ABSTRACT

Title of thesis:	PRINCIPAL AND TEACHER REPORTS OF PRINCIPAL LEADERSHIP: AN EXAMINATION OF CONGRUENCE AND PREDICTIVE VALIDITY
	Meghan Rebecca Finney Green, B.A., 2015
Thesis directed by:	Associate Professor Emeritus, William Strein, CHSE Department

Principals influence school characteristics including morale and teacher turnover, but the utility of different methods of measuring principal behavior is unclear. Using data from public schools in the National Study of Delinquency Prevention in Schools, I examined relations between school-level teacher reports and principal self-reports of leadership, which better predicted student-reported rule clarity and fairness, and whether agreement or congruence between reports of principal leadership predicted school morale, organizational focus, and teacher turnover. The data used are from 263 schools and thousands of respondents; limitations of the study include the measures of principal leadership used, which are not strictly parallel and the age of the data used. I

hypothesized that correlations between teacher and principal reports would be small and positive, that teacher reports of leadership would better predict rule clarity and fairness, and that congruence between reports would predict better school morale, better organizational focus, and lower teacher turnover.

PRINCIPAL AND TEACHER REPORTS OF PRINCIPAL LEADERSHIP: AN
EXAMINATION OF CONGRUENCE AND PREDICTIVE VALIDITY

By

Meghan Rebecca Finney Green

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of the Arts

2015

Advisory Committee:
Associate Professor Emeritus, William O. Strein, Ph.D., Chair
Professor Emeritus, Gary D. Gottfredson, Ph.D.
Professor, Dennis M. Kivlighan, Jr., Ph.D

Table of Contents

List of Tables

List of Figures

Chapter 1: Principal and Teacher Reports of Principal Leadership: An Examination of

Congruence and Predictive Validity

School principals influence school climate, organization, and morale. Principals

are key to implementing quality prevention programs (Gottfredson et al., 2002), and

influence teacher job satisfaction and turnover (American Federation of Teachers, 1997).

Some researchers assert that "educational leadership is possibly the most important single

determinant of an effective learning environment" (Kelley, Thornton, & Daughtery,

2005). Many recent reports focus on the role of principals in improving schools

(Ishimaru, 2012; Keys, Sharp, Greene, & Grayson, 2003; Knapp et al., 2010; Nettles &

Herrington, 2007). A recent Google search of "turnaround principals" produced 588,000

results demonstrating federal, state, and district-level interest in the qualities of and

strategies for identifying and training successful school principals – particularly in

difficult, low-performing schools. Researchers need effective methods to study principal

leadership, qualities, and performance within schools.

To study the effect of principal leadership on school outcomes, researchers use a

variety of methods including direct observation, teacher reports, and principal self-

reports. Though observations may provide an objective picture of principal leadership

qualities or behavior, they are time consuming and costly. Teacher and principal reports

often provide more efficient, less costly methods of assessing principal leadership, and

may be able to capture a more comprehensive view of principal leadership than time-

limited observations. However, some research indicates a lack of agreement, or a low

correlation, between reports of supervisors and supervisees about supervisor behavior

(Conway & Huffcutt, 1997). While a lack of congruity or agreement between reporters

may indicate that unique aspects of performance or behavior are highlighted by each reporter (Conway & Huffcutt, 1997), it may also indicate that one or both of the reports are not valid measures of the target construct – in this case, principal leadership style.

The few studies that have examined agreement between teacher and principal reports of school outcomes or leadership behavior have indicated low correlations between reports (Stone, Astor, and Benbenishty, 2009; Kelley, Thornton, and Daugherty, 2005). While there has been little research examining agreement or congruence between teacher and principal reports, organizational psychology has examined agreement between self and other reports of performance in supervisors and supervisees. A number of organizational studies found that higher correlations and congruence between supervisor and supervisee reports (self-other agreement) relate to higher supervisor intelligence (Mabe & West, 1982) as well as a number of positive outcomes ranging from achievement (Mabe & West, 1982) to job performance and organizational commitment (Szell & Henderson, 1997). Generally, this research has found low correlations between self-reports and other-reports of performance, with most demonstrating that self reports indicate higher levels of performance than do other-reports (Conway & Huffcutt, 1997; Harris & Schaubroek, 1988; Heidemeier & Moser, 2009). In organizational psychology, this self-other agreement between supervisors and supervisees is referred to as managerial self-awareness (Atwater & Yammarino, 1992; Church, 1997; Fleenor et al., 2010). Based on this organizational psychology research, it seems likely that agreement between principals (supervisors) and teachers (supervisees) may be a predictor of important school-related outcomes such as school morale, organizational focus, and teacher turnover.

Study Rationale

In this study, I examined to what degree teacher reports and principal self-reports are correlated, which report better predicts school rule clarity and fairness, and whether congruous reports between teachers and principals – as measured using polynomial regression – predict better school outcomes including better school climate, organizational focus, and lower teacher turnover. I explored these questions using the data gathered in the National Study of Delinquency Prevention in Schools (Gottfredson et al., 2002). The answers to these questions can inform future researchers about whether principal self-reports or teacher reports are more appropriate for assessing principal leadership and potentially other school characteristics. Moreover, the present research can inform future researchers on whether principal or teacher perceptions of principal leadership better predict school rule clarity and fairness, and whether congruity between reports is predictive of school morale, organizational focus, and staff turnover. If reports do not align, future research may examine what accounts for this lack of agreement between teachers and principals. Understanding which report has the most predictive utility may be important in determining whose report to use in future research. Information about the importance of congruence between teacher and principal reports in predicting school morale, organizational focus, and teacher turnover may be useful for future interventions. Interventions that aim to boost school morale, change organizational focus, or decrease teacher turnover may target principal self-awareness as a potential place to intervene if high self-other agreement predicts positive outcomes. If congruence between reporters is important, finding a way to build similar understandings and

perceptions between teachers and principals may be one approach to improving school climate and reducing teacher turnovers.

Statement of Research Questions

1. To what degree are principal self-reports and teacher reports of principal leadership style correlated?

   a. Hypothesis 1: Principal self-reports and teacher reports will have only a small positive correlation (<.25).

      A number of studies report that teacher and principal ratings of various school-related issues or outcomes are not highly correlated (Stone, Astor, & Benbenishty, 2009; Kelley, Thornton, & Daugherty, 2005). In their study of student victimization, Stone, Ashor and Benbenishty (2009) reported that the correlation between teacher and principal reports of victimization was 0.15. Studies of supervisor-supervisee reports on supervisor behavior produce correlations ranging from 0.14 to 0.35 between reports (Conway & Huffcutt, 1997; Harris & Schaubroek, 1988; Heidemeier & Moser, 2009). These low correlations highlight the lack of consistency between reports and indicate that either one reporter is not accurate or that different reports measure different facets of constructs such as victimization or supervisor leadership.

2. Are teacher reports or principal self-reports of principal leadership style more predictive of school rule clarity and fairness?

a. Hypothesis 2: Aggregated teacher reports of principal leadership will better predict student reports of school rule clarity and fairness than principal self-reports of leadership.

One study by Atwater and Yammarino (1992) found that self-ratings were often inflated and that self-reported leadership behavior was only predictive of performance when it was related to others' reports of leadership behavior. Other studies also indicate that self-assessment of skill or character is often flawed. A number of studies indicate that it is very difficult for individuals to judge themselves accurately, and that in many cases, other people's assessments are more accurate (Dunning, Heath, & Suls, 2004). Accordingly, teacher reports of principal leadership behavior are likely more accurate. Based on research indicating that effective leadership relates to school characteristics, more accurate reports of principal leadership (i.e., those made by teachers) are more likely to predict school characteristics, such as school rule clarity and fairness.

3. A) Are more congruous reports between teachers and principals (i.e. higher self-other agreement or principal self-awareness) predictive of better school morale, organizational focus, and lower staff turnover?

B) How does incongruity between principal self-reports and aggregated teacher reports of principal leadership influence school morale, organizational focus, and staff turnover?

a. Hypothesis 3: Higher principal-teacher agreement on measures of leadership will predict higher school morale, better organizational focus, and lower staff

turnover (See Figure 1). Discrepancies between self and other reports in which the teachers reported more favorably on principal leadership than principal's self-reported will relate to better morale and organizational focus and lower staff turnover.

Few studies examine self-other agreement as it relates specifically to teachers and principals. However, a number of studies found that high self-other agreement between supervisor and supervisee ratings of supervisor behavior related to positive outcomes including higher achievement (Mabe & West, 1982), job performance (Fleenor et al., 2010), leader performance, and organizational commitment (Szell & Henderson, 1997). In general, higher performing managers tend to have higher self-awareness (Church, 1997). These correlates of leader performance in the organizational literature serve as a proxy to the outcomes expected when assessing leadership in schools.

Z
School Morale
t score

Y
(Aggregated Teacher Reports,
t score)

X
(Principal Self-Reports,
t score
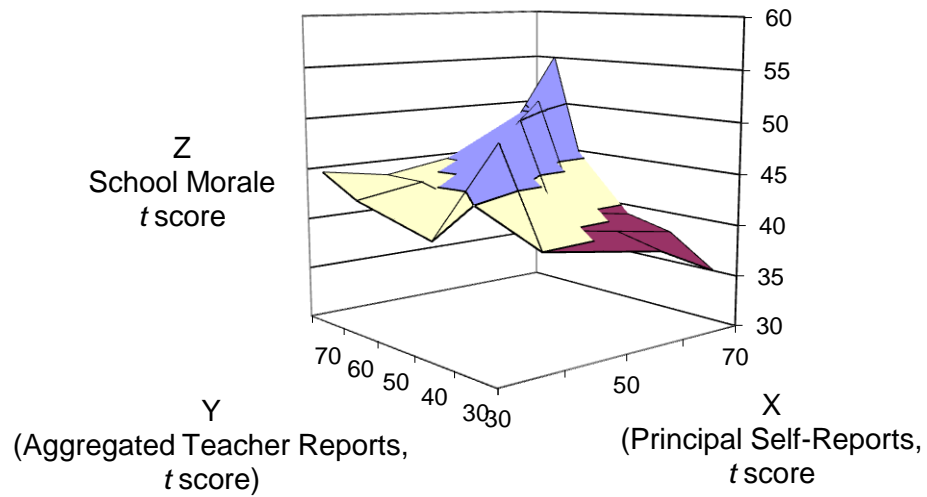
Note: The convex ridge at the line of perfect agreement indicates that school morale is highest at points of agreement between principal self-reports of leadership and aggregated teacher reports of leadership. The slope along the line of incongruity is negative, indicating that morale is higher when aggregated teacher reports of principal leadership are higher than principal self-reports of leadership. Teacher turnover is hypothesized to relate in a similar way, but with a concave surface and low points along the line of perfect agreement.

Figure 1. Hypothesis 3 Illustration: School morale (or organizational focus) as predicted

by principal self-reports and aggregated teacher reports of leadership discrepancy

Chapter 2: A Review of the Literature

This literature review explores the following questions: what makes an effective leader in schools, what is the importance of effective leadership, and how is it measured? The aim of this literature review is to provide some background on, conceptualizations of, and strategies for measuring effective principal leadership in schools, and to briefly review the connection between principal leadership and school characteristics of interest for this thesis, such as school morale and teacher turnover. While school leadership is a broad topic and likely comprises many attributes, characteristics, and behaviors, this review focuses on current trends in, important characteristics of, and difficulties in defining effective leadership.

Search Methods:

The chief sources for the literature review were electronic databases; the search generated in EBSCO using a number of databases: Academic Search Premier, Business Source Complete, Business Source Premier, Education Research Complete, Education Source, ERIC, Professional Development Collection, PsycArticles, PsycINFO, and Teacher Reference Center. Search terms included "self other reports of performance," "principal leadership in schools," "teacher turnover and principal leadership," "principal leadership, secondary school, and school outcomes," "leadership," "qualities of effective leader," and "teacher principal agreement." Peer-reviewed journal articles from the past 25 years were included. The publication type and time range were chosen to increase feasibility by limiting results and to reflect the ever-changing educational field by exploring current research and the broad transitions in conceptualizations of effective principal leadership have undergone in the past quarter century. The initial searches returned thousands of article results. All duplicates were removed, eliminating over half

of the results. After that, articles were reviewed for relevancy. Articles relating to general

leadership, principal leadership, leader effectiveness, manager effectiveness, and

measuring leadership were retained. Articles specifically related to other fields (e.g.,

medicine) or geographic locations (e.g., Japan) were removed. Following these inclusion

criteria, 229 articles were retained. Additional references were pulled from relevant

citations to broaden the search. Finally, recommendations of appropriate references were

sought from experts and researchers with knowledge of the field.

Broad Ideas on Leadership

According to research in organizational and industrial psychology, workplace

performance is a function of the skills, motivations and commitments of workplace

personnel, the characteristics of work settings, and the environment (Rowan, 1996).

Different researchers have theorized different relationships between these elements and

the importance of leadership in shaping these characteristics. Porter and Lawler (1968)

used Vroom's (1964) expectation-theory models as a foundation for their models of

organizational motivation and performance. Their model accounted for the process by

which components – including management, expectations of employees, and

performance – interact and lead to employee motivation and performance. Expectancy

plays an important role. Employees expect to be able to complete the tasks of their job,

receive rewards for successful performance, and expect that rewards are equitable. When

these expectations are met, employees are satisfied and, in turn, motivated (Kach, 2015;

Porter & Lawler, 1968; Lawler & Suttle, 1973). Research findings support this theory.

One study of 154 managers showed that job performance was positively related to

expectations of reward for effective performance (Lawler & Porter, 1967), and two

reviews found that at least 17 other studies found support for this expectancy model

(Lawler, 1971; Heneman & Schwab, 1972; Lawler & Suttle, 1973). Locke and Latham

(1990) wrote further about the importance of goals, expectations, and rewards. They

argued that effective managers are those who establish goals for organizations, translate

those goals into explicit agendas and plans, and reward employees who support and work

toward organizational goals (Locke & Latham, 1990).

Leadership can influence motivations of personnel, characteristics of the work

and environment, and ultimately workplace performance. As the recognition of the

importance of leadership grows, so do the definitions and conceptualizations of effective

leadership. Today, a Google search of "effective leadership" by this author results in over

27 million references. The top result is a blog post from Glenn Llopis, a contributor at

Forbes.com, who reported that preparing effective leaders begins with just five simple

rules that can be summarized as accountability, solving problems effectively, listening,

attending to employees, and learning from failure (Llopis, 2014). Another top result

comes from the University of Notre Dame's University Alliance, which cites four critical

leadership qualities: self-assessment, perception skills, recognizing and responding to

group needs, and understanding organizational goals (University Alliance, 2015). The

third result is from Peter Economy, who outlined "7 Traits of Highly Effective Leaders"

including optimism, integrity, confidence, and decisiveness (Economy, 2013). Even

among popular sources, the views on leadership vary and represent differing opinions on

the importance of skills and characteristics.

Despite years of research in organizational psychology, a consensus on the

definition of an effective leader remains out of reach. Some argue that effective leaders

are defined by their outcomes and measured by the success of their projects, employees, and employers. Others define effective leadership as personal qualities or traits attributed to the leader. Trends in leadership abound and include descriptors like "transformational" (e.g., Barnett, McCormick, & Conner, 2001), "authentic" (e.g., Bird et al., 2012), "creative" (e.g., Goertz, 2000), "reflective" (e.g., Day, 2000), "mindful" (e.g., Kearney, Kelsey, & Herrington, 2013), and "transactional" (e.g., Barnett, McCormick, & Conner, 2001). While these leadership descriptions are now applied to school leaders, school leaders also have their own descriptors like "instructional leaders" (e.g., Devine & Alger, 2011) or "turnaround principals." The volume and breadth of research on what it takes to be a good leader makes consensus a difficult, if not impossible, task. Management now requires a high level of self-awareness, reflection, distribution of responsibility and decision-making, and understanding of instruction. Effective managers must be genuine, assertive – but not too much (Ames & Flynn, 2007) –, creative, and able to reform even the most challenging schools or businesses.

Effective leadership remains undefined, but research hints at common elements, including self-awareness (Higgs & Rowland, 2010, Atwater & Yammarino, 1992), emphasis on teamwork (Kolb, 1995), supporting and empowering employees (Kolb, 1995; MIT Sloan Management Review, 2004), positive thinking (Wood & Vilkinas, 2004), trust or integrity (Burns & Martin, 2010), and focusing on achievement (Wood & Vilkinas, 2004). Good leaders also have "vision" and social influence (Matthews, 2009; Yukl, 1994). Northhouse (2004) writes that leadership is "a process whereby an individual influences a group of individuals to achieve a common goal…without influence, leadership does not exist" (p. 3). Though effective school leadership likely

requires many of the same characteristics required for other managerial or leadership positions, some of the demands and requirements place on school principals may be unique and require an additional set of skills.

Principal Leadership in Schools

As the leaders of their schools, principals influence the motivation and commitment of teachers as well as the characteristics of the school environment. One report from the Wallace Foundation (2011) stated, "a good principal is the single most important determinant of whether a school can attract high-quality teachers necessary to turn around schools" (p. 2). School principals influence school climate, organization, and morale, and are key to implementing quality prevention programs (Gottfredson et al., 2002). Administrative support is one of the most important factors in teacher job satisfaction and retention (American Federation of Teachers, 1997). Moreover, effective leadership "is second only to teaching among school-related factors in its impact on student learning" (Leithwood, Louis, Anderson, & Wahlstrom, 2004, p. 3), and "educational leadership is possibly the most important single determinant of an effective learning environment" (Kelley, Thornton, & Daughtery, 2005).

Educational leaders serve a vital role in determining the success and satisfaction of students and staff, and the influence of leaders may be strongest in the neediest schools. Many recent reports focus on the role of principals in improving schools (Ishimaru, 2012; Keys, Sharp, Greene, & Grayson, 2003; Knapp et al., 2010; Nettles & Herrington, 2007). The No Child Left Behind Act of 2001, with its emphasis on standards-based reform and leadership, created an impetus for leadership change in schools (Reardon, 2011; Matthews, 2009). President Obama's Blueprint for Education

also emphasize the importance of school leadership, outlining important requirements for effective principals and stressing leadership as a critical factor in school success (U.S. Department of Education, 2010). A Google search of "turnaround principals" produced 588,000 results demonstrating federal, state, and district-level interest in the qualities of and strategies for identifying and training successful school principals – particularly in difficult, low-performing schools. With the recent spotlight on principal leadership in schools, it is important to examine what elements constitute effective principalship.

While federal policy and research support the importance of effective leadership in schools, our understanding of the characteristics of effective school leadership is tenuous (Harris, 2004). Educational research has yet to establish which forms of leadership best influence school improvement and how different elements of leadership – including experience, training, traits, and professional learning – may combine to produce an effective school leader and improved school performance (Harris, 2004). As with other leadership research, the research on principal effectiveness supports some common factors of effective leaders.

Effective principals set clear directions, establish expectations, and evaluate their effectiveness as well as the performance of those around them. Successful schools leaders encourage staff members and students – providing them with the support and training they need to succeed (Leithwood, Louis, Anderson, & Wahlstrom, 2004). These guidelines for leadership may seem straightforward, but a number of reports indicate that principals must also be attuned to their particular school and community environment when making decisions about the type of leadership they employ (Keys, Sharp, Greene, & Grayson, 2003; Leithwood, Louis, Anderson, & Wahlstrom, 2004). Being an effective

principal is not easy, particularly in difficult, low achieving schools, but it is important. Principals have a clear influence on their subordinates (i.e. teachers); they also seem to have an important influence on the broader school environment (Matthews, 2009).

Principals use many different leadership roles and styles. One common role a principal may serve is the role of instructional leader. Theories of and research on instructional leadership in schools emerged and developed throughout the 1980s and focused heavily on high performing schools in low socioeconomic environments. Effective principals have "strong backgrounds in curriculum and instruction" (Ylimaki, 2007, p. 12). Many service jobs utilize a model where the supervisor's role is to oversee the subordinates' work with consumers; for principals, subordinates are teachers and consumers are students. To serve as effective instructional leaders, principals must engage in curriculum development and supervision of teachers – tasks that directly influence classroom practices, and ultimately influence students' experiences and success in school (Reardon, 2011; Ylimaki, 2007). Instructional leaders are able to support and implement professional development and intervention programs in schools, and create positive cultures defined by high expectations (Edmonds, 1979; Ylimaki, 2007). Other important qualities of effective instructional leadership included creating school goals, being highly visible, evaluating and supervising instruction, and supporting teachers in coordinating curriculum and monitoring student progress (Ylimaki, 2007; Hallinger, 1984). Instructional leadership served as the major training model in many principal training programs from the early 1980s through the mid 1990s, but fell out of favor due to the lack of inclusion of parent and teacher voices, at which time transformational leadership became the trend in effective leadership models (Ylimaki, 2007).

Despite current trends away from traditional instructional leadership, one case study on four elementary schools identified that shared instructional leadership – which places more emphasis on teacher involvement and inclusion – led to "secure and dynamic places for teaching and learning" (Ylimaki, 2007, p. 17). Shared instructional leadership is considered by some to serve as a bridge between traditional instructional leadership and transformational leadership. Others refer to "learning-centered leadership" which shares characteristics with instructional leadership but incorporates elements of transformational leadership, including respect for culture and diversity, building relationships within and outside of the school community, communicating with and supporting teachers, and monitoring data for accountability (Reardon, 2011). One small-scale study of 31 Virginian principals found that self-reports of learning-centered leadership related to better student outcomes on reading test scores, particularly for those principals reporting higher standards for student learning and more rigorous curriculum. Further, a principal's perception of focus on rigorous curriculum and performance accountability accounted for 16-17% more variance in reading test scores than accounted for by SES alone in 4th and 5th grade students (Reardon, 2011), indicating that this leadership style may improve student performance on standardized measures.

Transformational leadership, as noted above, is one current trend in principal training and is advocated for by many as a pathway to effective leadership (Hallinger, 2003). Transformational leadership is often viewed as a counterpart to transactional leadership. Downton distinguished these terms from each other in the mid-70's, but the terms did not gain attention until the work of Burns in the late 70's (Barnett, McCormick, & Conners, 2001). Early research on these two forms of leadership examined political

leadership and the distinction between ordinary and extraordinary leaders (Burns, 1978). This research devised these two classifications of leaders. Transactional leadership was marked by tradition and a power exchanged between followers and leaders in which followers comply to receive expected awards. Conversely, transformational leaders increase their followers' awareness of the value and importance of goals and strategies to achieve them. Thus, while transactional leaders rely on reward contingencies, transformational leaders rely on inspiration, confidence, and relationships (Burns, 1978; Barnett, McCormick, & Conners, 2001). Transformational leaders motivate followers. They "transcend their own immediate self-interest for the sake of the mission and vision of the organization" and this transcendence creates engagement and passion in followers – ultimately leading to performances that surpass expectations (Barnett, McCormick, & Conners, 2011, p. 25).

Studies by Bass and Avolio (1995, 1997) highlighted key characteristics of transformational leaders: they inspire trust and emulation, have attainable visions, motivate followers, provide meaning and purpose to work, encourage innovation and creativity, and build relationships with followers. Ordinary, transactional leaders rely on contingencies and intervene with followers only to correct or avoid mistakes (Barnett, McCormick, & Conners, 2011). These descriptions highlight why transformational leaders as school principals may seem so attractive. In schools, culture is critical and the work is difficult. Extraordinary, transformational leaders may be able to foster a positive school culture, provide support for their staff, and inspire trust and motivation in a challenging environment. Indeed, Leithwood and Jantzi (2005) and Robinson, Lloyd, and Rowe (2008) concluded that transformational leadership is related to student learning,

achievement, and engagement. Other research finds that transformational leadership in principals is associated with improved student outcomes (Leithwood & Riehl, 2003), more trusting relationships, and teacher participation in the decision-making process (Leithwood, 1994). Despite the theoretical benefit of and some research to support transformational leaders in school, at least one study found that the distinctions between transformational and transactional leadership is less clear in practice (Barnett, McCormick, & Conners, 2011). Disparities between measurement and definitions of leadership styles, like transformational leadership, makes it difficult to compare results, and more research is needed to define, measure, and analyze the effects of such leadership styles (Goddard & Miller, 2010).

Though transformational leadership may not be the panacea for school leadership, much research seems to highlight the importance of the so-called 'soft skills' or emotional intelligence of leadership (Crosbie, 2005; Goleman, 1995). One study found that people skills account for 85% of an individual's job success, whereas technical skills and knowledge account for only 15% (Crosbie, 2005). Research on successful CEOs finds that their staff members rate them as having integrity, inclusiveness, and self-awareness – attributes that seem closely tied to emotional intelligence and soft skills (Wood & Vilinas, 2006). Soft skills of leadership include collaboration, communication, initiative, planning, and presentation skills (Crosbie, 2005). Emotional intelligence includes attributes like self-awareness, self-management and regulation, empathy, and interpersonal or relationship skills (Goleman, 1995). More broadly, emotional intelligence refers to the ability to understand one's own and others' emotions and abilities (Goleman, 1995) and supports the ability to develop and maintain interpersonal

relationships. Leadership can be viewed as a relationship in which successful leaders are those best able to maintain relationships with their followers. To do this, exceptional leaders are able to serve as models, provide shared vision, enable and encourage followers, and challenge the status quo (Kouzes & Posner, 2002).

Though principals' understandings of curricular and other school-related tasks are likely important, research seems to indicate that soft skills and emotional intelligence are closely linked to exemplary leadership behaviors (Purkable, 2003). One study of school principals found that effective school principals were described as communicative, caring, understanding, fair, open-minded, patient, respectful, honest, and good role models. These principals also built relationships and were consistent, friendly, and flexible (Schulte, Slate, & Onwuegbuzie, 2010), elements that fit with the emotional intelligence model. Authentic leadership, or leadership marked by hope, optimism, trust, self-awareness and future-orientation, is a leadership style closely related to soft skills and emotional intelligence (Bird, Wang, Watson, & Murray, 2012). A number of studies have found that authentic leadership is related to employee attitudes (commitment, satisfaction, engagement, etc.), employee behaviors (job performance, extra effort, etc.), and overall business performance (Avolio et al., 2004; Jensen & Luthans, 2006; Bird et al., 2012). In schools, authentic leadership is related to teachers' level of trust, engagement, and intention to return to the school (Bird et al., 2012).

Despite the importance of soft skills, authenticity, and interpersonal relationships, research also highlights the significance of other management skills, including the ability to promote an orderly atmosphere, presence with teachers and students, ability to set goals and communicate with staff, assertiveness, instructional skills, and inclination to

assume responsibility (Sweeney, 1982). As the managers of schools, principals must emphasize achievement (their measure of business success), set instructional goals and strategies, create order, evaluate students and staff, coordinate instruction, and support teachers (Sweeney, 1982). Principals must also serve as "human capital managers" determining who and how to recruit, select, mentor, develop, manage, compensate and recognize staff and teachers (Kimball, 2011; Grissom & Loeb, 2011). Skillful principals are able to balance managerial skills with soft skills like self-awareness and relationship skills. As such, numerous researchers argue that effective leaders use both transactional and transformational behaviors (Devine & Alger, 2012; Bass, Avolio, Jung, & Berson, 2003). Leadership training programs are attempting to meet these needs and help principals develop the broad range of skills needed to successfully manage schools. However, some leadership characteristics may be dispositional, based in leader's personal qualities or characteristics, such as compassion, imagination, tenacity, and creativity (Green, 2013; Green & Cooper, 2013). While principal training and preparation programs may be able to educate individuals on instructional, management, and interpersonal skills, these personal qualities may be less trainable. The definition of effective leadership is broad and includes many facets, and strategies for improving leadership is still allusive, but the importance of leadership is clear. School leaders affect student and teacher outcomes and attitudes and play a large part in shaping school morale along with other factors.

The Importance of Leadership in Schools

School Morale, Organizational Focus, and Rule Clarity and Fairness

In schools with high morale, school faculty feel they are striving toward a common purpose, have common goals, can depend on each other for help, and can solve problems that arise. Schools with high organizational focus have consistent, explicit goals (Gottfredson et al., 2002). Both of these constructs are often measured by teacher report (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005). Discipline problems, delinquent behavior, and student victimization are less frequent in schools were students feel respected and expect to be treated fairly in accordance to clear, well-understood rules (Gottfredson et al., 2005; Gaustad, 1992). Providing positive school environments – reflected by equitable and fair discipline policies and rules –can increase student performance, decrease discipline issues, and increase a sense of school belonging (Gaustad, 1992; Schmidt-Davis & Bottoms, 2012). Principal leadership in schools is crucial to establishing a positive, fair environment for students and staff. Their leadership is essential to creating and following through on consistent, explicit, fair school rules. Furthermore, principals often set the framework for working toward joint goals and purpose and can foster or discourage staff collaboration. Principals have a critical role in creating safe and orderly environments, creating a clear and shared mission, monitoring school progress, setting high expectations, and providing (and participating in) professional development (Nettles & Herrington, 2007). School morale and organizational focus go hand-in-hand with these components of the job of the principal. Effective leaders – those who successfully create safe, fair environments with clear goals – will lead schools with higher school morale and organizational focus.

Teacher Turnover

Principals may affect teacher job satisfaction and retention indirectly through their role in building and maintaining school morale and organizational focus. Research also indicates that principals may directly influence teacher job satisfaction and retention or attrition. In their examination of the 2003-2004 Schools and Staffing Survey, Shen and colleagues (2012) found that school process variables including school influence, classroom control, administrative support, positive student behavior, staff collegiality, and working conditions had a significant effect on teacher job satisfaction. These findings highlight the importance both of the indirect effect of school leadership on school variables (such as school influence, work conditions, and staff collegiality), as well as the direct effect of school leadership (i.e. administrative support) on teacher job satisfaction. This study had limitations – including the fact that school variables and job satisfaction were measured by the same people and may contaminate results due to shared method variance. Furthermore, many of the effects they found, while significant, were small. However, the findings are supported by other research. For example, a U.S. Department of Education (1997) job satisfaction survey of teachers found that administrative support and leadership, school atmosphere, autonomy, and student behavior were related to teacher satisfaction. In an analysis of teacher turnover and shortages, Ingersoll (2001) stated that teacher job dissatisfaction is one cause of teacher turnover, and that lack of administration support and limited input into school decisions (along with other school or student characteristics) are associated with higher rates of teacher turnovers.

In Ingersoll's (2001) multiple regression analysis of the 1993-1994 Schools and Staffing Survey, he confirmed these findings with results indicating that administrative

support, student discipline problems, and faculty influence and autonomy were significant predictors of turnover. When teacher and school characteristics (such as size or private vs. public) were controlled for, these remained significant. When Ingersoll (2001) reviewed teachers' reasons for dissatisfaction or leaving teaching, low salaries, lack of administration support, and lack of influence over decision-making were the most common school-related factors. Lack of support from administration was a common reason for leaving across the board – from teachers in high-poverty, urban public schools to those in small private schools. Teacher turnover is an important issue as teacher shortages and an increasing student population may cause schools to lower their hiring standards (Ingersoll, 2001). Recruiting and training new teachers requires time and money. Moreover, persistent changes can challenge learning outcomes and frequent turnover may diminish school morale. As the previous studies highlighted, school factors that may be indirectly or directly influenced by principals – such as school morale, organizational focus, and administrative support – are key in preventing teacher turnover.

Measuring Leadership

Principal Leadership

To study the effect of principal leadership on school outcomes, researchers use a variety of methods including direct observation, teacher reports, and principal self-reports (Goddard & Miller, 2010). Though observations may provide a comprehensive picture of principal leadership qualities, they are time consuming and costly. Teacher and principal reports often provide more efficient and less costly methods of assessing principal leadership. However, the few studies that have examined agreement between teacher and principal reports of school outcomes or leadership behavior have indicated low

correlations between reports (Stone, Astor, and Benbenishty, 2009; Kelley, Thornton, and Daugherty, 2005). While a lack of congruity between reporters may indicate that unique aspects of performance or behavior are highlighted by each reporter (Conway & Huffcutt, 1997), it may also indicate that one or both of the reports are not valid measures of principal leadership.

In the present study, principal leadership is measured in two ways: principal self-reports of leadership using The Leadership Behavior Scale (Gottfredson, 1997) and aggregated teacher reports of leadership using the Administrative Leadership Scale from the Effective School Battery (Gottfredson, 1984). The Leadership Behavior Scale was created after Gottfredson and Hybl (1987) created and distributed a structured job analysis to 1153 principals. The job analysis was created through reviews of research and conversations with school principals and personnel. The inventory comprised a large number of potential tasks that principals might engage in and asked them to indicate the importance of each task and how much time was devoted to it. Task items fell into categories of curriculum and instruction, personnel management, student personnel, building administration, home-school-community relations, school-system relations, unscheduled activities, and personal and professional development. This breadth of potential activities encapsulated feedback from principals, maximized the potential roles of principals, and captured the large variety of roles principals may serve. While principals rated most aspects of their job as at least "moderately important", several areas stood out as the most important and time-consuming aspects of jobs based on principal self-reports, including presence and visibility, consideration, and initiation. These were used to create 19 items in The Leadership Behavior Scale (Gottfredson, 1997). The

Administrative Leadership Scale, on the other hand, was developed as part of the

Effective School Battery (Gottfredson, 1984), and used research from the NIE Safe

School Study (1978) as a foundation. The measures incorporated improvements from

previous items and underwent revisions using item analyses from school surveys

(Gottfredson, 1984).

Self-Other Agreement

Graham, Milanowksi, and Miller (2012) defined inter-rater , or self-other,

agreement as "the degree to which two or more evaluators using the same rating scale

give the same rating to an identical observable situation" (p. 5). Reports of principal

leadership may not reflect "identical observable situation[s]" and the rating scales used

by principals and teachers differ considerably in the present study, but if principals and

teachers are both valid raters of the same construct (principal effectiveness), their ratings

should largely agree. Although this seems true in theory, research in organizational

psychology demonstrates that supervisor and supervisee reports (including teacher and

principal reports) often disagree. This research indicates low correlations between self-

reports and other reports of performance, with most demonstrating that self reports

indicate higher levels of performance (Conway & Huffcutt, 1997; Harris & Schaubroek,

1988; Heidemeier & Moser, 2009). This self-other agreement between supervisors and

supervisees is referred to as managerial self-awareness, and leaders whose reports more

closely match those of their supervisees are considered more self-aware (Atwater &

Yammarino, 1992; Church, 1997; Fleenor et al., 2010).

Supervisor-Supervisee Agreement

In their meta-analysis of subordinate, supervisor, peer, and self-ratings, Conway and Huffcutt (1997) found small correlations (0.14 to 0.22) between supervisor and subordinate ratings. Harris and Schaubroek (1988) found a small correlation (0.35) between self- and supervisory ratings of job performance; Heidemeier and Moser (2009) also found a small correlation (0.22) between self-supervisor correlations with self-ratings indicating higher levels of performance. While these studies do not focus specifically on principal-teacher reports, the supervisor-subordinate relationship holds.

Principal-Teacher Agreement

In the National Study of Delinquency Prevention in Schools, Gottfredson et al. (2002) utilized a large sample of schools across the country and, as part of the study, compared teacher and principal reports of school disorder, morale, and delinquency prevention programs. They found that "some results imply that estimates of levels of school disorder derived from reports of principals, teachers, and students do not show agreement that is as high as might be expected" (p. 7-9). In their study of teacher and principal perceptions of student victimization in Israeli schools, Stone, Astor, and Benbenishty (2009) found that correlations between teacher and principal reports of student victimization, student risk behavior, and school response were positive and significant. Their study included a national sample of Israeli schools collected in 1999 with indicators of school violence, school response to violence and other school climate factors. Though their results were significant, the correlations between principal and teacher reports of victimization were quite small (0.15). While this correlation may be

statistically significant, it seems smaller than expected if principal and teacher reports were accurately measuring the same construct.

Little research compares teacher and principal reports of principal effectiveness. In their study, Kelley, Thornton, and Daugherty (2005) found that teacher and principal ratings of principal leadership style were nonsignificant and approximately zero. This small-scale, survey study included 31 elementary schools that employed only "one full-time principal without an assistant principal, dean, or other administrative support" (p. 3). These schools enrolled between 100 and 650 students each, and a total of 31 principals and 155 teachers completed measures for this study. School climate in this study was measured using the Staff Development and School Climate Assessment Questionnaire – a survey with six scale scores: communications, innovativeness, advocacy, decision-making, evaluation, and attitudes toward staff development (p. 4). Leadership behavior and leadership effectiveness were assessed using the Leadership Behavior Analysis II and the Leadership Effectiveness Scale respectively. While this study examined the topic of teacher and principal rating of principal effectiveness, it includes only a very small sample of small schools from rural settings. This small size and nonrepresentative sample limits the power and may limit the generalizability of their results.

It is important to understand whether principal self-reports and teacher reports agree to understand whether both measure principal leadership style. It is equally important to understand which reports better predict important school outcomes such as morale and climate. As Fleenor, Smither, Atwar, Braddy, and Sturm (2010) stated, "Although it appears that the use of self-ratings of leadership alone is problematic...ratings provided by others (e.g., bosses, direct reports, and peers) should

not necessarily be considered as the 'true scores' of leader effectiveness" (p. 1005). Thus, while principal self-reports may not correlate highly with teacher reports, it does not necessarily indicate that teachers more accurately rate principal leadership style. On the other hand, many studies indicate that teacher reports are good predictors of school morale, climate, or disorder (Kelley, Thornton, & Daughtery, 2005; Gottfredson et al., 2002). Despite this, principal reports alone are also often used in research as predictors and measures of those outcomes. One way to gauge the relative utility of principal versus teacher ratings is to determine which better predicts important school outcomes assessed by objective measures or other reporters, like school rule clarity and fairness. If one better predicts school outcomes, these reporters may be more appropriate sources of data when conducting future research on principal effectiveness and leadership.

Outcomes of Agreement

Little research has examined the effect of congruence (i.e. agreement) between teacher and principal reports. It is unclear whether congruence between teacher and principal reports is more prevalent in well-organized schools with positive climate and high morale, or whether there is little congruence across the board. Studies examining supervisor self-awareness often use congruity between self and other reports, referred to as self-other agreement, as a measure of self-awareness (Atwater & Yammarino, 1992; Church, 1997; Fleenor et al., 2010). Numerous studies have found that high self-awareness, or high self-other agreement, is related to positive characteristics and outcomes including intelligence and achievement (Mabe & West, 1982), leader performance (Fleenor et al., 2010), and job performance and organizational commitment (Szell & Henderson, 1997). Moreover, in his study of self-other agreement among high-

performing and average-performing managers, Church (1997) found that "high-performing managers were able to assess more accurately their own behaviors in the workplace, yielding greater congruence in self-reports versus direct reports' ratings compared with average performers" (p.287). This research highlights the important relationships between supervisor self-awareness and various individual characteristics or performance outcomes. Based on these results, it is likely that self-other agreement in rating principal leadership style ought to relate closely to important school outcomes-such as school morale, organizational focus, and teacher turnover – as well. Understanding of the effects of principal self-awareness could influence school-level interventions focused on enhancing school climate and decreasing teacher turnover.

Chapter 3: Methods

Purpose

The purpose of this study is threefold: to examine agreement or congruity (as measured by correlation) between aggregated teacher reports and principal self-reports of leadership behavior, to explore which report better predicts school rule clarity and fairness, and to determine whether school morale and organizational focus are highest and teacher turnover lowest when principal self-reports and aggregated teacher reports of leadership are congruous. These questions will be answered using data gathered in the National Study of Delinquency Prevention in Schools (Gottfredson et al., 2002).

Description of Sample

This study examines data from public schools that participated in the National Study of Delinquency Prevention in Schools. Private and Catholic schools were omitted because school leadership and outcomes may relate differently than in public schools due to different requirements and burdens (Gottfredson & Hybl, 1987). Of the public schools, only those that provided both teacher reports and principal self-reports of leadership were retained. Finally, five schools with fewer than three teacher respondents were eliminated. The final sample for this study included 263 public schools. Approximately 59% of the reporting schools were middle schools while the remaining 41% were high schools. The poverty status of students within the schools had a wide range—from zero to 100% of students eligible for free or reduced lunch, the indicator used to determine poverty status. Across schools, the number of principals in the last ten years ranged from one to nine, and the number of full time teachers ranged from two to 208 according to principals' reports. Reported enrollment in the sample of schools ranged from 19 to 2777 (see Table

2). Schools reporting lower enrollment and full time teacher numbers indicated that they

were public schools for students with behavior issues or special needs.

Table 1

Description of the Sample Retained for Study

School Characteristic	*N*	% of Sample
School Level		
Middle	157	60%
High	106	40%
School Enrollment		
10-500	96	36
501-1000	99	38
1001-1500	50	19
1501-2000	10	4
2001-2500	5	2
2501-3000	3	1
% of Students Receiving Free Lunch		
0-25%	102	44
26-50%	64	27
51-75%	41	18
76-100%	25	11
Number of Principals in past 10 years		
1-3	224	85
4-6	35	13
7-9	4	2
Number of Full Time Teachers Reported by Principal		
1-50	167	64
51-100	83	32
101-150	10	4
151 and over	2	1
Location		
Urban	74	28
Suburban	77	29
Rural	112	43

Description of the Measures

This study examines each of the three hypotheses using a number of measures from the National Study of Delinquency Prevention in Schools.

Hypothesis 1: Principal self-reports of leadership and aggregated teacher reports of principal leadership will have only a small positive correlation ($<.25$).

- **Measures:**
  - *The Administrator Leadership Scale*, completed by teachers, is part of the Effective School Battery (Gottfredson, 1984) and assesses principal leadership in schools. This scale consists of 12 items and has a high level of alpha reliability as an individual-level measure and high estimate of reliability of school-level aggregate (alpha = 0.84 and lambda-hat = 0.92 in this sample).
  - *The Leadership Behavior Scale* (Gottfredson, 1997), completed by principals, serves as a self-report measure of principal leadership. It consists of 19 items and has a high level of alpha reliability as an individual-level measure (0.88). This measure was based in part on a school principal job analysis using a structured task analysis inventory. Principals indicated the most important aspects of their jobs. The most important aspects indicated were used to create the measure on which principals rate the emphasis they place on different job components (Gottfredson, 1993). Though this scale was conceptualized by Gottfredson to include multiple subscales, or factors, in this sample, a

one-factor solution fit best. Accordingly, only overall self-reported

leadership scores are used in analyses.

Hypothesis 2: Aggregated teacher reports of principal leadership will better predict

aggregated student reports of rule clarity and rule fairness than principal self-reports of

leadership.

- **Measures:**
  - *Administrator Leadership Scale*
  - *Leadership Behavior Scale*
  - *Rule Clarity Scale,* completed by students, is part of the Effective
    School Battery (Gottfredson, 1984) and assesses student-perceived
    rule clarity. This scale consists of four items. The estimate of
    reliability as a school-level aggregate in this sample is.74.
  - *Rule Fairness Scale,* completed by students, is part of the Effective
    School Battery (Gottfredson, 1984) and assesses clarity of school rules
    as perceived by students. This scale consists of three items. The
    estimate of reliability as a school-level aggregate in this sample is .78.

Hypothesis 3: Higher self-other agreement will predict higher school morale, better

organizational focus, and lower staff turnover.

- Measures*:*
  - *Administrator Leadership Scale*
  - *Leadership Behavior Scale*
  - *The Morale Scale,* completed by teachers, is part of the Effective
    School Battery (Gottfredson, 1984) and assesses school morale. This

scale consists of 11 items and has a high estimate of reliability of school-level aggregate (lambda-hat = 0.93 in this sample).

- o The *Organization Focus Scale* (Gottfredson & Holland, 1996), completed by teachers, is a 16-item scale that assess the clarity of rules, goals, and operations (i.e. organizational focus) of the school. Organizational Focus measures whether the school has a "focused set of consistent and explicit goals (versus conflicting and poorly defined goals)" (Gottfredson et al., 2002, p. 6-1).It has a high estimate of reliability of school-level aggregate (lambda-hat = 0.98 in this sample).

- o I will use staff turnover as calculated through principal reports of current full time teachers, full time teachers from the previous year, and teachers new to the school this year.

Table 2

Description of Measures

Measure Name (Reference)	Information	Sample Questions
Administrator Leadership Scale (adapted from *Effective School Battery;* Gottfredson, 1984*)*	Teacher Questionnaire *N* items = 12 $\alpha = .84$ $\hat{\lambda} = 92$	• The school's administration makes it easy to get supplies, equipment, or arrangements needed for instruction. • There is little administrator-teacher tension in this school. • Teachers feel free to communicate with the principle. • The principal of our school is informal. *Responses for the first item was "strongly agree", "agree somewhat", "disagree somewhat," and "strongly disagree." Responses for the rest of items were "true" or "false."*
Leadership Behavior Scale (Gottfredson, 1997)	Principal Questionnaire 2 *N* items = 19 $\alpha = .88$	• Review teacher performance with individual teachers in formal evaluation • Being patient with and helpful to faculty • Observe teacher's instruction and classroom management practices • Assign responsibilities to teachers *Principals rated their leadership emphasis on each item "top", "high", "some", and "little."*
Rule Clarity Scale (adapted from Effective School Battery, Gottfredson, 1984)	Student Questionnaire *N* items = 3 $\alpha = .62$ $\hat{\lambda} = .74$	• Everyone knows what the school rules are. • Teachers let the students know what they expect of them. *Students rated the first item as "almost always", "sometimes", or "almost never." All other items were rated either "true" or "false".* (*table continues*)

Rule Fairness Scale (adapted from Effective School Batter, Gottfredson, 1984)	Student Questionnaire N items = 4 α = .63 $\hat{\lambda}$ = .78	- The school rules are fair. - The punishment for breaking school rules is the same no matter who you are. *Students rated items as "almost always" or "almost never".*
Morale Scale (adapted from Effective School Battery, Gottfredson, 1984)	Teacher Questionnaire N items = 11 α = .81 $\hat{\lambda}$ = .93	- Students here don't really care about the school. - I feel my ideas are listened to and used in this school. - Please indicate which of the following descriptors are mostly true of the teaching faculty of your school and which are mostly false: apathetic, cohesive, enthusiastic, frustrated, satisfied… *Responses of items were "true" or "false."*
Organizational Focus Scale (Gottfredson & Holland, 1996)	Teacher Questionnaire N items = 16 α = .94 $\hat{\lambda}$ = .98	- Rules and operating procedures are clear and explicit in this school. - Everyone here is working toward the same ends. - My school is torn up by leaders with different agendas. *Responses were "false," "mostly false," "mostly true," and "true."*
Teacher Turnover	Principal Questionnaire N items = 1 α = N/A $\hat{\lambda}$ = N/A	Principals reported number of full time teachers in current and previous year and new teachers to the school this year. *Calculated by taking the ratio of new teachers this year compared to total number of teachers in the school.*

Note. α=alpha reliability for individual-level measures. λ =lambda-hat, estimated reliability of school-level aggregate. N/A = not applicable.

Analysis Method

The primary statistical analyses that I conducted were correlations and regression (linear and polynomial). SPSS was used for most analyses, though the polynomial regression response surfaces were created in Excel using the procedure outlined by Shanock, Baran, Gentry, Pattison, & Heggestad (2010). Teacher and student reports were aggregated and all analyses examined at the school level. I ran correlations to explore the relation between principal self-reports of leadership and aggregated teacher reports of leadership and examined how each report of leadership related to aggregated student reports of rule clarity and fairness. I also examined the correlations between all variables to be included in the polynomial regression: principal self-reports of leadership, aggregated teacher reports of principal leadership, school morale, organizational focus, and teacher turnover. I ran linear regressions with models incorporating each predictor variable (teacher and principal reports of leadership) with each outcome variable (school morale, organizational focus, and teacher turnover).

Finally, I conducted polynomial regression, which used a more complex regression model incorporating squared and cross-product terms. This approach produced a three-dimensional surface to provide a visual representation of the congruence and incongruence, between predictor variables as they relate to each outcome variable. Polynomial regression also produced the usual regression output including information about the influence of each term in the equation, covariances, and standard errors. The regression output and three-dimensional response surface allowed for analyses of the influence of the slope of the line of perfect agreement, curvature of the line of perfect agreement, slope of the line of incongruence, and curvature of the line of incongruence.

This information allowed for exploration of the third hypothesis – that agreement and disagreement between teachers and principals about principal leadership would lead to different outcomes in school morale, organizational focus, and teacher turnover. Prior to running the regressions, I examined the shapes of distributions of all variables of interest, including skewness and kurtosis. All variables fell within the acceptable limits of kurtosis and skewness (+/-1) as is commonly accepted in literature and were not transformed for analyses. Multicollinearity was not evident. While principal self-reports of leadership, aggregated teacher reports of principal leadership, school morale, and organizational met all assumptions for tests of significance within regression (linearity, independence, homoscedasticity, and normality), the distribution of teacher turnover was a skewed, as a large portion of schools reported zero turnover, leading to a spike at that point. Traditional transformations could not remedy this issue, and results should be interpreted with caution. Future research using other regression models should be conducted to provide more information about the relation between leadership and turnover in this sample. More explicit data analysis techniques are outlined below.

Polynomial regression with response surface analysis is a popular technique for examining multisource feedback research, particularly to examine self-observer rating discrepancies (Shanock et al., 2010). This approach views congruence not as a single score and instead interprets the effect of congruence as a "three-dimensional surface relating the two components [principal views and teacher views] to the outcome" (Edwards, 2002, p.360). This approach eliminates many of the problems with using traditional difference scores to examine congruity (Edwards, 2002) and has been used by researchers to study self-other agreement (Taylor, Wang, & Zhan, 2012). The dependent

measures used in this analysis include the Morale Scale, the Organization Focus scale completed by teachers, and teacher turnover.

To determine whether congruence between aggregated teacher reports and principal self-reports of leadership predicts morale, organizational focus, and teacher turnover, I compared aggregated teacher reports of principal leadership and principal self-reports of leadership using hierarchical polynomial regression procedures. To do this, I entered principal self-ratings, teacher ratings, principal self-ratings squared, teacher-ratings squared, and cross-product of self and other ratings into the model to examine self-other agreement. I then analyzed the generated response surfaces estimated using the polynomial regression coefficients to examine each of the three outcomes of interest – generating three polynomial regression models (Taylor, Wang, & Zhan, 2012) to determine whether higher levels of agreement in ratings of principal leadership style are related to higher school morale, better organizational focus, and lower teacher turnover (more procedural information outlined in the results section).

The three-dimensional surface produced provides information about how two predictors relate to an outcome of interest – in this case how self and teacher reports of principal leadership relate to school morale, organizational focus, and teacher turnover. Prior to using polynomial regression, certain assumptions must be met (Shanock et al., 2010). First, the two predictor variables must measure the same conceptual domain. Because the assumption of the data is that both reports are measures of principal leadership, this assumption may be met. However, because the instruments used for each reporter are different, it is possible that the conceptual domains measured are different. This is an important limitation and, as such, results about congruence and incongruence

between reporters must be interpreted with caution. Further, leadership is likely a

multidimensional construct. The Ohio State Leadership studies identified two major

dimensions of leadership: consideration and initiation (Fiedler, 1964), and Gottfredson

and Hybl (1987) identified multiple dimensions of leadership. While both measures likely

tap into multiple aspects of leadership, they may not each capture the same elements of

leadership. A second assumption for polynomial regression is that both predictor

variables must be measured on the same scale (Shanock et al., 2010). The two predictor

variables in this study were not measured on the same scale. So, I computed the total

scores for aggregated teacher-reports and principal self-reports of leadership. Then, I

transformed both variables to a standardized scale (z score) to meet this assumption. To

make the data more user-friendly, the grand-mean centered z scores were transformed to t

scores. These t scores were used for the polynomial regression equations for each

predictor and outcome variable.

Chapter 4: Results

Preliminary Results

Descriptive information about each variable of interest was obtained for the

sample used in this study. Table 3 shows that there is sufficient variance in the variables

of interest, including principal self-reports of leadership, aggregated teacher reports of

principal leadership, school morale, organizational focus, and teacher turnover to study

relations among these variables.

Table 3

Descriptive Information of Variables of Interest in This Sample Prior to t-Score

Transformation

Variable	Possible Range		Current Sample, School Level Statistics		
	Minimum	Maximum	Minimum	Mean (SD)	Maximum
Principal Self-Reports of Leadership	1.00	4.00	2.05	3.16 (.38)	4.00
Aggregated Teacher Reports of Principal Leadership	.17	1.50	.49	.95 (.16)	1.23
Teacher reports of School Morale	0	1	.33	.67 (.14)	.97
Teacher Reports of Organizational Focus	0	3	.96	1.96 (.36)	2.78
Student Reports of Rule Clarity	0	1	.52	.76 (.07)	.93
Student Reports of Rule Fairness	0	1	.35	.61 (.09)	.83
Teacher Turnover	0	4	.00	1.92(1.02)	3.90

After examining the descriptive information for each variable of interest, the hypotheses

were tested.

Hypothesis 1*: Principal self-reports of leadership and aggregated teacher reports of principal leadership will have only a small positive correlation (<.25).*

This hypothesis was supported; principal self-reports of leadership and aggregated teacher reports of principal leadership were not significantly correlated ($r = .04$, 95% Confidence Interval [-.08 to .17]), indicating that these measures did not capture the same construct.

Hypothesis 2*: Aggregated teacher reports of principal leadership will better predict student reports of rule fairness and rule clarity than will principal self-reports of leadership.*

The second hypothesis was also supported. Aggregated teacher reports of principal leadership significantly predicted both student-reported rule clarity ($r = .33$, $p < .01$) and student-reported rule fairness ($r = .24$, $p < .01$). Principal self-reports of leadership were not significantly predictive of either student-reported rule clarity ($r = .03$, $p = .67$) or student-reported rule fairness ($r = -.004$, $p = .95$). A test for the difference of two correlations in dependent samples was conducted for each set of correlations using Lee and Preacher's (2013) online tool. The test indicated significant differences between correlations of reported leadership and rule clarity ($z = 3.27$, $p < .01$) and reported leadership and rule fairness ($z = 2.61$, $p < .01$). These results may indicate that teacher reports of principal leadership are more accurate, or more meaningfully predict other school-related outcomes associated with principal leadership behaviors, than principal self-reports of leadership behavior. Based on this study, teacher reports of principal leadership seem to be a better method for capturing information about the effects of principal leadership.

Hypothesis 3*: Higher principal-teacher agreement or congruence on measures of leadership will predict higher school morale, better organizational focus, and lower staff turnover. Discrepancies between self and other reports in which the teachers reported more favorably on principal leadership than principal's self-reported will relate to better morale and organizational focus and lower staff turnover.*

The third hypothesis was partially supported. Raw scores for all variables were first grand-mean centered and then transformed to *t* scores. These *t* scores were used for all variables so that scores used the same metric. Linear regressions and polynomial regressions were run to explore whether the more complex equation – with agreement and discrepancy included –- added explanation of variability in the outcome variable beyond what was explained by the linear relation alone. Based on Shanock et al.'s (2010) recommendations, descriptive information about the occurrence of discrepancies between principal self-report and teacher reports of principal leadership was explored, using half a standard deviation above or below the standardized score as a measure for discrepancy. Since *t* scores were used, a difference of five or greater between teacher and principal reports of leadership were considered discrepancies. Findings are presented in Table 4.

Table 4

Frequencies of Self-reported Principal Leadership Levels Over, Under, and In-agreement with Teacher-reported Levels of Principal Leadership

Agreement Group	*N*	Percentage
Self-report more than .5 SD > teacher-report	94	36
In agreement (within .5 SD)	66	25
Self-report more than .5 SD less than teacher-report	103	39

As indicated in Table 4, approximately three-quarters of the reports of leadership were discrepant between reporters, indicating that polynomial regression may be an appropriate analysis to explore how discrepancies (and agreement) between reporters may relate to other outcomes. Correlations between all variables to be included in the polynomial regression were run to understand the strength of the relation between them. The correlations between aggregated teacher reports of leadership and principal self-reports of leadership with each of the three variables of interest indicated that aggregated teacher reports of principal leadership were significantly correlated with all three variables, while principal self-reports of leadership were not (see Table 5).

Table 5

Correlations Between Teacher-reported and Principal Self-reported Leadership with

Morale, Organizational Focus, and Teacher Turnover

Measure	1	2	3	4	5
1.Principal Self-reported Leadership	–				
2.Teacher-reported Leadership	.04	–			
3.Morale	.04	.81**	–		
4.Organizational Focus	.07	.81**	.84**	–	
5.Teacher Turnover	.11	-.15*	-.13*	-.07	–

* $p < .05$
**$p < .01$

In addition to running and interpreting polynomial regression, linear regressions were run for each of the three outcome variables, using models with both predictor variables included. Linear and polynomial regression models are presented for each outcome variable below.

The polynomial regression equation is as follows: $Z = b_0 + b_1X + b_2Y + b_3X^2 + B_4XY + B_5Y^2 + e,$ where Z is the dependent variable, X is principal self-reports of leadership, and Y is aggregated teacher reports of principal leadership. To conduct these analyses, the square of each predictor and the cross-product of the two predictor values (all centered on 50 with SD = 10) was used, and the regression equation was run in SPSS using syntax outlined by Shanock et al. (2010). The results from the polynomial regression including unstandardized regression coefficients, standard errors, and covariances, were used to create a polynomial regression surface by creating a points-to-plot chart and using those points to create a three-dimensional response surface. These results also provided calculations for the slope of the line of perfect agreement, the curvature for the line of perfect agreement, the slope of the line of incongruence, and the curvature of the line of incongruence (see note below Table 7 for further information). The response surface provided a visual representation of the three-dimensional relation between each of the two predictors on the outcome variable, as well as the effect of agreement and disagreement between the two predictor variables on the outcome variable. The data and visual produced by the polynomial regression allowed for exploration and interpretation of three types of results: first, how agreement between reporters relates to each outcome, second, how the degree of discrepancy between reporters relates to each outcome, and finally, how the direction of discrepancy relates to each outcome. I explored these elements related to all three outcomes – school morale, organizational focus, and teacher turnover – using Shanock et al.'s (2010) procedure to explore the polynomial regression, produce a response surface, and examine agreement and discrepancy between reporters. The regression results and the points-to-plot chart

also provided additional information to analyze the influence of each predictor variable and equation component on the outcome variable, as well as the level of each outcome variable at different ratings of the predictor variables.

School Morale

Principal self-reports and aggregated teacher reports of leadership were used in a stepwise linear regression model to determine how well each predicted school morale. The results are reported in Table 6. The model was statistically significant $F(2, 260) = 251.62$, $p < .01$, and accounted for approximately 66% of the variance in school morale ($R^2 = .66$, Adjusted $R^2 = .66$). However, while the full model with both predictors was significant, adding principal self-reports of leadership to a model with just aggregated teacher reports of principal leadership did not account for a significant change in the model fit (F change $= .00$, $p > .90$), indicating that aggregated teacher reports of leadership alone predicted about 66% of the variance in school morale.

Table 6

Linear Regression of School Morale on Aggregated Teacher Reports of Leadership and Principal Self-reports of Leadership

	Teacher reports of school morale
Variable	b(se)
Constant	9.36 (2.53)**
Principal self-reports of leadership (self-report)	.001 (.04)
Aggregated teacher reports of principal leadership (teacher report)	.812 (.04)**
R2	.66**

** Indicates significance at the .01 level

My polynomial regression results indicated no significant influence of agreement or discrepancy between reporters on predicting teacher perceptions of school morale (see Table 7). The overall model was significant and accounted for approximately 68% of the

variance, only slightly more than the linear model. Though results were not significant, the response surface showed a trend of highest morale in cases where aggregated teacher reports of leadership were highest, and lowest morale when aggregated teacher reports of leadership were lowest (see Figure 2). This was confirmed by the points-to-plot chart (see Appendix 7). Notably, there was a point of particularly low morale where principal self-reports of leadership were at the mean and aggregated teacher reports of principal leadership were one standard deviation above the mean . This point aligned with a dip for each of the outcome variables present. Though no results were significant, visual inspection of the response surface shows that the Y-axis (aggregated teacher reports of leadership) appears to have a much steeper slope in relation to the Z-axis (morale) than the X-axis (principal self-reports of leadership). This indicates that aggregated teacher reports of principal leadership alone are more predictive and have a larger effect on school morale ratings than principal self-reports of leadership, which is supported by the correlations and linear regression results.

Table 7

Regression Results of Principal Self-reports and Aggregated Teacher Reports of

Leadership Discrepancy as Predictor of School Morale

	Teacher reports of school morale	
Variable	b(se)	
Constant	24.9 (11.7)	
Principal self-reports of leadership (self-report)	.31 (.30)	
Aggregated teacher reports of principal leadership (teacher report)	-.21 (.35)	
Self –report * teacher report	.002 (.004)	
Self-report * self-report	-.004 (.003)	
Teacher report * teacher report	.01(.003)	
R^2	.675 **	
Surface tests		
a_1	.10 (.49)	

a_2	.01(.01)
a_3	.52(.42)
a_4	.004(.01)

$N = 262$

** Indicates significance at the .01 level

a_1 = slope of the line of perfect agreement between self-reports and teacher reports of leadership as related to school morale = b_1 (self-report) + b_2 (teacher report)

a_2 = curvature along the line of perfect agreement as related to school morale = b_3 (self-report squared) + b_4 (self-report * teacher report) + b_5 (teacher report squared)

a_3 = slope of the line of incongruence as related to school morale = $b_1 - b_2$

a_4 = curvature along the line of incongruence as related to school morale = $b_3 - b_4 + b_5$
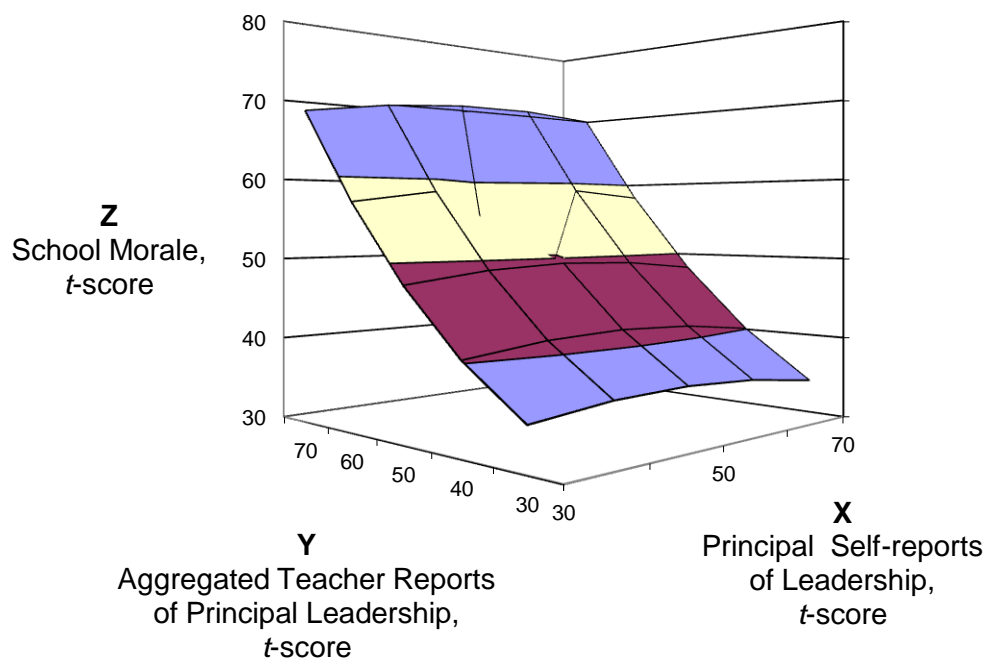
Figure 2. School Morale as Predicted by Teacher-reported and Principal Self-reported

Leadership Discrepancy

Organizational Focus

A stepwise linear regression model was run with aggregated teacher reports and

principal self-reports of leadership to determine how well each predicted organizational

focus. The results are reported in Table 8. The model was statistically significant F (2,

260) = 252.76, $p < .01$, and accounted for approximately 66% of the variance in

organizational focus ($R^2 = .66$, Adjusted $R^2 = .66$). Though the full model with both

predictors was significant, adding principal self-reports of leadership to a model with

aggregated teacher reports of principal leadership alone did not account for a significant

change in the model fit (F change = .87, $p > .30$), and aggregated teacher reports of

leadership alone predicted about 66% of the variance in organizational focus.

Table 8

Linear Regression Results of Organizational Focus on Aggregated Teacher Reports of

Leadership and Principal Self-reports of Leadership

	Teacher reports of organizational focus
Variable	b(se)
Constant	7.79 (2.53)**
Principal self-reports of leadership (self-report)	.03 (.04)
Aggregated teacher reports of principal leadership (teacher report)	.81 (.04)**
R^2	.66**

** $p < .01$

My polynomial regression explored organizational focus as predicted by

agreement or discrepancy between aggregated teacher reports of principal leadership and

principal self-reports of leadership. The overall model was significant and accounted for

approximately 67% of the variance. This polynomial regression produced one significant

result (See Table 9) for the curvature along the line of perfect agreement between

principal self-reports of leadership and aggregated teacher reports of principal leadership,

indicating that the line of perfect agreement is non-linear. The resulting value of the

curvature on the line of agreement was positive, indicating that the line of perfect

agreement as it relates to organizational focus is concave (positive and upward curving).

Because the line of agreement is non-linear, organizational focus may increase or

decrease more sharply as reports of leadership behavior become lower or higher from a

given point along the line of agreement. No other statistically significant results related to

agreement or discrepancy between reports of leadership were found. However, when

visually examining the resulting response surface, higher levels of organizational focus

appeared where both teachers and principals indicate the highest levels of principal

leadership, and consistently lower levels of organizational focus where aggregated

teacher reports of principal leadership are at the lowest level. However, the lowest point

level of organizational focus is found at a point where principal self-reports of leadership

are average ($t = 50$) and aggregated teacher reports of principal leadership are one

standard deviation above average ($t = 60$). As it was for school morale, this response

surface appears to indicate that teacher reports of principal leadership relate more closely

to organizational focus scores than principal self-reports, based on the change in the slope

of the surface along the y-axis, compared to the change in slope along the x-axis (See

Figure 3). This finding is supported by the correlations and linear regression results,

which indicate that aggregated teacher reports of principal leadership better predict

organizational focus.

Table 9

Regression Results of Principal Self-reports and Aggregated Teacher Reports of

Leadership Discrepancy as Predictor of Organizational Focus

	Teacher reports of organizational focus
Variable	*b*(se)
Constant	31.0 (11.8)
Principal self-reports of leadership (self-report)	-.08 (.30)
Aggregated teacher reports of principal leadership (teacher report)	-.11 (.35)
Self –report * teacher report	.002 (.004)
Self-report * self-report	.0004 (.003)
Teacher report * teacher report	.01(.003)**
R^2	.671 **
Surface tests	
a_1	-.19(.49)
a_2	.01(.01)*
a_3	.03(.42)
a_4	.01(.01)

$N = 262$

*** p < .01*

a_1 = slope of the line of perfect agreement between self-reports and teacher reports of leadership as related to organizational focus = b_1 (self-report) + b_2 (teacher report)

a_2 = curvature along the line of perfect agreement as related to organizational focus = b_3 (self-report squared) + b_4 (self-report * teacher report) + b_5 (teacher report squared)

a_3 = slope of the line of incongruence as related to organizational focus = $b_1 - b_2$

a_4 = curvature along the line of incongruence as related to organizational focus = $b_3 - b_4 + b_5$
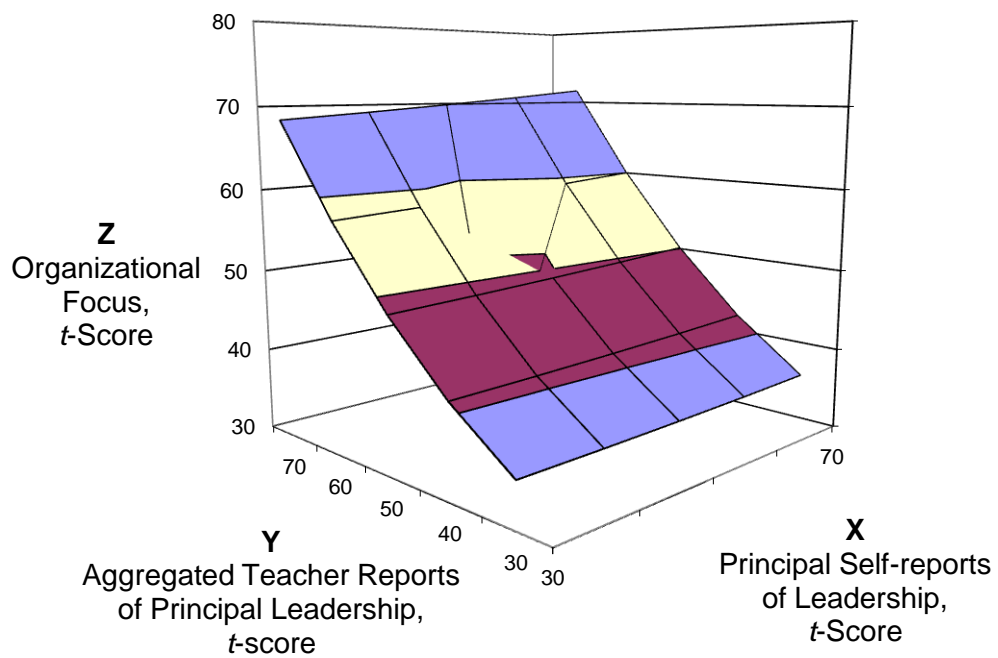
Figure 3. Organizational Focus as Predicted by Teacher-reported and Principal Self-

reported Leadership Discrepancy

Teacher Turnover

Principal self-reports and aggregated teacher reports of leadership were used in a stepwise linear regression model to determine how well each predicted teacher turnover. The results are reported in Table 10. The model was statistically significant $F(2, 247) = 4.50$, $p < .05$, but accounted for only about 3% of the variance in teacher turnover ($R^2 = .04$, Adjusted $R^2 = .03$). The full model with both predictors was significant, but adding principal self-reports of leadership to a model with just aggregated teacher reports did not account for a significant change in the fit of the model (F change $= 3.11$, $p = .08$), and aggregated teacher reports of leadership alone predicted about 2% of the variance in teacher turnover. Notably, the regression model was inappropriate for this variable, due to its distribution and shape, and all results should be interpreted with caution.

Table 10

Linear Regression Results of Teacher Turnover on Aggregated Teacher Reports of Leadership and Principal Self-reports of Leadership

	Teacher reports of organizational focus
Variable	b(se)
Constant	52.18 (4.41)**
Principal self-reports of leadership (self-report)	.11 (.06)
Aggregated teacher reports of principal leadership (teacher report)	-.16 (.06)*
R^2	.03*

* $p < .05$
** $p < .01$

The polynomial regression exploring teacher turnover as predicted by agreement or discrepancy between aggregated teacher reports of principal leadership and principal self-reports of leadership was significant and accounted for approximately 5% of the variance. The polynomial regression produced significant results for the slope along the

line of incongruence or perfect disagreement. The resulting value for the slope along the line of incongruence or perfect disagreement was significant and positive (See Table 11). This indicates that teacher turnover is higher when the direction of the discrepancy between reporters is such that principal self-reports of leadership are higher than aggregated teacher reports of principal leadership, compared to teacher turnover in cases where aggregated teacher reports are higher than principal self-reports of leadership. So, when principal self-reports of leadership behavior are higher than teacher reports of leadership behavior, it more greatly influences teacher turnover than when teachers rate principal leadership more highly than principals rate themselves. Visual examination of the response surface indicates that teacher turnover is lowest at a point where principal self-reports of leadership are average and aggregated teacher reports of principal leadership are one standard deviation above average (See Figure 4), and this was confirmed by the points-to-plot chart (see Appendix 7). Again, it is important to note that these results should be interpreted with caution. In the case of teacher turnover, the regression model was inappropriate and an alternative regression model may better explain the relation between turnover and leadership.

Table 11

Regression Results of Principal Self-reports and Aggregated Teacher Reports of

Leadership Discrepancy as Predictor of Teacher Turnover

	Teacher Turnover
Variable	b(se)
Constant	60.73 (20.7)
Principal self-reports of leadership (self-report)	.60(.53)
Aggregated teacher reports of principal leadership (teacher report)	-1.02(.60)
Self –report * teacher report	.007(.006)
Self-report * self-report	-.008 (.005)
Teacher report * teacher report	.006 (.005)
R^2	.05 *
Surface tests	
a_1	-.42(.87)
a_2	.00(.01)
a_3	1.61 (.72)*
a_4	-.01(.01)

$N = 262$

$* p < .05$

a_1 = slope of the line of perfect agreement between self-reports and teacher reports of leadership as related to organizational focus = b_1 (self-report) + b_2 (teacher report)

a_2 = curvature along the line of perfect agreement as related to organizational focus = b_3 (self-report squared) + b_4 (self-report * teacher report) + b_5 (teacher report squared)

a_3 = slope of the line of incongruence as related to organizational focus = $b_1 - b_2$

a_4 = curvature along the line of incongruence as related to organizational focus = $b_3 - b_4 + b_5$
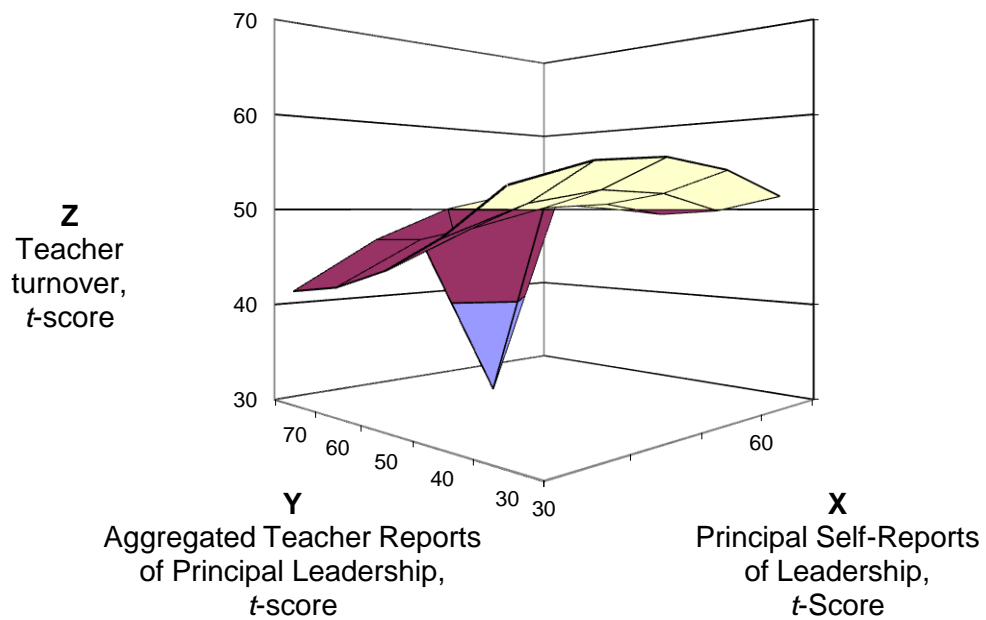
Figure 4. Teacher Turnover as Predicted by Teacher-reported and Principal Self-reported

Leadership Discrepancy

Chapter 5: Discussion

The study explored the relation between principal self-reports of leadership and aggregated teacher reports of principal leadership, and how those reports and agreement or disagreement between reports relate to school characteristics, including school morale, organizational focus, and teacher turnover.

The first question explored to what degree principal self-reports of leadership and aggregated teacher reports of principal leadership were related. Based on research on the relation between supervisor and supervisee reports of leadership, I hypothesized that the reports would have only a small, positive correlation ($r<.25$). To evaluate this hypothesis, I ran a correlation between the two reports. My hypothesis was supported with a small, positive, nonsignificant correlation between principal self-reports of leadership and aggregated teacher reports of principal leadership ($r = .04$, 95% CI [-.08 to .17]).

This finding is supported by research exploring agreement between teacher and principal reports as well as research exploring supervisor and supervisee ratings of supervisor behavior. Research by Stone, Astor, and Benbenishty (2009) found small, positive correlations between teacher and principal ratings of school violence and victimization ($r = .15$). Kelley, Thronton, and Daugherty (2005) explored agreement between teacher and principal reports of leadership behavior and found that the correlation between reports was approximately zero. Conway and Huffcutt (1997) explored correlations between self-other ratings of job performance and found low correlations ranging from .14 to .22. Harris and Schaubroek (1988) conducted a meta-analysis of seventy studies of peer-supervisor ratings of job performance and found low correlations between ratings. Heidemeier and Moser (2009) also found small positive

correlations between self and subordinate ratings. The similarity between these results and previous study results indicate similarities between teacher and principal ratings and those of other supervisor-subordinate raters.

The small, nonsignificant correlation between reports in this sample can be interpreted in a few ways. Because teachers and principals rated principal leadership using different measures, that difference may account for the discrepant results. However, since previous research supports this small correlation between supervisor-supervisee reports, it may not fully explain the difference between reports. Self-reports and other-reports of leadership may not measure the same underlying construct. Thus, teacher reports of principal leadership may capture a different construct than principal self-reports of leadership. Finally, this difference may be due to differences in reliability of an assessment based on a single versus many reporters. An assessment based on a single reporter is bound to be unreliable as a measure of a school-level construct, in this case principal leadership. Previous research seems to support this as an explanation for the difference, if accurate reports are expected to predict outcomes likely tied to leadership. A number of studies have found that self-ratings are frequently inflated and not predictive of performance (Atwater & Yammarino, 1992; Dunning, Heath, & Sula, 2004). Since other-reports of leadership better predict performance, they may be considered a more useful, if not more reliable, source of information about leadership or behavior than self-reports. The second question explored the assumption, examining the predictive validity of each set of ratings.

The second research question assessed how principal self-reports of leadership and aggregated teacher reports of principal leadership relate to school outcomes. To

avoid confounds created by single-reporter bias, this question was explored using student-rated outcomes – rule clarity and rule fairness. Rules are often established from the top down, meaning that principals play a big role in deciding and enforcing rules. As such, ratings of rule clarity and fairness are likely related to principal leadership. Based on research outlined previously, I hypothesized that aggregated teacher reports of principal leadership would better predict rule clarity and fairness than principal self-reports of leadership (Atwater & Yammarino, 1992; Dunning, Heath, & Sula, 2004). This hypothesis was supported by my results. The correlations between aggregated teacher reports of principal leadership and rule clarity and fairness were .33 ($p < .01$) and .24 ($p < .01$) respectively. Contrasting, the correlations between principal self-reports of leadership and rule clarity and fairness were .03 ($p > .70$) and -.004 ($p > .90$). A test for the difference between correlations indicated a significant difference between both pairs of correlations.

The results of this analysis support the interpretation that teacher ratings of principal leadership have more predictive utility than principals' self-ratings of leadership. Though this analysis focused only on student-reported rule clarity and fairness, similar results may be found for other outcomes. Based on this limited examination, it seems that teacher ratings of principal leadership and other school factors may be more accurate predictors of and more closely related to school outcomes or characteristics than principal self-reports of leadership. This result supports using teacher reports rather than principal reports when evaluating schools. Principal self-reports of leadership or principal reports of school factors may not be dependable in capturing information valuable in predicting important school outcomes.

The final research questions explored how agreement or disagreement between principal self-reports and aggregated teacher reports of principal leadership relate to a variety of school outcomes, including school morale, organizational focus, and teacher turnover. Correlations between the five variables of interest were calculated to explore the strength of the relations between variables. Correlations demonstrated aggregated teacher reports of principal leadership were significantly related to measures of school morale ($r = .81$, $p < .01$), organizational focus ($r = .81$, $p < .01$), and teacher turnover ($r = .15$, $p < .05$). In contrast, principal self-reports of leadership were not significantly related to any of these outcomes. Notably, the correlations between all teacher-reported variables were very high. The correlation between aggregated teacher reports of principal leadership and school morale was .81, as was the correlation between aggregated teacher reports of principal leadership and organizational focus; the correlation between school morale and organizational focus was .84. With correlations this high, one might argue that these measures are all tapping into the same construct. Though the measures ask different questions, it is possible that all three are capturing an underlying construct that overlaps with each measure, such as attitudes toward school or general feelings toward the school. There may be little distinction between teacher ratings of principal leadership, teacher ratings of school morale, and teacher ratings of organizational focus, and it is clear that these three school-related variables are closely intertwined. The Effective School Battery (Gottfredson, 1984) was the source for many of the scale analyzed in this study, and included them in a broad section of "school climate" measures. Based on the strong correlations between variables, it is possible that school climate is the broader umbrella construct that encapsulates all of these more focused scales and school

characteristics. Further research may explore the differences and similarities between these variables and underlying constructs that may capture all of these elements.

The questions raised by the third hypothesis were further analyzed using polynomial regression. First, I explored how much disagreement there was between reporters and found that about 75% of the reports disagreed. Knowing there was significant discrepancy between reporters, I explored the relationship between agreement, disagreement, and each of the three variables. Linear regressions were explored for each of the three outcome variables using both predictors. All three regressions were significant at the .05 level, though the regression model may not have been appropriate for teacher turnover. The regressions for school morale and organizational focus demonstrated that a regression with both predictors explained more than 65% of the variance in each outcome. However, aggregated teacher reports alone accounted for most of that predictive utility, and adding principal self-reports to a model with just teacher reports of leadership did not significantly improve the model. This finding is expected based on the correlations found between variables, and supports the idea that teacher reports of leadership are likely more predictive of school outcomes than other reports. However, it is important to note that both school morale and organizational focus suffer from method variance, as teachers reported on all three variables (school morale, organizational focus, and principal leadership). While this is the case, the large amount of variance predicted is likely more than would be expected if this was simply an artifact of one reporter reporting on multiple measures. Further, the principal reports add virtually nothing to the model, indicating that principal self-perceptions of leadership are unrelated to teacher reports of school morale or organizational focus. As these characteristics may

be tied to job satisfaction, performance, and turnover, it is important to understand what predicts each and how they might be intervened on. Improving leadership (as perceived by teachers) may be an appropriate target to improve these school characteristics, and in turn, other school outcomes.

The linear regression for teacher turnover was also significant, but the model with both predictor variables (teacher reports and principal self-reports of leadership) predicted only about 3% of the variance in teacher turnover, indicating that other variables contribute to differences in teacher turnover. In this case, adding principal self-reports to the model did not significantly improve the fit of the model above aggregated teacher reports alone, but did improve the fit slightly. This was unexpected as research indicates that teacher turnover is closely related to principal leadership. However, as noted previously, this regression model was inappropriate for the turnover variable used. The results and interpretations should be considered with caution, and future research should use other regression models to explore the relation between teacher turnover and principal leadership.

In addition to the regression model being inappropriate, the small amount of variance accounted for by these predictors may be related to the metric used to capture teacher turnover. This study used a ratio measure to capture teacher turnover, which examined the change in full time teachers from one year to the next. While this does capture change in teachers, it does not account for the reason for this change. Teachers may have been fired, quit, or otherwise transitioned due to structural school changes (including lower or higher budgets), any of which would have been included in the turnover rate. The breadth of types of turnover included in this measure may have

influenced the results, but it is hard to interpret due to the methodological problems of the regression model used to explore this variable. Effective leaders may fire more ineffectual teachers, which would mean higher turnover by this measure. Moreover, schools with turnaround principals may engage in structural changes, which could also account for a change in the number of teachers. A teacher turnover measure that included only those teachers that quit may better capture the effect of leadership on turnover.

Polynomial regression was used to explore the influence of agreement or disagreement between principal and teacher reports of leadership. Agreement or disagreement between principal self-reports of leadership and aggregated teacher reports of leadership demonstrated little relation to school morale or organizational focus, and did not add much predictive utility beyond the linear regression models. For each outcome variable examined, aggregated teacher reports of leadership were more important in predicting changes in reports of school morale or organizational focus than were principal self-reports of leadership. In examining the polynomial regression surface and points-to-plot table, the slope of school morale and organizational focus changes more drastically along the axis related to aggregated teacher reports of principal leadership, whereas the slope is nearly flat along the line of principal self-reports of leadership. Notably, the ratings of organizational focus and school morale dipped at the point where principals self-reports of leadership were average where aggregated teacher reports of principal leadership were one standard deviation above average. This result carried through all three regressions, though it is unclear why.

Previous research indicates that self-other agreement between reporters on measures of leadership relates to important outcomes including job satisfaction and

performance (Fleenor et al., 2010; Szell & Henderson, 1997). The difference between this result and previous findings may be due to a number of factors. First, teachers rated school morale and organizational focus. Accordingly, it makes sense that aggregated teacher reports of principal leadership would be more predictive of other teacher-rated variables like school morale and organizational focus than principal reports. As the first result demonstrates, principal self-reports and aggregated teacher reports of principal leadership are not correlated. Thus, we might expect that agreement or disagreement between reports may not be very predictive of other outcomes. Though the stronger predictive power of aggregated teacher reports of leadership may be accounted for by method variance (single-rater bias), the result from the second research question seems to indicate that this difference may not be wholly explained by single-rater bias. As stated before, aggregated teacher reports of principal leadership may be more accurate in capturing actual principal leadership and is certainly more predictive of some school outcomes and characteristics. It makes sense that these reports better predict school outcomes likely tied to principal leadership – such as school morale or organizational focus – than principal self-reports of leadership.

The other school outcome explored through polynomial regression was teacher turnover. This was included because teacher turnover is an important issue in schools. Also, in this case, teacher turnover was an objective measure calculated by exploring the change in the number of teachers over the course of a year. This variable eliminated the single-rater bias and used an objective measure as opposed to a subjective rating. The results of this analysis were different from the results of the other two outcomes. One result was significant: the slope along the line of perfect disagreement or incongruence.

The results for the slope along the line of incongruence indicated that when principal self-reports of leadership behavior are higher than teacher reports of leadership behavior, it more greatly influences teacher turnover than when teachers rate principal leadership more highly than principals rate themselves.

The polynomial regression surface showed that teacher turnover is lowest when principal self-reports of leadership are average and aggregated teacher reports of principal leadership are one standard deviation above average, as indicated in the other two polynomial regressions. This was found in all three response surfaces. However, the trend was more pronounced in this result. When interpreting turnover results, it is important to consider the metric of turnover. In this study, the measure used to calculate teacher turnover was a ratio of new teachers to total teachers. However, the number did not appear to account for whether new teachers were hired to replace teachers who left or because additional positions became open. Additionally, for teachers who left the school, it is unclear whether they left because they quit, were fired, or transitioned into a different position. The results of this analysis, with teacher turnover lowest at an "average" principal rating, may be related to teacher turnover including teachers who both left voluntarily and were fired. For example, principals being more highly rated may increase teachers' desire to stay in a school, but good principals may also be more likely to fire incompetent or inadequate teachers – leading to higher turnover rates. Likewise, the poorest rated principals may be least likely to fire inadequate teachers but their poor leadership may result in more teachers quitting, leading to nearly equivalent rates of teacher turnover for the highest rated and lowest rated principals. The principals rated in

the average range may be those with enough skills to encourage teachers to stay, but who are less likely to fire incompetent faculty..

The results of the turnover regressions should be interpreted with caution. This variable did not fit the assumptions for regression. The shape of this variable indicated that there was a spike at the "zero turnover" level, but that the rest of the data were more normally distributed. Because zero was included, traditional transformations (e.g., log transformations) did not improve the interpretability of these results. Further research must be conducted to examine the relation between ratings of principal leadership and different types of teacher turnover using alternative regression models.

Though this study does not allow conclusions to be made about the objective accuracy of either reporter, the utility of each is clear. While principal self-reports of leadership did not strongly relate or significantly predict any outcome, aggregated teacher reports of principal leadership related to important school characteristics. Whether this reflects underlying differences in teacher and principal views of leadership, or difficulties in self-reporting behavior, teacher reports of leadership are the better option when measuring leadership and predicting its effects on school outcomes,

Limitations

This study is limited in a few ways. First, there is no manipulation of participants and therefore causal inferences will not be justified. The sample included public schools from across the United States and rural schools appeared a bit overrepresented in the sample. However, with the analyses of interest in this study, this was not an area of major concern. The relations between variables were expected to be the same across public schools, and the variables all showed sufficient variability to be included in analysis.

The data used for this study are from the 1990s and may not fully capture the current educational climate and demands placed on leadership. Since these data were collected, major shifts occurred that influenced federal education policy, including No Child Left Behind and the Blueprint for Reform, which emphasize evaluation, student outcomes, and school leadership. These changes may place increasing demands on leadership, which may influence the relation among variables of interest in this study. Future research is needed to see whether the results of this study hold true in today's educational environment.

The measures utilized in this study may not adequately capture the constructs they attempt to represent, particularly for the teacher and principal surveys of leadership. In part, however, the purpose of this study is to examine the construct validity and see if there is a fair amount of agreement among raters. If not, it is important to see which of these raters better predicts school outcomes likely related to principal leadership. The teacher and principal reports of leadership surveys explored do not include the same questions. Therefore, the comparison will not be a one-to-one contrast of different ratings on the same items. This introduces some difficulty in interpreting the reasons for a lack of agreement between reporters. On the one hand, principals may over or under-report certain aspects of their leadership; on the other hand, the differences may indicate that the questions asked are measuring different constructs. This study does not allow conclusions about which explanation better accounts for the differences between reports. Another issue of construct validity relates to measures of school morale, organizational focus, and teacher turnover as these serve as the main dependent variables in this study. Though the surveys used may not perfectly measure these constructs, the reliabilities reported suggest

that these are adequate measures of something. Furthermore, in the initial study

conducted by Gottfredson et al. (2002), analyses indicated that the survey results

predicted what they were expected to predict in most cases, which supports the idea that

these are adequate measures of school morale, organizational focus, and teacher turnover.

Merits of Study

Despite these limitations, this study has merits. The data used provided a large

sample to provide important, meaningful results. Utilizing the polynomial regression

approach to examine self-other agreement and the relationship between congruence in

reports of principal leadership style and school outcomes alleviates many of the issues

with using traditional difference score comparisons. It enhances interpretability of the

results, which should increase the statistical validity of my conclusions for this study.

The first two questions of my study are simple, but important. Understanding

whether teacher reports and principal self-reports of leadership are highly correlated (i.e.

agree) provides important insight into the construct validity of these measures. With

growing interest in principal leadership behavior and a movement toward recognizing

principals as *the* important factor in changing school performance, research on and with

principals is bound to increase. To ensure that such research is useful, efficient, and

effective, it is important to understand the utility of different measures and strategies for

approaching principal-based research. While the first research question addressed

whether teachers and principals agree on measures of principal leadership, the second

question assessed the predictive validity of each report. Teacher reports are significantly

better predictors of an outcome likely related to leadership behavior – rule clarity and

fairness –, which lends credence to the idea that teachers are more accurate reporters of

leadership behavior and supports the notion that teacher reports of leadership have more predictive utility. This is important to consider for future research, when analyzing research, and when reading the numerous reports coming out on 'turnaround principals' or transformational school leaders. Much of this research is based on observations by a single researcher using qualitative methods. Given the clear prospect that measures of schools based on the reports of a single observer are unreliable, much of this research is of questionable value.

Finally, the third piece of this study applies a methodology seemingly underutilized in school research to examine the effect of congruence between reporters on important school outcomes. Organizational research indicates that supervisor-supervisee congruence, or agreement, is tied to improved performance, higher organizational commitment, and increased job satisfaction. Little research has examined principal-teacher agreement in this way. As mentioned previously, polynomial regression provides a stronger approach for looking at differences in reports between individuals. This particular study examined how principal-teacher agreement relates to outcomes. The influence of agreement and disagreement about principal leadership in this study were underwhelming. However, this study provided a useful comparison to organizational research and the findings were somewhat unexpected. Teacher reports were much better predictors of all outcomes explored compared to principal self-reports. This may tap into discrepancies between conceptualizations of leadership or a lack of self-awareness among principals. It also indicates that the relationship between the supervisor and supervisee in schools may be different from other organizations and should be further explored. These results highlight some potential areas for future changes to principal training programs –

including more emphasis on understanding what teachers value in a leader and increasing

leader self-awareness. Beyond that, this provides a framework for using polynomial

regression in schools – a place notorious for disagreement between reporters. It sets the

stage for future research using this method in a way that may be able to explore the

problems with and outcomes of disagreement between reporters on any number of

school-related issues, including student and teacher evaluations.

This research assessed whether congruence between principal and teacher reports

of principal leadership style predicts school morale, organizational focus, and teacher

turnover. These three factors are all crucial to school outcomes. Congruence seemed far

less important than teacher perceptions of principal leadership. As such, interventions

targeting increased understanding of teacher perceptions and conceptualizations of good

leadership may be appropriate for schools with low morale and high turnover. Further,

the identification of the high intercorrelations between teacher reports of school outcomes

like school morale, organizational focus, and principal leadership, indicates that

improving one may improve the other. An underlying factor, like school climate, may

account for teacher perceptions of many school-related issues. Understanding and

intervening on that underlying factor may also be useful in schools with low teacher

morale, high turnover, or low work satisfaction.

Though this study cannot point to specific causes related to principal leadership or

the outcomes examined, it provides information regarding the predictive validity of

principal and teacher reports of principal leadership. Most educational researchers agree

that principals are key figures in determining many school outcomes: from individual

student performance, to school climate, to teacher turnover, to the integrity of

implemented treatment programs for students. This research indicates that measuring principal leadership by self-report is inadequate when exploring the relationship between leadership and important school outcomes. Principal leadership measures are often used to explore the effect of principal leadership on other school outcomes – like school morale. Recognizing that self-reports are not effective may improve research on schools and school leadership. Finally, organizational research indicates that effective leaders are generally more self-aware – demonstrating more congruence between their self-reports of behavior and the reports of their subordinates. Self-awareness is also emphasized in conceptualizations of transformational leadership, authentic leadership, and emotionally intelligent leadership – all current trends in leadership training. However, this study seems to indicate that congruence (or self-awareness) was not a major factor in influencing school outcomes. This study highlights the importance of further research into understanding how to operationalize, measure, and create effective school leadership.

Implications for Future Research and Practice

As noted, one of the limitations of this study was the age of the data used. Future research may focus on conducting similar analyses with current data on principal and teacher reports of leadership. Because the teacher and principal reports of leadership were not assessed using the same measure, a direct comparison of these two reports is difficult to interpret. Future research may contrast teacher and principal reports of leadership using the same items administered to both sets of raters. This would allow better interpretations of agreement and disagreement between reporters and allow for a more nuanced understanding of the differences in self vs. other reports of leadership. It would

also allow a more direct comparison to research using self-other agreement in other fields, such as organizational psychology, where analyses are conducted on the same sets of items completed by different raters. It may be valuable to explore how principals and teachers conceptualize principal leadership differently. Perhaps the underlying views of leadership differ. While principal reports were not predictive of outcomes explored in this study, their views of leadership may predict other school outcomes not explored here. Understanding the value and utility of teacher and principal reports of leadership may help shape future research and have policy implications for how schools are assessed and school outcomes measured.

As noted, all teacher-reported factors were highly intercorrelated. Future research should explore the differences between these constructs and whether an underlying factor accounts for the large degree of relatedness between teacher ratings of school characteristics. If an umbrella factor, such as teacher attitudes towards school, school climate, or feelings of work satisfaction accounts for a substantial portion of each of these variables, it may be a more useful target for research and intervention than any of these variables alone. However, it may also be the case that by improving one of the variables (e.g., teacher perceptions of school leadership) other variables also change (e.g., teacher perceptions of school morale and organizational focus). This is an important consideration for school improvement plans, particularly for improving school climate or culture.

Finally, based on these results, principal training programs may benefit from using teachers' input to provide guidance on what they interpret as good leadership.

Teacher evaluations of principals may be valuable teaching tools and may help provide

information about where to intervene on leadership and what principal skill's need work.

References

Adams, C. M., & Jean-Marie, G. (2011). A diffusion approach to study leadership

    reform. *Journal of Educational Administration, 49*, 354-377. doi:

    10.1108/09578231111146452

Agho, A. O. (2009). Perspectives of senior-level executives on effective followership and

    leadership. *Journal of Leadership & Organizational Studies, 16*, 159-166.

Akins, R., Bright, B., Brunson, T., & Wortham, W. (2013). Effective leadership for

    sustainable development. *Journal of Organizational Learning & Leadership,*

    11(1), 29-36.

American Federation of Teachers. (1997). *Job Satisfaction among America's teachers:*

    Effects of workplace conditions, background characteristics, and teacher

    compensation. Retrieved October 20, 2013 from

    http://nces.ed.gov/pubs97/97471.pdf.

Ames, D. R., & Flynn, F. J. (2007). What breaks a leader: The curvilinear relation

    between assertiveness and leadership. *Journal of Personality and Social*

    Psychology, 92, 307-324. doi: 10.1037/0022-3514.92.2.307

Arlestig, H. (2008). Structural prerequisites for principals' and teachers' communication

    about teaching and learning issues. *Improving Schools, 11*(3), 189-203.

Arnn, J. W., Jr., & Mangieri, J. N. (1988). Effective leadership for effective schools: A

    survey of principal attitudes. *NASSP Bulletin, 72*(505), 1-7.

Atwater, L., Waldman, D., Ostroff, C., Robie, C., & Johnson, K. M. (2005). Self–Other

    agreement: Comparing its relationship with performance in the U.S. and Europe.

    International Journal of Selection & Assessment, 13, 25-40. doi: 10.1111/j.0965-

075X.2005.00297.x

Atwar, L.E. & Yammarino, F.J. (1992). Does self–other agreement on leadership perceptions moderate the validity of leadership and performance predictions? *Personnel Psychology*, *45*, 141–164.

Axley, S. R. (1990). The practical qualities of effective leaders. *Industrial Management, 32*(5), 29.

Barton, L. T. (2013). Knowledge of effective educational leadership practices. *International Journal of Educational Leadership Preparation, 8*(1), 93-102.

Béteille, T., Kalogrides, D., & Loeb, S. (2012). Stepping stones: Principal career paths and school outcomes. *Social Science Research, 41*, 904-919. doi: 10.1016/j.ssresearch.2012.03.003

Bird, J. J. j. u. e., Chuang, W., Watson, J., & Murray, L. (2012). Teacher and principal perceptions of authentic leadership: Implications for trust, engagement, and intention to return. *Journal of School Leadership, 22*, 425-461.

Bista, M. B., & Glasman, N. S. (1998). Principals' leadership, antecedents, and student outcomes. *Journal of School Leadership, 8*(2), 109-136.

Blase, J. (1987). Dimensions of effective school leadership: the teacher's perspective. *American Educational Research Journal, 24*, 589-610. doi: 10.3102/00028312024004589

Borman, G.D. & Dowling, N.M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research, 78,* 367-409. doi: 10.3102/0034654308321455

Boyd, D., Grossman, P., Ing, M., Lankford, H., Loeb, S., & Wyckoff, J. (2010). The influence of school administrators on teacher retention decisions. *American Educational Research Journal, 48,* 303-333. doi: 10.3102/0002831210380788

Braun, D., Gable, R., & Kite, S. (2011). Relationship among essential leadership preparation practices and leader, school, and student outcomes in K-8 Schools. *International Journal of Educational Leadership Preparation, 6*(3), 1-38.

Browde, B. (2011). Coaching political leaders: Can coaching be used to improve the quality of executive-level government? *Journal of Leadership Studies, 5*(1), 71-75. doi: 10.1002/jls.20206

Brown, P., Finch, K., MacGregor, C., & Watson, R. (2012). Divergent angry voices. *International Journal of Educational Leadership Preparation, 7*(3).

Burns, G., & Martin, B. N. (2010). Examination of the effectiveness of male and female educational leaders who made use of the invitational leadership style of leadership. *Journal of Invitational Theory and Practice, 16*, 30-56.

Busch, S., & Johnson, S. (2007). Self-Awareness: A below the surface examination of conflict management. *National Forum of Educational Administration & Supervision Journal, 24*(3), 102-112.

Bush, T. (1998). The national professional qualification for headship: the key to effective school leadership? *School Leadership & Management, 18*(3), 321-333. doi: 10.1080/13632439869529

Bush, T. (2009). Leadership development and school improvement: contemporary issues in leadership development. *Educational Review, 61*, 375-389. doi: 10.1080/00131910903403956

Bush, T. (2012). International perspectives on leadership development: Making a

difference. *Professional Development in Education, 38*(4), 663-678.

Capowski, G. (1994). Anatomy of a leader: Where are the leaders of tomorrow? (cover

story). *Management Review, 83*(3), 10.

Catano, N., & Stronge, J. H. (2007). What do we expect of school principals?

Congruence between principal evaluation and performance standards.

International Journal of Leadership in Education, 10(4), 379-399. doi:

10.1080/13603120701381782

Church, A.H. (1997). Managerial self-awareness in high-performing individuals in

organizations. *Journal of Applied Psychology, 82,* 281-292.

Church, A.H. (2000). Do higher performing managers actually receive better ratings? A

validation of multirater assessment methodology. *Consulting Psychology Journal:*

Practice and Research, 52, 99–116.

Coddard, R. D., & Miller, R. J. (2010). The conceptualization, measurement, and effects

of school leadership. *Elementary School Journal, 111*, 219-225.

Coelli, M., & Green, D. A. (2012). Leadership Effects: School Principals and Student

Outcomes. *Economics of Education Review, 31*(1), 92-109.

Cohen-Vogel, L. e., & Herrington, C. D. e. (2005). The politics of teacher and

administrator preparation and development: The quality controversy. *Symposium,*

19(1), 5-249.

Conley, S., Shaw, S., & Glasman, N. (2007). Correlates of job and professional

satisfaction among secondary school administrators. *Journal of School*

Leadership, 17(1), 54-88.

Conway, J.M. & Huffcutt, A.I. (1997). Psychometric properties of multisource performance ratings: A meta-analysis of subordinate, supervisor, peer, and self-ratings. *Human Performance, 10,* 331-360.

Crosbie, R. (2005). Learning the soft skills of leadership. *Industrial & Commercial Training, 37*(1), 45-51. doi: 10.1108/00197850510576484

Crum, K. S., & Sherman, W. H. (2008). Facilitating high achievement: High school principals' reflections on their successful leadership practices. *Journal of Educational Administration, 46*(5), 562-580.

Crum, K. S., Sherman, W. H., & Myran, S. (2010). Best practices of successful elementary school leaders. *Journal of Educational Administration, 48*(1), 48-63.

Dunning, D., Heath, C., & Suls, J.M. (2004). Flawed self-assessment: Implications for health, education, and the workplace. *Psychological Science in the Public Interest, 5(3),* 69-106. doi: 10.1111/j.1529-1006.2004.00018.x

Danielson, C. (2007). The many faces of leadership. *Educational Leadership, 65*(1), 14-19.

Daresh, J. C., Gantner, M. W., Dunlap, K., & Hvizdak, M. (2000). Words from "the trenches": Principals' perspectives on effective school leadership Characteristics. *Journal of School Leadership, 10*(1), 69-83.

Davis, S. H., & Leon, R. J. (2011). How not to prepare school principals. *Planning and Changing, 42*(3-4), 274-287.

Day, C. (2000). Effective leadership and reflective practice. *Reflective Practice, 1*(1), 113-127. doi: 10.1080/146239400115590

Day, C., Harris, A., & Hadfield, M. (2001). Grounding knowledge of schools in

stakeholder realities: A multi-perspective study of effective school leaders. *School Leadership & Management, 21*(1), 19-42.

Devine, J., & Alger, G. (2011). Teachers' perceptions of the leadership styles of middle school principals and instructional leaders. *Academic Leadership (15337812), 9*(4), 1-21.

Devos, G., Hulpia, H., Tuytens, M., & Sinnaeve, I. (2013). Self-other agreement as an alternative perspective of school leadership analysis: An exploratory study. *School Effectiveness and School Improvement, 24*(3), 296-315.

Dinham, S. (2005). Principal leadership for outstanding educational outcomes. *Journal of Educational Administration, 43*(4), 338-356.

Doggett, M. (1990). Leadership and competence: Keys to school-based management. *NASSP Bulletin, 74*(526), 59-61.

Drysdale, L. (2011). Introduction. *Leadership & Policy in Schools, 10*(4), 371-374. doi: 10.1080/15700763.2011.610553

DuFour, R., & Mattos, M. (2013). How do principals really improve schools? *Educational Leadership, 70*(7), 34-40.

Economy, P. (2013, Aug). 7 Traits of Highly Effective Leaders. [Web log comment]. Retrieved from http://www.inc.com/peter-economy/7-traits-highly-effective-leaders.html

Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression analysis and response surface methodology.

Eriksen, M. (2009). Authentic leadership: Practical reflexivity, self-awareness, and self-authorship. *Journal of Management Education, 33*(6), 747-771.

Feigenbaum, A. V., & Feigenbaum, D. S. (2003). Quality, not quantity, of management. *Quality Progress, 36*(10), 44-48.

Fiedler, F.E. (1964). A contingency model of leadership effectiveness. In L. Berkowitz (Eds.), *Advances in Experimental Social Psychology*, (149-190). New York: Academic Press.

Findley, D., & Findley, B. (1992). Effective schools: The role of the principal. *Contemporary Education, 63*(2), 102-104.

Fleenor, J. W., Smither, J. W., Atwar, L.E., Braddy, P.W., & Sturm, R.E. (2010). Self–other rating agreement in leadership: A review. *Leadership Quarterly, 21,* 1005–1034. doi: 10.1016/j.leaqua.2010.10.006

Focus on Teams and Teamwork. (2004). *MIT Sloan Management Review, 46*, 2-2.

Forner, M., Bierlein-Palmer, L., & Reeves, P. (2012). Leadership practices of effective rural superintendents: Connections to Waters and Marzano's leadership correlates. *Journal of Research in Rural Education, 27*(8).

Fuller, E. J., & Hollingworth, L. (2014). A bridge too far? Challenges in evaluating principal effectiveness. *Educational Administration Quarterly, 50*(3), 466-499. doi: 10.1177/0013161X13506595

Furney, K. S., Aiken, J., Hasazi, S., & Clark/Keefe, K. (2005). Meeting the needs of all students: Contributions of effective school leaders. *Journal of School Leadership, 15*(5), 546-570.

Gamage, D. (2012). Effective leadership: three key responsibilities. *Principal Matters* (92), 30-34.

Gaziel, H. (1995). Managerial work patterns of principals at high- and average-performing Israeli elementary schools. *The Elementary School Journal, 96*, 179-194.

Gaziel, H. (2003). Images of leadership and their effect upon school principals' performance. *International Review of Education / Internationale Zeitschrift für Erziehungswissenschaft, 49*(5), 475-486.

Genao, S. (2013). Meeting AYP: Affective or effective on school leadership? *Management in Education, 27*(4), 159-163.

Ginsberg, R., & Thompson, T. (1992). Dilemmas and solutions regarding principal evaluation. *Peabody Journal of Education, 68*(1), 58-74.

Goertz, J. (2000). Creativity: An essential component for effective leadership in today's schools. *Roeper Review, 22*(3), 158.

Goldring, E., Cravens, X. C., Murphy, J., Porter, A. C., Elliott, S. N., & Carson, B. (2009). The evaluation of principals: What and how do states and urban districts assess leadership? *Elementary School Journal, 110*(1), 19-39. doi: 10.1086/598841

Goldring, E., Huff, J., May, H., & Camburn, E. (2008). School context and individual characteristics What influences principal practice? *Journal of Educational Administration, 46*(3), 332-352.

Gonzalez, R. A., & Firestone, W. A. (2013). Educational tug-of-war: internal and external accountability of principals in varied contexts. *Journal of Educational Administration, 51*(3), 383-406. doi: 10.1108/09578231311311528

Gottfredson, G.D. (1993). *An analytical description of the school principal's job.* Unpublished manuscript, Johns Hopkins University, Center for Social Organization of Schools.

Gottfredson, G.D. (1994). Some biographical correlates of career recognition among school principals. *Journal of Career Assessment, 2,* 179-189.

Gottfredson, G.D., Cantor, D., Gottfredson, D.C., Czeh, E.R., Crosse, S.B., & Hantman, I.(2002, April). National study of delinquency prevention in schools, final report. Retrieved from https://www.ncjrs.gov/pdffiles1/nij/grants/194116.pdf

Gottfredson, G. D. & Hybl, L.G. (1987). An analytical description of the school principal's job (Report No. 13). Washington, DC: Office of Educational Research and Improvement.,

Gottfredson, G.D., & Hybl, L.G. (1989). Some biographical correlates of outstanding performance among school principals (Report No. 35). Baltimore, MD: Center for Research on Elementary and Middle Schools.

Gottfredson, G.D. & Gottfredson, D.C. (1989). School climate, academic performance, attendance, and dropout. Washington, DC: Office of Educational research and Improvement.

Gottfredson, G.D., Gottfredson, D.C., Payne, A.A., & Gottfredson, N.C. (2005). School climate predictors of school disorder: Results from a national study of delinquency prevention in schools. *Journal of Research in Crime and Delinquency, 42,* 412-444. doi: 10.1177/0022427804271931

Graham, M., Milanowski, A., & Miller, J. (2012). Measuring and promoting inter-rater

   agreement of teacher and principal performance ratings. *Washington, DC: Center

   for Educator Compensation Reform. Retrieved* March, 23, 2012

Gray, C., & Bishop, Q. (2009). Leadership development: Schools and districts seeking

   high performance need strong leaders. *Journal of Staff Development, 30*(1), 28-

   30.

Green, R. L., & Cooper, T. (2012). An identification of the most preferred dispositions of

   effective school leaders. *National Forum of Applied Educational Research

   Journal, 26*(1/2), 55-76.

Greenlee, B., & Brown Jr, J. J. (2009). Retaining teachers in challenging schools.

   Education, 130(1), 96-109.

Griffith, J. (2006). A compositional analysis of the organizational climate-performance

   relation: public schools as organizations. *Journal of Applied Social Psychology,

   36,* 1848-1880.

Grissom, J. A., & Loeb, S. (2011). Triangulating principal effectiveness: How

   perspectives of parents, teachers, and assistant principals identify the central

   importance of managerial skills. *American Educational Research Journal, 48*(5),

   1091-1123.

Grissom, J. A., Loeb, S., & Master, B. (2013). Effective instructional time use for school

   leaders: Longitudinal evidence from observations of principals. *Educational

   Researcher, 42*(8), 433-444.

Gurr, D., Drysdale, L., & Mulford, B. (2005). Successful principal leadership: Australian

   case studies. *Journal of Educational Administration, 43*(6), 539-551.

Gurr, D.., Drysdale, L., & Mulford, B. (2006). Models of successful principal leadership. *School Leadership & Management, 26*(4), 371-395. doi: 10.1080/13632430600886921

Gündüz, Y, & Balyer, A. (2012). An investigation of the effective leadership behaviors of school principals. *Journal of Theoretical Educational Science / Kuramsal Eğitimbilim Dergisi, 5*(2), 237-238.

Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education, 33*(3), 329-351. doi: 10.1080/0305764032000122005

Hallinger, P., & Heck, R. H. (1998). Exploring the principal's contribution to school effectiveness: 1980-1995. *School Effectiveness & School Improvement, 9*(2), 157.

Hallinger, P., & Leithwood, K. (1994). Introduction: Exploring the impact of principal leadership. *School Effectiveness and School Improvement, 5*(3), 206-218.

Harris, M.M, & Schaubroeck, J. (1988). A meta-analysis of self-supervisor, self-peer, and peer-supervisor ratings. *Personnel Psychology, 41,* 43-62.

Harris, S. L. (2006). Best practices of award-winning public school principals: Implications for university preparation programs. *AASA Journal of Scholarship & Practice, 3*(2), 30-41.

Hausman, C. S., Crow, G. M., & Sperry, D. J. (2000). Portrait of the "ideal principal": Context and self. *NASSP Bulletin, 84*(617), 5-14.

Heck, R. H. (1992). Principals' instructional leadership and school performance: Implications for policy development. *Educational Evaluation and Policy Analysis, 14*(1), 21-34.

Heck, R. H., & Marcoulides, G. A. (1992). Principal assessment: Conceptual problem, methodological problem, or both? *Peabody Journal of Education (0161956X), 68*(1), 124-144.

Heidemeier, H. & Moser, K. (2009). Self-other agreement in job performance ratings: A meta-analytic test of process model. *Journal of Applied Psychology, 94,* 353-370.

Higgs, M., & Rowland, D. (2010). Emperors with clothes on: The role of self-awareness in developing effective change leadership. *Journal of Change Management, 10*(4), 369-385. doi: 10.1080/14697017.2010.516483

Hogan, R., & Roberts, B. W. (2000). A socioanalytic perspective on person-environment interaction. In W. B. Walsh, K. H. Craik, & R. H. Price (Eds.), *New directions in person-environment psychology* (pp. 1-23). Mahwah, NJ: Lawrence Erlbaum.

Hoppey, D., & McLeskey, J. (2013). A case study of principal leadership in an effective inclusive school. *Journal of Special Education, 46*(4), 245-256.

Ingersoll, R.M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38,* 499-534.

Ishimaru, A. (2013). From heroes to organizers: Principals and education organizing in urban school reform. *Education Administration Quarterly, 49,* 3-51. doi: 10.1177/0013161X12448250

Italiano, F., & Hine, G. (2014). Finding ways to effectively use year 12 achievement data to inform practice in secondary schools. *Australian Journal of Teacher Education, 39*(5).

Jackson, K. M., & Marriott, C. (2012). The interaction of principal and teacher instructional influence as a measure of leadership as an organizational quality.

Educational Administration Quarterly, 48(2), 230-258.

Jacobson, S. (2012). Principal leadership: Sustaining and deepening school improvement in low-income communities in North America. *Journal of Cases in Educational Leadership, 15*(3), 7-10.

Janssen, O., & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader-member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal, 47*(3), 368-384. doi: 10.2307/20159587

Kach, A. (2015). Theories of motivation. Retrieved on March 26, 2015 from http://www.scm.ethz.ch/teaching/Courses/FS14/QM/Theories_of_Motivation.pdf.

Kamler, E. e. k. l. e., Dodge, A., & Walker, J. M. T. (2013). Growing school leaders: An exploration of perceptions, actions, and support following a formative assessment experience. *Journal of School Leadership, 23*(1), 4-33.

Kearney, W. S., Kelsey, C., & Herrington, D. (2013). Mindful leaders in highly effective schools: A mixed-method application of Hoy's M-scale. *Educational Management Administration & Leadership, 41*(3), 316-335.

Keelin, T., & Arnold, R. (2002). Five habits of highly strategic thinkers. *Journal of Business Strategy, 23*(5), 38.

Kelley, R. C., Thornton, B., & Daugherty, R. (2005). Relationships between measures of leadership and school climate. *Education, 126*(1), 17-25.

Keys, W., Sharp, C., Greene, K., & Grayson, H. (2003). Successful leadership of schools in urban and challenging contexts. Full report. Retrieved from

http://dera.ioe.ac.uk/5129/1/media-7ab-b0-successful-leadership-in-urban-contexts.pdf

Kimball, S. M. (2011). Principals: human capital managers at every school. *Phi Delta Kappan, 92*(7), 13-18.

Kimball, S. M., Heneman, H. G., III, & Milanowski, A. (2007). Performance evaluation and compensation for public school principals: Results from a national survey. *ERS Spectrum, 25*(4), 11-21.

Klar, H. W., & Brewer, C. A. (2013). Successful leadership in high-needs schools: An examination of core leadership Practices enacted in challenging contexts. *Educational Administration Quarterly, 49*(5), 768-808.

Knapp, M. S., Copland, M. A., Honig, M. I., Plecki, M. L., & Portin, B. S. (2010). Learning-focused leadership and leadership support: Meaning and practice in urban systems. *Knowledge Creation Diffusion Utilization*, 1-42.

Kolb, J. A. (1995). Leader behaviors affecting team performance: Similarities and differences between leader/member assessments. *Journal of Business Communication, 32*(3), 233-248.

Kowalski, T. J., & et al. (1992). Perceptions of desired skills for effective principals. *Journal of School Leadership, 2*(3), 299-309.

Krajewski, B. (1996). Enculturating the school: The principal's principles. *NASSP Bulletin, 80*(576), 3-8.

Krüger, M. L., Witziers, B., & Sleegers, P. (2007). The impact of school leadership on school level factors: Validation of a causal model. *School Effectiveness & School Improvement, 18*(1), 1-20. doi: 10.1080/09243450600797638

Lapointe, P., Poirel, E., & Brassard, A. (2013). Beliefs and responsibilities of educational stakeholders concerning student success and effective principal leadership. *Canadian Journal of Educational Administration & Policy*(142), 33-49.

Larsen, C., & Rieckhoff, B. S. (2014). Distributed leadership: principals describe shared roles in a PDS. *International Journal of Leadership in Education, 17*(3), 304-326. doi: 10.1080/13603124.2013.774051

Lawler, E.E. & Hall, D.T. (1970). Relationship of job characteristics to job involvement, satisfaction, and intrinsic motivation. *Journal of Applied Psychology, 54*(4), 305-312. doi: 10.1037/h0029692

Lawler III, E.E., Hall,D.T., & Oldham, G.R. (1974). Organizational climate: Relationship to organizational structure, process and performance. *Organizational Behavior and Human Performance*,11(1), 139-155. doi: 10.1016/0030-5073(74)90010-5.

Lawler III, E.E., & Porter, L.W. (1967). Antecedent attitudes of effective managerial performance, *Organizational Behavior and Human Performance*, 2(2), 122-142. doi: 10.1016/0030-5073

Lawler, E.E. & Suttle, J.L. (1973). Expectancy theory and job behavior. *Organizational Behavior and Human Performance, 9,* 482-503.

Lee, I. A., & Preacher, K. J. (2013, September). Calculation for the test of the difference between two dependent correlations with one variable in common [Computer software]. Available from http://quantpsy.org.

Leithwood, K., Louis, K., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning.* New York: Wallace Foundation.

Llopis, G. (2014, Sept.). Preparation for effective leadership begins with 5 simple rules.

[Web log comment]. Retrieved from

http://www.forbes.com/sites/glennllopis/2014/09/09/preparation-for-effective-

leadership-begins-with-5-simple-rules/

Locke, E.A. & Latham, G.P. (1990). Work motivation and satisfaction: Light at the end

of the tunnel. *Psychological Science, 1,* 240-246. doi: 10.1111/j.1467-

9280.1990.tb00207.x

London, M., & Wohlers, A. J. (1991). Agreement between subordinate and self-ratings in

upward feedback. *Personnel Psychology, 44*(2), 375-390.

Lumpkin, A. (2008). Three keys to success for principals (and their teachers). *Kappa*

Delta Pi Record, 45(1), 22-25.

Mabe, P., & West, J. (1982). Validity of self-evaluation of ability: A review and meta-

analysis. Journal of Applied Psychology, *67,* 280−296.

Male, T., & Palaiologou, I. (2012). Learning-centered leadership or pedagogical

leadership?An alternative approach to leadership in education contexts.

International Journal of Leadership in Education, 15(1), 107-118.

Marcellus, A., Flores, M., & Craig, A. (2012). Leader voices: Principals reflect on the

evolution of their leadership. *Journal of Staff Development, 33*(6), 10-12.

Mendels, P. (2012). Principals in the pipeline: Districts construct a framework to develop

school leadership. *Journal of Staff Development, 33*(3), 48-52.

Mills, S. J., Huerta, J. J., Watt, K, & Martinez, J. (2014). AVID teacher leadership:

Administrator and teacher perceptions of leadership attributes. *Journal of School*

Leadership, 24(1), 146-163.

Mitchell, T. D., & Towler, A. J. (2014). Location, language, location: Toward a better

understanding of leader-performance relations. *Industrial and Organizational Psychology: Perspectives on Science and Practice, 7*(2), 195-198.

Moorhead, R., & Nediger, W. (1991). The impact of values on a principal's daily activities. *Journal of Educational Administration, 29*(2), 5-24.

Muijs, D. (2011). Leadership and organisational performance: From research to prescription? *International Journal of Educational Management, 25*(1), 45-60.

Mulford, B., Kendall, D., Edmunds, B., Kendall, L., Ewington, J., & Silins, H. (2007). Successful school leadership: What is it and who decides? *Australian Journal of Education, 51*(3), 228-246.

Mulford, B., & Silins, H. (2011). Revised models and conceptualisation of successful school principalship for improved student outcomes. *International Journal of Educational Management, 25*(1), 61-82.

Myung, J., Loeb, S., & Horng, E. (2011). Tapping the principal pipeline: Identifying talent for future school leadership in the absence of formal succession management programs. *Educational Administration Quarterly, 47*(5), 695-727.

Nettles, S.M. & Herrington, C. (2007). Revisiting the importance of direct effects of school leadership on student achievement: The implications for school improvement policy. *Peabody Journal of Education, 82,* 724-736.

Nir, A. E., & Hameiri, L. (2014). School principals' leadership style and school outcomes The mediating effect of powerbase utilization. *Journal of Educational Administration, 52*(2), 210-227. doi: 10.1108/JEA-01-2013-0007

O'Doherty, A., & Ovando, M. N. (2013). Leading learning: First-year principals' reflections on instructional leadership. *Journal of School Leadership, 23*(3), 533-

561.

Odhiambo, G., & Hii, A. (2012). Key stakeholders' perceptions of effective school

leadership. *Educational Management Administration & Leadership, 40*(2), 232-

247.

Orphanos, S., & Orr, M. T. (2014). Learning leadership matters: The influence of

innovative school leadership preparation on teachers' experiences and outcomes.

Educational Management Administration & Leadership, 42(5), 680-700. doi:

10.1177/1741143213502187

Ostroff, C. (2007) Methodological and analytical techniques in fit research. In C. Ostroff

& T.A. Judge (Eds.), *Perspectives on Organizational Fit* (pp. 351-387). New

York, NY: Taylor & Francis Group.

Ostroff, C., Atwater, L. E., & Feinberg, B. J. (2004). Understanding self-other agreement.

Personnel Psychology, 57(2), 333-375.

Owings, W. A., Kaplan, L. S., & Chappell, S. (2011). Troops to teachers as school

administrators: A national study of principal quality. *NASSP Bulletin, 95*(3), 212-

236.

Oyinlade, A. O. (2006). A method of assessing leadership effectiveness: Introducing the

essential behavioral leadership qualities approach. *Performance Improvement

Quarterly, 19*(1), 25-40. doi: 10.1111/j.1937-8327.2006.tb00355.x

Pashiardis, P., Costa, J. A., Mendes, A. N., & Ventura, A. (2005). The perceptions of the

principal versus the perceptions of the teachers: A case study from Portugal.

International Journal of Educational Management, 19(7), 587-604.

Pavlovic, N., Oljaca, M., & Kostovic, S. (2012). Integration of leadership styles of school

director. *Educational Research and Reviews, 7*(1), 31-35.

Pepper, K. (2010). Effective principals skillfully balance leadership styles to facilitate student success: A focus for the reauthorization of ESEA. *Planning and Changing, 41*(1-2), 42-56.

Porter, L.W. & Steers, R.M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. *Psychological Bulletin, 80*(2), 151-176. doi: 10.1037/h0034829.

Power, R. L. (2013). Leader-member exchange theory in higher and distance education. *International Review of Research in Open and Distance Learning, 14*(4), 277-284.

Provost, J., Boscardin, M. L., & Wells, C. (2010). Perceptions of principal leadership behaviors in Massachusetts in the era of education reform. *Journal of School Leadership, 20*(5), 532-560.

Pugh, A. G., Fillingim, J. G., Blackbourn, J. M., Bunch, D., & Thomas, C. (2011).Faculty validation of the leadership practices inventory with secondary school principals. *National Forum of Educational Administration & Supervision Journal, 28*(3), 4-11.

Quigney, T. A. (2000). Effective school administration in an age of educational reform. *Mid-Western Educational Researcher, 13*(4), 21-27.

Quong, T. & Walker, A. (2010). Seven principles of strategic leadership. *International Studies in Educational Administration (Commonwealth Council for Educational Administration & Management (CCEAM)), 38*(1), 22-34.

Reardon, R. M. (2011). Elementary school principals' learning-centered leadership and

educational outcomes: Implications for principals' professional development. *Leadership and Policy in Schools, 10*(1), 63-83.

Reitzug, U. C. (1989). Principal-teacher interactions in instructionally effective and ordinary elementary schools. *Urban Education, 24*(1), 38-58.

Reynolds, C. H., & O'Dwyer, L. M. (2008). Examining the relationships among emotional intelligence, coping mechanisms for stress, and leadership effectiveness for middle school principals. *Journal of School Leadership, 18*(5), 472-500.

Rice, S. M. (2014). Working to maximise the effectiveness of a staffing mix: what holds more and less effective teachers in a school, and what drives them away? *Educational Review, 66*(3), 311-329. doi: 10.1080/00131911.2013.776007

Richards, P. (2008). A competency approach to developing leaders--Is this approach effective? *Australian Journal of Adult Learning, 48*(1), 131-144.

Roney, K., & Coleman, H. (2011). Relationship between organizational health of middle schools and student achievement in reading and math: What middle grades principals should hear. *National Forum of Educational Administration & Supervision Journal, 29*(1), 1-27.

Rossotti, C. O. (2006). Challenges for effective leadership. *American Review of Public Administration, 36*(4), 386-388. doi: 10.1177/0275074006293644

Rowan, B. (1996). Standards as incentives for instructional reform. In S.H. Fuhrman & J. O'Day (Eds.), *Rewards and reform: Creating educational incentives that work.* San Francisco: Jossey-Bass.

Rutherford, W. L. (1985). School principals as effective leaders. *Phi Delta Kappan, 67*, 31-34.

Sammons, P., Gu, Q., Day, C., & Ko, J. (2011a). Exploring the impact of school

 leadership on pupil outcomes. *International Journal of Educational Management,*

 25(1), 83-101. doi: 10.1108/09513541111100134

Sammons, P., Gu, Q., Day, C., & Ko, J. (2011b). Exploring the impact of school

 leadership on pupil outcomes: Results from a study of academically improved and

 effective schools in England. *International Journal of Educational Management,*

 25(1), 83-101.

Sarros, J. C., & Sarros, A. M. (2011). Five years on: Leadership challenges of an

 experienced CEO. *School Leadership & Management, 31*(3), 235-260.

Schneider, A., & Burton, N. (2005). An ideal "type"?--The characteristics of effective

 school principals as perceived by aspiring principals both from within education

 and those from an alternate career path. *Management in Education, 19*(2), 6-9.

Schulte, D. P., Slate, J. R., & Onwuegbuzie, A. J. (2010). Characteristics of effective

 school principals: A mixed-research study. *Alberta Journal of Educational*

 Research, 56(2), 172-195.

Schwab, D. P. and Cummings, L. L. (1970), Theories of performance and satisfaction: A

 review. industrial relations: *A Journal of Economy and Society, 9:* 408–430. doi:

 10.1111/j.1468-232X.1970.tb00524.x

Shanock, L.R., Baran, B.E., Gentry, W.A., Pattison, S.C., & Heggestad, E.D. (2010).

 Polynomial regression with response surface analysis: A powerful approach for

 examining moderation and overcoming limitations of difference scores. *Journal*

 of Business Psychology, 25, 543-554 doi*:*10.1007/s10869-010-9183-4

Shen, J., Leslie, J.M., Spybrook, J.K., & Ma, X. (2012). Are principal background and school processes related to teacher job satisfaction? A multilevel study using schools and staffing survey 2003-2004. *American Education Research Journal, 49,* 200-231. doi: 10.3102/0002831211419949

Shouppe, G. & Pate, J.L. (2010). Teachers' perceptions of school climate, principal leadership style and teacher behaviors on student academic achievement. *National Teacher Education Journal, 3(2),* 87-98.

Showry, M., & Manasa, K. V. L. (2014). Self-awareness - key to effective leadership. *IUP Journal of Soft Skills, 8*(1), 15-26.

Siddel, H., & Bell, R. (2003). Towards understanding self-other difference. *Australian Journal of Psychology, 55*, 144-144.

Silins, H., & Mulford, B. (2002). Schools as learning organizations: The case for system, teacher and student learning. *Journal of Educational Administration, 40*(5), 425-446. doi: 10.1108/09578230210440285

Silins, H. C. (1994). Leadership characteristics and school improvement. *Australian Journal of Education, 38*(3), 266-281.

Sims, J. M. (2009). Styles and qualities of effective leaders. *Dimensions of Critical Care Nursing, 28*(6), 272-2074.

Sosik, J. J. (2001). Self-other agreement on charismatic leadership: Relationships with work attitudes and managerial performance. *Group & Organization Management, 26*(4), 484.

Sosik, J. J., & Megerian, L. E. (1999). Understanding leader emotional intelligence and performance: The role of self–other agreement on transformational leadership

perceptions. *Group & Organization Management, 24*(3), 367-390.

Spillane, J. P. (2009). Managing to lead: Reframing school leadership and management. *Phi Delta Kappan, 91*(3), 70-73.

Stone, S., Astor, R., & Benbenishty, R. (2009). Teacher and principal perceptions of student victimization and the schools' response to violence: The contributions of context on staff congruence. *International Journal of Educational Research, 48,* 194-213. doi: 10.1016/j.ijer.2009.07.00

Strauss, J. P. (2005). Multi-source perspectives of self-esteem, performance ratings, and source agreement. *Journal of Managerial Psychology, 20*(6), 464-482. doi: 10.1108/02683940510615424

Streshly, W. A., & Gray, S. P. (2008). A close look at six super star principals: Implications for educational leadership and administration programs. *Educational Leadership and Administration: Teaching and Program Development, 20*, 116-124.

Strickland-Cohen, M., McIntosh, K., & Horner, R. H. (2014). Effective practices in the face of principal turnover. *Teaching Exceptional Children, 46*(3), 19-25.

Sweeney, J. (1982). Research synthesis on effective school leadership. *Educational Leadership, 39*(5), 346-352.

Szell, S. & Henderson, R. (1997). The impact of self-supervisor/subordinate performance rating agreement on subordinates' job satisfaction and organisational commitment. *Journal of Applied Social Behaviour, 3,* 25-37.

Taylor, S.N., Wang, M., & Zhan, Y. (2012). Going beyond self-other rating comparison to measure leader self-awareness. *Journal of Leadership Studies, 6(2),* 6-31. doi:

10.1002/jls.21235

Terry, P. M. (1996). Effective leadership. *Catalyst for Change, 25*, 10-14.

Tobin, J. (2014). Management and leadership issues for school building leaders. *International Journal of Educational Leadership Preparation, 9*(1).

Tunison, S. D. (2001). Instructional supervision: The policy-practice rift. *Journal of Educational Thought/Revue de la Pensee Educative, 35*(1), 83-108.

Törnsén, M. (2009). Principal leadership, national responsibilities and successful school outcomes. *International Studies in Educational Administration (Commonwealth Council for Educational Administration & Management (CCEAM)), 37*(3), 37-52.

University Alliance (2015). *What makes an effective leader.* Retrieved from http://www.notredameonline.com/resources/leadership-and-management/what-makes-an-effective-leader/#.VQmMO47F-88

Unnu, N. A. A., & Kesken, J. (2014). Diagnosing the effects of leader-member exchange quality on performance in the context of organizational culture: a case from Turkish family-owned businesses. *Journal of Business Economics & Management, 15*(1), 174-195. doi: 10.3846/16111699.2011.653983

Vale, C., Davies, A., Weaven, M., Hooley, N., Davidson, K., & Loton, D. (2010). Leadership to improve mathematics outcomes in low SES schools and school networks. *Mathematics Teacher Education and Development, 12*(2), 47-71.

Appendix 1: Key Background Article from Literature Review – Summary Table

Author(s) Name (Year)	Broad Topic	Study Type	Method & Relevant Findings	Limitations
American Federation of Teachers (1997)	Teacher job satisfaction	National Report	Large scale survey of American teachers (Schools and Staffing Survey 93-94); administrative support and leadership, student behavior, school atmosphere and teacher autonomy related to teacher satisfaction	Older survey, results based on limited measures for each construct – focus on breadth rather than depth
Atwater & Yammarino (1992)	Self-other agreement on leadership	Survey Study	Examined whether self-awareness – agreement between self and other leadership ratings – predicts performance of naval academy students (n=91) and naval officers (n=158); found that self-ratings are often inflated and that self-other agreements are often not in agreement; leader behavior highly, positively related to performance for those who were self-aware but not for over-estimators	Broke up sample into groups – agreement, over-estimator, under-estimator – which decreased individuals within each sample, particularly the agreement sample; very specific sample of Naval Officers which may affect generalizability
Borman & Dowling (2008)	Teacher attrition & retention	Meta-analysis & Review	Searched literature for articles relating to characteristics of teachers	Cannot examine long-term longitudinal data, but rather attrition rates from one year

			who enter, remain in, or leave the profession as well as articles about school characteristics , compensation policies, and pre-service and in-service policies related to teacher retention; found that teacher characteristics including gender, age, marital status, and teaching qualifications were related to attrition, as were school characteristics including size, location, support networks, administrative leadership, teacher salary, and instructional spending	to the next; focus on breadth rather than depth of information, ratings based on different types of measurement with little information on the psychometric properties of measures used
Boyd et al. (2010)	Administrator effect on retention	Survey study	Explored first-year teachers' assessments of school contextual factors and the relationship between these factors and teacher attrition; survey of 4,360 first-year teachers in NYC; created six measures of school contextual factors (teacher influence, administration, staff relations, students, facilities, and safety); found that in full model with all school contextual	Limited sample of first-year teachers in NYC, which may limit generalizability of findings; unclear what aspects of administrative support are important; used responses of one set of teachers to predict outcomes of other teachers in the same school, rather than exploring the actual retention of the teachers who did the reporting; did not explore impacts of being a first-year teacher on perceptions of

			factors and controls, only administration significantly predicts teacher retention after controlling for school and teacher characteristics	school factors
Church (1997)	Manager self-awareness	Survey Study	Explored differences in self-awareness (congruence between self and direct reports' ratings) in 134 high and 47 average-performing managers; found that high performing managers were more self-aware regardless of data source or organization	May have insufficient power to detect significant differences among the sub-samples (female vs. male high performers), moderators weren't examined; unclear if high performers became more self aware or whether self awareness resulted in high performance based on study design
Church (2000)	Multirater manager feedback	Validation Study	Examined prior performance and daily behaviors of 76 senior managers in global health organization and ratings from 308 direct reports, 291 peers, 71 supervisors; found that self-other behavior rating correlations were far lower than other rater comparisons; higher performing managers were rated higher by direct reports, peers, and supervisors (though supervisors rated higher across the board, higher	Sample was very limited both in size and in breadth (included only 76 senior managers from a specific organization), all participants had attended a feedback-based development program, limited sample size that limited the ability to find significant findings in self-awareness and performance measures, unclear whether self-awareness is cause or result of high performance, lack of hard performance measures (sales figures, turnover ratios, budgets, etc),

			ratings from direct reports predicted more positive climate; though self-direct report ratings didn't differ by performance group (high vs. low), there was a difference by performance and awareness of climate as well as a significantly greater proportion of higher performers comprising the accurate higher behaving group when data examined using four group categorical approach	continuous performance data would have been more useful than categorical (high vs. low), disagreement on validity of self-awareness measures
Conway & Huffcutt (1997)	Multisource Performance Ratings	Meta-Analysis	Meta-analysis explored the interrater reliabilities between raters of job performance; found low between source rating correlations, particularly self-other ratings with correlations ranging from .14 to .22	Study was on more general supervisor-supervisee relationships as opposed to teacher-principal ratings
Edwards (2002)	Polynomial Regression	Statistical Method Overview	Outlines the problems in using difference scores and argues for the use of polynomial regression as a replacement to traditional difference scores; polynomial regression allows for comprehensive test of complex	

			relationships and allows for the conceptualization of relationships as three-dimensional; difference scores often distort effects	
Fleenor, Smither, Atwar, Braddy, and Sturm (2010)	Self-other agreement on leadership	Literature Review	Reviews literature on self-other agreement; report discrepancies in research due to varied metrics to measure leadership and the importance of understanding relationship between self-other agreement and predictors/outcomes; focuses on models of agreement, factors affecting congruence between self-other ratings, correlates of agreement, and data analytic techniques (including polynomial regression)	Broad review, no specific information for criteria in choosing or evaluating articles or reports included
Gottfredson (1993)	Important aspects of principal jobs; development of measure used	Job/Task analysis inventory	Principals in a national sample of schools completed a structured task analysis inventory and reported what they considered to be the most important aspects of their jobs; important job functions included serving as supervisors of others;	Based purely on feedback from principals, little information regarding what roles were related to 'better' principals – though this was used as a leadership behavior measure in National Survey of Delinquency

			directing, supervising, and observing work of staff; providing feedback to staff, and assessing and addressing school needs; this survey also found that public school principals had less freedom to make administrative or personnel decisions and viewed their jobs as less important than those principals in private and Catholic schools	
Gottfredson (1994)	Traits of good principals	Measure development	Examined the utility of a simple biographical checklist to identify outstanding school principals; principals tend to fall within the Social Enterprising Investigative (SEI) Holland's occupational classification code; as such, indicators of those dimensions were used to create biodata items, along with items reflecting prior recognition for a leadership task, and items related to initiative or energy; utilized sample of general principals, outstanding principal nominees and nationally	Low response rates, only used brief checklist and the sample distinguished outstanding principals based purely on judgments of nominators or committees who awarded recognition, used extreme groups

			distinguished principals; found that the checklist was successful in distinguishing outstanding principals from others	
Gottfredson et al. (2002)	Delinquency and Other Prevention Programs in Schools	Grant-supported, Survey Study	Large-scale survey; found that a number of factors influence successful program implementation including organizational capacity (staff turnover, unpredictability in roles, school morale), leadership and staff traits, and organizational support.	Correlational in nature, overall low response rate compared to number of surveys sent out, may be error in reporting or interpretation in completing surveys, raters nested in schools and may have little knowledge of other schools when rating their own
Graham, Milanowksi, and Miller (2012)	Inter-Rater Agreement: Teacher & Principal	Report	Review and report, describes inter-rater reliability and agreement, including how it's measured, what level is acceptable, how evidence can be gathered, and factors that affect agreement	
Griffith (2006)	Organizational climate	Survey Study	Used archival and survey data in 122 elementary schools, saw increased variability or less agreement regarding school environment in schools that had principal changes recently than those without principal change; schools with principal changes had	Only 15 schools had principal changes under negative circumstances, seems like conclusions are a bit of a leap in logic, scales used were made up of borrowed or adapted items from other surveys, though they did highlight good reliability and factor loading

			more new, economically disadvantaged, and minority students; researchers claimed results pointed at effective principal leadership and effectively configured schools: those with principal changes had less internal control (less order and discipline), lower school empowerment and participation of parents (less external focus), and less consensus regarding environment	as expected
Harris & Schaubroek (1988)	Self-Supervisor Ratings	Meta-Analysis	Meta-analysis of 70 studies (23 peer-supervisor, 11 self-peer, 36 self-supervisor)found low correlations between self-supervisor ratings and self-peer ratings	Self-supervisor not self-subordinate, older literature search – only searched until 1986, but these phenomenon may not change much over time; limited sources of articles, few studies in each category
Heidemeier & Moser (2009)	Self-Other Agreement: Job Performance Ratings	Meta-Analysis	Meta-analysis of 128 independent samples, found small correlation between self and supervisor ratings (.22)	Self-supervisor vs. self-subordinate
Hogan & Roberts (2000)	Person-Situation Interaction	Chapter	Discusses person-situation interaction: behavior is function of personality (reputation & identity), role	Clearly advocating for specific perspective, chapter vs. study, focus specifically on personality dysfunctional

			played during interaction, and agenda for interaction; situations defined by expectations of others in situation, people are "situations", appointed leaders pay attention to expectations of people who appointed them; emergent leaders pay attention to the group they lead; most important situations are at work, bosses' personalities determine situation and are source of stress	bosses
Hulpia, Devos, & Keer (2011)	School leadership & teacher commitment	Survey Study	Survey of 1,522 teachers in 46 secondary schools; HLM used to reflect teachers nested in schools; found that 9% of variability in teachers' organizational commitment accounted for by between school differences – particularly quality of leadership, cooperation with leadership team, shared decision making	Conducted in Belgium, unclear on how schools were selected, not much information about the reliability or validity of scales used
Ingersoll (2001)	Organizational analysis of teacher turnover	Survey Study	Used Schools and Staffing Survey along with Teacher Followup Survey (6.733 teachers); found that turnover is not related	Older surveys (1991-1992 and 1990-1991), measured administrative support simply by degree of assistance provided to new

			primarily to teacher shortages from an insufficient supply and organizational issues need to be addressed rather than teacher recruitment problems; for teachers indicating dissatisfaction, they could indicate reasons for dissatisfaction, and inadequate administrative support was one of the top highlighted items; a 1-unit difference in reported support between schools resulted in 23% difference in odds of teacher departing	teachers reported by all teachers
Ishimaru (2012)	Principals, Organization, Shared Leadership	Qualitative Case Studies	Qualitative, utilized interviews, observations, and documents to study principals in three small, low-income, low-performing schools; working from a shared-leadership framework and role theory (expectations and conceptions of roles shape behavior as leaders); find that principals occupy multiple roles and are key to improving schools, particularly through shared leadership	Very small, limited sample; limited generalizability; no quantitative findings presented, principals became administrators as a result of previous successful school reform

Kelley, Thronton,& Daughtery (2005)	School leadership & climate	Survey Study	31 elementary schools (total of 31 principles and 155 teachers), responded to measures of leadership behavior, effectiveness, and school climate; found that teachers' perceptions of principal effectiveness predicted school climate scores; correlations between teacher ratings and principal self-ratings of leadership were approximately zero	Small sample size, schools were small and in rural settings, measured school climate using six scale scores (Communications, Innovativeness, Advocacy, Decision-Making, Evaluation, and Attitudes) and may have overlooked some important variables related to school climate
Keys, Sharp, Greene, & Grayson (2003)	Successful Leadership	Report, Review	Literature review to explore what makes school leaders successful in challenging contexts; found that effective leadership is an important characteristic in improving schools and that leadership styles must be attuned to school context; shared vision and leadership are present in successful schools	Large portion of the studies in this analysis were from UK (20/28), about 1/3 of the included sources came from opinion pieces, descriptive accounts, literature reviews or other non-empirical sources, this type of policy-related document may be skewed by goals of the creating committee or organization
Knapp et al. (2010)	Learning-focused Leadership	Report	Relied on repeated qualitative inquiries at approximately 21 total schools; examined the characteristics that are necessary for leaders to promote equitable learning	Focused specifically on schools pursuing learning improvement agenda with focus on leadership, most schools in study had ongoing relationship with study coordinator (The Wallace

			in schools	Foundation) – including having received leadership-related grants
Leithwood et al., (2004)	Influence of leadership in schools	Review of Research, Report	This report was commissioned by The Wallace Foundation to examine the research and evidence base to answer questions about the role of leadership, the effect of leadership on students, and the qualities of successful leaders; found that leadership was second only to teaching among school factors that relate to student learning, and that leaders served three very important functions – setting directions, developing people, and ensuring supportive work conditions	This was a review of research and while they stated that their findings were tied to research and provided some overall references, they did not spend much time review the original research; as this was a commissioned report, there may have been some bias or a predetermined goal for the review which may have influenced the areas focused on
Ma & MacMillan (2010)	Workplace conditions & satisfaction	Survey Study	Survey data of 2,202 teachers examined the influence of workplace conditions on teacher job satisfaction; found that administrative support was the most important workplace factor related to teacher job satisfaction	Surveys collected entirely from large rural province in Canada with two school systems, information from 1996, little information about particular measures used
Mabe & West (1982)	Validity of self-evaluation	Meta-Analysis	Reviewed 55 studies that compared self-evaluation to	A large percentage of the studies reviewed were

			performance ratings; found low mean validity coefficient (.29) and high variability (SD=.25); high intelligence, achievement status and internal locus of control associated with accurate evaluations	conducted on college and other students and examined scholastic, rather than job, performance
Nettles & Herrington (2007)	School Leadership & Achievement	Review	Literature review, explored the important effect of school leadership on student achievement; argue for potential direct effects of principal practices on student achievement and evidence of some effect of principal behavior on student achievement	Do not provide specific information of how literature was gathered – no systematic process; article is supporting or advocating for specific argument
Shanock, Baran, Gentry, Pattison, & Heggestad (2010)	Polynomial Regression	Review of statistical method	Review of polynomial regression with response surface analysis including some background research, how it might be useful, the types of questions it can answer, and the assumptions that must be met; includes examples of potential research questions that can be addressed through this method and a how-to for polynomial regression	Primarily just a piece advocating the use of polynomial regression with little information about potential drawbacks or limitations

Shen, Leslie, Spybrook, & Ma (2011)	Principal factors and teacher satisfaction	Survey Study	Used 2003-2004 Schools and Staffing survey to examine relationship between teacher job satisfaction and principal background and school processes; utilized HLM to address teachers being nested within schools; found that 17% of the variance in job satisfaction is between schools; found that teaching level, experience, and certification were related to job satisfaction as were school influence, classroom control, and administrative support	Interpreted the finding that principal background variables are not significantly related to job satisfaction on most measures as indication that it is less important than school process, did not reflect on the fact that administrator is often key in school processes; both job satisfaction and school processes were reported by same group of teachers which may bolster relationship
Shouppe & Pate (2010)	Teacher perceptions of principal style	Survey Study	Surveyed 367 teachers in ten middle schools in Georgia to explore teacher behaviors, principal leadership, school climate, academic performance and various teacher characteristics (gender, years of teaching, level of education and ethnicity); found no significant relationship between school climate and academic achievement, but a strong,	Self-report surveys, surveys may have missed important teacher behavior-related items (professional interactions, teaching strategies, collegiality), limited sample that may not generalize

			significant relationship between principal openness and school climate and a moderate positive relationship between teacher openness and school climate	
Stone, Astor, and Benbenishty (2009)	Teacher-principal ratings of victimization	Survey Study	Used large, nested national sample of Israeli schools (1352 teachers, 186 principals) to study congruence in reports of awareness and response to school violence and victimization; found small correlation between teacher and principal reports of victimization (.15), but larger correlation in reports of student risk behavior (.61) and school response to violence and victimization (.25)	Sample limited to Israeli schools, looking at congruence in ratings of specific phenomenon – may not capture same thing as congruence in leadership ratings
Szell & Henderson (1997)	Self-Supervisor agreement and satisfaction/commitment	Survey Study	A total of 96 employees from 13 work groups were divided into 83 supervisor/supervisee dyads and completed the Career Motivation Inventory regarding supervisor performance and motivation; supervisees also completed job	Profile agreement was not related to three aspects of satisfaction or one aspect of commitment, so only related to specific pieces; small sample size – which may have related to weak profile agreement; Australian, public sector organization – unclear about

			satisfaction and organizational commitment measures; found that higher agreement between supervisors and supervisees related to higher organizational commitment and job satisfaction	generalizability; ratings may be different in non-research context, where employees may withhold information
Taylor, Wang, & Zhan (2012)	Leader Self-awareness	Survey Study	Collected data from 248 leaders and their 556 direct reports on interpersonal competencies; framed self-awareness as two-pronged: understanding of self and ability to predict how others perceive you; both self-other and prediction-other ratings predicted effectiveness as rated by a supervisor, with prediction-other accounting for more variability in effectiveness	Effectiveness was measured by supervisor rating, sample was limited and participants were only asked to predict two rater groups and only a fraction predicted ratings of direct reports (n=97), range restriction may have decreased power, sample was fairly homogenous in terms of geographic location, race, and most were alumni or management of university

Appendix 2: Administrator Leadership Scale
Reproduced from the National Study of Delinquency Prevention (Gottfredson et al., 2002) with permission

---

Item Content of Teacher Administrator Leadership Scale

The school's administration makes it easy to get supplies, equipment, or arrangements needed for instruction. (+)

In your opinion, how well do teachers and administrators get along at your school? (+)

Administrators and teachers collaborate toward making the school run effectively. (+)

There is little administrator-teacher tension in this school. (+)

Our principal is a good representative of our school before the superintendent and the board. (+)

The principal is aware of and lets staff members and students know when they have done something particularly well. (+)

Teachers or students can arrange to deviate from the prescribed program of the school. (+)

Teachers feel free to communicate with the principal. (+)

The administration is supportive of teachers. (+)

It is hard to change established procedures here. (+)

The principal of our school is informal. (+)

The principal of our school is open to staff input. (+)

Note. Response for the first item was "strongly agree," "agree somewhat," "disagree somewhat," and "strongly disagree." Response for the next item was "not well," "fairly well," "very well," and "does not apply." Responses for the rest of the items were "true" or "false." Scoring direction is indicated in parentheses at the end of each line. Adapted from the *Effective School Battery* copyright ©1984, 1999 by Gary D. Gottfredson, Ph.D. Reproduced by special permission of the publisher, Gottfredson Associates, Inc., Ellicott City, Maryland 21042. Not to be further reproduced without written permission of the publisher.

Appendix 3: Leadership Behavior Scale
Reproduced from the National Study of Delinquency Prevention (Gottfredson et al., 2002) with permission

Item Content of Principal Leadership Behavior Scale

Supervision and feedback

Discuss quality of work performance with staff members

Review teacher performance with individual teachers in a formal evaluation

Mention observed strengths and weaknesses in performance to teachers at the time of observation

Communicate performance expectations

Consideration

Check with teachers before making changes that may affect them

Praise teachers or recognize effective staff performance

Being patient with and helpful to faculty

Offer support or sympathy when a staff member experiences a difficulty

Presence and visibility

Tour the school to establish my presence

Observe teacher's instruction and classroom management practices

Use reason or passion to generate staff commitment to tasks

Plan staff meetings

Planning

Formally assess the needs or problems of the school

Evaluate the effectiveness of existing school practices

Discuss alternative plans for school improvement with staff, district personnel, or community members

Review progress on improvement plans with individual staff members

Set school improvement goals, taking into account such things as time, resources, obstacles, and cost

Other

Assign responsibilities to teachers

Establish policies or standard operating procedures to cover most day-to-day decisions

Note. Principals were asked to rate their leadership emphasis in their work to lead the school. Possible responses for their emphasis on each work activity were "top," "high," "some," and "little." The total leadership behavior scale is composed of all items. Copyright©1997, 2000 Gottfredson Associates, Inc. Not to be reproduced without written permission from Gottfredson Associates.

Appendix 4: Rule Fairness and Clarity Scales

Reproduced from the National Study of Delinquency Prevention (Gottfredson et al., 2002) with permission

Item Content of Fairness of Rules Scale

The school rules are fair.

The punishment for breaking school rules is the same no matter who you are.

The principal is fair.

Note: Students were asked to rate the first two items on a three-point scale from "Almost always" (1 pt) to "Almost never" (0 pt). The last item was rated either "Agree" (1 pt) or "Disagree" (0pt).

Item Content of Clarity of Rules Scale

Everyone knows what the school rules are.

The principal runs the school with a firm hand.

The teachers let the students know what they expect of them.

The principal lets the students know what he or she expects of them.

Note: Students rated the first item on a three-point scale from "Almost always" (1 pt) to "Almost never" (0 pt). The second item was rated as either "Agree" (1 pt) or "Disagree" (0 pt). The final two items were both rated either "True" (1 pt) or "False" (0pt).

Appendix 5: School Morale Scale
Reproduced from the National Study of Delinquency Prevention (Gottfredson et al., 2002) with permission

---

Item Content of Teacher Morale Scale

Students here don't really care about the school. (-)

Our problems in this school are so big that it is unrealistic to expect teachers to make much of a dent in them. (-)

I feel my ideas are listened to and used in this school. (+)

I want to continue working with the kind of students I have now. (+)

Please indicate which of the following descriptors are mostly true of the teaching faculty of your school and which are mostly false *about the faculty.*

Apathetic (-)

Cohesive (+)

Enthusiastic (+)

Frustrated (-)

Satisfied (+)

Tense (-)

Unappreciated (-)

Note. Response of above items were "true" or "false." Scoring direction is indicated in parentheses at the end of each line. Adapted from the *Effective School Battery* copyright ©1984, 1999 by Gary D. Gottfredson, Ph.D. Reproduced by special permission of the publisher, Gottfredson Associates, Inc., Ellicott City, Maryland 21042. Not to be further reproduced without written permission of the publisher.

Appendix 6: Organizational Focus Scale
Reproduced from the National Study of Delinquency Prevention (Gottfredson et al., 2002) with permission

---

Item Content of Teacher Organizational Focus Scale

This school clearly signals to faculty and staff what performance is expected of them. (+)

Rules and operating procedures are clear and explicit in this school. (+)

It is difficult to determine what is expected of a person in this school. (-)

The goals of this school are clear. (+)

Everyone understands what behavior will be rewarded in this school. (+)

Some persons in positions of power or authority in this school have conflicting expectations for others. (-)

Everyone here is working towards the same ends. (+)

In this school, people who accomplish the same thing are rewarded in the same way. (+)

People are often confused about what objective they should go for in this school. (-)

In this school people know what to do and when to do it. (+)

People know how to achieve rewards here. (+)

People have often said that it is difficult to decide what aims to work towards in this school. (-)

This school simultaneously pursues many conflicting goals. (-)

My school has a clear focus. (+)

My school is torn up by leaders with different agendas. (-)

Rules and procedures are often ignored in this school. (-)

Notes. Respondents were presented with a list of statements to show how well each described their school. Possible responses were "false," "mostly false," "mostly true," and "true." Scoring direction is indicated in parentheses at the end of each line. Adapted from the *Organizational Focus Questionnaire* copyright © 1996 by Gary D. Gottfredson and John L. Holland. Not to be further reproduced without written permission of the authors.

Appendix 7: Points-to-Plot Charts for Polynomial Regression Outputs

School Morale

Points to Plot

		30	40	50	60	70
	70	68.35	69.91	70.71	70.77	70.06
	60	57.01	58.40	23.18	58.94	58.08
Y	50	47.65	48.89	49.37	49.11	48.09
	40	40.29	41.37	41.69	41.27	40.09
	30	34.92	35.84	36.01	35.42	34.08

Note: Diagonal is line of congruence (x = y), below the diagonal X>Y, and above the diagonal X<Y

Organizational Focus

Points to Plot

		30	40	50	60	70
	70	68.49	69.18	70.71	70.76	71.67
	60	57.52	58.03	23.18	59.27	60.00
Y	50	48.32	48.66	49.37	49.56	50.12
	40	40.90	41.06	41.69	41.62	42.01
	30	35.25	35.24	36.01	35.45	35.67

Note: Diagonal is line of congruence (x = y), below the diagonal X>Y, and above the diagonal X<Y

Teacher Turnover

Points to Plot

		30	40	50	60	70
	70	41.65	46.64	50.02	51.78	51.93
	60	42.52	46.84	29.31	50.64	50.12
Y	50	44.51	48.16	50.20	50.63	49.44
	40	47.63	50.61	51.98	51.74	49.88
	30	51.87	54.18	54.88	53.97	51.44

Note: Diagonal is line of congruence (x = y), below the diagonal X>Y, and above the diagonal X<Y