufficient to be of interest. Additionally, much of the research finding nonsignificant or indirect effects have small samples sizes and are methodologically weak (Nettles & Herrington). Elmore (2000) also points out that the purpose of school leadership is to improve instructional performance, which calls for performance-based accountability. Others outside of education have emphasized the importance of holding leaders accountable not for processes or perceived effectiveness, but for actual organizational outcomes (Kaiser et al., 2008). In order to understand the level to which principals can be held accountable for student outcomes, as well as teacher job satisfaction, this study will investigate the relationship of these variables within the framework of transformational and instructional leadership.

Hypotheses

The primary purpose of this study is to compare the two dominant educational leadership theories in the literature, transformational leadership and instructional leadership. One of the primary differences in these theories is the specificity of practices used in the measurements.

Instructional leadership has specific practices incorporated in its questionnaire, while transformational leadership is more general and lacks specific application to the educational setting. In theory, it would seem that instructional leaders would facilitate better test results with its focus on coordinating the curriculum and monitor student progress. Additionally, a recent meta-analysis showed that instructional leadership was considerably more effective than transformational leadership in its effects on student achievement (Robinson et al., 2008). It was hypothesized that instructional leadership would explain more variance in students' academic achievement scores than transformational leadership based on the work of Robinson et al. (2008) and its specific application to the educational setting.

H_1: It was hypothesized that principals' instructional leadership scores would account for more of the variance in student academic test scores than transformational leadership.

Much of the literature recognizes that principals' leadership practices have a weak effect on student achievement (Kruger et al., 2007). Many models of leadership account for the context of the school and factors relating to the school principal (Hallinger et al., 1996). In this study contextual variables were collected such as the school context variables and principal demographics in order to control for these antecedent variables. It was hypothesized that after controlling for these antecedent variables principal leadership would account for a small but significant amount of variance in student achievement scores.

H_2: It was hypothesized that principals' instructional leadership and transformational leadership scores would account for a small but significant amount of variance in student test scores after controlling for school context and principal demographics.

In addition to looking at the overall effects of transformational and instructional leadership, it would be informative to investigate which particular principal practices or

dimensions of leadership best predict student achievement and teacher job satisfaction. Robinson et al. (2008) conducted a similar investigation through meta-analysis and found five key leadership dimensions that had the largest effect on student achievement. These dimension included (1) establishing goals and expectations, (2) strategic resourcing, (3) planning, coordinating, and evaluating teaching and the curriculum, (4) promoting and participating in teacher learning and development, and (5) ensuring an orderly and supportive environment. Witziers et al. (2003) also conducted a meta-analysis examining the leadership functions of instructional leadership. The findings showed that defining and communicating the school goals had the largest effect size, while the other functions had little effect on student achievement. Similar to these findings, it was hypothesized that the specific leadership dimensions that would best predict student achievement were frame the school goals, communicate the school goals, supervise and evaluate instruction, coordinate the curriculum, and promote professional development for instructional leadership, and individualized consideration and contingent reward for transformational leadership.

H_3: It was hypothesized that the principals' instructional leadership dimension scores of frame the school goals, communicate the school goals, supervise and evaluate instruction, coordinate the curriculum, and promote professional development, and the dimension scores of individualized consideration and contingent reward from transformational leadership would best predict student achievement scores.

Principals also have a significant impact on their schools besides student achievement. Many researchers have investigated the mediating effects of teacher variables on student achievement, and many of these models include teacher job satisfaction (Bogler, 2005; Hallinger & Heck, 1996). Although there is considerable evidence supporting increased teacher job

satisfaction for principals practicing transformational leadership, few studies have made the connection between instructional leadership and teacher job satisfaction. A key difference between these two theories of leadership is that transformational leaders tend to practice more bottom-up approaches, meaning they involve the teachers more in the decision making process. Additionally, transformational leadership is more geared towards establishing positive teacher-staff relations (Robinson et al., 2008). Instructional leaders are also categorized as being the head of the teaching and learning in their school, and who make a majority of the decisions in the school. From these differences and empirical support, it was hypothesized that transformational leadership would account for more of the variance in teacher job satisfaction than instructional leadership. It was also assumed that the school context and principal demographics would have less of an impact on job satisfaction than on student achievement, thus, it was hypothesized that instructional and transformational leadership would still predict a significant amount of the variance in teacher job satisfaction after controlling for school context and principal demographics.

H_4: It was hypothesized that principals' transformational leadership scores would account for more of the variance in teacher job satisfaction than instructional leadership.

H_5: It was hypothesized that principals' instructional and transformational leadership scores would account for a significant amount of the variance in teacher job satisfaction, even after controlling for school context and principal demographics.

Another beneficial finding would be to discover which leadership dimensions have the strongest effect on teacher job satisfaction. A meta-analysis of 18 studies found that the four dimensions of transformational leadership (0.58) actually had a significantly lower estimated true score correlation than contingent reward (0.64) (Judge & Piccolo, 2004). Other research looking

at job satisfaction in teachers found idealized influence and inspirational motivation (combined β = .38) had the largest effect on teacher job satisfaction, and contingent reward (β = .14) as having the next largest effect (Nguni et al., 2006). Based on these findings it was hypothesized that the transformational leadership dimensions of idealized influence, inspirational motivation, and contingent reward would best predict teacher job satisfaction.

Instructional leadership has fewer empirical support in regards to which leadership dimensions impact teachers' job satisfaction. Evans and Johnson (1990) found principals' goal orientation had a negative relationship with teachers' job satisfaction, while Tillman and Tillman (2008) found supervision had a positive relationship. Based on these studies and the descriptions from the dimensions of instructional leadership, it was hypothesized that supervise and evaluate instruction, promote professional development, and provide incentives for teachers would best account for teacher job satisfaction.

H_6: It was hypothesized that the principals' instructional leadership dimension scores of supervise and evaluate instruction, promote professional development, and provide incentives for teachers, and the dimension scores of idealized influence, inspirational motivation, and contingent reward from transformational leadership would best predict teacher job satisfaction.

Significance

This study will contribute to the current literature in three ways. First, there is considerable evidence supporting both instructional leadership and transformational leadership in education. However, there has never been a direct comparison between the two leadership theories. Second, the researcher has found no literature on the effects of instructional leadership on teacher job satisfaction using the PIMRS. It also will be informative to know which of the two leadership theories best accounts for teachers' job satisfaction. Lastly, this study will

examine the specific leadership dimensions that have the largest impact on student achievement and teacher job satisfaction. These findings will directly benefit principals by finding the best practices that will help influence their teachers and students for the better, as well as contribute to the literature in educational leadership.

Method

Participants and Setting

Thirty-seven schools from three school districts located in the Intermountain West participated in this study. The school districts were assigned the titles District A, District B, and District C, and the schools were assigned an identification number in order to protect anonymity. Schools were chosen based on their availability and their public school partnership with the institution collecting data. In order to control for grade level and school type only elementary schools (K-6) were included in this study. Of the 97 schools in the 3 districts, 45 elementary schools were available for participation in this study. Schools were considered not available for participation if they were conducting state testing, the school was not in session for the duration of the study, or the school district administrators did not allow research to be conducted at that school. Because the approval process took longer in District C, many of the schools within that district were unavailable to participate as this study would overlap with year end testing. All 45 available elementary schools were invited to participate in this study. Only 8 school principals declined to participate, leaving a total sample of 37 elementary schools (see Table 4). School district demographics from the participating schools are displayed in Table 5.

Table 4

The Number of Participating Schools from Each School District

Category	District A	District B	District C	Total
Number of elementary schools	26	13	58	97
Number of available elementary schools	26	13	6	45
Number of participating elementary schools	20	13	4	37

Note. Many schools in District C were conducting year end testing and unavailable to participate.

Table 5

Students' Demographic Information from the Participating Elementary Schools

Demographic Category	District A	District B	District C	Total
Enrollment				
Total students (*n*)	12,586	7,457	3,695	23,738
School size (*M*)	629.30	573.62	923.75	641.57
Gender				
Male	51.2%	50.8%	51.2%	51.1%
Female	48.8%	49.2%	48.8%	48.9%
Ethnicity				
White	86.2%	63.9%	94.3%	80.4%
African American	0.9%	1.0%	0.7%	0.9%
Asian	0.5%	2.3%	1.1%	1.1%
Hispanic	10.7%	28.2%	3.2%	15.0%
Pacific Islander	0.9%	2.7%	0.4%	1.4%
Other	0.9%	2.0%	0.3%	1.1%
School Status				
ELL	7.6%	25.2%	2.1%	12.3%
SES	35.4%	49.0%	12.0%	36.0%
Disabilities	15.7%	15.5%	11.4%	14.9%
Attendance	95.0%	95.4%	95.5%	95.2%

Note. School size represents the average number of students per school. ELL = English language learners. SES = Socioeconomic status and represents the percentage of students in the school that are considered to be low SES, based on household income and eligibility for reduced price lunch.

School principals completed a questionnaire containing demographic items. Principals from 31 of the 37 (83.8%) schools completed the questionnaire. Data regarding age, gender, and total years as a school principal are reported in Table 6. Principals were also asked about the educational degrees they obtained. Thirty principals had completed a master's degree, and one principal completed a doctoral degree. While the school principals completed undergraduate degree from a variety of schools, all the participating principals completed their graduate degrees within the state that this study took place. Public record data were available for all participating school principals, which include salary and total years as principal at current school.

Table 6

Demographic Information for Participating Principals in Each District

Demographic Category	District A	District B	District C	Total
Number of principals (*n*)	20	13	4	37
Age	45-49	50-54	55-59	50-54
Gender				
Male	70.0%	61.5%	25.0%	62.2%
Female	30.0%	38.5%	75.0%	37.8%
Education				
MS	96.2%	100.0%	100.0%	96.8%
PhD	3.8%	0.0%	0.0%	3.2%
Years at current school	4.03 (1.96)	5.54 (3.97)	2.50 (1.29)	4.39 (2.85)
Total years as principal	9.24 (5.69)	9.11 (7.56)	10.33 (9.02)	9.58 (6.26)
Salary	$82,397.80	$85,664.54	$90,024.33	$84,213.00

Note. Age was reported in ranges and represents the median age range. Salary represents the mean principal salary in each district, with an overall range of $74,047-$97,061.

Elementary teachers from the 37 participating schools completed a series of questionnaires evaluating their principal's leadership behavior and their job satisfaction. Demographic information from the participating teachers is reported in Table 7. Of the 1,254 teachers that received e-mails to complete the on-line questionnaire, 590 teachers participated. A total of 32 responses were incomplete and removed from the analysis, resulting in a total of 558 participating teachers. The total response rate for teachers was 44.5%, which falls within the acceptable range for e-mail surveys (Dillman, Smyth, & Christian, 2008). The response rate for each school is displayed in Table 8. It should be noted that not all participants were classroom teachers. Some of the participants were other staff members such as librarians, school psychologists, and reading tutors. Because these staff members worked closely with the principal and make up 26.1% of the responses, all participating staff members were included in the analyses and will be referred to as teachers.

Table 7

Demographic Information for Participating Teachers in Each District

Demographic Category	District A	District B	District C	Total
Number of teachers (*n*)	373	136	49	558
Age	35-39	40-44	40-44	40-44
Gender				
Male	9.9%	6.8%	6.4%	8.9%
Female	90.1%	93.2%	93.6%	91.1%
Teaching Grade				
K-2	35.3%	30.8%	35.4%	34.2%
3-6	38.8%	36.2%	56.3%	39.7%
Other staff	25.9%	33.1%	8.3%	26.1%
Years of teaching experience	10.50 (10.41)	11.44 (9.36)	14.13 (9.07)	11.07 (10.07)
Years working with principal	3.43 (2.37)	4.50 (4.42)	2.49 (2.00)	3.61 (3.04)

Note. Age was reported in ranges and represents the median age range.

Table 8

Teacher Response Rate by District and School

District	School	Participating Teachers	Total Teachers	Response Rate
District A	1	15	41	36.6%
	2	18	43	41.9%
	3	20	41	48.8%
	4	18	36	50.0%
	5	24	36	66.7%
	6	15	19	78.9%
	7	21	42	50.0%
	8	26	29	89.7%
	9	13	45	28.9%
	10	20	33	60.6%
	11	14	31	45.2%
	12	21	47	44.7%
	13	18	34	52.9%
	14	22	50	44.0%
	15	21	34	61.8%
	16	22	42	52.4%
	17	18	40	45.0%
	18	10	24	41.7%
	19	22	40	55.0%
	20	15	36	41.7%
District B	21	12	27	44.4%
	22	10	25	40.0%
	23	11	24	45.8%
	24	6	22	27.3%
	25	12	30	40.0%
	26	13	31	41.9%
	27	6	22	27.3%
	28	9	31	29.0%
	29	6	28	21.4%
	30	12	28	42.9%
	31	11	31	35.5%
	32	13	28	46.4%
	33	15	38	39.5%
District C	34	8	40	20.0%
	35	19	53	35.8%
	36	8	23	34.8%
	37	14	30	46.7%
Total		558	1,254	44.5%

Measures

Multifactor Leadership Questionnaire (MLQ). The MLQ Form 5X (Bass & Avolio, 1994) was used to assess the transformational leadership, transactional leadership, and non-leadership behaviors of the participating leaders. The MLQ Form 5X contains 45 questions using a 5-point Likert scale ranging from (1) *not at all* to (5) *frequently, if not always*. Transformational leadership has four dimensions: inspirational motivation, individualized consideration, intellectual stimulation, and idealized influence (charisma). Each dimension contains four items, with the exception of idealized influence which contains eight items. Sample items from each subscale include (a) inspirational motivation, *Talks optimistically about the future*, (b) individualized consideration, *Gives personal attention to others when necessary*, (c) intellectual stimulation, *Shows others how to think about problems in new ways*, and (d) idealized influence, *Displays a sense of power and influence*. Transaction leadership also has four items for each of the two dimensions: contingent reward and management by exception-active. Passive/avoidant leadership was measured by the dimensions of management by exception-passive and laissez-faire leadership, each consisting of four items. The remaining nine questions measured leadership satisfaction and leadership effectiveness, which are not relevant to the current study and were not included. Thus, the MLQ used in this study only contained 36 items.

The MLQ has been used extensively in research and has shown to be a valid and reliable measure. MLQ internal consistency reliabilities ranged from 0.74 to 0.94 for each leadership dimension in a sample of 2,154 raters (Avolio & Bass, 2004). Judge and Piccolo (2004) conducted a meta analysis from 87 studies and found an overall validly coefficient of .44, showing the predictive validity of transformational leadership with follower satisfaction,

follower motivation, and organizational performance. Of the 87 studies, 72 provided reliability coefficients that were used to produce mean reliability levels. Transformational leadership had a mean reliability of 0.90, transactional leadership had 0.75, and passive/avoidant leadership had 0.67 (Judge & Piccolo, 2004). Results from several confirmatory factor analysis studies support the established leadership factors of transformational leadership, transactional leadership, and passive/avoidant leadership (Avolio & Bass, 2004). Other studies have found correlations among the dimensions of transformational leadership and related personality factors, such as extroversion and agreeableness (Bono & Judge, 2004).

Principal Instructional Management Rating Scale (PIMRS). Hallinger's (2003) conceptualization of instructional leadership was used for the current study for three reasons. First, this conceptualization has an established rating scale that has considerable evidence supporting its validity and reliability (Hallinger, 2000). Secondly, this conceptualization dominates much of the published work on instructional leadership, with over 75 journal articles and dissertations using the PIMRS. In a recent meta analysis of leadership's effects on student outcomes over half of the studies examining instructional leadership use Hallinger's conceptualization or versions of the PIMRS (Robinson et al., 2008). Finally, the PIMRS is compatible in both format and length to the transformational leadership scale (MLQ), which allows for a compatible analysis of the two models of leadership.

The PIMRS evaluates a principal's performance on 10 instructional leadership dimensions that have been associated with effective school leadership practices. The measurement contains 50 items (5 items for each dimension), which address specific principal behaviors and practices. Each item is rated on a 5-point Likert scale ranging from (1) *almost never* to (5) *almost always*. Example items include, *Discusses the school's academic goals with*

teachers at faculty meeting, *Conducts informal observations in classrooms on a regular basis*, *Monitors the classroom curriculum to see that it covers the school's curricular objectives,* and *Limit interruptions of instructional time by public address announcements*. As can be seen by these examples, items refer to very specific practices of a school principal rather than general statement of leadership behavior. The PIMRS contains three versions that may be completed by teachers, principals (self-assessment), and a district office supervisor. In the current study only the teacher version of the PIMRS was used.

The PIMRS has considerable evidence supporting its validity and reliability (Hallinger, 2000; Hallinger & Murphy, 1985). Four experts in instructional leadership assigned items developed from a job analysis to each of the 10 dimensions. All 10 dimensions had an average agreement of 0.80 and above, showing evidence of content validity. Additional content validity evidence has been found with a school document analysis. Principals' school documents were content analyzed and found to match with many of the dimensions in the PIMRS. One of the weaknesses of this measure is the lack of distinctiveness of the leadership dimensions, with significant intercorrelations between all ten dimensions. Although there is considerable overlap between dimensions, it is assumed that some overlap would occur given the narrow domain of instructional leadership. Internal reliability for each of the 10 dimensions had a range of 0.78 to 0.90 in a sample from 10 elementary schools.

Teachers' Job Satisfaction Scale (TJSS). The TJSS was developed specifically to address satisfaction related to the work functions of school teachers (Evans & Johnson, 1990). The measurement contains 17 items or job functions that are rated on a 5-point Likert scale ranging from (1) *very dissatisfied* to (5) *very satisfied*. Sample items include *freedom on the job*, *work conditions*, *principal rewards teachers*, *salary,* and *teacher's needs are met*. The TJSS has

shown face validity and content validity, correlating with other measures of job-related stress and principals' leadership behavior (Evans & Johnson, 1990; Hurren, 2006). Internal consistency reliability also is strong with a coefficient of 0.93 (Hurren, 2006).

Student achievement. Student achievement was measured by two standardized test scores, the Criterion Referenced Test (CRT) and the Iowa Test of Basic Skills (ITBS). Every year elementary schools in the current study take these mandatory standardized tests. These academic achievement scores, on the school-level not the individual student-level, are available to the public and were used as the outcome measure for the current study.

The CRT is taken at the conclusion of the school year and covers the topics of math, language arts, and science. All 2-6 grade students complete the math and language arts section, while only 4-6 grade students completed the science section. The state department of education processes the scores for each school and provides three separate statistics: an average raw score for each school, the percentage of students from each school that were proficient (the proficiency level is determined by the state's standards of what students should master at a particular grade level), and an index of progress that considers the improvement of the school from the previous year.

The CRT undergoes continual refinement to ensure that it is a valid and reliable assessment (Dyson, 2008). The CRT was developed by a committee of educators through the state department of education, who used the appropriate standards and methods for psychological testing established by the American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education (Utah State Office of Education, 2009). The CRT shows strong convergent validity with similar standardized tests, having strong correlations ($r = .74$-$.83$) with the Stanford Achievement Test-9 (Dyson, 2008).

Internal consistency was also strong with Cronbach's alpha coefficients ranging from .79 to .95 (Dyson, 2008).

Schools also administered the ITBS to elementary students in grades 3 and 5, and included the subjects of reading, language arts, math, science, and social studies. The ITBS is a norm-referenced test which measure how well students performed in comparison to other students in the US. Two scores are calculated for the ITBS: a *core* percentile rank (which included the subjects of reading, language arts, math) and a *composite* percentile rank (which includes all five subjects).

Procedure

This research was coordinated through the three participating school districts during the 2008-09 school year. District superintendants were informed of the current research study at a governing board meeting and asked for permission to conduct research in their respective school districts. Further contact with the schools and data collection was coordinated through the research specialist in each district. After district approval, principals at each elementary school were contacted with information regarding the research study, as well as an opportunity to withdrawal their school from participation. After the approval process, principals and teachers completed a series of on-line questionnaires.

A standardized script of instructions and on-line questionnaire links were sent to the principals and teachers at each of the participating schools through their school e-mail account. After two weeks a reminder e-mail was sent, again with a standardized script and questionnaire links. The e-mail links directed the principals and teachers to separate questionnaires. The principals' questionnaire consisted exclusively of demographic questions and took approximately one minute to complete. Teachers completed a series of questionnaires which

took approximately 8-12 minutes to complete (*Mdn* = 10.00, *M* = 11.73, *SD* = 6.78). Teachers were informed that the questionnaires would be anonymous and that no school administrators would have access to the data. After the introduction and informed consent, the on-line survey software randomly assigned teachers to either the transformational leadership questionnaire (MLQ) or the instructional leadership questionnaire (PIMRS). After completing the MLQ or the PIMRS, teachers completed the job satisfaction survey (TJSS) and a few demographic questions. A diagram representing the order of the questionnaires is shown in Figure 1.

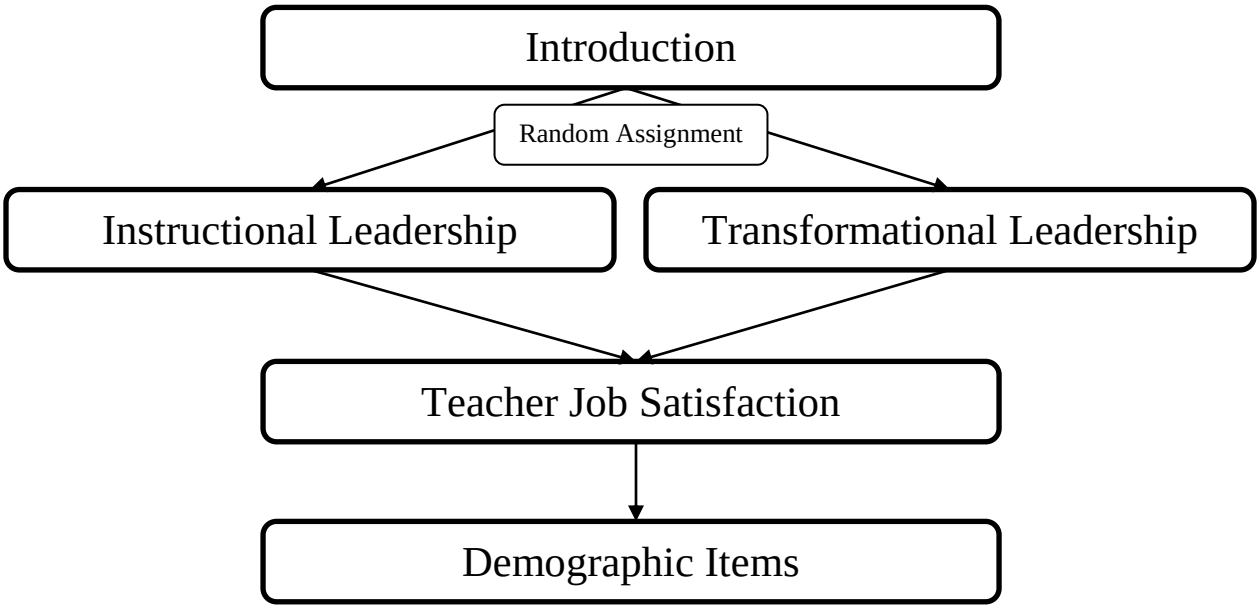


Figure 1. Order and flow of the questionnaires.

Data collection took place towards the end of the school year to ensure that teachers had adequate opportunities to observe their principal and accurately rate their behavior. E-mails were sent only after district and school permission was granted. Because the approval process took longer in some districts the surveys were completed at slightly different times. Principals

and teachers in District A and District B completed the on-line questionnaires during the month of April, while District C completed the questionnaires during May and into the beginning of June. Of the 39 elementary schools in District A and B, 33 (84.6%) schools participated in the study. Because data collection in District C took place during the end of the year testing, many of the schools from this district were unavailable to participate in the study. Only 4 of the 58 (6.9%) elementary schools in District C participated in this study (refer back to Table 4).

During the duration of the study only those invited through e-mail could access the questionnaires on-line. Upon completion of the study all questionnaires were removed from participant access. Data from the on-line questionnaires were downloaded from the password protected database for analysis. All procedures during this study maintained the anonymity of the teachers and the confidentiality of the data and copyrighted questionnaires. Additionally, no students participated directly in this study, as test scores are available to public access.

Student achievement was measured through students' standardized test scores. The participating elementary schools participated in their state-wide testing independent of the current study. The ITBS took place in the Fall of 2008, during the month of October. The CRT exams took place in the Spring, during the month of May and into June. The procedures for these exams were quite similar. The elementary schools distributed the paper and pencil exams, which took approximately 2 weeks. Make-up exams are only allowed within the week following the normal testing for students that are absent during the testing days. The tests are processed independent of the school and are subject to quality assurance validation. Test scores, displayed as school aggregates or percentiles, are available to the public and were accessed on-line by the researchers.

Design

The experimental design chosen for this study was based on similar methods used in previous research, which primarily uses a single measure survey design (Robinson et al., 2008). The administration of the survey in the current study, specifically the use of random assignment, was unique because the purpose of this study to compare leadership theories rather than to examine a single theory using one measure. The reason for randomly assigning teachers to complete either the instructional or transformational leadership survey was twofold. First, completing one leadership survey could bias the responses on the other leadership survey, regardless of the order. Thus, only one leadership survey was completed by each teacher to avoid this carry over effect. Second, rater fatigue would be a factor if teachers had to complete both leadership surveys.

Variables

The variables used in this study can be described as independent and dependent variables, but also as school-level and teacher-level variables. Because certain variables will be used as both dependent and independent variables when addressing different hypotheses, the categories of school-level and teacher-level variables will be most beneficial. Additionally, defining variables as school- and teacher-level will be more appropriate when conducting hierarchical linear modeling (HLM), which will be discussed in the data analysis section.

Teacher-level variables.

***Individual teacher perceptions of leadership*.** Scale scores from each leadership dimension were computed for each teacher. There are a total of ten dimensions for instructional leadership measured by the Principal Instructional Management Rating Scale (PIMRS), and eight dimension of transformational leadership using the Multifactor Leadership Questionnaire

(MLQ). These leadership scores at the teacher-level represent the unique perception of each teacher in regards to his or her individual relationship with his or her principal. It is understood that teachers may vary in their perceptions of leadership. For example, one particular teacher might have a strong relationship and positive opinion of his or her principal, while another teacher may have a negative opinion of the principal based on a first impression or a misunderstanding. This is consistent with leader-member exchange theories of leadership (Hooper & Martin, 2008; Sin, Nahrgang, & Morgeson, 2009). These theories suggest that leaders do not behave in the same manner to all subordinates, thus, principals' relationships with each subordinate may vary in quality (Gavin & Hofmann, 2002).

Job satisfaction. Individual job satisfaction scores were computed for each teacher using the overall score from the 17-item TJSS. Job satisfaction is inherently a teacher-level variable because satisfaction is considered to be at the individual level. This is because teachers, although they may be from the same school, will likely differ in their individual level of job satisfaction.

School-level variables.

Average principal leadership rating. Although leadership was assessed at the individual level, principal leadership can be characterized at the school-level. The theoretical support for school-level leadership is that the individual teachers are exposed to the same leadership behaviors and actions. Thus, the average principal leadership ratings provide a good estimate of school-level leadership performance. Previous research has also conceptualized leadership at the organizational level (Gavin & Hofmann, 2002; Shamir, Zakay, Breinin, & Popper, 1998), claiming many of the leaders' actions and decisions are directed toward the organization as a

whole, which allows many to have a common reference point for observing and assessing leadership.

Overall school job satisfaction. Although job satisfaction is primarily considered to be at the individual level, there may be meaningful differences between schools in the average level of job satisfaction. It should also be noted that different schools each have their own unique culture, goals, organization, student demographics, and teacher relations, with each school's unique qualities contributing to an overall school-level satisfaction. Given teachers from the same school work in the same environment similar perceptions of job satisfaction may exist within each school. For these reasons the overall teacher job satisfaction at each school is a meaningful variable that will be used in this study.

Student achievement. There are five variables used in this study measuring student achievement. The first three are measures from the Criterion Referenced Test (CRT): *CRT-raw* refers to the total raw score average for each school, the *CRT-proficient* refers to the percentage of students at the school that reached the standard proficiency level mandated by the state, and the *CRT-progress* refers to the index of change comparing the achievement levels of each student from one year to the next year, which has a possible range of 50 to 375. The Iowa Test of Basic Skills (ITBS) has two measures that have been labeled *ITBS-core* and *ITBS-composite*. The core value is the school's percentile rank based on the scores from the subjects of reading, language arts, and math, while the composite value includes scores from reading, language arts, math, science, and social studies.

School context and principal demographic control variables. Several control variables from each school were collected from public record data. Demographic variables included principal gender and the number of years the principal had been at his or her school (principal

tenure). School context variables include school size, the percentage of students in the school that have an ethnicity of African American, American Indian, Asian, Hispanic or Pacific Islander (non-White), the percentage of students in the school that are English language learners (ELL), and school socioeconomic status (SES). School SES is the percentage of students in the school that are considered to be of low socioeconomic status, based on household income and eligibility for reduced price lunch. These control variables are standard measurements and are consistently used in research to control for principal demographics and school context (Dumay, 2009; Hite, Williams, Hilton, & Baugh, 2006; Printy, 2008).

Data Analysis

The six hypotheses in this research can be divided into two parts. The first three hypotheses use student achievement as the dependent variable, while the last three hypotheses use job satisfaction as the dependent variable. Because schools are inherently in a hierarchical structure, with students nested in classes and classes nested within schools, the most appropriate method of analysis is the multilevel technique of hierarchical linear modeling (HLM). One of the benefits of HLM is that it allows both teacher-level and school-level analyses to be incorporated within the same framework, without reducing the teacher-level data to school-level aggregates (Byrk & Raudenbush, 1992).

This study has two levels of variables, with teacher-level variables being the first level and school-level variables being the second level. One of the requirements of HLM is that the dependent variable is at the lowest level (Byrk & Raudenbush, 1992). Since student achievement is a school-level variable, multiple regression will be the primary statistic used to analyze the first three hypotheses. Job satisfaction on the other hand is a teacher-level variable and HLM will be used for the last three hypotheses.

Hypothesis one, that stated the PIMRS would account for more of the variance in student achievement than the MLQ, was tested using multiple regression. The instructional and transformational leadership dimensions were the predictor variables and the student achievement scores were the separate dependent or criterion variables. These analyses produced an R^2 statistic for the two separate leadership theories on each of the five student achievement measures, which were then be compared to test the first hypothesis.

Sequential regression was be used to test the second hypothesis, that leadership will significantly predict student achievement after controlling for school context and principal demographics. Sequential regression is similar to stepwise regression in that variables or blocks of variables are entered consecutively in the regression analysis (Galambos, Magill-Evans, & Darrah, 2008; Keith, 2006; Rubin, Munz, & Bommer, 2005). With stepwise regression the statistical software package enters the variables in a sequence based on statistical significance, while sequential regression enters the predictor variable or blocks of variables based on theory with more control given to the researcher (Garson, 2009; Keith, 2006). In this study the school context and principal demographic control variables were the first block of variables entered in the analysis followed by the second block of the leadership dimensions. Separate analyses were run for instructional and transformational leadership, repeated for each dependent variable of student achievement. Since this study is interested in the R^2 for all the leadership dimensions from each leadership theory no variables were excluded from the analyses, although it was assumed that some or even many of the variables would not be significant.

The third hypothesis used multiple regression, similar to the procedures used for the first hypothesis. The standardized betas were used to test the hypothesis to find which leadership dimensions best account for student achievement. Additionally, individual regressions was

performed on each leadership dimension since the direction and statistical significance of the betas may differ with multiple variables being entered into the analysis together.

Because of the multi-level structure that is inherent in school data, hierarchical linear modeling (HLM) was used for the last three hypotheses. The variables for each level are presented in Figure 2. The first step in HLM computed an unconditional means model, which can be interpreted as a one-way random effects ANOVA model (Singer, 1998). This was done by entering no predictors at any level, which estimates the within and between school variance components for the dependent variable of teacher job satisfaction. The resulting estimates allowed for calculations of an intraclass correlation coefficient (ICC). This ICC may be interpreted as the proportion of variance in job satisfaction that exists between schools, or the proportion of variance that can be explained by school-level predictors once the with-in school difference is taken into account.

The second model included the effects of the school-level predictors. The first pair of analyses just included the mean principal leadership scores for instructional and transformational leadership. The next pair of analyses included principal leadership in addition to the five student achievement scores and school SES, to see the change in variance accounted for when adding these addition variables. Only the control variable school SES was included in these analyses for simplicity of interpretation and the lack of significant impact of the other control variables from the previous analyses. The results display the contributions of principal leadership to the between school variance in job satisfaction by comparing the variance component of the unconditional model with the variance component from Model 2.

The third model includes the effects of the teacher-level predictors, with separate analyses for instructional and transformational leadership. This answers the question of how

much the within school variance in teacher job satisfaction is explained by teacher perceptions of leadership. Similar to Model 2, the variance component from these analyses were compared to the variance component in the unconditional model (Model 1). The fourth model includes both the school- and teacher-level predictors into an inclusive model. The HLM output from each of these models answers the last three hypotheses. In order to demonstrate the differences between OLS regression and HLM, separate multiple regression analyses were computed at the teacher-level (individual job satisfaction) and school-level (school job satisfaction). For a more thorough discussion and the specific calculations used in HLM please refer to Singer (1998) and Byrk and Raudenbush (1992).

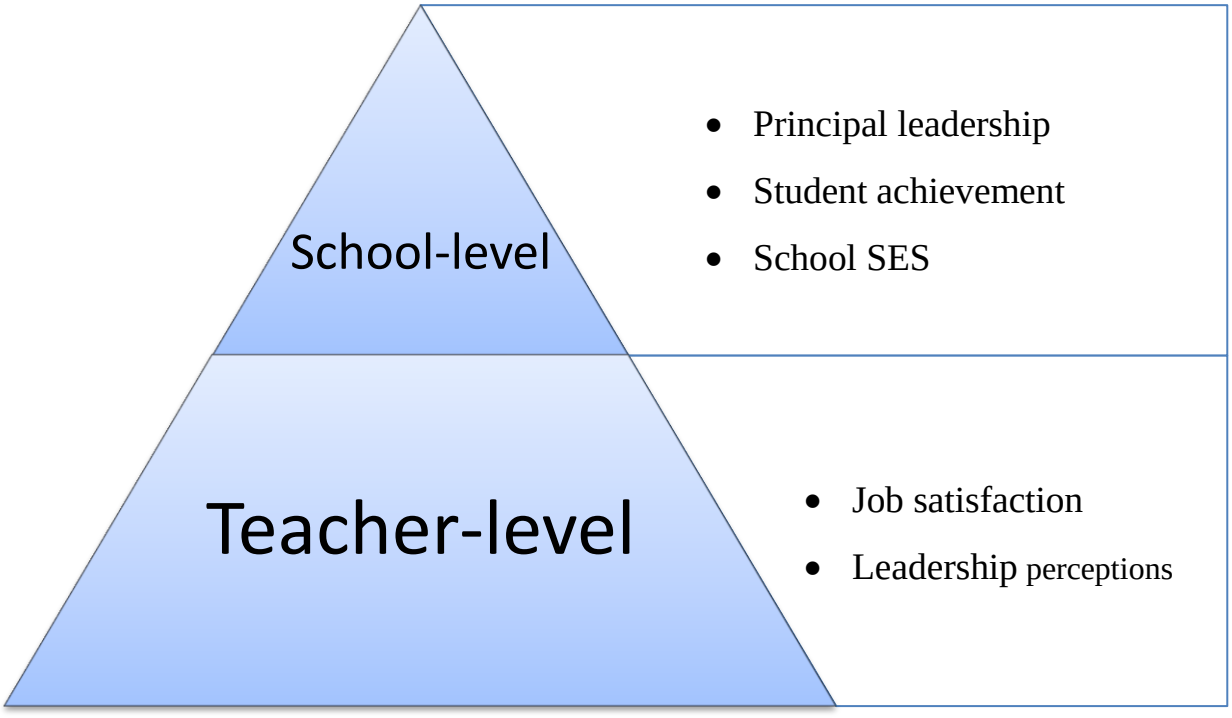


Figure 2. A description of the teacher-level and school-level variables used in this study.

Results

Descriptive Statistics

Descriptive statistics were used to report the frequency, central tendency, and variability of the measures used in this study. Because of the frequent use of the leadership dimensions used in this study, abbreviations will be used in the tables. A list of the abbreviations used for instructional and transformational leadership is presented in Table 9. Descriptive statistics for the school-level variables and teacher-level variables are reported in Table 10 and Table 11 respectively.

Table 9

Abbreviations for Transformational and Instructional Leadership Dimensions

Leadership Theory and Dimension	Abbreviation
Transformational Leadership	
Idealized Influence	II
Inspirational Motivation	IM
Intellectual Stimulation	IS
Individualized Consideration	IC
Contingent Reward	CR
Management-by-Exception: Active	MEa
Management-by-Exception: Passive	MEp
Laissez-Faire Leadership	LZ
Instructional Leadership	
Frame the school goals	FG
Communicate the school goals	CG
Supervise and evaluate instruction	SEI
Coordinate the curriculum	CC
Monitor student progress	MP
Protect instructional time	PT
Maintain high visibility	HV
Provide incentives for teachers	IT
Promote professional development	PD
Provide incentives for learning	IL

Table 10

Descriptive Statistics for School-Level Variables

Demographic Category	*n*	*M*	*SD*
Principal tenure	37	4.39	2.89
School size	37	641.57	175.65
Non-White	37	23.66	16.62
ELL	37	13.36	14.09
School SES	37	37.63	18.56
Transformational leadership			
II	37	4.16	0.40
IM	37	4.30	0.39
IS	37	3.83	0.54
IC	37	3.80	0.59
CR	37	3.77	0.47
MEa	37	2.19	0.48
MEp	37	1.76	0.51
LZ	37	1.52	0.42
Instructional leadership			
FG	37	4.23	0.43
CG	37	3.92	0.52
SEI	37	3.86	0.49
CC	37	4.06	0.51
MP	37	3.81	0.55
PT	37	3.91	0.48
HV	37	3.57	0.59
IT	37	3.62	0.68
PD	37	4.22	0.47
IL	37	3.80	0.69
Teacher job satisfaction	37	3.94	0.32
CRT-raw	37	496.32	13.87
CRT-proficient	36	78.47	7.43
CRT-progress	36	199.14	10.65
ITBS-core	36	50.99	10.27
ITBS-composite	36	56.01	10.14

Table 11

Descriptive Statistics for Teacher-Level Variables

Demographic Category	*n*	*M*	*SD*
Transformational leadership			
II	276	4.20	0.78
IM	276	4.33	0.72
IS	276	3.87	0.99
IC	276	3.87	1.11
CR	275	3.85	0.96
MEa	271	2.18	0.99
MEp	275	1.73	0.97
LZ	274	1.51	0.77
Instructional leadership			
FG	279	4.30	0.76
CG	281	4.00	0.88
SEI	279	3.95	0.83
CC	277	4.15	0.85
MP	280	3.88	0.88
PT	281	3.96	0.82
HV	281	3.68	1.02
IT	279	3.72	1.16
PD	277	4.26	0.84
IL	277	3.85	1.07
Teacher job satisfaction	549	4.00	0.62

Note. The *n* for transformational and instructional leadership differ slightly because teachers were randomly assigned to either measurement. Approximately half of the teachers completed each leadership dimension, while all the teachers were able to completed the job satisfaction scale.

Student Achievement: Regression Results

Hypothesis 1. The first hypothesis dealt with which leadership dimension best accounts for the variance in student achievement. Since student achievement in the current study was collected at the school-level in order to protect teacher anonymity, only school-level variables were used to predict student achievement. Regression rather than HLM was used to analyze student achievement because HLM is only appropriate if the dependent variable is at the lowest level (Steenbergen & Jones, 2002). Thus, a series of multiple regressions were used, with instructional and transformational leadership as the predictor variables and student achievement as the criterion or dependent variables. Results from the 10 separate multiple regression analyses are presented in Table 12.

Multiple regression results indicated that instructional leadership explained more of the variance in student achievement when measured by the CRT, which supports the first hypothesis. For CRT-raw, instructional leadership explained a surprising 45.4% of the variation, while transformational leadership explained 29.0%. The ten leadership dimensions of instructional leadership predicted 3.6% to 16.4% more of the variance in CRT scores than the eight dimensions of transformational leadership. However, the achievement scores from the ITBS show that transformational leadership predicts more of the variance in student achievement. When compared to instructional leadership, transformational leadership predicted 5.8% more of the variance in ITBS-core and 7.8% more of the variance in ITBS-composite.

It is important to note the difference between CRT-raw and the other measures of student achievement. Instructional leadership explained a large portion of the variance in CRT-raw [$F(10, 26) = 2.16$, $p = .056$, $R^2 = 0.45$] when compared to the other measures. This could be attributed to the fact that one school petitioned their exam scores and only the CRT raw scores

were available for this school. When eliminating this school from analysis the CRT-raw values are more consistent with the other measures of achievement, with instructional leadership explaining 25.8% [F (10, 25) = 0.87, p = .57], and transformational leadership explaining 17.8% [F (8, 27) = 0.73, p = .66] of the variance in CRT-raw.

Both instructional and transformational leadership did not predict a statistically significant amount of variance in any measure of student achievement. Although not statistically significant, R^2 values in the .20 to .45 range do explain a meaningful amount of variance in student achievement. Other factors, such as school context, in addition to principal leadership may also contribute to variation in student achievement. Hypothesis 2 explores this inquiry.

Table 12

Multiple Regression Results for Leadership Dimensions Predicting Student Achievement

	Instructional Leadership		Transformational Leadership	
Variable	R^2 (SEE)	*F*	R^2 (SEE)	*F*
CRT-raw[a]	.45 (12.06)	2.16[†]	.29 (13.25)	1.43
CRT-proficient[b]	.20 (7.88)	0.61	.16 (7.75)	0.64
CRT-progress[b]	.27 (10.76)	0.93	.22 (10.72)	0.94
ITBS-core[b]	.22 (10.75)	0.69	.27 (9.96)	1.27
ITBS-composite[b]	.21 (10.65)	0.68	.29 (9.73)	1.38

Note. [a]n = 37. [b]n = 36. [†] p = .056.

Hypothesis 2. The second hypothesis refers to the significance of leadership predicting student achievement after controlling for school context and principal demographics. Procedures of sequential regression and calculations for the significance in ΔR^2 are presented in Keith (2006, p. 78). A summary of the results are presented in Table 13. Results from the sequential regression analyses show that leadership accounted for most of the variance in CRT-raw and CRT-progress scores, while the control variables accounted for only a small proportion. The opposite is true, however, for the other measures of student achievement. The school context and principal demographic control variables accounted for most of the variance in CRT-proficient and both of the ITBS scores.

After controlling for school context and principal demographics, instructional leadership accounted for a large and significant amount of the variance in CRT-raw scores [F (10, 20) = 4.31, $p < .01$, $\Delta R^2 = .52$] and transformational leadership accounted for a nonsignificant, but larger proportion of the variance than the control variables [F (8, 22) = 1.42, $p = .24$, $\Delta R^2 = .26$] (see Table 14). For CRT-proficient the control variables accounted for most of the variance, with nonsignificant changes in R^2 for both instructional leadership [F (10, 19) = 2.12, $p = .08$, $\Delta R^2 = .25$] and transformational leadership [F (8, 21) = 0.98, $p = .48$, $\Delta R^2 = .13$] (see Table 15). Neither the control variables nor the leadership dimension were able to predict a significant amount of the variance in CRT-progress scores, although instructional leadership [F (10, 19) = 1.28, $p = .31$, $\Delta R^2 = .33$] and transformational leadership [F (8, 21) = 1.89, $p = .12$, $\Delta R^2 = .34$] seemed to account from more of the variance than the control variables (see Table 16). For both the core and composite ITBS the control variables account for a significant amount of the variance, while adding the leadership dimensions did not make a significant impact on the final R^2 (see Tables 17 and 18).

It is also interesting to note the significant control variables that were best able to predict student achievement scores. The most consistent control variable that was able to predict a significant amount of variance in achievement scores was school SES (β = -.73 to -.85, $p < .05$), while none of the other control variables were significant in the first step of the regression analysis. Notice in Tables 14 through 18 the direction of the relationship between school SES and student achievement. A negative relationship exists because school SES in the percentage of students in the school that are considered low SES. Thus, as the percentage of students with low SES increases in the school the achievement scores decrease. In addition to the control variables, another interest would be to find which specific leadership dimensions are associated with high achievement scores. This inquiry will be addressed in hypothesis 3.

Table 13

Summary of the Sequential Regression Analyses on Student Achievement

	Instructional Leadership		Transformational Leadership	
Variable	R^2	ΔR^2	R^2	ΔR^2
CRT-raw[a]				
Step 1	.24†	.52**	.24†	.26
Step 2	.76**		.50	
CRT-proficient[b]				
Step 1	.53**	.25†	.53**	.13
Step 2	.78**		.66*	
CRT-progress[b]				
Step 1	.18	.33	.18	.34
Step 2	.51		.52	
ITBS-core[b]				
Step 1	.58***	.22†	.58***	.15
Step 2	.80**		.73**	
ITBS-composite[b]				
Step 1	.59***	.21	.59***	.13
Step 2	.80**		.72**	

Note. [a]$n = 37$. [b]$n = 36$. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. Step 1 contains the control variables and Step 2 contains the control variables in addition to the leadership dimensions.

Table 14

Results of the Two Sequential Regression Analyses for CRT-raw

	Instructional Leadership		Transformational Leadership	
Variable		β		β
Step 1				
Principal gender		0.10		0.10
Principal tenure		0.15		0.15
School size		-0.23		-0.23
Non-White		-0.37		-0.37
ELL		0.66		0.66
School SES		-0.76†		-0.76†
R^2	.24†		.24†	
Step 2				
Principal gender		0.06		-0.01
Principal tenure		0.09		0.32
School size		-0.54*		-0.04
Non-White		0.62		-0.12
ELL		-0.21		0.41
School SES		-1.21**		-0.79†
Leadership dimensions				
	FG	-0.16	II	0.15
	CG	-0.12	IM	-0.08
	SEI	-0.57	IS	0.17
	CC	1.43**	IC	0.04
	MP	-1.03*	CR	-0.39
	PT	0.34	MBEa	-0.20
	HV	-0.25	MBEp	-0.91*
	IT	0.07	LZ	0.94*
	PD	-0.12		
	IL	0.63*		
R^2	.76**		.50	
ΔR^2	.52**		.26	

Note. $n = 37$. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 15

Results of the Two Sequential Regression Analyses for CRT-proficient

	Instructional Leadership		Transformational Leadership	
Variable		β		β
Step 1				
Principal gender		0.10		0.10
Principal tenure		0.16		0.16
School size		-0.28†		-0.28†
Non-White		-0.07		-0.07
ELL		-0.03		-0.03
School SES		-0.73*		-0.73*
R^2	.53**		.53**	
Step 2				
Principal gender		0.08		0.04
Principal tenure		0.09		0.18
School size		-0.51*		-0.26
Non-White		0.64		-0.06
ELL		-0.73		0.00
School SES		-1.15*		-1.05*
Leadership dimensions				
	FG	0.10	II	0.76†
	CG	-0.85*	IM	-0.02
	SEI	-1.04*	IS	0.10
	CC	1.35*	IC	-0.84
	MP	-0.24	CR	-0.11
	PT	0.55*	MBEa	-0.02
	HV	-0.36	MBEp	-0.07
	IT	0.59*	LZ	0.17
	PD	-0.20		
	IL	0.00		
R^2	.78**		.66*	
ΔR^2	.25†		.13	

Note. $n = 36$. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 16

Results of the Two Sequential Regression Analyses for CRT-progress

	Instructional Leadership		Transformational Leadership	
Variable		β		β
Step 1				
Principal gender		0.16		0.16
Principal tenure		0.11		0.11
School size		-0.40†		-0.40†
Non-White		-0.57		-0.57
ELL		0.86		0.86
School SES		-0.59		-0.59
R^2	.18		.18	
Step 2				
Principal gender		0.17		-0.01
Principal tenure		0.14		0.28
School size		-0.76*		-0.24
Non-White		-0.39		-0.26
ELL		0.50		0.82
School SES		-0.77		-1.18*
Leadership dimensions				
	FG	0.07	II	0.60
	CG	-1.20†	IM	-0.07
	SEI	-0.54	IS	0.14
	CC	1.38†	IC	-0.61
	MP	-0.27	CR	-0.49
	PT	0.31	MBEa	-0.13
	HV	-0.31	MBEp	-0.76†
	IT	0.61†	LZ	0.86*
	PD	0.03		
	IL	-0.37		
R^2	.51		.52	
ΔR^2	.33		.34	

Note. $n = 36$. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 17

Results of the Two Sequential Regression Analyses for ITBS-core

	Instructional Leadership		Transformational Leadership	
Variable		β		β
Step 1				
Principal gender		0.03		0.03
Principal tenure		0.23†		0.23†
School size		-0.15		-0.15
Non-White		-0.08		-0.08
ELL		0.11		0.11
School SES		-0.85*		-0.85*
R^2	.58***		.58***	
Step 2				
Principal gender		0.14		-0.04
Principal tenure		0.26†		0.29†
School size		-0.43†		0.01
Non-White		-0.12		0.10
ELL		0.19		0.03
School SES		-1.17**		-1.08**
Leadership dimensions				
	FG	0.34	II	0.57
	CG	-0.45	IM	0.40
	SEI	-1.03*	IS	-0.44
	CC	1.02*	IC	-0.36
	MP	-0.31	CR	-0.19
	PT	0.30	MBEa	0.04
	HV	0.11	MBEp	-0.26
	IT	0.63**	LZ	0.22
	PD	-0.41†		
	IL	-0.12		
R^2	.80**		.73**	
ΔR^2	.22†		.15	

Note. $n = 36$. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 18

Results of the Two Sequential Regression Analyses for ITBS-composite

	Instructional Leadership		Transformational Leadership	
Variable		β		β
Step 1				
Principal gender		0.02		0.02
Principal tenure		0.21†		0.21†
School size		-0.11		-0.11
Non-White		-0.05		-0.05
ELL		0.02		0.02
School SES		-0.80*		-0.80*
R^2	.59***		.59***	
Step 2				
Principal gender		0.13		-0.04
Principal tenure		0.23		0.26
School size		-0.35		0.02
Non-White		-0.06		0.07
ELL		0.00		-0.02
School SES		-1.06*		-0.99*
Leadership dimensions				
	FG	0.25	II	0.57
	CG	-0.51	IM	0.36
	SEI	-1.05*	IS	-0.42
	CC	1.03*	IC	-0.42
	MP	-0.12	CR	-0.10
	PT	0.24	MBEa	0.01
	HV	0.12	MBEp	-0.16
	IT	0.64*	LZ	0.14
	PD	-0.43†		
	IL	-0.12		
R^2	.80**		.72**	
ΔR^2	.20		.13	

Note. $n = 36$. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis 3. Which leadership dimensions are associated with higher student achievement? This question was addressed in the third hypothesis. It was hypothesized that the instructional leadership dimensions of frame the school goals, communicate the school goals, supervise and evaluate instruction, coordinate the curriculum, and promote professional development, and the transformational leadership dimensions of individualized consideration and contingent reward would best predict student achievement scores (Table 19). To test this hypothesis multiple regression was used, with ten separate analyses for the instructional and transformational leadership dimensions each predicting the five measures of student achievement.

Results showed that very few leadership dimensions significantly predicted student achievement scores. The standardized betas are reported in Table 20 (refer back to Table 12 from the first hypothesis to find the R^2 and standard error of the estimate). Management-by-exception: passive ($\beta = -.82$, $p < .05$) and laissez-faire leadership ($\beta = .87$, $p < .05$) were the only significant transformational leadership dimensions to predict student achievement, while monitor student progress ($\beta = -.85$, $p < .05$) and provide incentives for learning ($\beta = .57$, $p < .05$) were the only significant dimensions of instructional leader. The betas reported may be misleading because the direction and strength of the relationship may be unclear when several dimensions were entered together in the multiple regression analysis.

In order to find the directions and strength of these relationships, separate regression analyses were used for each of the individual dimensions of leadership (see Table 21). For instructional leadership, protect instructional time ($R^2 = .11$, $p < .05$, $r = .33$) and provide incentives for learning ($R^2 = .25$, $p < .001$, $r = .50$) significantly predicted CRT-raw, and provide incentives for teachers was significant for both ITBS-core ($R^2 = .16$, $p < .05$, $r = .39$) and ITBS-

composite (R^2 = .15, p < .05, r = .38). Monitor student progress, which was significant in the multiple regression analysis, did not reach significance in the single regression analysis, but did have a positive correlation with CRT-raw (R^2 = .02, p = .37, r = .15). As for transformational leadership, contingent reward was the only dimension with a significant R^2, which reached significance on both the ITBS-core (R^2 = .14, p < .05, r = .38) and ITBS-composite (R^2 = .16, p < .05, r = .40). Management-by-exception: passive (R^2 = .05, p = .19, r = -.22) and laissez-faire leadership (R^2 = .00, p = .87, r = .02) did not reach significance on the single regression analysis for CRT-raw, although they were significant when entered with the other dimensions in the multiple regression analysis.

Table 19

Summary of Significant Leadership Dimensions Predicting Student Achievement

Leadership Dimension	Hypothesis	Significant Result
Instructional Leadership		
Frame the school goals	✓	
Communicate the school goals	✓	
Supervise and evaluate instruction	✓	
Coordinate the curriculum	✓	
Promote professional development	✓	
Monitor student progress		✓
Protect instructional time		✓
Provide incentives for learning		✓
Provide incentives for teachers		✓
Transformational Leadership		
Individualized Consideration	✓	
Contingent Reward	✓	✓

Table 20

Results of Multiple Regression Analyses for Student Achievement

	CRT-raw	CRT-prof	CRT-prog	ITBS-core	ITBS-comp
Dimension	β	β	β	β	β
Instructional leadership					
FG	-.47	-.08	-.14	.07	.00
CG	.71	.10	-.77	.18	.16
SEI	.24	.60	.05	.35	.42
CC	.06	-.61	.09	-.51	-.48
MP	-.85*	-.31	.38	-.29	-.25
PT	.18	.40	.35	.20	.13
HV	-.16	-.18	-.40	.02	.05
IT	-.10	.40	.49	.48	.47
PD	.24	.13	.20	.01	-.03
IL	.57*	-.22	-.47	-.14	-.13
Transformational leadership					
II	.10	.28	.42	.30	.28
IM	-.44	-.23	-.29	-.03	-.05
IS	.10	-.41	-.03	-.72†	-.72†
IC	.23	-.19	-.34	.10	.07
CR	.14	.73	-.01	.72	.80†
MBEa	-.17	-.05	-.08	.05	.02
MBEp	-.82*	-.25	-.67†	-.15	-.09
LZ	.87*	.35	.73†	.18	.14

Note. $n = 36$, except for CRT-raw ($n = 37$). † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 21

Results of Single Regression Analyses for Student Achievement

	CRT-raw	CRT-prof	CRT-prog	ITBS-core	ITBS-comp
Dimension	R^2	R^2	R^2	R^2	R^2
Instructional leadership					
FG	.01	.02	.03	.06	.05
CG	.10†	.02	.04	.05	.05
SEI	.01	.05	.01	.07	.08
CC	.07	.02	.02	.04	.03
MP	.02	.01	.01	.03	.02
PT	.11*	.03	.00	.04	.03
HV	.04	.01	.05	.06	.06
IT	.04	.08	.00	.16*	.15*
PD	.10†	.02	.00	.04	.03
IL	.25***	.01	.03	.03	.02
Transformational leadership					
II	.01	.00	.03	.07	.06
IM	.01	.00	.04	.06	.06
IS	.03	.00	.05	.02	.02
IC	.03	.01	.07	.10†	.10†
CR	.04	.04	.06	.14*	.16*
MBEa	.04	.01	.02	.01	.02
MBEp	.05	.00	.01	.05	.05
LZ	.00	.00	.08	.03	.03

Note. $n = 36$, except for CRT-raw ($n = 37$). † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Job Satisfaction: HLM Results

Model 1: Unconditional means model. To investigate the relationship between leadership and teacher job satisfaction, four separate models of HLM were analyzed. The first model is similar to a one-way ANOVA with random effects, which answers the question of how much of the variation in teacher job satisfaction can be attributed to within schools and between schools. The results from the unconditional means model provided estimated variance components at both the school- and teacher- level, which both differ significantly from zero (see Table 22). These estimates were used to calculate the ICC ($\hat{\rho}$ = .215, as $\hat{\rho} = \frac{intercept}{intercept \ + residual}$ or $\frac{.08}{.08 + .30}$), which tells us what proportion of the total variance in job satisfaction occurs between schools (Singer, 1998). These results suggest that the schools and teachers in this sample significantly differ in their average job satisfaction scores, and that there is more variation within schools (78.5%) than between schools (21.5%). Although between school variance is only 21.5%, it still accounts for a significant proportion of the total variation. The next two models will show how much of the 21.5% of between school variance can be attributed to the school-level factors and how much of the 78.5% within school variance can be attributed to the teacher-level variables.

Table 22

Results for HLM Model 1: Unconditional Means Model for Job Satisfaction

Random effects	Variance component (SE)	*z*
Intercept (school-level)	0.08 (0.02)	3.39***
Residual (teacher-level)	0.30 (0.02)	16.02***
Fixed effect	**Coefficient estimate (SE)**	***t***
Intercept (average school mean)	3.95 (0.05)	74.14***

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Model 2: Effects of school-level predictors. The unconditional means model provides a baseline for comparison for more complex models. Model 2 included the school-level variables, which can answer the questions: Do the schools with high principal leadership scores also have teachers with high job satisfaction? Does instructional leadership or transformational leadership best account for between school variation in teacher job satisfaction? Four separate HLM analyses were used in the second model. Separate analyses were performed for instructional and transformational leadership dimensions, with and without the inclusion of the control variables. The results from these analyses will explain what proportion of the school differences in job satisfaction (21.5% of the total variation) can be attributed to leadership, and which leadership theory accounts for more of the between school variation in job satisfaction.

***Leadership as the school-level predictors*.** HLM results for instructional and transformational leadership are displayed in Table 23. First looking at the fixed effects, there seems to be a significant association between instructional leadership and job satisfaction for the dimensions of *supervise and evaluate instruction* and *maintain high visibility*. Transformational leadership on the other hand does not show a significant relationship with teacher job satisfaction on any of the leadership dimensions. This suggests that instructional leadership is associated with teacher job satisfaction, while transformational leadership does not have a significant association.

The school-level variance components decreased markedly from the unconditional means model from .08 to .02 for instructional leadership and .03 for transformational leadership. This drop signifies that leadership dimensions explain a large portion of the school-to-school variation in mean job satisfaction. Specifically, instructional leadership dimensions account for 78.1% of the explainable variation in job satisfaction, while 65.9% of the explainable variation in

job satisfaction is explained by the transformational leadership dimensions. This was calculated subtracting the school-level variance component in Model 2 from the school-level variance component in Model 1, and then dividing by the school-level variance component in Model 1 ($\frac{.08 - .02}{.08}$ and $\frac{.08 - .03}{.08}$) (Singer, 1998). When comparing the variance accounted for, instructional leadership explained 12.2% more than transformational leadership. Because only school-level predictors were included in this model the residual variance component, which corresponds to the within school variation, remains unchanged from the unconditional means model.

It should be noted that the percentages of variance accounted for are not equivalent to R^2 because they are only explaining 78.1% or 65.9% of the 21.5% school-to-school variation. The larger 78.5% of the total variation is within schools and will be addressed in Model 3. Because there is a large within school variance and a small between school variance, it may seem like school-level leadership is explaining a large amount of very little (Singer, 1998). However, the 21.5% of the between school variation is still a meaningful and significant amount of the variation in job satisfaction.

The school-level variance component estimates for both instructional and transformational leadership were significant, which suggests that even with leadership predictors in the model there remains a significant amount of within school variation in job satisfaction that is not explained (Byrk & Raudenbush, 1992). The next set of analyses will add the control variables of school SES and student achievement to the predictor variable of leadership to find if this model will explain a significant amount of the between school variation in job satisfaction.

Leadership, student achievement, and SES as the school-level predictors. The next HLM analyses kept the leadership predictors but included the five student achievement measures

and school SES. These analyses were performed for both instructional and transformational leadership (see Table 24). When adding student achievement and school SES predictors, the predictor provide incentives for teachers becomes significant, while supervise and evaluate instruction is no longer significant. Transformational leadership remains virtually unchanged in regards to the fixed effect results, with no significant predictors.

The variance components for both instructional and transformational leadership are reduced even more when adding student achievement and school SES, with a .01 reduction in both models. This adds to the amount of between school variation accounted for, up to 87.8% from 78.1% for instructional leadership and up to 72.7% from 65.9% for transformational leadership. Adding student achievement and school SES to leadership also made the school-level variance component nonsignificant for instructional leadership, meaning that there is not a significant amount of between school variation left to be explained ($z = 1.02$, $p = .15$). However, in the model with transformational leadership there still remains a significant amount of between school variation that remains unexplained ($z = 1.67$, $p < .05$).

Table 23

Results for HLM Model 2: Leadership as the School-Level Predictors (Two Separate Analyses)

		Instructional Leadership			Transformational Leadership	
Random effects		Variance (SE)	*z*		Variance (SE)	*z*
Intercept		0.02 (0.01)	1.71*		0.03 (0.01)	2.07*
Residual		0.30 (0.02)	16.04***		0.30 (0.02)	16.00***
Fixed effect		Estimate (SE)	*t*		Estimate (SE)	*t*
Intercept		2.08 (0.44)	4.69***		1.81 (0.96)	1.88*
Leadership dimension						
	FG	-0.08 (0.23)	-0.35	II	-0.41 (0.27)	-1.50
	CG	0.02 (0.18)	0.09	IM	0.18 (0.24)	0.73
	SEI	0.48 (0.23)	2.13*	IS	0.14 (0.16)	0.89
	CC	-0.25 (0.23)	-1.11	IC	0.38 (0.23)	1.68†
	MP	-0.13 (0.17)	-0.76	CR	0.19 (0.22)	0.87
	PT	-0.02 (0.14)	-0.14	MBEa	0.11 (0.10)	1.14
	HV	0.23 (0.09)	2.70**	MBEp	0.10 (0.15)	0.62
	IT	0.17 (0.09)	1.89†	LZ	-0.03 (0.19)	-0.18
	PD	0.10 (0.13)	0.78			
	IL	0.00 (0.09)	-0.05			

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 24

Results for HLM Model 2: Leadership, Student Achievement, and SES as the School-Level Predictors (Two Separate Analyses)

	Instructional Leadership			Transformational Leadership	
Random effects	Variance (SE)	*z*		Variance (SE)	*z*
Intercept	0.01 (0.01)	1.02		0.02 (0.01)	1.67*
Residual	0.30 (0.02)	15.82***		0.30 (0.02)	15.83***
Fixed effect	Estimate (SE)	*t*		Estimate (SE)	*t*
Intercept	-3.96 (8.95)	-0.44		-7.81 (10.16)	-0.77
CRT-raw	0.02 (0.02)	0.95		0.02 (0.02)	0.97
CRT-proficient	0.00 (0.02)	0.14		0.00 (0.02)	0.17
CRT-progress	-0.01 (0.01)	-1.39		0.00 (0.01)	-0.39
ITBS-core	0.05 (0.05)	0.92		0.02 (0.05)	0.46
ITBS-composite	-0.06 (0.05)	-1.27		-0.03 (0.05)	-0.73
School SES	-0.01 (0.00)	-1.72†		0.00 (0.00)	0.07
Leadership dimensions					
FG	-0.22 (0.24)	-0.91	II	-0.50 (0.30)	-1.69†
CG	-0.26 (0.22)	-1.17	IM	0.17 (0.25)	0.67
SEI	0.16 (0.27)	0.59	IS	0.19 (0.18)	1.05
CC	0.09 (0.25)	0.38	IC	0.36 (0.25)	1.44
MP	0.22 (0.21)	1.07	CR	0.16 (0.24)	0.67
PT	-0.08 (0.15)	-0.54	MBEa	0.09 (0.10)	0.84
HV	0.24 (0.09)	2.68**	MBEp	0.10 (0.18)	0.57
IT	0.24 (0.10)	2.32*	LZ	-0.13 (0.23)	-0.56
PD	-0.06 (0.14)	-0.41			
IL	-0.03 (0.10)	-0.33			

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Model 3: Effects of teacher-level predictors. The third model allows us to examine the relationships between teacher-level predictors and teacher job satisfaction. Results will indicate the amount of within school variation in job satisfaction that can be accounted for by instructional and transformational leadership. The only teacher-level predictor in this study is leadership. This variable of leadership needs to be differentiated from the school-level variable of leadership. The school-level variable is a mean leadership score and best represents the principals' leadership at the school-level. The teacher-level variable of leadership represents the individual teachers' perceptions of their principal's leadership behavior. Both of these types of leadership are distinct and important constructs examined in this study.

The HLM fixed effect results indicate that there is a statistically significant relationship between teacher perceptions of instructional and transformational leadership and teacher job satisfaction (see Table 25). The leadership dimensions that reached significance included promote professional development and provide incentives for teachers for instructional leadership, and individualized consideration for transformational leadership.

To see the effects of individual leadership perceptions on job satisfaction, the random effects variance components will need to be compared to the variance components in the unconditional means model. The within school estimate from the first model was .30, which has now been reduced in the third model to .17 for instructional leadership. Thus, the inclusion of the teacher-level predictors of instructional leadership has accounted for 44.9% of the explainable variation within schools. Comparatively speaking, school-level instructional leadership (78.1%) explains more of the variance between schools than teacher-level perceptions of instructional leadership (44.9%) explains the variance within schools. However, it should be noted that the within school variance was much larger than the between school variance. So,

instructional leadership explained 78.1% of the 21.5% between school variance, and 44.9% of the 78.5% within school variance.

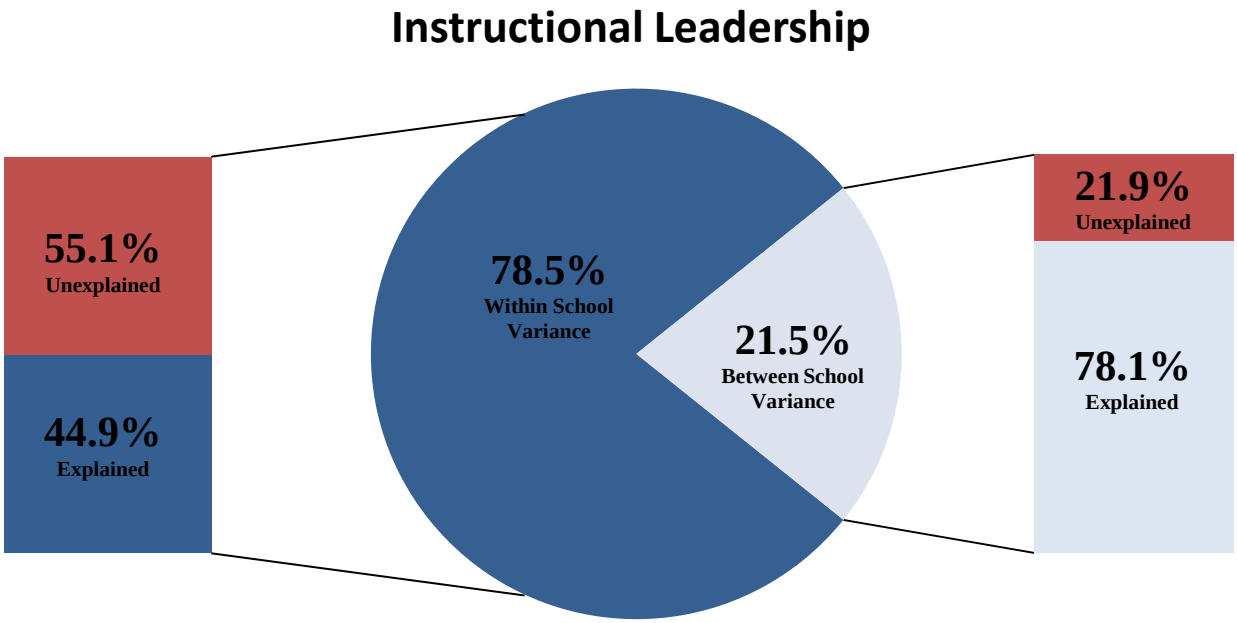
The within school estimate was reduced to .17 for transformational leadership. This equates to accounting for 44.5% of the explainable variation within schools, with the inclusion of the teacher-level transformational leadership dimensions. Similar to instructional leadership, school-level transformational leadership (65.9%) explains more of the variance between schools than teacher-level perceptions of instructional leadership explains the variance within schools (44.5%). Thus, transformational leadership explained 65.9% of the 21.5% between school variance, and 44.5% of the 78.5% within school variance. Figure 3 graphically demonstrates the amount of within and between school variance accounted for by both instructional and transformational leadership. If we compare the two leadership theories, instructional leadership explained slightly more of the within school variance in teacher job satisfaction by a mere 0.4%.

Table 25

Results for HLM Model 3: Leadership as the Teacher-Level Predictors (Two Separate Analyses)

		Instructional Leadership			Transformational Leadership	
Random effects		Variance (SE)	*z*		Variance (SE)	*z*
Intercept		0.02 (0.01)	1.90*		0.03 (0.01)	2.11*
Residual		0.17 (0.02)	10.55***		0.17 (0.02)	10.53***
Fixed effect		Estimate (SE)	*t*		Estimate (SE)	*t*
Intercept		1.96 (0.18)	10.92***		2.32 (0.27)	8.74***
Teacher-level leadership dimension						
	FG	0.09 (0.06)	1.32	II	0.02 (0.07)	0.23
	CG	-0.10 (0.06)	-1.82†	IM	0.08 (0.07)	1.18
	SEI	0.03 (0.06)	0.53	IS	0.08 (0.06)	1.46
	CC	0.05 (0.06)	0.85	IC	0.17 (0.05)	3.28**
	MP	-0.05 (0.06)	-0.80	CR	0.09 (0.05)	1.83†
	PT	0.04 (0.05)	0.71	MBEa	-0.02 (0.03)	-0.79
	HV	0.07 (0.04)	1.57	MBEp	0.00 (0.04)	0.11
	IT	0.21 (0.04)	5.75***	LZ	-0.06 (0.05)	-1.02
	PD	0.13 (0.05)	2.47*			
	IL	0.06 (0.04)	1.74†			

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.



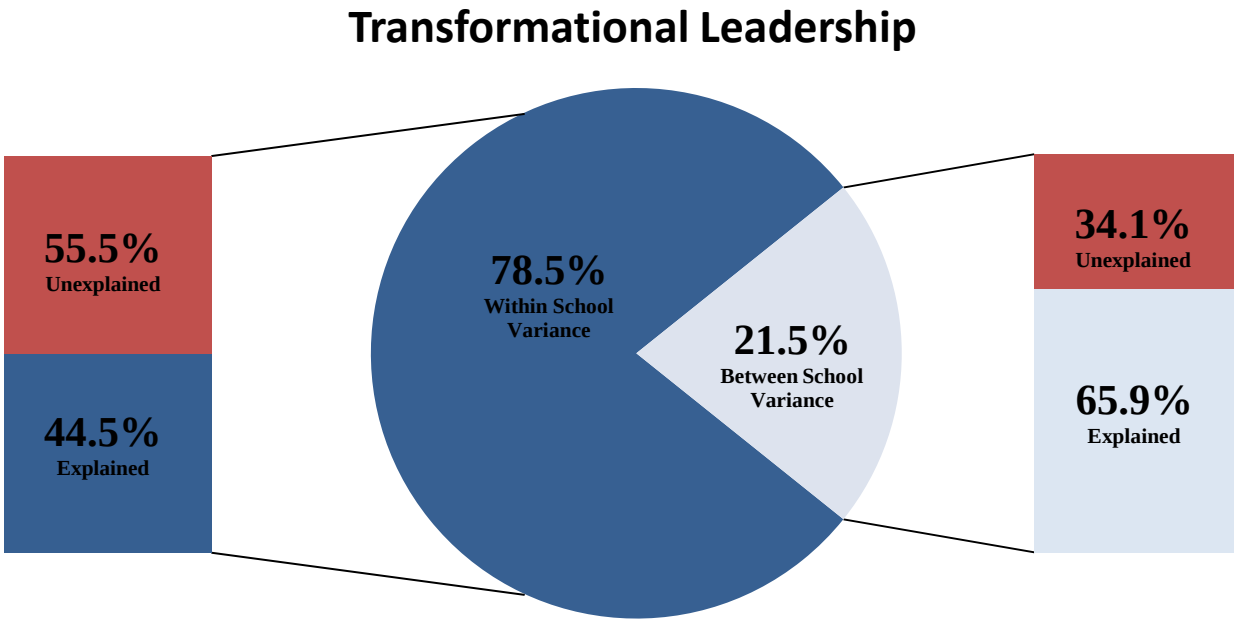


Figure 3. Percentage of the between and within school variation accounted for by instructional and transformational leadership.

Model 4: Effects of both school-level and teacher-level predictors. The fourth model will now contain all the predictor variables that have been included in the previous two models. Similar to the procedures in Model 2, two analyses will be run that exclude and then include the school-level controls of student achievement and school SES, repeated for instructional and transformational leadership.

The results from the first set of analyses are presented in Table 26. The results from the fixed effects show that school-level leadership does not seem to be related to teacher job satisfaction. Again these dimensions of leadership are at the school-level (principal leadership), while teacher-level leadership dimensions represent teachers' individual perceptions of leadership. It seems that teacher perceptions of leadership have a stronger relationship with teacher job satisfaction than school-level leadership. Specifically, the instructional leadership dimensions of provide incentives for teachers, promote professional development, and provide incentives for learning and the transformational leadership dimension of individualized consideration significantly predicted teacher job satisfaction.

Results from the random effects show that the variance components remain virtually unchanged from the previous two models. The significance tests show that there is still a significant portion of the variance not accounted for both instructional and transformational leadership. Meaning there is reason to believe that there are additional school-level and teacher-level predictors that might explain the variation in job satisfaction. The variance within schools will remain unchanged since no more teacher-level variables were used in this study. However, in the next set of analyses the school-level factors of school SES and student achievement will be added.

The results from the HLM analyses that included the school-level predictors of student achievement and school SES are shown in Table 27. The random effects results now show that there is not a significant amount of between school variance that remains unexplained, once student achievement and school SES are included. Interestingly, none of the control predictors were significant in the fixed effect results. The fixed effects for the leadership dimensions remained unchanged, with the instructional leadership dimensions of provide incentives for teachers, promote professional development, and provide incentives for learning and the transformational leadership dimension of individualized consideration remaining significant. The HLM results can now be summarized in relation to the last three hypotheses.

Table 26

Results for HLM Model 4: Effects of Both School- and Teacher-Level Predictors

		Instructional Leadership			Transformational Leadership	
Random effects		Variance (SE)	*z*		Variance (SE)	*z*
Intercept		0.02 (0.01)	1.69*		0.02 (0.01)	1.82*
Residual		0.16 (0.02)	10.59***		0.17 (0.02)	10.56***
Fixed effect		Estimate (SE)	*t*		Estimate (SE)	*t*
Intercept		1.57 (0.48)	3.28**		2.72 (0.94)	2.90**
School-level leadership						
	FG	0.03 (0.26)	0.11	II	-0.52 (0.29)	-1.81†
	CG	-0.04 (0.21)	-0.18	IM	-0.06 (0.25)	-0.22
	SEI	0.46 (0.25)	1.81†	IS	-0.12 (0.17)	-0.71
	CC	-0.22 (0.26)	-0.84	IC	0.38 (0.23)	1.66†
	MP	-0.17 (0.19)	-0.87	CR	0.19 (0.23)	0.80
	PT	-0.08 (0.16)	-0.49	MBEa	0.13 (0.10)	1.29
	HV	0.12 (0.11)	1.14	MBEp	0.14 (0.16)	0.91
	IT	0.06 (0.11)	0.56	LZ	-0.20 (0.19)	-1.06
	PD	-0.03 (0.16)	-0.16			
	IL	-0.01 (0.10)	-0.07			
Teacher-level leadership						
	FG	0.06 (0.07)	0.93	II	0.04 (0.08)	0.56
	CG	-0.09 (0.06)	-1.56	IM	0.10 (0.07)	1.37
	SEI	-0.01 (0.06)	-0.22	IS	0.10 (0.06)	1.68†
	CC	0.06 (0.07)	0.93	IC	0.13 (0.05)	2.55*
	MP	-0.03 (0.07)	-0.41	CR	0.07 (0.05)	1.42
	PT	0.05 (0.05)	1.00	MBEa	-0.03 (0.03)	-0.85
	HV	0.03 (0.05)	0.68	MBEp	-0.01 (0.04)	-0.13
	IT	0.19 (0.04)	4.78***	LZ	-0.04 (0.06)	-0.74
	PD	0.15 (0.06)	2.58*			
	IL	0.09 (0.04)	2.15*			

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 27

Results for HLM Model 4 (With the Inclusion of Student Achievement and SES)

		Instructional Leadership			Transformational Leadership	
Random effects		Variance (SE)	*z*		Variance (SE)	*z*
Intercept		0.02 (0.02)	1.37		0.02 (0.01)	1.45
Residual		0.16 (0.02)	10.44***		0.17 (0.02)	10.40***
Fixed effect		Estimate (SE)	*t*		Estimate (SE)	*t*
Intercept		-0.40 (10.55)	-0.04		-11.77 (10.38)	-1.13
CRT-raw		0.01 (0.02)	0.29		0.03 (0.02)	1.37
CRT-proficient		0.02 (0.03)	0.65		-0.01 (0.02)	-0.34
CRT-progress		0.00 (0.01)	-0.62		0.00 (0.01)	0.33
ITBS-core		0.05 (0.06)	0.80		-0.02 (0.05)	-0.43
ITBS-composite		-0.06 (0.06)	-1.10		0.00 (0.05)	0.00
School SES		0.00 (0.00)	-0.91		0.00 (0.00)	-0.64
School-level leadership						
	FG	-0.07 (0.30)	-0.24	II	-0.45 (0.32)	-1.41
	CG	-0.19 (0.26)	-0.74	IM	-0.04 (0.26)	-0.16
	SEI	0.26 (0.33)	0.79	IS	-0.19 (0.19)	-0.99
	CC	0.05 (0.31)	0.16	IC	0.36 (0.26)	1.38
	MP	0.05 (0.25)	0.21	CR	0.18 (0.25)	0.73
	PT	-0.18 (0.19)	-0.98	MBEa	0.14 (0.11)	1.25
	HV	0.19 (0.12)	1.60	MBEp	0.16 (0.19)	0.84
	IT	0.10 (0.13)	0.78	LZ	-0.33 (0.24)	-1.38
	PD	-0.21 (0.18)	-1.14			
	IL	-0.02 (0.13)	-0.12			
Teacher-level leadership						
	FG	0.06 (0.07)	0.95	II	0.04 (0.08)	0.52
	CG	-0.10 (0.06)	-1.75†	IM	0.10 (0.08)	1.33
	SEI	-0.01 (0.06)	-0.16	IS	0.11 (0.06)	1.67†
	CC	0.05 (0.07)	0.69	IC	0.14 (0.05)	2.56*
	MP	-0.01 (0.07)	-0.20	CR	0.07 (0.05)	1.31
	PT	0.06 (0.05)	1.13	MBEa	-0.03 (0.03)	-0.92
	HV	0.02 (0.05)	0.41	MBEp	-0.02 (0.05)	-0.39
	IT	0.19 (0.04)	4.75***	LZ	-0.03 (0.06)	-0.54
	PD	0.18 (0.06)	2.97**			
	IL	0.09 (0.04)	2.06*			

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis 4. It was hypothesized that principals' transformational leadership scores would account for more of the variance in teacher job satisfaction than instructional leadership. Hypothesis four was not confirmed. In fact, the evidence supported the contrary. Instructional leadership explained more of the variance of both within and between school variance. As far as explaining the between school variance, instructional leadership explained 78.1%, compared to 65.9% by transformational leadership. Instructional leadership explained 44.9% of the within school variance, compared to transformational 44.5%. Although not large differences exist, still instructional leadership explained more of the variance than transformational leadership.

Hypothesis 5. It was hypothesized that instructional and transformational leadership scores will account for a significant amount of the variance in teacher job satisfaction, even after controlling for school SES. This hypothesis was not addressed in the HLM results reported previously, but after running the analyses hypothesis five is supported. This hypothesis was tested by running the HLM with the school-level SES and student achievement variables, followed by the same HLM analysis while adding school-level leadership. With just the SES and student achievement predictors, 33.8% of the between school variance was explained. This value is minimal considering that the explained school-level variance when adding leadership dimensions is 87.8% and 72.7% for instructional and transformational leadership respectively. Also, with just the SES and student achievement predictors, there is a significant amount of between school variance that remains unexplained ($z = 2.69$, $p < .01$). The fixed effect results show that none of the school SES and student achievement predictors were significant. These results support the fifth hypothesis that leadership accounts for a significant amount of the variance in job satisfaction after controlling for student achievement and school SES.

Hypothesis 6. It was hypothesized that the principals' instructional leadership dimension scores of supervise and evaluate instruction, promote professional development, and provide incentives for teachers, and the dimension scores of idealized influence, inspirational motivation, and contingent reward from transformational leadership will best predict teacher job satisfaction. Again, leadership dimensions were calculated at the school-level (principal leadership) and teacher-level (teacher perceptions). The hypotheses was supported as the school-level leadership dimensions of maintain high visibility, supervise and evaluate instruction, and provide incentives for teachers significantly predicted teacher job satisfaction at the school-level. And at the teacher-level provide incentives for learning, promote professional development, and provide incentives for teachers were significant. The hypothesis was not supported for the transformational leadership dimensions as idealized influence, inspirational motivation, and contingent reward were not significant at any level. The transformational leadership dimension of individualized consideration was significant at the teacher-level, but only marginally significant at the school-level. None of the transformation leadership dimensions were significant at the school-level. A summary of the results are presented in Table 28.

Table 28

Summary of Significant Leadership Dimensions Predicting Job Satisfaction

Leadership Dimension	Hypothesis	Significant Result
Instructional Leadership		
Supervise and evaluate instruction	✓	✓
Provide incentives for teachers	✓	✓
Promote professional development	✓	✓
Maintain high visibility		✓
Provide incentives for learning		✓
Transformational Leadership		
Idealized influence	✓	
Inspirational motivation	✓	
Contingent reward	✓	
Individualized consideration		✓

Job Satisfaction: Regression Results

Job satisfaction at the individual level was analyzed using OLS regression in addition to HLM. Although HLM is the most appropriate analysis, regressions were included for comparison purposes. When using school-level leadership to predict school-level job satisfaction, instructional leadership explained 73.9% of the variance in job satisfaction [F (10, 26) = 7.36, $p < .001$] while transformational leadership explained 59.9% of the variance [F (8, 28) = 5.20, $p < .001$]. This difference is similar to the difference between 78.1% (instructional leadership) and 65.9% (transformational leadership) explained variance from the school-level HLM results.

When entering in the control variables in the first block, the sequential regression results show that the control variables alone did not significantly predict the school's overall job satisfaction [F (6, 30) = 2.30, $p = .06$, $R^2 = .32$]. However, the R^2 became significant with the

addition of leadership, with significant changes in R^2 for both instructional [F (10, 20) = 4.37, $p < .01$, $\Delta R^2 = .47$] and transformational leadership [F (8, 22) = 2.74, $p < .05$, $\Delta R^2 = .34$]. This is consistent with the HLM analyses that leadership significantly predicts the variance in teacher job satisfaction, even when controlling for school context and principal demographics.

Teacher perceptions of leadership were also used to predict teacher-level job satisfaction. Again the results parallel the HLM analyses, with instructional leadership [F (10, 259) = 31.17, $p < .001$, $R^2 = .55$] explaining more of the variance in teacher job satisfaction than transformational leadership [F (8, 256) = 30.73, $p < .001$, $R^2 = .49$]. However, the within school HLM results show only marginal differences between the variance accounted for (44.9% for instructional leadership and 44.5% for transformational leadership), while the regression results show more distinct differences. These regression results give support to the results obtained from HLM, and confirm the conclusions reached about the hypotheses.

Discussion

Conclusions

The purpose of this study was to compare instructional and transformational leadership theories, specifically evaluating how each affects teacher job satisfaction and student achievement. Elementary school teachers evaluated their principal's leadership style, as well as their own job satisfaction. The leadership ratings were used to predict teacher job satisfaction and student achievement scores. Results indicated that instructional leadership accounted for more of the variance in job satisfaction than transformational leadership. Results for student achievement indicated that instructional leadership accounted more of the variance in the CRT scores, while transformational leadership accounted for more of the variance in ITBS scores. A summary of the results comparing the two leadership theories are presented in Table 29.

Table 29

Comparison Summary of Instructional and Transformational Leadership Theories

	Instructional	Transformational	
Dependent Variable	Variance Explained	Variance Explained	Difference
Regression			
CRT-raw	45%	29%	16%
CRT-proficient	20%	16%	4%
CRT-progress	27%	22%	5%
ITBS-core	22%	27%	-5%
ITBS-composite	21%	29%	-8%
Teacher job satisfaction	55%	49%	6%
School job satisfaction	74%	60%	14%
HLM			
Job satisfaction (within)	45%	44%	1%
Job satisfaction (between)	78%	66%	12%

Student achievement.

Comparing leadership theories (H_1). There seems to be conflicting results when comparing the effects of instructional and transformational leadership on student achievement. Instructional leadership tends to explain more of the variation in CRT scores than transformational leadership, which includes the overall CRT raw score, the number of students that reached the minimum proficiency level, and the schools' progress in CRT scores from the previous year. Transformational leadership, however, explains more of the variance in the other achievement test used in this study, the ITBS. The magnitude of the differences also seems to be approximately equivalent between both theories, with the exception of the CRT-raw where instructional leadership is noticeably larger.

It may seem difficult to come to a solid conclusion about the effects of these leadership theories on student achievement. However, the differences between these tests should be noted (Utah State Office of Education, 2009). The CRT is taken by all students beyond the first grade, while the ITBS is taken by only 3rd and 5th graders. The CRT is taken at the conclusion of each year, while the ITBS is taken at the beginning of each year. The CRT is used for accountability purposes, which determine if the school reaches adequate yearly progress as mandated by the No Child Left Behind Act, while the ITBS is more for evaluative and comparison purposes for the individual student. Because of these differences, it would seem that teachers and administrators place more of an emphasis on the CRT than the ITBS. Since the CRT is the favored dependent variable, results would tend to favor instructional leadership as the better model for principals to use when trying to influence student achievement.

These results are consistent with those of Robinson et al. (2008), that instructional leadership has a stronger effect on student achievement than transformational leadership.

Although Robinson's meta-analyses claimed that effects sizes were four times higher for instructional leadership, it should be noted the limitations of the meta-analysis discussed earlier in this paper. When keeping the international context of the school constant, the differences between leadership theories are not as striking. The results from the current study also support this conclusion, that instructional leadership only has a slight advantage over transformational leadership when it comes to student achievement.

The effects of school context and principal demographic control variables (H_2). Results demonstrated that the school context and principal demographics had a large effect on student achievement, explaining over half of the variance in CRT-proficient and the ITBS scores. This is consistent with the extensive research showing the impact of school context factors, such as SES and school size, on students' achievement scores (Hallinger et al., 1996; Nonoyama-Tarumi, 2008). The interesting finding is that both leadership and school context variables seem to be unique in explaining the variation in student achievement. With the exception of CRT-raw and CRT-progress, the control variables explained ~55% of the variance in student achievement and when adding leaderships' unique ~20% these variables combined to account for a remarkable 66%-80% of the variance (refer to Table 13 for specific statistics).

CRT-raw and CRT-progress on the other hand were explained primarily by the principals' leadership ratings (26% to 52%), with the control variables predicting a small and nonsignificant amount of the variance (24% and 18% respectively). CRT-raw scores could be considered different measures of achievement than the CRT-proficient and the ITBS, because raw scores are not a percentage or percentile and can have a larger range of values. CRT-progress is also a unique measure, which considers the progress of students from the previous year. It is very possible that principals actually do have more influence over the progress of the

students in their school than the impact of the school context. School context would seem to be a rather stable characteristic, while principal leadership is more dynamic and may have a larger impact on change, as indicated by the results of leadership accounting for nearly twice as much as the variance in student academic progress than school context.

Specific leadership dimensions (H_3). What specific principal behaviors have the largest impact on student achievement? Results demonstrated that monitor student progress, protect instructional time, provide incentives for learning, provide incentives for teachers, and contingent reward were associated with higher levels of student achievement. These first four leadership dimensions of monitor student progress, protect instructional time, provide incentives for teachers, and provide incentives for learning deal with the principals' ability to:

- Meet with teachers to discuss students' needs
- Discuss performance results with teachers and students
- Limit possible interruptions on classroom instruction
- Encourage teachers to use instructional time effectively
- Recognize students that demonstrate academic excellence or improvement
- Give clear expectations and establish appropriate rewards for teachers
- Give recognition at assemblies, office visits, and in communications to parents

These leadership practices seem to align nicely with students' ability to perform academically, but have not been demonstrated in previous studies (Witziers et al., 2003).

The last leadership dimensions associated with student achievement was contingent reward, which has been shown in previous research to be associated with student achievement (Robinson et al., 2008). This leadership dimension is associated with the ability of principals to clearly indicate expectations and establish appropriate rewards for teachers when they meet those

expectations. Table 30 contains a summary of the leadership dimensions that were significantly related to student achievement and teacher job satisfaction.

Table 30

Summary of Leadership Dimensions Predicting Student Achievement and Job Satisfaction

Leadership Dimension	Student Achievement	Job Satisfaction
Instructional Leadership		
Frame the school goals		
Communicate the school goals		
Supervise and evaluate instruction		✓
Coordinate the curriculum		
Monitor student progress	✓	
Protect instructional time	✓	
Maintain high visibility		✓
Provide incentives for teachers	✓	✓
Promote professional development		✓
Provide incentives for learning	✓	✓
Transformational Leadership		
Idealized influence		
Inspirational motivation		
Intellectual stimulation		
Individualized consideration		✓
Contingent reward	✓	
Management-by-exception: Active		
Management-by-exception: Passive		
Laissez-faire leadership		

Job satisfaction.

Comparing leadership theories (H_4). The results displayed on Table 29 demonstrate the superiority of instructional leadership in predicting teacher job satisfaction. This is an interesting finding given that transformational leadership has a strong association with follower satisfaction in the literature, while few studies have ever reported the impact of instructional leadership on teacher satisfaction (Judge & Piccolo, 2004). Additionally, with the heavy emphasis of instructional leadership on managing the curriculum and student leaning it would seem this form of leadership would affect academic outcomes rather than teacher outcomes (Hallinger, 2003).

Another interesting finding from the HLM analyses is that teacher job satisfaction has more variation within schools than between schools. This could be interpreted to mean job satisfaction is primarily an individual phenomenon, meaning that teachers within a school can differ significantly in regards to their satisfaction despite sharing the same work environment and school characteristics. Teacher perceptions of their principals' leadership practices accounts for a fair amount of the variance at the teacher-level (44% to 45%), while several other individual factors would account for the remaining variance. Other factors not investigated in this study could include teacher occupational perceptions, individual salary differences, personal circumstances, the quality of teacher relationships, parent interactions, student performance at the classroom level, and other individual factors that would likely influence teachers' job satisfaction (Bogler, 2001; Grayson & Alvarez, 2008; Hulpia et al., 2009). Although leadership does not capture the not the entire construct of job satisfaction, the 44 to 45% of explained variance is very meaningful. The way in which a teacher perceives his or her principal and the interactions that they experience can impact how satisfied he or she is with work.

The HLM results also show that there is a smaller but significant amount of between school variance, meaning that while most of job satisfaction is at the individual level there are some common school-level elements that influence teachers' job satisfaction. A large influence at the school-level is the leadership of the school principal, as leadership accounted for 66% and 79% of the school-level variance. This means that a large majority of the differences between school-level job satisfaction can be attributed to the principals' leadership at that school. It could be speculated that the remaining variance can be attributed to other school factors, such as the work environment, the school climate, the social networks and learning communities at the school, or the schools' resources (Grayson & Alvarez, 2008). Other school-level factors, such as the school SES and student achievement, were collected as part of the study to find the influence of these factors in addition to the principals' leadership.

The effects of school context and student achievement control variables (H_5). It would seem that schools with excelling students and in higher SES areas would have teachers that are more satisfied with their job. However, the HLM results indicated that school context seems to play a minor role in teacher job satisfaction, as none of the control variables were significant. Only 34% of the between school variance was explained with the control variables entered in the HLM analysis. When adding the control variables of student achievement and school SES to leadership the explained variance only increased 10% for instructional leadership and 7% for transformational leadership. These results suggest that school context and student achievement only have a small impact on job satisfaction, while leadership seems to be the primary influence.

Specific leadership dimensions (H_6). What specific leadership behaviors have the largest effect on job satisfaction? The dimensions of supervise and evaluate instruction, maintain high visibility, provide incentives for teachers, promote professional development, provide

incentives for learning, and individualized consideration all had a significant association with job satisfaction (Table 30). Based on the individual items of the PIMRS and MLQ, the specific behaviors associated with increased teacher satisfaction are:

- Conduct classroom observations and give feedback to teachers
- Informally visit with students and teachers during breaks and activities
- Acknowledge, recognize, and reinforce good performance by teachers
- Compliment teachers publically and privately
- Ensure in-service activities are being conducted and are effective
- Encourage collaboration and the sharing of information at faculty meetings
- Recognize students that demonstrate academic excellence or improvement
- Give recognition at assemblies, office visits, and in communications to parents
- Support teachers in their recognition of student accomplishments in class
- Understand the individual needs of teachers
- Develop individuals through coaching and providing opportunities for growth
- Establish a supportive work environment

These behaviors, with the exception of the last three, are associated with instructional leadership. These results contribute significantly to the literature because very few studies have shown the impact of instructional leadership on teacher job satisfaction. While transformational leadership has extensive research demonstrating its effects on job satisfaction (Bogler, 2001; Judge & Piccolo, 2004), instructional leadership has an even larger impact on job satisfaction and provides specific principal leadership behaviors that are associated with higher levels of teacher job satisfaction.

Implications

Leadership development. For the past twenty years, leadership development programs have suggested the use of instructional or transformational leadership practices (Hallinger, 2000; LaPointe & Davis, 2006). Until recently, few research studies have attempted to directly compare these theories. Robinson et al. (2008) was one of the first to compare these theories. Results from that meta-analysis suggest that instructional leadership practices are more effective than transformational leadership. Likewise, the results from the current study would suggest the use of instructional leadership practices over transformational leadership practices.

Another reason for the use of instructional leadership in leadership development programs is its specificity. The use of transformational leadership in education may leave a principal asking, what does transformational leadership look like? Instructional leadership, however, has specific practices that a principal can understand and implement simply by reviewing the leadership dimensions or reading the items on the PIMRS.

Leadership development programs can specifically target the most effective leadership practices rather than on all the dimensions of instructional leadership. The specific practices that are associated with student achievement and teacher job satisfaction were reported earlier in this study. It should also be noted that some of the instructional leadership dimensions were associated with both student achievement and teacher job satisfaction, namely provide incentives for teachers and provide incentives for learning. Although these practices seem to be transactional in nature, they show a considerable impact on student achievement and teacher job satisfaction.

Promote professional development was related to increased job satisfaction and had a .32 correlation with student achievement. This dimension is related to practices such as ensuring in-

service activities are being conducted and are effective, as well as encouraging collaboration and information-sharing at faculty meetings. This dimension could be compared to the efforts of principals to promote professional learning communities (Leithwood et al., 2009; Vescio et al., 2008). Other researchers have noted the particular importance of promoting professional development in establishing effective schools (Leithwood et al., 2009; Robinson et al., 2008). Professional learning communities have received a large amount of attention from researchers in recent years, with studies demonstrating the importance of establishing networks among teachers and opportunities for collaborative interactions (Bullough & Baugh, 2008; C. Mullen & Hutinger, 2008; Vescio et al., 2008). It is suggested that in addition to providing incentive for teachers and students, that developing professional learning communities be a priority for principals.

Accountability. The No Child Left behind Act has placed an increased amount of accountability on school principals to ensure students are meeting achievement standards (US Department of Education, 2009). It may seem that student achievement is outside the influence of the school principal. Increasingly, however, researchers are arguing that leadership does make a difference (Waters & Cameron, 2005). Although not directly addressing educational leadership, Kaiser et al. (2008) have recently argued that leaders should be evaluated on actual group outcomes, rather than on perceived effectiveness or processes. Results from empirical research, such as this study, suggest that principal leadership does account for a meaningful amount of the variation in student test scores (Nettles & Herrington, 2007). From the results in this study and the conclusions reached by other researchers, it is suggested that principals should be held accountable to some degree for the performance of teachers and students. It is possible that the increased accountability on school principals has some merit. However, there are also some important contextual factors that should also be considered.

Heck (2000) has pointed out that student background and school contextual factors, such as school SES, is beyond the control of the school principal. Principals should, however, be accountable for the student achievement standards that fall within their influence, meaning that principals should be held responsible for student achievement given the school context and the realities in which they work. Heck (2000) proposed a model that included statistical adjustments that allowed for an equitable comparison between schools. The results from this study support this conclusion that school context and principal demographics do have a significant impact on student achievement, but that principals contribute to the outcome of student test scores in a unique and meaningful way. Results from CRT-progress data also suggest that the principal may have more of an influence on the progress of students than on actual scores. Thus, leadership does matter within the context of student and school characteristics, and a possible way to hold school context constant is to look at the progress of students within the same school.

Limitations and Future Research

Several limitations should be noted in this study. First, the sample was relative small at the school-level. There were a large number of teachers that participated in this study with a very strong response rate, which allowed for more conclusive and statistically significant results at the teacher-level. However, the school-level sample size, which contained the student achievement variables, was not large enough for the analyses in the first hypothesis to reach significance. Remember that the first hypothesis results showed that leadership accounted for 16 to 45% of the variance in student achievement. Although this is a very meaningful amount of variance accounted for, the R^2 did not reach statistical significance. It is assumed that with more schools in the sample these R^2 would be statistically significant. Other research studies have also found a meaningful but nonsignificant association between leadership and student achievement

(Hallinger & Heck, 1996; Robinson et al., 2008). However, it should be noted that the results from the current study show a much stronger association than other research studies, with correlations ranging from .40 to .67, while typical correlations from other studies tend to be around .25 (Waters & Cameron, 2005). The small sample of schools would not have been a problem if student achievement scores were at the teacher- or student-level. This would have increased the number of test scores from 37 (the number of participating schools) to 558, (the number of classrooms or participating teachers) or even to 11,160 at the student-level (the potential number of student test scores if each class had an average of 20 students). This leads into another related limitation. Another limitation regarding the sample is the definition of teachers used in this study. Teachers were not simply K-6 certified teachers, but included other staff such as reading aids, school psychologists, and speech pathologists.

Second, student achievement scores were collected at the school-level. This limited the statistical analyses that could have been performed as HLM was not used due to student achievement being at the school-level. In order to allow teachers to be honest in evaluating their school principal, the surveys were kept anonymous. This did not allow the researchers to get a class average achievement score that could be connected to the teachers' individual responses. Results would be more informative if HLM had been used with teacher-level leadership scores, teacher-level job satisfaction, and student achievement averaged for each classroom. Another step further would be to have a three-level HLM model, with school-, teacher-, and student-level variables, where individual student test scores would be nested in classrooms (teacher-level variables) and classrooms nested in schools (school-level variables). This is a possible direction for future research where researchers have approval and access to large-scale databases, typical of research involved in school improvement initiatives.

A third limitation that needs to be addressed is the survey methodology. Survey methodology can be very advantageous to researchers, and provide very informative results. The limitation of this study is that surveys responses from the same source were used as both the independent and dependent variable. This problem is referred to as common-source bias (Dionne, Yammarino, Atwater, & James, 2002), meaning that teachers' perceptions of leadership were used to predict teachers' perceptions of job satisfaction. Because these two measurements come from the same source, the two measures will inherently have a relationship. For example, the two rating measurements may simply have an association due to a person having a tendency to rate high across both scales, while another person may have a tendency to rate low across both scales. By averaging the ratings to the school-level some of the bias was reduced in this study. But a more informative and impressive approach to this line of research would be to use rating scales to predict an independent criterion. For example, this study used leadership ratings to also predict the criterion of student achievement which was independent of the teacher ratings. Future research could explore other areas and associations of leadership ratings with dependent measures that are not rating scales, such as school-record data (office discipline referrals, suspensions, and attendance), student grade point average, objective measures of school climate, or teacher turnover rates.

Future research could also examine new models of leadership in education. For example, findings from this research could be used to combine the leadership dimensions that showed a significant association with student achievement and job satisfaction to create a new model of leadership. Several researchers have taken this method and created new modified theories of leadership that are beginning to replace the older theories of instructional and transformational leadership. For example, Hallinger (2003) suggested that the ideal form of leadership is the

integration of instructional and transformational leadership. Other researchers have built off Hallinger's work and integrated leadership models to form newer and more popular theories of leadership, called shared instructional leadership and distributed leadership (Hulpia et al., 2009; Mangin, 2007; Scribner et al., 2007). These theories are more recent, and although promising, lack the uniform measurement and extensive publications that instructional and transformational leadership theories have (Mayrowetz, 2008).

Caution should be taken when integrating theories. There is danger in simply amalgamating leadership dimensions because many dimensions are theoretically incompatible. For example, one cannot combine the dimensions of provide incentives for teachers and transformational leadership because providing incentive form teachers is primarily a transactional leadership behavior. Bass (1995) claims that transformational leaders are able to go beyond the short term exchanges, such as provide incentives for teachers, and have followers give additional effort by buying in to a greater vision. Another danger in simply integrating established leadership dimensions is the mistaken idea that the researcher has created something new (Leithwood & Jantzi, 2006). Simply adding an element to an already established model does not sufficiently merit the attention of an entirely new line of research. What is needed in educational research is the conceptualization of a new model of leadership that can go beyond the current theories and have a greater impact than the current models of instructional and transformational leadership.

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