THE RELATIONSHIP BETWEEN PRINCIPAL LEADERSHIP AND TEACHER ATTITUDES: EVIDENCE FROM THE SCHOOLS AND STAFFING SURVEY

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By

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THE RELATIONSHIP BETWEEN PRINCIPAL LEADERSHIP AND TEACHER ATTITUDES: 
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ABSTRACT

Principals constitute the core of school leadership teams and are increasingly thought to play an important role in determining a school’s effectiveness. However, empirical evidence on the importance of principal leadership is more limited, partly because the concept of leadership and its components in the educational context have evolved over time. Leadership models that differentiate between instructional (the activities directly connected to classroom instruction) and organizational (the activities that impact the broader school culture and environment) components have more recently gained popularity in practice. This study uses data from the 1999-2000 Schools and Staffing Survey (SASS), a national survey of K-12 principals, teachers, and schools, to investigate the relationship between principal instructional and organizational leadership and teacher attitudes, which is an indicator of teacher and school effectiveness. I find modest evidence that relative to instructional leadership, organizational leadership is more strongly positively related to teacher attitudes.
ACKNOWLEDGEMENTS

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Sophie Kim
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I. Introduction

Principals, who form the core of a school’s leadership team, are increasingly touted as important determinants of school effectiveness. This view has garnered them added scrutiny in recent educational policy debates over how to improve our nation’s schools (DeVita, 2010; Herman et al., 2008; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Rice, 2010). The Obama administration’s education reform agenda, for example, places improved school leadership among its top priorities (A Blueprint for Reform, 2010). In fact, the Obama administration included the development, reward, retention, and equitable distribution of effective principals into requirements for states seeking funding from the recent $4.35 billion Race to the Top program (Race to the Top Executive Summary, 2009). U.S. Secretary of Education Arne Duncan has publicly acknowledged, “the demands and the stresses on principals have never been greater” (Duncan, 2009). The federal recognition of the growing importance of principals also means that they are increasingly expected to ensure that benchmarks are met at the school level in the current accountability era (Rice, 2010). This trend raises the stakes on principals, and has implications for their role in ensuring the success of our nation’s schools.

Despite the popular view that principals are important, empirical studies on principal effectiveness have been limited by a lack of data (Branch, Hanushek, & Rivkin, 2009). Aside from an in-depth 2010 study examining school leadership commissioned by the Wallace Foundation, there are few other large-scale empirical studies of how leadership impacts improvements in the academic performance of students and their schools over time (Hallinger & Heck, 2010; Louis, Leithwood, Wahlstrom, & Anderson, 2010). These few studies suggest that principals’ effects on student learning are mostly indirect and in some cases even suggest that “the direct effect of principals on student achievement is near zero” (Hallinger & Heck, 1996; Ross & Gray, 2006, p. 799). The role of the principal, then, is in creating the environmental
conditions conducive to improved student learning and outcomes (Darling-Hammond & Orphanos, 2006; Grissom, forthcoming; Hallinger & Heck, 1998).

Existing research on effective schools suggests that effective principals influence a variety of school outcomes, including student achievement, through their recruitment and motivation of quality teachers, their ability to identify and articulate school vision and goals, their effective allocation of resources, and their development of organizational structures to support instruction and learning (Horng, Kalogrides, & Loeb, 2009). In particular, principals’ influence on teacher attitudes about their work environment is an often overlooked part of creating positive conditions for student learning and achievement (Grissom, forthcoming). Working conditions and perceptions of leadership have emerged as highly predictive factors that mediate teachers’ effectiveness in classrooms and influence teachers’ intentions to remain in or leave their schools (Ladd, 2009). These findings, in conjunction with studies showing that high teacher attrition negatively affects student outcomes, suggest that good principal leadership may be particularly important in disadvantaged schools, where teacher turnover is high (Boyd et al., 2009; Hanushek & Rivkin, 2007; Ladd, 2009). But what is good principal leadership?

A. Defining Leadership in Education

Over the past several decades, two models have emerged from the debate over identifying the most suitable leadership role for principals: instructional leadership and transformational leadership (Hallinger, 2003). The definitions of these two models have evolved in response to the changing trends in education, but general themes do emerge. The instructional leadership model originated in the 1980s from research on effective schools and was identified as “strong, directive leadership focused on curriculum and instruction from the principal” (Hallinger, 2003, p. 329). The transformational leadership model originated in the 1990s largely in response to the instructional leadership model, which was viewed as too focused on the principal as the center of
authority. It also reflected an evolving trend in educational reform that emphasized empowerment and shared learning: “transformational leadership focuses on developing the organization’s capacity to innovate,” rather than “direct coordination, control, and supervision of curriculum and instruction” (Hallinger, 2003, p. 330). While instructional leadership “encourages a focus on improving the classroom practices of teachers as the direction for the school,” transformational leadership “draws attention to a broader array of school and classroom conditions that may need to be changed if learning is to improve” (Leithwood et al., 2004, p. 6).

**B. Defining Principal Leadership Along Instructional and Organizational Dimensions**

Subsequent research on these two leadership models have produced mixed conceptualizations, in some cases conflating the two and in other cases introducing new constructs all together, such as “visionary leadership” (Hallinger & Heck, 2001, p. 1). The term instructional leadership has been applied to both principals and teachers, further complicating its meaning. There has been a more recent research shift from an emphasis on leadership models to an emphasis on principal actions, suggesting that principal leadership can and should be defined in more concrete, measurable terms—along two main dimensions: “instructional activities” and “organizational management” (Grissom & Loeb, 2009, p. 16; Horng, Klasik, & Loeb, 2009, p. iv). Instructional activities can therefore be understood to be those that have a direct connection to classroom instruction. Organizational management, on the other hand, implies the activities that impact the broader school culture and environment. School districts like the District of Columbia Public Schools (DCPS), in its “Leadership Element” section of the Effective Schools Framework, a key strategic document guiding the district’s reform efforts, specifies the expectation that principals possess and exhibit “instructional leadership” and “organizational leadership” qualities (Draft Leadership Element, DCPS Effective Schools Framework, 2010).
Building on the DCPS model and the growing literature that distinguishes principal leadership along the instructional and organizational dimensions, I investigate the following question: What effect do different types/models of principal leadership—differentiated as instructional and organizational—have on teacher attitudes?

In particular, this study adds to the existing literature on educational leadership by exploring whether (1) a significant relationship exists between principal leadership style and the attitudes teachers possess, and (2) whether one mode of principal leadership exhibits a stronger relationship with teacher attitudes than the other. Given the evidence that principals’ impact on student achievement is mediated through teachers, I examine the relationship between these two actors. Specifically, I look at the impact principals have on teacher attitudes, using a leadership paradigm that captures two dimensions of principal leadership—instructional and organizational—that appear to be gaining traction in practice and are popularized by a growing national focus on cultivating school leaders.

II. Conceptual Model and Hypothesis

Figure 1 presents a conceptual model of how principal leadership is related to student achievement. Consistent with the body of research suggesting that principals’ effects on student achievement is indirect, this model illustrates how principals’ effects on student achievement are mediated through other factors and conditions, such as teacher attitudes, which is the focus of this study.

The model shows principal effectiveness, as defined by organizational and instructional leadership, as a determinant of school effectiveness, which then determines student achievement. Although principal effectiveness is the focus of this model and this study, it is certainly not the only, nor even necessarily the most important, determinant of school effectiveness. The model
does, however, emphasize the figurative leading role that principals occupy, and the potential they have to exert widespread influence on their schools.

The existing literature defines instructional leadership as follows: “an approach to leadership that focuses on curriculum-specific principal actions such as teacher hiring and assignment, interpretation of curriculum standards, textbook selection, provision of professional development, and supervision of instructional practices” (Ross & Gray, 2006, p. 815); or put another way, “the set of tasks in which principals engage in order to promote, support, and
improve the implementation of curricular programs in classrooms” (Grissom & Loeb, 2009, p. 10).

The organizational leadership construct is somewhat more abstract, but it can be understood as the aspects of a principal’s leadership that do not lie directly in the instructional realm. One study refers to organizational leadership as tasks that “[oversee] the functioning of the school” and includes tasks that “we would expect the principal to take active and direct responsibility for executing throughout the year in pursuit of the schools’ medium- and long-term goals” (Grissom & Loeb, 2009, p. 11). These tasks include, for example, “maintaining campus facilities, managing budgets and resources, and developing a safe school environment” (Grissom & Loeb, 2009, p. 11).

Figure 1 shows that principals can exhibit leadership in both categories, but the distribution and degree of leadership exercised in each category can vary from principal to principal and is an important determinant of a principal’s overall effectiveness.

A principal’s effectiveness is in turn a key determinant of school effectiveness, which according to a recent study by the Consortium on Chicago School Research, is comprised of the following essential supports elements—how sound the school environment is, how aligned and rigorous the school’s standards and curriculum are, and how satisfied and effective the school’s teachers are (Bryk, 2010).

Existing research shows that teaching ability is among the most important school-based factors influencing student performance (Goldhaber, 2010; Gordon, Kane, & Staiger, 2006; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004; Weisberg et al., 2009). While the importance of effective teachers in positively influencing student achievement is clear, questions remain about what factors best predict teacher effectiveness and how a teacher’s effectiveness can or should be measured (Gordon, Kane, & Staiger, 2006; Staiger & Rockoff, 2010).
This model proposes that teacher attitudes, which are measured in this study as a factor of the level of support they receive from their principal, their morale, adherence to the school’s mission, collegiality with other staff, and general satisfaction with being a teacher, are related to teacher effectiveness. This assumption is informed by the past literature, which emphasizes that teacher satisfaction is “a pivotal link in the chain of education reform” because it influences job performance, attrition, and “ultimately, student achievement” (Shann, 1998, p. 68). Furthermore, research suggests that collegial support and interaction influence teacher satisfaction and retention among teachers, and that such a school culture can be affected by principals’ actions (Bloland & Selby, 1980; Theobald, 1989 as cited in Shann, 1998).

Thus, this model hypothesizes that more positive teacher attitudes will more likely increase teacher effectiveness, which then increases the overall effectiveness of the school and its capacity to boost student achievement. This study takes these links as given and focuses on the empirical relationship between principal leadership and teacher attitudes. Numerous qualitative studies and some empirical research suggest that principal leadership is a key factor in shaping teachers’ work environment, their attitudes, and their likelihood of being retained (Grissom, forthcoming).

The model posits that instructional leadership and organizational leadership both influence teacher attitudes, but it is theoretically unclear what the absolute and relative strengths of the relationship are. The DCPS model for assessing principal leadership suggests that instructional and organizational leadership both matter in determining a principal’s effectiveness, as do the growing demands of principals’ jobs in the current accountability era (Rice, 2010). However, further specificity is lacking and presents an empirical question that is the focus of this study.
III. DATA

This study analyzes data from the public-use version of the 1999-2000 Schools and Staffing Survey (SASS), sponsored by the National Center for Education Statistics (NCES) of the U.S. Department of Education. The SASS, first administered in the 1987-88 school year, has become “the largest, most extensive survey of K-12 school districts, schools, teachers, and administrators in the [U.S.] today” (Tourkin et al., 2004, p. 1). It consists of a set of surveys from a nationally representative sample of K-12 teachers, principals, and district employees from public, private, public charter, and Bureau of Indian Affairs (BIA) schools, and includes information on America’s elementary and secondary schools such as demographic characteristics and attitudes of teachers and principals, and school conditions and practices.

The survey employs a stratified probability sample design, where schools were selected first, and then a sample of teachers and principals were selected from within each school. The sampling frame for the traditional public school sample was adapted from the 1997-98 Common Core of Data (CCD) file, an annual administrative data collection from state education agencies of all elementary and secondary schools in the U.S. CCD is widely known to be the most complete public school listing available (Tourkin et al., 2004).

Data collection took place during the 1999-2000 school year with the questionnaire mailing occurring between September 1999 and March 2000 (Tourkin et al., 2004). The 1999-2000 SASS consists of five questionnaires: the School District Questionnaire, the School Principal Questionnaire, the School Questionnaire, the School Teacher Questionnaire, and the School Library Media Center Questionnaire.
Table 1 – Summary Statistics

**Principal Leadership**

*Instructional Leadership (1-5 scale)*

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional leadership index</td>
<td>4.226</td>
</tr>
<tr>
<td>Setting performance standards</td>
<td>4.063</td>
</tr>
<tr>
<td>Establishing curriculum</td>
<td>3.990</td>
</tr>
<tr>
<td>Determining professional development content</td>
<td>4.204</td>
</tr>
<tr>
<td>Hiring teachers</td>
<td>4.647</td>
</tr>
</tbody>
</table>

*Organizational Leadership (1-4 scale)*

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational leadership index</td>
<td>3.307</td>
</tr>
<tr>
<td>Facilitating school mission</td>
<td>3.102</td>
</tr>
<tr>
<td>Building professional community</td>
<td>3.056</td>
</tr>
<tr>
<td>Managing school facilities</td>
<td>3.764</td>
</tr>
</tbody>
</table>

**Principal Characteristics**

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in aspiring principal program</td>
<td>0.510</td>
</tr>
<tr>
<td>Total principal experience (years)</td>
<td>8.945</td>
</tr>
<tr>
<td>Total teaching experience (years)</td>
<td>14.009</td>
</tr>
<tr>
<td>Male</td>
<td>0.568</td>
</tr>
<tr>
<td>White</td>
<td>0.828</td>
</tr>
<tr>
<td>Black</td>
<td>0.108</td>
</tr>
</tbody>
</table>

**School Characteristics**

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one Title 1 student</td>
<td>0.495</td>
</tr>
<tr>
<td>Student-teacher ratio 10-15</td>
<td>0.381</td>
</tr>
<tr>
<td>Student-teacher ratio 15-20</td>
<td>0.349</td>
</tr>
</tbody>
</table>

**Teacher Attitudes**

* (1-4 scale)

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher attitude index</td>
<td>3.259</td>
</tr>
<tr>
<td>Support</td>
<td>3.146</td>
</tr>
<tr>
<td>Morale</td>
<td>3.405</td>
</tr>
<tr>
<td>Shared vision</td>
<td>3.195</td>
</tr>
<tr>
<td>Collegiality</td>
<td>3.121</td>
</tr>
<tr>
<td>General satisfaction</td>
<td>3.425</td>
</tr>
</tbody>
</table>

**Teacher Characteristics**

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total teaching experience (years)</td>
<td>14.622</td>
</tr>
<tr>
<td>Male</td>
<td>0.227</td>
</tr>
<tr>
<td>White</td>
<td>0.836</td>
</tr>
<tr>
<td>Black</td>
<td>0.066</td>
</tr>
</tbody>
</table>

Notes: Table figures report means for the variables indicated. N = 8,046 principals. Principal sampling weights applied. Index variables were constructed by averaging the individual components of instructional leadership, organizational leadership, and teacher attitudes, respectively. Lower values (i.e. 1) correspond to no or a low degree of the given construct and higher values correspond to a high/higher (positive) degree of the given construct. Teacher summary statistics were calculated by taking the mean scores of all teachers associated with each principal, and then averaging these scores across all principals. * See Table 2 for full description of response scales and survey questionnaire statements.
This study examines the 8,046 public school principals who had corresponding teacher and school data.\textsuperscript{1} The study’s unit of analysis is the principal, since the main interest of this study is to determine the impact principal leadership has on teacher attitudes. The teacher variables, thus, were averaged and aggregated up to the principal level. An average of 4.6 teachers is associated with each principal in the sample. Table 1 provides additional summary statistics.

IV. **Empirical Strategy**

A. **Key Variables**

The key variables were selected from the two main questionnaires of interest—the School Principal Questionnaire and the School Teacher Questionnaire—which collected data on principals’ frequency of engaging in various school activities, and their perceptions of their influence on school policies; and on teachers’ decision-making practices, perceptions and attitudes about teaching, and workplace conditions. The selection of these variables yields multiple separate measures of the principal leadership and teacher attitudes constructs, and allows for the construction of an aggregate index that may be a more reliable measure of the constructs than any single measure alone.

**Dependent Variable**

Teacher attitudes, the main dependent variable, is measured by the level of support, morale, shared vision, collegiality, and general satisfaction teachers feel, based on their level of agreement with a series of corresponding questionnaire statements. Responses are on a scale of 1 to 4, with 1 indicating a response of strongly disagree, and 4 indicating a response of strongly

\textsuperscript{1}The analysis in this study excludes 478 principals who did not have corresponding teacher data. Comparison of means t-tests showed few significant differences between the sample of principals with corresponding teacher data (5 out of 24 variables tested) and those without (with the exception of principals’ influence on hiring teachers, principals’ influence on managing school facilities, principal participation in an aspiring principal program, school Title 1 status, and school student-teacher ratio). Thus, it appears less likely that excluding these principals without teacher data induced a substantial selection bias into the analysis.
agree. See Table 2 for a complete description of the questionnaire statements and response scale. The average scores for the individual teacher attitudes components (see Table 1) are: support (3.146), morale (3.405), vision (3.195), collegiality (3.121), and general satisfaction (3.425). The average teacher attitude index score is 3.259.

**Independent Variables**

The key independent variables of interest are those indicating instructional and organizational leadership. Different types of principal activities were used to operationalize the instructional leadership and organizational leadership constructs.

**Instructional leadership** is measured by principals’ reported influence on decisions concerning the following activities: setting performance standards, establishing curriculum, determining professional development content, and hiring teachers. Responses are on a scale of 1 to 5, with 1 indicating a response of no influence, and 5 indicating a response of a great deal of influence. See Table 2 for a complete description of the questionnaire statements and response scale. The average scores for the individual instructional leadership components (see Table 1) are: setting performance standards (4.063), establishing curriculum (3.990), determining professional development content (4.204), and hiring teachers (4.647). The average principal instructional leadership index score is 4.226.

**Organizational leadership** is measured by principals’ reported frequency with which they engage in the following activities: facilitating school mission, building professional community, and managing school facilities. Responses are on a scale of 1 to 4, with 1 indicating a response of never, 2 indicating a response of once or twice a month, 3 indicating a response of once or twice a week, and 4 indicating a response of every day. See Table 2 for a complete description of the questionnaire statements and response scale. The average scores for the organizational leadership components are: facilitating school mission (3.102), building
professional community (3.056), and managing school facilities (3.764). The average principal organizational leadership index score is 3.307.

Table 2 – Main Dependent and Independent Variables’ Survey Questionnaire Statements and Response Scales

<table>
<thead>
<tr>
<th>Teacher Attitude Measures</th>
<th>Principal Instructional Leadership Measures</th>
<th>Principal Organizational Leadership Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Support</strong></td>
<td>Setting performance standards</td>
<td>Facilitating school mission</td>
</tr>
<tr>
<td>The school administrator’s behavior toward the staff is supportive and encouraging.</td>
<td>Setting performance standards for students of this school.</td>
<td>Facilitate achievement of the school’s mission through such activities as consensus building, planning, obtaining resources, monitoring progress, etc.</td>
</tr>
<tr>
<td><strong>Morale</strong></td>
<td>Establishing curriculum</td>
<td>Building professional community</td>
</tr>
<tr>
<td>I sometimes feel it is a waste of time to try to do my best as a teacher.</td>
<td>Establishing curriculum at this school.</td>
<td>Build professional community among faculty and other staff.</td>
</tr>
<tr>
<td><strong>Shared vision</strong></td>
<td>Determining professional development content</td>
<td>Managing school facilities</td>
</tr>
<tr>
<td>Most of my colleagues share my beliefs and values about what the central mission of the school should be.</td>
<td>Determining the content of in-service professional development programs for teachers in this school.</td>
<td>Manage school facilities, resources, and procedures (e.g. maintenance, budget, schedule).</td>
</tr>
<tr>
<td><strong>Collegiality</strong></td>
<td>Hiring teachers</td>
<td></td>
</tr>
<tr>
<td>There is a great deal of cooperative effort among the staff members.</td>
<td>Hiring new full-time teachers at this school.</td>
<td></td>
</tr>
<tr>
<td><strong>General satisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am generally satisfied with being a teacher at this school.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Teacher attitude measures response scale: 1-4 (1=strongly disagree; 2=somewhat disagree; 3=somewhat agree; 4=strongly agree). Responses indicate teachers’ self-reported level of agreement with the statements. Principal instructional leadership measures response scale: 1-5 (1=no influence; 5=a great deal of influence). Responses indicate principals’ self-reported degree of influence on the activities. Principal organizational leadership measures response scale: 1-4 (1=never; 2=once or twice a month; 3=once or twice a week; 4=every day). Responses indicate principals’ self-reported frequency of engagement in the activities. The response scale for the teacher attitude morale variable was reverse-coded because of the negative nature of the questionnaire statement (i.e. a response of 4=strongly disagree).
Table 3 shows the correlations between the components of the teacher attitude, principal instructional leadership, and principal organizational leadership constructs. The table also reports Cronbach’s alpha, a statistic that measures how closely related a set of items are. The
relatively high values for teacher attitude (Cronbach’s alpha = 0.753), principal instructional leadership (Cronbach’s alpha = 0.710), and principal organizational leadership (Cronbach’s alpha = 0.497), suggest that the variables used for these key constructs are measuring similar constructs. While high Cronbach’s alpha measures are reassuring, the measures would not necessarily be invalid even with low Cronbach’s alpha measures. Because of the complex nature of the leadership construct, we may not expect to see perfect consistency among the variable measures that constitute leadership.

The correlation between the instructional leadership and organizational leadership indices is 0.152. This weak correlation is also reassuring. It suggests that the two variables are measuring different constructs; in other words, it appears that the measures for instructional leadership and organizational leadership are distinct.

Figures 2, 3, and 4 summarize the full distributions of index scores for teacher attitudes, principal instructional leadership, and principal organizational leadership, respectively.

Figure 2 – Density Plot of Teacher Attitude
Figure 3 – Density Plot of Principal Instructional Leadership

Figure 4 – Density Plot of Principal Organizational Leadership
B. Estimating the Relationship Between Principal Leadership and Teacher Attitudes

The main estimating model decomposes principal leadership into its two components:

\[
\text{Teacher Attitudes} = \beta_0 + \beta_1 \text{Instructional Leadership} + \beta_2 \text{Organizational Leadership} + \\
\beta_3 \text{Instructional Leadership} \times \text{Organizational Leadership} + \\
\beta_4 \text{Principal Program} + \beta_5 \text{Principal Controls} + \beta_6 \text{School Controls} + \\
\beta_7 \text{Teacher Controls} + \mu
\]

The main dependent variable, teacher attitudes, has six different measures: support, morale, vision, collegiality, satisfaction, and the average index of the first five measures. The variables were reverse-coded as needed to produce a set of teacher attitude measures, where higher values correspond to more positive teacher attitudes. \(\beta_0\) represents the intercept term, while \(\mu\) is a random error term.

The principal leadership constructs, the main independent variables of interest, are continuous variables that were constructed by creating an index score for each principal using the average of the individual components of instructional leadership (setting performance standards, establishing curriculum, determining professional development content, and hiring teachers) and organizational leadership (facilitating school mission, building professional community, and managing school facilities), respectively. Each index measure was then normalized by subtracting the mean and dividing by the standard deviation.

The model includes an interaction term between instructional and organizational leadership. A positive coefficient on the interaction term (\(\beta_3\)) would indicate that having a high level of both instructional and organizational leadership provides an extra boost to teacher attitudes. Positive coefficients on any of the leadership variables (\(\beta_1\) and \(\beta_2\)) indicate that higher levels of leadership correspond to higher levels of teacher attitudes. Positive, statistically significant coefficients on the leadership variables would affirm the notion that both instructional
and organizational leadership matter. However, because the relative strength of the influence of one leadership construct over another on teacher attitudes is unclear, a series of t-tests comparing the $\beta_1$ and $\beta_2$ coefficients indicate the magnitude of the relationship—allowing us to determine whether one type of leadership has a stronger relationship with teacher attitudes.

The model was estimated using Ordinary Least Squares (OLS) with robust standard errors, principal weights, and controlling for principal characteristics, school characteristics, and teacher characteristics. The model controls for the following principal characteristics—participation in an aspiring principal program, total principal experience, total teaching experience, gender, and race. The school characteristics I controlled for included—status as a Title 1 school and student-teacher ratio. And the teacher characteristics controlled for in the model include—total teaching experience, gender, and race.

Again, the unit of analysis in this study is the principal because my interest is in determining the impact principal leadership has on teachers. All key and control variables were averaged for each principal and in this way, aggregated up to the principal level. Accordingly, the dependent variables indicate the average teacher attitude score for each principal and the teacher controls indicate the average teacher characteristics for each principal.

V. RESULTS

Table 4 reports the OLS estimates from a series of regressions based on the model presented above. Columns 1 through 5 test the relationship between each of the individual components of teacher attitude and the principal leadership types. Column 6 tests the relationship between an index measure of teacher attitude and the principal leadership types. The results are robust to the exclusion of covariates, thus Table 4 reports only results with covariates. Robust standard errors are reported in parentheses.
Table 4 – Ordinary Least Squares Estimates of Principal Leadership on Teacher Attitudes

<table>
<thead>
<tr>
<th></th>
<th>Support (1)</th>
<th>Morale (2)</th>
<th>Vision (3)</th>
<th>Collegiality (4)</th>
<th>Satisfaction (5)</th>
<th>Index (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional leadership</td>
<td>0.0282***</td>
<td>0.00253</td>
<td>-0.00275</td>
<td>0.00470</td>
<td>0.00395</td>
<td>0.00733</td>
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<td>(0.0107)</td>
<td>(0.00851)</td>
<td>(0.00755)</td>
<td>(0.00973)</td>
<td>(0.00834)</td>
<td>(0.00635)</td>
</tr>
<tr>
<td>Organizational leadership</td>
<td>0.0172</td>
<td>0.0181**</td>
<td>0.0198**</td>
<td>0.0312***</td>
<td>0.0113</td>
<td>0.0195***</td>
</tr>
<tr>
<td></td>
<td>(0.0113)</td>
<td>(0.00902)</td>
<td>(0.00846)</td>
<td>(0.0101)</td>
<td>(0.00825)</td>
<td>(0.00658)</td>
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<tr>
<td>Instr. x Org. leadership</td>
<td>0.0120</td>
<td>-0.00110</td>
<td>0.00165</td>
<td>-0.00759</td>
<td>-0.00486</td>
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<td>(0.0111)</td>
<td>(0.00882)</td>
<td>(0.00818)</td>
<td>(0.00949)</td>
<td>(0.00865)</td>
<td>(0.00699)</td>
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<tr>
<td>Aspiring principal program</td>
<td>0.0270</td>
<td>-0.0453***</td>
<td>0.00260</td>
<td>-0.00555</td>
<td>-0.0175</td>
<td>-0.00773</td>
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<tr>
<td></td>
<td>(0.0208)</td>
<td>(0.0174)</td>
<td>(0.0150)</td>
<td>(0.0185)</td>
<td>(0.0154)</td>
<td>(0.0119)</td>
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<tr>
<td>Principal experience</td>
<td>0.000760</td>
<td>0.00333***</td>
<td>0.00308***</td>
<td>0.00450***</td>
<td>0.00318***</td>
<td>0.00297***</td>
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<tr>
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<td>(0.00143)</td>
<td>(0.00114)</td>
<td>(0.00104)</td>
<td>(0.00131)</td>
<td>(0.00105)</td>
<td>(0.000846)</td>
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<tr>
<td>Teaching experience (principal)</td>
<td>-0.00103</td>
<td>-0.00123</td>
<td>-0.00124</td>
<td>-0.000354</td>
<td>0.000138</td>
<td>-0.000744</td>
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<td>(0.00150)</td>
<td>(0.00118)</td>
<td>(0.00109)</td>
<td>(0.00138)</td>
<td>(0.00112)</td>
<td>(0.000863)</td>
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<tr>
<td>Male (principal)</td>
<td>-0.0403*</td>
<td>-0.0461**</td>
<td>-0.0403**</td>
<td>-0.0663***</td>
<td>-0.00354</td>
<td>-0.0393***</td>
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<tr>
<td></td>
<td>(0.0222)</td>
<td>(0.0192)</td>
<td>(0.0165)</td>
<td>(0.0203)</td>
<td>(0.0167)</td>
<td>(0.0131)</td>
</tr>
<tr>
<td>Black (principal)</td>
<td>-0.212***</td>
<td>-0.105***</td>
<td>-0.0304</td>
<td>-0.122***</td>
<td>-0.186***</td>
<td>-0.131***</td>
</tr>
<tr>
<td></td>
<td>(0.0460)</td>
<td>(0.0385)</td>
<td>(0.0282)</td>
<td>(0.0350)</td>
<td>(0.0393)</td>
<td>(0.0264)</td>
</tr>
<tr>
<td>T-statistic (p-value)</td>
<td>0.44</td>
<td>1.38</td>
<td>3.67*</td>
<td>3.08*</td>
<td>0.35</td>
<td>1.61</td>
</tr>
<tr>
<td></td>
<td>(0.505)</td>
<td>(0.241)</td>
<td>(0.056)</td>
<td>(0.079)</td>
<td>(0.556)</td>
<td>(0.204)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.025</td>
<td>0.031</td>
<td>0.051</td>
<td>0.040</td>
<td>0.041</td>
<td>0.053</td>
</tr>
</tbody>
</table>

Notes: N = 8,046 for all regressions. Dependent variables are continuous and reflect the average of teachers for each principal along the following teacher attitude measures: support, morale, vision, collegiality, satisfaction, and an index average of the previous five measures. The main independent variables (instructional leadership and organizational leadership) are continuous variables that were constructed by first averaging the individual components of each leadership type for each principal and then normalizing by subtracting the mean and dividing by the standard deviation. See Table 2 and text for more details on variable definitions. The other right-hand side variables are a principal leadership interaction term, a dummy for principal participation in an aspiring principal program, and covariates (principal experience level, gender, race.) Not reported are covariates for school Title 1 status, student-teacher ratio, and teacher experience level, gender, and race.) T-statistics are from a test that the instructional leadership and organizational leadership coefficients differ from each other. Robust standard errors are noted in parentheses. Principal sampling weights applied. * = significant at 10% level; ** = significant at 5% level; *** = significant at 1% level.
The table also includes the results of t-tests comparing the instructional leadership and organizational leadership coefficients for each of the regressions.

A. Main Results

The regression results in Table 4 suggest that principal leadership—both instructional and organizational—explain some variation in teacher attitudes; a number of the coefficients on the principal leadership variables across the six regressions are statistically significant. Notably, principals’ organizational leadership appears to have a fairly consistent and significantly positive effect on teacher attitudes—both at the level of the individual components of teacher attitude, and in the composite. The only statistically significant coefficient for instructional leadership is in column 1, where the dependent variable is the specific teacher attitude, support.

Column 2 shows that all else equal, principals who rank themselves as exhibiting a high degree of organizational leadership tend to have teachers who have a high average sense of morale (p<0.05). Columns 3, 4, and 6 show a similar pattern on teachers’ average sense of shared vision with their colleagues (p<0.05), on teachers’ average sense of collegiality (p<0.01), and on teachers’ average overall attitude index (p<0.01). The organizational leadership coefficient in column 1 has a similar sign and magnitude to the coefficients in columns 2, 3, and 6, but it is marginally insignificant.

Column 1 shows that all else equal, principals who rank themselves as exhibiting a high degree of instructional leadership tend to have teachers who have a high average sense of support from the school administration (p<0.01). This is the only dependent teacher attitude variable with a statistically significant instructional leadership coefficient.

The coefficient on the interaction term (instructional leadership x organizational leadership) is insignificant across all of the regressions, suggesting that there is not an additional
effect for principals who exhibit a high degree of both instructional and organizational leadership.

Tests of significance were conducted to compare the relative magnitudes of the instructional leadership and organizational leadership coefficients. The results of a series of t-tests show a statistically significant difference between instructional leadership and organizational leadership in columns 3 and 4, where the dependent variables are teachers’ sense of shared vision (p<0.10) and teachers’ sense of collegiality with their colleagues (p<0.10). For both, the organizational leadership coefficient is significantly greater than the instructional leadership coefficient.

B. Secondary Results

Another independent variable of interest is the indicator for a principal’s participation in an aspiring principal program. Column 2 is the only specification to suggest a statistically significant relationship between principals’ participation in preparation programs and teacher attitude. It suggests that for those principals who participated in an aspiring principal program prior to becoming a principal, their average teacher morale score is 0.0453 units lower, on average (p<0.01) than those principals who did not participate in such a program. Without knowing the quality, duration, or other aspects of these principal programs, it is difficult to interpret this result. Given the insignificant effects across the other five specifications, however, participation in such a program does not appear to be robustly related to teacher attitudes. There is a lack of evidence in the literature that school leadership preparation programs have any discernable impact on leadership or other factors of school effectiveness. One study noted mixed evidence on the relationship (Clark, Martorell, & Rockoff, 2009). The inconclusive results here, thus, are not surprising.
Table 4’s results also show positive effects of a principal’s years of experience as a principal on teacher attitudes. With the exception of the individual teacher attitude variable for the level of support teachers feel from school administration, additional years of a principal’s experience as a principal are associated with positive teacher attitudes (p<0.01). Interestingly, principals’ years of teaching experience are negatively, albeit insignificantly, associated with teacher attitudes. This finding might pose a challenge to the conventional wisdom that principals ought to have substantial years of prior teaching experience.

C. Robustness Checks

The results from Table 4 were generally robust to re-categorizing the dependent teacher attitude variable as a 0/1 dummy and then running Linear Probability Models (LPM) and probit regressions. In these cases, the teacher attitude index was recast as a dichotomous variable, where a response of 2.5 or higher was set equal to 1 (indicating positive teacher attitudes overall), and 0 otherwise. The 2.5 cutoff was selected to be the midpoint of the 1-4 response scale. The results from an analogous (to Table 4) series of LPM and probit specifications were mostly robust, with the exception of the results for morale and the teacher attitude index. In both models, the organizational leadership coefficients on both the morale and teacher attitude variables were 0.003. In the LPM and probit specifications, the coefficients on these variables were statistically insignificant, although they did retain the same sign as the coefficients on the corresponding variables in the OLS model reported in Table 4.

VI. DISCUSSION

As the emphasis on educational leadership continues to permeate policy discussions of how to reform our public education system, policymakers and researchers must be guided by evidence on what type of leadership matters in the school context, and how it impacts teachers,
the individuals who have the most direct connection to students in classrooms. This analysis seeks to assess this important relationship, albeit in a modest way.

Returning to the central premise of this study—that there may be a distinction between the effects of principal instructional and organizational leadership on teacher attitudes—this analysis finds some modest confirming evidence. The results reported in Table 4 for the organizational leadership construct are particularly notable in this regard. On an intuitive level, we may want to reject the notion that one type of leadership matters “more” than the other. After all, both constructs appear to be valuable. But it appears that organizational leadership may relate to teacher attitudes in a more systematically positive manner than instructional leadership. A possible explanation for this finding might be that the activities associated with organizational leadership reflect more holistic elements of a school environment that can impact the overall culture of a school. And the teacher attitudes being measured in this analysis also reflect teachers’ perceptions about similarly more holistic measures of the broader school environment. Thus, the association between the organizational leadership measures and teacher attitudes may be a product of the variables chosen.

There are some general measurement problems to be aware of in this study. Construct validity—the extent to which a measurement corresponds to the theoretical concept under study—is among the more significant concerns with respect to the measures of instructional and organizational leadership. These constructs were operationalized using selected principals’ responses to their influence on and the frequency with which they engage in certain activities. However, these responses do not capture the quality of the principals’ engagement. In other words, there is no way to know and account for whether the frequency with which a principal reports his or her engagement in “facilitating school mission,” for example, is necessarily “good.”
Furthermore, there is a general concern with reliability, in that the main principal leadership constructs are generated using principals’ self-reported responses to questions about their influence on certain activities and the frequency with which they engage in them. While the specific variables were selected based on reasonable assumptions grounded in past literature and theory, it is important to note that these self-reported responses could be heavily influenced by principals’ perceptions and own biases. The relatively high average scores speak to this point (see Figures 3 and 4). The perceived value of certain activities could influence respondents’ self-reported answers, whether or not they are actually true. Thus, because the influence of principal leadership in this study is measured through principals’ reports of their own effectiveness and teachers’ reports of their attitudes, these measures may suffer from measurement error and reporting bias, making the conclusions drawn from them less reliable. The research presented in this paper should be viewed as descriptive and not causal.

Another limitation to note is that there is no way to verify that principals have discretion over certain instructional and organizational activities due to district rules. For instance, some principals may be prevented or prohibited from controlling certain activities. This could pose a bias problem because these unknown, unmeasured issues could influence principals’ reported influence and frequency of engagement in certain activities.

Some leadership characteristics cannot be measured. Charisma, “gravitas,” motivation, and ability for instance, could be important characteristics, but are not easily quantified. But such unmeasured traits would still be expected to be correlated with both teacher attitudes and the degree of leadership exercised by the principal. (A more charismatic principal would, presumably, inspire improved teacher attitudes.)

Nevertheless, evaluating the links between different modes of principal leadership—differentiated as instructional leadership, an attribute typically associated with instruction and
learning in the classroom context, and organizational leadership, an attribute associated with more general aspects of a school culture and environment—are important because of the potential to influence principal training program curricula. As new local, state, and national initiatives on school leadership continue to emerge, including a principal training initiative launched by former First Lady Laura Bush last fall, and others, the content of these programs will become increasingly important. This analysis did not find a statistically significant positive association between teacher attitudes and those principals who participated in an aspiring principal program. Data limitations preclude an assessment of the content, curriculum, rigor, and/or duration of these principal programs, which are critical quality control measures that should be a part of any evaluation of the effect of these sorts of programs. However, the insignificant relationship suggested by this analysis should prompt current and future principal training initiatives to rigorously assess the impact of these programs on teachers, the primary individuals future principals will be in the position to supervise.

Another implication of the finding that organizational leadership may have a more positive effect on teacher attitudes is that it could lend credence to the widely held view among education reformers that school leaders do not necessarily need to hold the traditional credentials of an educator to be effective. The popular belief among education reformers today is that leadership—exercised through more business-like practices—can and will drive better results for students and schools. Further study and evaluation of assertions like these that expand upon this study’s inquiry will continue to be relevant and necessary.
VII. REFERENCES


