School Leadership, Trust and Teacher Job Satisfaction Is It a Potential Strategy for Raising Student Achievement?

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SCHOOL LEADERSHIP, TRUST AND TEACHER JOB SATISFACTION
IS IT A POTENTIAL STRATEGY FOR RAISING STUDENT ACHIEVEMENT?

By

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I dedicate this to my family and friends who have shown me nothing but love and support through this process.
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ABSTRACT

Research literature suggests that school leadership matters, and that their influence on student achievement is typically observed through indirect means. Following suit, the purpose of this study was to gain an understanding of school leadership behaviors’ association with school trust and teacher job satisfaction, in an effort to maximize student achievement. Using varying survey data from Chicago Public Schools, I perform a series of linear regression analyses to explore these relationships: First, the relationship school leadership has with school trust and teacher job satisfaction is investigated. Second, the association school trust and teacher job satisfaction has on student achievement. Finally, the magnitudes of the relationships school trust and teacher job satisfaction have on student achievement are compared. The results reveal that school leadership behavior has a relationship with school trust and teacher job satisfaction, but that school trust and teacher job satisfaction do not have clear relationships with student achievement. The study suggests that further investigation is conducted on the relationship school trust and teacher job satisfaction have on student achievement.
INTRODUCTION

Although the research on how school leaders influence student achievement is mixed, evidence suggests that they do make a difference (Leithwood, Louis, Anderson, & Wahlstrom, 2004; Hallinger & Heck 1996, 1998). Many studies suggest that principals’ influence is largely indirect through intervening school-level variables (Hallinger & Heck 1996, 1998; Witziers, Bosker, & Kruger, 2003). For example, evidence suggests that principal behaviors influence dimensions of school climate, which in turn, influence student achievement (Hallinger & Heck 1996, 1998; Tschannen-Moran, Parish, & DiPaola, 2006; Williams, Persaud, & Turner, 2008). A substantial dimension of school climate is the relationships among individuals in a school (Cohen, McCabe, Michelli, & Pickeral, 2009; Thapa, Cohen, Guffey, & Higgins-D’Alessandro, 2013). Relationships can be examined through various measures of trust, which have been associated with higher student achievement (Adams & Forsyth, 2013; Adams, 2014; Louis, Dretzke, & Wahlstrom, 2010). Specific measures of school trust associated with higher student achievement include, teachers trust in students and parents (Adams and Forsyth, 2013), and professional community and teachers’ trust of school leadership (Louis, Dretzke, & Wahlstrom, 2010). Teacher job satisfaction has also been found to have a positive relationship with student achievement (Johnson, Kraft, Papay, 2012). Identifying principal behaviors associated with stronger school trust and higher teacher job satisfaction may help understand one indirect pathway school leaders can use to help achieve higher student achievement.

Identifying these variables’ association with student achievement may vary based on the student characteristics of a school. For example, studies have found that the principal behaviors used to solve school problems and the principal behaviors’ influence on student achievement, vary based on student characteristics (Grissom & Loeb, 2011; Bloom & Owens, 2011).
Recognizing how student achievement is associated with principal behavior, teacher job satisfaction, and school trust, when controlling for the school’s student characteristics, will possibly help guide future studies.

The following section will use literature to develop a conceptual framework to explore some of the concepts introduced above. Specifically, the possible association principal behaviors have with school trust and teacher job satisfaction, and in turn, their potential mediated relationship with student achievement will be explored. I hypothesize that stronger principal behaviors will be associated with higher school trust and teacher job satisfaction, and that these measures will have a significant and positive relationship with student achievement. The magnitude of school trust and teacher job satisfaction’s relationship with student achievement will also be compared. The methods section will detail the school-level data from Chicago Public Schools (CPS) and the series of linear regression analyses used to investigate these relationships. The last section will then decipher the results in an effort to provide implications for future studies and policymakers.
REVIEW OF LITERATURE

This section will review the literature regarding the potential influence principal behavior has on student achievement through intervening variables of school trust and teacher job satisfaction. First, I will highlight literature that supports principal influence on student achievement. Second, I will unpack the evidence suggesting that principal behaviors have an indirect relationship with student achievement largely through school climate. Third, I will explain the currently understood role of school trust. Fourth, I will introduce the current literature on teacher job satisfaction. Fifth, I will show how student characteristics influence the association among the investigated school-level variables. This collection of evidence is used to justify my research questions and begin to conceptualize my analyses.

School Leaders’ Behaviors and Influence

Evidence from studies examining school leaders suggests that they have an influence on student achievement. A meta-analysis conducted by Waters, Marzano, and McNulty (2003), found that the “average effect size (expressed as a correlation) between leadership and student achievement is 0.25” (p.3). In addition to supporting the findings from Water, Marzano, and McNulty (2003), Leithwood, Louis, Anderson, & Wahlstrom (2004) found that principals often make the greatest impact on student achievement when and where they are needed most (p. 5). This suggests that principal behaviors matter and their impact is cause to investigate their potential influences on the school environment.

Murphy, Goldring, Elliot, and Porter (2006) argue that the way principals affect the school environment can be framed into two distinct areas: precursors and behaviors. Precursors consist of experience, knowledge, personal characteristics, and values and beliefs. The authors suggest that principals’ precursors help determine principals’ behaviors. Principal behaviors
consist of specific tasks such as “improving the instructional program,” “identifying a vision”, and “collaboration with parents and the community” (Tschan nen-Moran, Parish, & Dipaola, 2006). Principal behaviors are typically embedded in specific leadership styles which often make them difficult to isolate. Some examples of leadership styles include transformational (Sun & Leithwood, 2012), collaborative (Hallinger & Heck, 2010), or instructional (Fancera & Bliss, 2011). These three leadership styles occur in the literature frequently, but their definitions vary by author and have evolved over time (Hallinger, 2010). Transformative leadership is generally defined by behaviors that motivate faculty and staff to move towards a shared goal larger than their own personal interests (Sun & Leithwood, 2012). The basic concept of collaborative leadership, often similarly referred to as shared or distributed leadership, is focused on including teachers in the decision making processes of a school (Hallinger & Heck, 2010). Instructional leadership refers to behaviors focused on improving instruction and student learning (Fancera & Bliss, 2011). These are three among the numerous leadership styles currently in the literature. The following section details how principal behaviors indirectly impact student achievement.

Indirect Relationship and School Climate

Multiple studies suggest that there is an indirect relationship between the principal and student achievement (Hallinger & Heck 1996, 1998; Witziers, Bosker, & Kruger, 2003). Hallinger and Heck (1996) conducted a literature review that categorized articles into five different models to help explain the relationship between a principal and student achievement. The five models include: direct-effects, direct-effects with antecedent effects, mediated-effects, mediated-effects with antecedent effects, and reciprocal-effects. The direct effects model proposes that school leadership affects student achievement without any intervening or mediating variables (Hallinger and Heck, 1996, p. 18). The mediated-effects model assumes that
all of, or a fraction of, the impact between the school leader and student achievement is mediated by the school climate (Hallinger and Heck, 1996, p.18). The antecedent-effects model proposes that the administrator is both the dependent and independent variable, and hence is influenced and/or bound by certain school climate variables, but still has an influence on school variables such as student achievement (Hallinger and Heck, 1996, p. 19). The reciprocal-effects model suggests that the principal adapts to his or her environment and that the relationship is interactive and dynamic (Hallinger and Heck, 1996, p. 19). These models are illustrated in Figure One.

Hallinger and Heck (1996) found that indirect models found more significant relationships. The authors go further to state that this aligns with the theoretical purpose of leadership, which is to accomplish results through those being led (p. 39).

**Figure 1: Principals’ Influence on Student Achievement**
(Adapted from Hallinger and Heck, 1996, p.16)
More recent studies have confirmed Hallinger and Heck (1996) findings using indirect models of leadership, specifically through variables of school climate (O’Donnell & White, 2005; Tschannen-Moran, Parish, & DiPaola, 2006; Williams, Persaud, & Turner, 2008). According to Cohen, McCabe, Michelli, and Pickeral (2009), no explicit definition of school climate exists, but the authors claim that most researchers can agree that it consists of four major dimensions: (1) safety, (2) relationships, (3) teaching and learning, and (4) environmental-structural. The four dimensions are defined accordingly: The first component, safety is defined as the physical and social-emotional safety of students and adults. The second dimension, relationships refer to interactions between individuals, both adults and students, and an overall feeling of community and positive morale (Cohen, McCabe, Michelli, & Pickeral, 2009, p. 184). The third dimension, teaching and learning is comprised of the school’s leadership, quality of instruction, the value of social, emotional and ethical learning, and the professional development that supports learning. The fourth dimension, environmental-structural refers to the physical space, size of school, cleanliness, etc. These four major dimensions are derived from the perceptions of individuals within the school such as the administration, teachers, students, parents, staff, etc. Cohen, McCabe, Michelli, and Pickeral (2009) provide a wide arena for school leadership to utilize in an effort to increase student achievement.

As mentioned previously, many studies have found that principal behaviors have a relationship with improving variables of school climate to increase student achievement (O’Donnell & White, 2005; Tschannen-Moran, Parish, & DiPaola, 2006; Williams, Persaud, & Turner, 2008). For example using principal instructional leadership behavior, O’Donnell and White (2005) find that behaviors focused on improving school climate (i.e. protecting instructional time, maintaining high visibility, providing incentive to teachers, promoting
professional development, and providing incentives for learning) predicted higher student achievement in middle schools (O’Donnell & White, 2005). The following section will start to narrow the focus to the school relationship dimension of school climate in an effort to suggest one possible pathway school leaders can improve student achievement.

School Trust

School trust is closely aligned to the relationship dimension of school climate. School trust is built over time through a collection of interactions that demonstrate respect, personal regard, competence, and personal integrity. Respect is demonstrated by both genuinely listening and using what was heard to modify behavior and actions in the future to form a connection with another person or group. Establishing personal regard in a school setting typically requires a person to extend beyond the formal requirements of their role in an effort to show another person or group that they care about them. Competence, in an individual’s designated role, is validated when a person has the capacity to attain the results they projected. Personal integrity is demonstrated by the individual keeping their commitments and being reliable (Bryk & Schneider, 2003; Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010). School trust formed from interactions using this criterion demonstrates a more specified form of the relationship dimension of school climate.

Various trust relationships at the school-level have been associated with higher student achievement (Adams & Forsyth, 2013; Adams, 2014; Louis, Dretzke, & Wahlstrom, 2010). Adam and Forsyth (2013) found that collective teacher trust in students and parents was associated with higher student achievement in urban elementary schools. In a similar setting, Adams (2014) found that collective student trust in teachers was also associated with higher student achievement. Tschannen-Moran, Parish, and Dipaola (2006) investigated a series of
school climate variables that included teacher professionalism which is the quality of connection between teachers, and is also closely related the characteristics of teacher-teacher trust. The researchers found that teacher professionalism had a significant relationship with student achievement. These studies help to illustrate recent associations between school trust and student achievement.

Tschannen-Moran (2009) expanded Tschannen-Moran, Parish, and Dipaola (2006) study and found that schools with greater teacher professionalism also tend to have greater faculty trust in the principal and school leaders with a stronger professional orientation. When combined with the earlier study’s findings from Tschannen-Moran, Parish, and Dipaola (2006) that suggest a relationship between teacher professionalism and student achievement, the findings from Tschannen-Moran (2009) suggest that school leaders that cultivate teacher-principal trust and professionalism among teachers may find a positive association with student achievement. Other studies have explored the relationship among school leadership, forms of school trust, and student achievement. Louis, Dretzke, & Wahlstrom (2010) found that student achievement had a positive relationship with teacher-principal trust and teacher-teacher relationships, but not with principal instructional or shared leadership behaviors. They go further to argue that this is consistent with the literature that suggests that school leadership is largely indirect. These studies provide evidence that suggest that principals may be able to indirectly increase student achievement by cultivating school trust.

In the previously mentioned studies, the varying measures of school trust were measured through a variety of scales and survey responses. Adams and Forsyth (2013) used teacher responses to the six-point Likert Omnibus Trust Scale developed by Hoy and Tschannen-Moran (1999). Similarly, Louis, Dretzke, and Wahlstrom (2010) used teacher survey responses
developed by Tschannen-Moran (2004) to capture their trust in the principal. Adams (2014) used student responses on thirteen questions from a four-point Likert scale called the Student Trust in Teachers Scale developed by Adams and Forsyth (2009). To measure teacher professionalism, among other variables, Tschannen-Moran, Parish, and Dipaola (2006) developed the School Climate Index using elements from the existing Organizational Health Inventory (Hoy & Feldman, 1987) and Organizational Climate Descriptive Questionnaire (Hoy et al., 1991; Hoy & Sabo, 1998). Tschannen-Moran, Parish, and Dipaola administered the School Climate Index during faculty meetings to all of the teachers of the included schools. Tschannen-Moran (2009) also used the School Climate Index to measure teacher professionalism, but measured teacher-principal trust using items developed by Hoy and Tschannen-Moran (2003). The majority of the studies used teacher responses to measure various forms of school trust.

This section explained school trust theoretically while showing its proximity to Cohen, McCabe, Michelli, and Pickeral (2009) definition of the relationship dimension of school climate. It went further to show the linkage between various forms of school trust and student achievement, while illuminating a potential avenue school leaders can use to increase student achievement. It showed that the majority of studies utilized teacher responses to survey items to measure various forms of school trust. Later, I will propose to use the same strategy in a similar fashion.

Teacher Job Satisfaction

This section will use literature to suggest that teacher job satisfaction deserves attention when exploring the relationship among school leadership, school trust, and student achievement. First, I will define teacher job satisfaction and state its proximity to school trust. Second, I will
state how teacher job satisfaction is associated with other school-level variables related to teachers. Third, I will state that teacher job satisfaction may have an association with school leadership and student achievement. Consequently, this section will suggest that further investigation of teacher job satisfaction should be conducted.

Teacher job satisfaction is sense of fulfillment achieved from daily activities and interactions (Klassen & Chiu, 2010). Teacher job satisfaction is measured using teacher responses and parallel to school trust, is influenced by the quality of the interactions with students, other teachers, administrators, parents, etc. (Klassen & Chiu, 2010). In many ways the components that construct school trust (i.e. respect, personal regard, competence, and personal integrity) also have a relationship with the degree of fulfillment achieved by teachers that leads to job satisfaction. For example, if teachers do not feel that they are respected by their peers and their peers show a low sense of commitment to their team obligations (i.e. demonstrating low personal integrity) the teacher’s job satisfaction and trust in the individuals of the school is likely to diminish. Teacher job satisfaction and school trust are closely related and are likely to have similar associations with school-level variables.

Teacher job satisfaction has an association with many other school-level variables related to teachers (Stephanou, Gkavras, & Doulkeridou, 2013; Klassen & Chiu, 2010). Stephanou, Gkavras, and Doulkeridou (2013) found that teachers’ efficacy had an effect on the school’s collective-efficacy beliefs and job satisfaction. This suggests that a teacher’s beliefs affect their peers’ beliefs and that this relationship is interrelated to job satisfaction. Similarly, Klassen and Chiu (2010) explored the relationships between teacher characteristics, self-efficacy, job stress, and job satisfaction. They found that classroom stress, self-efficacy, and job satisfaction are all interrelated. The authors go further by finding that teachers had increased job satisfaction when
they had greater classroom management self-efficacy or greater instructional strategies self-efficacy. These studies show that teacher job satisfaction is heavily rooted in other variables addressing teachers, which suggests that it may also have an association with measures of teachers’ trust.

Evidence from Leithwood, Day, Sammon, Harris, and Hopkins (2006) suggest that teacher job satisfaction may be affected by principal behavior and influence student achievement. The authors show that classroom instruction is the only school related factor that with a stronger relationship with student achievement, than school leadership. Additionally, they argue that school leadership’s influence on student learning is primarily through staff motivation, commitment and fostering positive working conditions (Leithwood, Day, Sammon, Harris, and Hopkins, 2006, p 10). This study suggests that examining principal precursors and behaviors associated with higher teacher job satisfaction and school trust may help increase student achievement.

Shen, Lesie, Spybrook, and Ma (2011) show the influence of principal precursors on teacher job satisfaction. The authors find that principal education and experience had a significant association with teacher job satisfaction (Shen, Lesie, Spybrook, & Ma, 2011, p. 216). Perhaps their most significant finding is that “approximately 17% of the variance in teacher job satisfaction lies between schools and 83% lies within schools” (Shen, Lesie, Spybrook, and Ma, 2011, p. 214). A large proportion of the 83% within schools is facilitated by the school’s leader, the principal. A potential shortfall of Shen, Lesie, Spybrook, and Ma (2011) is they did not use principal behaviors as variables in their study.

Empirical evidence shows that transformative leadership behaviors made an impact on student achievement through variables closely aligned to school trust and teacher job
satisfaction. Twigg (2009) illustrated significant results through their faculty’s perceived organizational support, self-esteem, and citizen behaviors. The first variable comparable to respect, perceived organizational support, is defined by “the extent to which the organization cares about their well-being and values their contributions” with a heavy emphasis on the school leadership (Twigg, 2008, p. 261). The second variable arguably comparable to respect is self-esteem, or how the individual perceives the organization’s view of them (Twigg, 2008, p. 261). The third variable similar to personal regard is citizen behaviors which are behaviors that are not required from the respondent, but are still important to the overall organization’s effectiveness (Twigg, 2008, p. 262). These findings, based on these three variables, suggest that transformative leadership supports the relationship between principals and teachers. Griffith (2004) supports Twigg (2008) findings by showing a direct relationship between transformative leadership and higher teacher job satisfaction. These studies show that school leadership has a relationship with teacher job satisfaction and school trust.

Johnson, Kraft, and Papay (2012) tie school leadership, school trust, and teacher job satisfaction together. The authors investigated teacher working conditions and job satisfaction in an effort to examine its relationship with student achievement. They found that the elements of the school environment that mattered most to teacher job satisfaction were social conditions such as the relationships between teachers (similar to teacher-teacher trust), the effectiveness of their principal (primarily measured through instructional leadership behaviors), and school culture with a supportive context. The authors go further to suggest teacher job satisfaction may increase student achievement, even in low income settings, by reducing teacher turnover.

This section shows that teacher job satisfaction warrants further investigation. The goal is to ultimately help understand potential ways school leadership can positively influence student
achievement. In short, principal behaviors that foster teacher job satisfaction, along with school trust, may be another tool in the immense toolbox that school leaders can utilize. The following section will discuss the need to control for student characteristics.

**Varying Student Characteristics**

The potential association among school leadership, school trust, and teacher job satisfaction on student achievement may be influenced by student characteristics. A recent study by Klar and Brewer (2013) did a case study of three high-needs middle schools that had performed better than their school demographics had suggested. The study found that the one commonality that principals shared was that they adapted their leadership practices to fit their particular context (Klar & Brewer, 2013, p. 800).

Other studies support Klar and Brewer (2013) findings by identifying the differences in leadership between high and low performing schools. For example, Hallinger (2010) found that the effect of instructional and transformative leadership was linked to the context and environment of the school. Leithwood and Mascall (2008) found that principals in higher performing schools allowed teachers and other school stakeholders to have a greater influence on school decisions than low-performing schools. Bloom and Owens (2011) found that principals’ perceptions of their influence on school variables differed according to their schools’ performance. In relation to teacher job satisfaction, Grissom (2011) found that teacher job satisfaction tended to be lower in schools with lower performance. These studies show that principal behaviors are influenced by a school’s context.

This evidence suggests that controlling for schools’ student characteristics, like performance, may yield more significant results and grant more generalizability. The following section introduces the conceptual model and research questions designed to investigate the
relationships of principal behaviors, school trust, and teacher job satisfaction on student achievement.

**Conceptual Model**

I will examine the influence principal behaviors have on student achievement mediated by school trust and teacher job satisfaction conceptually modeled in Figure Two. Figure Two suggests that there may be a bidirectional relationship between school relationships and teacher job satisfaction. These influences will be evaluated by controlling for varying school environments based on student characteristics. The goal of the conceptual model is to explore the possibility of maximizing principal behaviors’ indirect effects on student achievement through school trust and teacher job satisfaction.

![Figure 2: Conceptual Model](image)

**Research Questions**

The following research questions are aimed at investigating the relationships illustrated by the conceptual model and identifying their possible influence on student achievement in varying school environments. Consequently, the results may illuminate potential behaviors school leaders can use to increase school trust and teacher job satisfaction in an effort to maximize student achievement. The following section will address these relationships using data from the Chicago Public Schools.
1. What relationship do principal behaviors have with school trust and teacher job satisfaction?

2. In turn, what relationship does school trust and teacher job satisfaction have with student achievement?

3. Is the relationship with student achievement the same for school trust and teacher job satisfaction?
METHODS

Data

The University of Chicago Consortium on School Research (CCSR) at the University of Chicago Urban Education Institute, in partnership with Chicago Public Schools, has developed a series of K-12 city-wide teacher and student surveys to drive capacity-building school reform. They frame capacity-building reform into five evidence-based categories referred to as the 5Essentials: effective leaders, collaborative teachers, involved families, supportive environment, and ambitious instruction. These four definitions are defined broadly on the CCSR website and measured using the following sub-categories:

1. **Effective leaders**: The principal works with teachers to implement a clear and strategic vision for school success.
   a. Teacher influence
   b. Principal instructional leadership
   c. Program coherence
   d. Teacher-Principal trust
2. **Collaborative teachers**: The staff is committed to the school, receives strong professional development, and works together to improve the school.
   a. Collective Responsibility
   b. Quality Professional Development
   c. School Commitment
   d. Teacher-Teacher Trust
3. **Involved families**: The entire school staff builds strong relationships with families and communities to support learning.
   a. Human & Social Resources in the community
   b. Outreach to parents
   c. Teacher-Parent Trust
4. **Supportive environment**: The school is safe and orderly. Teachers have high expectations for students. Students are supported by their teachers and peers.
   a. Peer support for academic work
   b. Academic professionalism
   c. Academic press
   d. Safety
   e. Student-Teacher Trust
5. **Ambitious instruction**: Classes are academically demanding and engage students by emphasizing the application of knowledge.
   a. Course clarity
   b. English instruction
c. Math instruction  
d. Quality of student discussion

Bryk, Sebring, Allensworth, Luppescu, and Easton (2010) found that schools with strong indicators in all five of these categories were ten times more likely to raise student achievement than if three or more of these categories were weak (p. 198). One of the goals of the 5Essentials is closely aligned to the purpose of this paper, which is to better understand the holistic nature of schools by giving proper attention to human and social factors (p.45). Unrelated to the variables this paper chooses to investigate, the authors reported some weaknesses with the CCSR data regarding the measures of teacher quality and the accuracy of student reported surveys on academic press and professionalism. CCSR’s 5Essentials will serve as a strong dataset to capture the following variables introduced in the next section.

The 2013 survey responses allow me to capture the quality of the following school trust measures: teacher-principal, teacher-teacher, teacher-parent, and teacher-student. Furthermore, it includes the ability to capture teacher job satisfaction and teachers’ perceived principal behaviors. The data is provided publicly at the school level, reporting the total percent of teachers and students at each school who responded and the percent responded to individual survey questions within the above sub-categories. The average response rate is: 76.9% of teachers and 80.8% of students. The 65 teacher survey questions consist of a four point Likert scale between strongly disagree, disagree, agree, or strongly agree, and not at all, a little, some, or to a great extent. The 47 student survey questions consist of the same four point Likert scale between: strongly disagree, disagree, agree, or strongly agree, but adds another four point Likert scale: never, once or twice a semester, once or twice a month, once or twice a week, or almost every day. In addition, some student survey responses include a five point Likert scale: none, a few, about half, most, or all.
School achievement will be measured using the 2012-2013 school-level state achievement test scores from the Illinois Standards Achievement Test (ISAT) capturing third through eighteen grade and Prairie State Achievement Exam (PSAE) capturing eleventh grade. The percent of students at each school that are in the following categories of passing requirements for both the ISAT and PSAE will be used to measure student achievement: exceed, meet, below, and warning. These scores will be collected from the Chicago Public Schools website.

Also collected from the Chicago Public Schools website is school-level student characteristics. Collected using the 2012-2013 data reveals an average of 85.2% of student receiving free and reduced lunch, 13.9% special education population, and 13.0% English Language Learners (ELL). In addition, the school-level racial and ethnic characteristics of students will be collected using student survey results. The average racial and ethnic distributions are 53.0% Black, 34.9% Hispanic, 7.4% White, 2.4% Asian, and 2.3% other. In sum, Chicago Public School’s student population is both high minority and largely low income.

**Variables**

Using the data described above, this section is focused on defining the variables of the conceptual model. The initial independent variable is principal behavior and the two separate dependent variables are school trust and teacher job satisfaction. In addition, the relationship between school trust and teacher job satisfaction will be investigated. Consequently, school trust and teacher job satisfaction will serve as independent variables to measure its association with the dependent variable of student achievement. As shown in the literature, the measures of principal behaviors, teacher job satisfaction, and school trust will be measured using Likert scale
survey responses. An overview of these variables’ descriptions and their hypothesized relationships is depicted in Figure Three.

**Figure 3: Conceptual Model with Variables**

Principal behaviors are measured using two CCSR predefined survey sections: instructional leadership and teacher influence. Instructional leadership is defined by Grissom and Loeb (2011) as behaviors that “support and improve curricular programs” (p.1100). CCSR’s instructional leadership is aligned with the definitions and behaviors measured by Grissom & Loeb (2011). This study will use teacher survey responses to questions such as: “the principal sets high standards for student learning,” and “knows what’s going on in my classroom.” Teacher influence is included as a principal behavior measure because it is a component of
collaborative leadership. As defined by Heck and Hallinger (2010), a main component of collaborative leadership is the “broad participation and collaboration in decision making, and shared accountability for student learning outcomes” (p. 228). For the purposes of this study, teacher influence measures to what extent teachers are involved in the school’s decisions. A full list of the measures used to represent principal behaviors is shown below in Table 1.

Table 1: Principal Behavior Measures

<table>
<thead>
<tr>
<th>Principal Leadership</th>
<th>Collaborative Leadership</th>
<th>Instructional Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiring new professional personnel.</td>
<td>Planning how discretionary school funds should be used.</td>
<td>Participates in instructional planning with teams of teachers.</td>
</tr>
<tr>
<td>Planning how discretionary school funds should be used.</td>
<td>Determining books and other instructional materials used in classrooms.</td>
<td>Knows what’s going on in my classroom.</td>
</tr>
<tr>
<td>Determining books and other instructional materials used in classrooms.</td>
<td>Setting standards for student behavior.</td>
<td>Carefully tracks student academic progress.</td>
</tr>
<tr>
<td>Setting standards for student behavior.</td>
<td>Establishing the curriculum and instructional program.</td>
<td>Understands how children learn.</td>
</tr>
<tr>
<td>Establishing the curriculum and instructional program.</td>
<td>Determining the content of in-service programs.</td>
<td>Presses teachers to implement what they have learned in professional development.</td>
</tr>
</tbody>
</table>

Teacher job satisfaction is not a predefined section of the CCSR survey, but is a combination of survey questions from two CCSR sections: school commitment and program coherence. The selected CCSR survey questions are consistent with measures used to capture teacher job satisfaction in recent and relevant literature (Johnson, Kraft, & Papay, 2012; Johnson, Kraft, & Papay, 2012; Shen, Leslie, Spybrook, & Ma, 2011). For example, Shen, Leslie, Spybrook, and Ma (2011) measure teacher job satisfaction using the Schools and Staffing Survey...
from 2003-2004 and include the following survey questions: “I think about transferring to another school,” “I am generally satisfied with being a teacher at this school,” and “I like the way things are run at this school.” These questions are similar to CCSR’s questions: “I wouldn’t want to work in any other school”, “I usually look forward to each working day at this school”, and “we have so many different programs in this school that I can’t keep track of them all.” As shown in Table Two, the CCSR survey responses serve as adaptations to previously used survey questions. Adding the variable teacher job satisfaction to my analysis will be one way this study expands the previous work of Bryk, Sebring, Allensworth, Luppescu, and Easton (2010) in CPS.

Table 2: Comparison of Teacher Job Satisfaction Measures

<table>
<thead>
<tr>
<th>Teacher Job Satisfaction</th>
<th>Relevant Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wouldn’t want to work in any other school</td>
<td>I think about transferring to another school (Shen, Leslie, Spybrook, &amp; Ma, 2011).</td>
</tr>
<tr>
<td>I would recommend this school to parents seeking a place for their child.</td>
<td>Overall, my school is a good place to work and learn (Johnson, Kraft, &amp; Papay, 2012)</td>
</tr>
<tr>
<td>I usually look forward to each working day at this school.</td>
<td>I feel good at work (Klassen &amp; Chui, 2010). I am generally satisfied with being a teacher at this school (Shen, Leslie, Spybrook, &amp; Ma, 2011).</td>
</tr>
<tr>
<td>We have so many different programs in this school that I can’t keep track of them all.</td>
<td>I like the way things are run at this school (Shen, Leslie, Spybrook, &amp; Ma, 2011).</td>
</tr>
</tbody>
</table>

As described earlier, school trust refers interaction constructed from a collection of interactions that demonstrate respect, personal regard, competence, and personal integrity (Bryk & Schneider, 2003; Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010). Using the following trust sections, I will measure the quality of these relationships: teacher-principal trust, teacher-teacher trust, teacher-parent trust, and student-teacher. Teacher-principal, teacher-teacher, and teacher-parent trust are measured using teacher responses. Examples include: “The principal looks out for the personal welfare of the faculty members,” “Teachers feel respected by
other teachers,” and “Parents support teachers teaching efforts.” Student-teacher trust is measured using student responses. Examples of this include: “I feel safe and comfortable with my teachers at this school,” and “My teachers treat me with respect.” The full list of measures is shown in Table 3.

Table 3: School Trust Measures

<table>
<thead>
<tr>
<th>Teacher-Principal Trust</th>
<th>It’s OK in this school to discuss feelings, worries, and frustrations with the principal.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The principal looks out for the personal welfare of the faculty members.</td>
</tr>
<tr>
<td></td>
<td>I trust the principal at his or her word.</td>
</tr>
<tr>
<td></td>
<td>The principal at this school is an effective manager who makes the school run smoothly.</td>
</tr>
<tr>
<td></td>
<td>The principal places the needs of children ahead of personal and political interests.</td>
</tr>
<tr>
<td></td>
<td>The principal has confidence in the expertise of the teachers.</td>
</tr>
<tr>
<td></td>
<td>The principal takes a personal interest in the professional development of teachers.</td>
</tr>
<tr>
<td></td>
<td>Teachers feel respected by the principal</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
<td>Teachers in this school trust each other.</td>
</tr>
<tr>
<td></td>
<td>It's OK in this school to discuss feelings, worries, and frustrations with other teachers.</td>
</tr>
<tr>
<td></td>
<td>Teachers respect other teachers who take the lead in school improvement efforts.</td>
</tr>
<tr>
<td></td>
<td>Teachers at this school respect those colleagues who are experts at their craft.</td>
</tr>
<tr>
<td></td>
<td>Teachers feel respected by other teachers</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>Parents do their best to help their children learn</td>
</tr>
<tr>
<td></td>
<td>Teachers feel good about parents’ support for their work</td>
</tr>
<tr>
<td></td>
<td>Parents support teachers teaching efforts</td>
</tr>
<tr>
<td></td>
<td>Teachers and parents think of each other as partners in educating children.</td>
</tr>
<tr>
<td></td>
<td>Staff at this school work hard to build trusting relationships with parents.</td>
</tr>
<tr>
<td></td>
<td>Teachers feel respected by the parents of the students</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>My teachers always keep their promises</td>
</tr>
</tbody>
</table>
Table 3: Continued

<table>
<thead>
<tr>
<th>Student-Teacher Trust</th>
<th>I feel safe and comfortable with my teachers at this school.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>My teachers will always listen to students’ ideas.</td>
</tr>
<tr>
<td></td>
<td>When my teachers tell me not to do something, I know they have a good reason</td>
</tr>
<tr>
<td></td>
<td>My teachers treat me with respect.</td>
</tr>
</tbody>
</table>

The distributions of the variables that will be used in this study are provided in Table 4. As shown, the mean and standard deviations are fairly similar between the types of variables: school leadership (i.e. collaborative and instructional leadership), and school trust (i.e. teacher-principal trust, teacher-teacher trust, teacher-parent trust, and student-teacher trust). Teacher job satisfaction has a mean roughly twenty values higher than the other measures, and a standard deviation roughly ten values lower. This is likely the result of all other measures being calculated by CCSR using a Rasch analysis that combines survey items averages to create a score between 1 and 99. Teacher job satisfaction was calculated by taking the percent of teachers that scored within the two positive scales and adding them together to create the percent of teachers that signified positive teacher job satisfaction. Then for each school, the positive percent from each of the four questions were averaged to create the mean percent of teachers that were positively satisfied with their job. Using standardized coefficients in the analyses will help to more accurately compare the magnitudes of these variables.

### Table 4: Variable Distribution

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Leadership</td>
<td>52.720</td>
<td>22.017</td>
</tr>
<tr>
<td>Instructional Leadership</td>
<td>47.337</td>
<td>21.864</td>
</tr>
<tr>
<td>Teacher-Principal Trust</td>
<td>46.102</td>
<td>21.276</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
<td>51.814</td>
<td>25.483</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>56.293</td>
<td>20.838</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>55.817</td>
<td>22.475</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>72.976</td>
<td>13.829</td>
</tr>
</tbody>
</table>
Table 4: Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISAT 2013</td>
<td>50.088</td>
<td>18.317</td>
</tr>
<tr>
<td>ISAT 2011</td>
<td>47.399</td>
<td>17.974</td>
</tr>
<tr>
<td>PSAE 2013</td>
<td>22.829</td>
<td>22.034</td>
</tr>
<tr>
<td>PSAE 2011</td>
<td>24.383</td>
<td>22.365</td>
</tr>
<tr>
<td>English Language Learner %</td>
<td>0.130</td>
<td>0.166</td>
</tr>
<tr>
<td>Special education %</td>
<td>0.139</td>
<td>0.117</td>
</tr>
<tr>
<td>Free and reduced lunch %</td>
<td>0.852</td>
<td>0.187</td>
</tr>
<tr>
<td>White %</td>
<td>7.407</td>
<td>15.048</td>
</tr>
</tbody>
</table>

The three independent measures, principal behavior, teacher job satisfaction, and school relationships, are used to investigate their influence on the dependent variable of student achievement. As described previously, student achievement is measured using students’ performance on the PSAE and ISAT. The percent of students that score in meets expectations and above will be used in the following analysis section. In addition, school environment factors including student racial/ethnic demographics and the percent of Free and Reduced Lunch, Special Education, and English Language Learner students will be taken into account due to their influence on instructional leadership (Hallinger, 2010), teacher influence (Leithwood and Mascall, 2008), teacher job satisfaction (Grissom, 2011), and other school level variables. The following section will begin to describe the methods using a linear regression model.

**Analysis**

This section explores the relationships between the independent and dependent variables displayed in the conceptual model using a series of regression analyses. This section will expand the work of Bryk, Sebring, Allensworth, Luppescu, and Easton (2010) by investigating the role of teacher job satisfaction. First, the analysis explores the correlation of principal behavior with teacher job satisfaction and school trust. Second, I use school leadership measures to predict school trust and teacher job satisfaction. Third, student achievement is predicted using teacher
job satisfaction and varying measures of school trust. Fourth, the analysis models student achievement as a function of school trust and teacher job satisfaction. Fifth, I test school trust and teacher job satisfaction against each other. Ultimately, the goal is to understand one potential pathway school leadership can improve the school environment in an effort to increase student achievement.

**Stage One**

The first stage of the analysis attempts to justify further exploration of the relationship among school leadership, school trust, and teacher job satisfaction. This is explored using pairwise correlations. The variables for school leadership and school trust are composite variables calculated by the combination of their measures. For example, school trust is the combination of teacher-principal trust, teacher-teacher trust, teacher-parent trust, and student-teacher trust. This provides evidence to justify further investigation of the relationship among these variables.

**Stage Two**

This stage of analysis uses school leadership measures (i.e. instructional leadership $ilcomp$ and teacher influence $ticmp$) to predict school trust $trust$ and teacher job satisfaction $tjs$ in two separate models. The models also include student characteristics (i.e. white student percentage $whitep$, English Language Learner percentage $ellp$, special education percentage $spedp$, and free and reduced lunch percentage $frlp$) as controls due to their relationship with school leadership (Hallinger, 2010). The analytical weight function is utilized in all of the following stages to control for schools with excessively small or large student enrollments. In addition, standardized coefficients will be displayed to allow the
comparison of magnitudes of different independent variables. The following models will expand stage one, and further investigate my first research question.

\[ \text{trust/tjs} = \beta_0 + \beta_1 \text{ilcomp} + \beta_2 \text{ticomp} + \beta_3 \text{whitep} + \beta_4 \text{ellp} + \beta_5 \text{spedp} + \beta_6 \text{frlp} + e \]

**Stage Three**

In this stage, I focus on investigating the relationship between school trust and teacher job satisfaction (\(tjs\)) on student achievement (\(psae2013/isat2013\)) in an effort to explore my second research question. Instead of the composite variable of school trust (\(trust\)), I use the individual measures of school trust (i.e. teacher-principal trust (\(tptcomp\)), teacher-teacher trust (\(tttcomp\)), teacher-parent trust (\(tpartcomp\)), and student-teacher trust (\(sttcomp\))) in this state of the analysis. As performed previously, the analytical weights and standardized coefficients are used. The first group consists of elementary and middle schools taking the ISAT, and the second group consists of high schools taking the PSEA. They will be analyzed separately due to this difference in student assessment, which will also allow me to compare how these variables interact differently in these settings. Except for the student assessment, the models are exactly the same as shown below.

\[ \text{psae2013/isat2013} = \beta_0 + \beta_1 \text{tpcomp} + \beta_2 \text{ttcomp} + \beta_3 \text{tpartcomp} + \beta_4 \text{sttcomp} + \beta_5 \text{tjs} + e \]

**Stage Four**

In this stage of the analysis I expand my investigation of the relationship between school trust, teacher job satisfaction, and student achievement (\(psae2013/isat2013\)) by adding school-level controls (i.e. white student percentage (\(whitep\)), English Language Learner percentage (\(ellp\)), special education percentage (\(spedp\)), and free and reduced lunch percentage (\(frlp\)). This may help to gain a better understanding of how student characteristics impact the variables being
investigated. As shown below, the model will remain the same except for the addition of school-level controls.

\[ psae2013/isat2013 = \beta_0 + \beta_1 tptcomp + \beta_2 tttcomp + \beta_3 tpartcomp + \beta_4 sttcomp + \beta_5 stjs + \beta_6 whitep + \beta_7 ellp + \beta_8 spedp + \beta_9 frlp + e \]

**Stage Five**

In this model I will add student achievement from two years prior (psae2011 or isat2011) to control for family background and other school-level variables that are not captured by the previously used school-level controls (Hanushek, Kain, Markman, & Rivkin, 2003). Other than adding controls, the model below is the same as stage four of the analyses.

\[ psae2013/isat2013 = \beta_0 + \beta_1 tptcomp + \beta_2 tttcomp + \beta_3 tpartcomp + \beta_4 sttcomp + \beta_5 stjs + \beta_6 psae2011/isat2011 + \beta_7 whitep + \beta_8 ellp + \beta_9 spedp + \beta_10 frlp + e \]

**Stage Six**

This stage focuses on understanding the relationship between school trust and teacher job satisfaction on student achievement. The models exercised in stage three remains the same except for instead of using multiple measures of school trust (i.e. teacher-principal trust (tptcomp), teacher-teacher trust (tttcomp), teacher-parent trust (tpartcomp), and student-teacher trust (sttcomp)) this stage will use the composite measure of school trust (trust) previously used in stage one. The sole purpose of the models below is to explore my third research question by testing school trust and teacher job satisfaction magnitude on student achievement against each other using a joint significance F-test.

\[ psae2013/isat2013 = \beta_0 + \beta_1 trust + \beta_2 stjs + \beta_3 psae2011/isat2011 + \beta_4 whitep + \beta_5 ellp + \beta_6 spedp + \beta_7 frlp + e \]
RESULTS

The following section focuses on exploring the relationship among the variables as depicted in the conceptual model. Stage one and two of the analysis, focuses on research question one: investigating the association school leadership has with school trust and teacher job satisfaction. Stage three and four explore research question two, focuses on exploring the relationship school trust and teacher job satisfaction has with student achievement. The final stage, five, investigates the third research question comparing the magnitude of influence school trust and teacher job satisfaction have on student achievement. These results help to understand the relationships within a school community in an effort to identify a potential strategy to maximize student achievement.

Stage One

As shown below in Table 5, the correlations among the variables of interest are all statistically significant suggesting that schools with strong leadership also have higher levels of school trust and teacher job satisfaction. The correlations between the variables are within eight percentage points of each other suggesting that their magnitude may be similar in a linear regression model. This stage provides evidence to suggest further investigation of the school-level variables.

Table 5: Pairwise Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>School Leadership</th>
<th>School Trust</th>
<th>Teacher Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Leadership</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Trust</td>
<td>0.777***</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.697***</td>
<td>0.723***</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p <0.001
Stage Two

This stage provides evidence to suggest that school leadership has a statistically significant relationship with school trust and teacher job satisfaction. After performing the models, I first tested for heteroskedasticity using the Breusch-Pagan test. When predicting teacher job satisfaction, there is a statistically significant amount of heteroskedasticity ($\chi^2(1)=42.90$, p<0.05). Robust standard errors are calculated to correct for heteroskedasticity in this stage of the analysis, and will be used in all future stages of this analysis. When predicting school trust there is not a statistically significant amount of heteroskedasticity ($\chi^2(1)=1.03$, p>0.05). Second, in both models instructional leadership and teacher influence are found to be individually significant and have similar standardized coefficients in each respective model. This suggests that when predicting school trust and teacher job satisfaction, that the strength of the two types of leadership is relatively the same. I tested the two leadership variables and found that they are not significantly different from one another in either model (school trust: f(1,567)=0.13, p>0.05, teacher job satisfaction: f(1,566)=0.24, p>0.05). The results displayed in Table 6 provide evidence to suggest that school leadership has a statistically significant relationship with both school trust and teacher job satisfaction that aligns to the conceptual model proposed earlier.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standardized Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicting School Trust (n=574) $R^2=0.657$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional leadership</td>
<td>0.320***</td>
<td>0.425</td>
<td>0.024</td>
</tr>
<tr>
<td>Teacher Influence</td>
<td>0.304***</td>
<td>0.405</td>
<td>0.025</td>
</tr>
<tr>
<td>English Language Learner %</td>
<td>9.127**</td>
<td>0.095</td>
<td>2.621</td>
</tr>
<tr>
<td>Special education %</td>
<td>-5.223</td>
<td>-0.021</td>
<td>6.353</td>
</tr>
<tr>
<td>Free and reduced lunch %</td>
<td>-15.635**</td>
<td>-0.180</td>
<td>4.487</td>
</tr>
<tr>
<td>White %</td>
<td>-0.005</td>
<td>-0.005</td>
<td>0.049</td>
</tr>
<tr>
<td>Constant</td>
<td>33.563***</td>
<td></td>
<td>4.320</td>
</tr>
</tbody>
</table>
Table 6: Continued  
Variable | Coefficient | Standardized Coefficient | Standard Error |
--- | --- | --- | --- |
Instructional leadership | 0.219*** | 0.347 | 0.024 |
Teacher Influence | 0.241*** | 0.384 | 0.026 |
English Language Learner % | 16.761*** | 0.210 | 2.684 |
Special education % | -16.245* | -0.077 | 7.639 |
Free and reduced lunch % | -6.522 | -0.090 | 3.854 |
White % | 0.085* | 0.103 | 0.042 |
Constant | 54.195** |  | 3.739 |
*p < 0.05, **p < 0.01, ***p <0.001

Predicting Teacher Job Satisfaction with Robust Standard Errors (n=573) $R^2=0.582$

Stage Three

The preliminary models below suggest that school trust, but not teacher job satisfaction, has a statistically significant relationship with student achievement. The negative associations of school trust on student achievement appear counterintuitive, and suggest that further investigation should be conducted. The following stage uses school-level controls to more accurately capture the relationships.

*Elementary and Middle Schools.* This model explains 38.8% of the total variance of student achievement, as seen in Table 7. All measures of school trust are found to be individually significant ($p<0.05$), but teacher job satisfaction is not. Teacher-parent trust ($\beta=0.716$, $p<0.001$) has the strongest relationship with student achievement in elementary and middle schools. Counter intuitively, the other three measures of school trust (i.e. teacher-principal trust ($\beta=-0.112$), teacher-teacher trust ($\beta=-0.151$), and student-teacher trust ($\beta=-0.072$)) have significant, but negative relationships with student achievement. The results from these independent variables suggest that school-level controls should be added to the model.

Table 7: Predicting Student Achievement  
Variable | Coefficient | Standardized Coefficient | Standard Error |
--- | --- | --- | --- |
Elementary and Middle Schools with Robust Standard Errors (n=469) $R^2=0.388$
Teacher-Principal Trust | -0.100* | -0.112 | 0.048 |
Table 7: Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standardized Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-Teacher Trust</td>
<td>-0.112*</td>
<td>-0.151</td>
<td>0.045</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>0.663***</td>
<td>0.716</td>
<td>0.081</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>0.072*</td>
<td>0.072</td>
<td>0.034</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.102</td>
<td>0.072</td>
<td>0.087</td>
</tr>
<tr>
<td>Constant</td>
<td>22.682**</td>
<td></td>
<td>4.087</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Schools (n=117) ( R^2 = 0.666 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-Principal Trust</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
</tr>
<tr>
<td>Constant</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p <0.001

High Schools. This model explains nearly double the amount of total variance (66.6%) in student achievement when compared to the elementary and middle school model. Similarly to the elementary and middle school model, teacher job satisfaction is not found to be individually significant (p>0.05). One measure of school trust, teacher-teacher trust, is negatively associated with student achievement (\( \beta = -0.261, p<0.001 \)). Teacher-parent trust (\( \beta = 0.738, p<0.001 \)) and student-teacher trust (\( \beta = 0.265, p<0.001 \)) are positively associated with student achievement. Further investigation will be conducted using school-level controls in an effort to increase accuracy.

Stage Four

In an effort to increase the accuracy of the results from stage three, this stage of the analysis adds school-level characteristics to the models. Consistent with the previous stage, some measures of school-trust have a negative relationship with student achievement that contradict the literature. The following stage will use prior achievement to more accurately capture the results.
Elementary and Middle Schools. This model explains 60.2% of the total variance in student achievement. This is more than a 20% increase from the previous model. Similarly to the earlier model, teacher-teacher trust contradicts the research literature by having a negative relationship with student achievement ($\beta=-0.099$, $p<0.05$). The individual significance of teacher-principal trust and student-teacher trust vanishes, but teacher-parent trust remains positively significant ($\beta=0.336$, $p<0.001$). In this group all the school-level controls, except minority and ELL percentage, are statistically significant. The similarity in magnitude of teacher-parent trust ($\beta=0.336$, $p<0.001$) and free and reduced lunch percentage ($\beta=0.336$, $p<0.001$) suggest that they may be related. These results suggest that some measures of school trust have a significant relationship with student achievement.

Table 8: Predicting Student Achievement with Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standardized Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elementary and Middle Schools with Robust Standard Errors (n=469) $R^2=0.602$</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-Principal Trust</td>
<td>-0.064</td>
<td>-0.072</td>
<td>0.040</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
<td>-0.073*</td>
<td>-0.099</td>
<td>0.037</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>0.311***</td>
<td>0.336</td>
<td>0.065</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>-0.034</td>
<td>-0.042</td>
<td>0.032</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.093</td>
<td>0.066</td>
<td>0.067</td>
</tr>
<tr>
<td>White %</td>
<td>0.229</td>
<td>0.219</td>
<td>0.120</td>
</tr>
<tr>
<td>English Language Learner %</td>
<td>-0.233</td>
<td>-0.002</td>
<td>5.036</td>
</tr>
<tr>
<td>Special education %</td>
<td>-54.914***</td>
<td>-0.149</td>
<td>15.388</td>
</tr>
<tr>
<td>Free and reduced lunch %</td>
<td>-31.907**</td>
<td>-0.342</td>
<td>9.117</td>
</tr>
<tr>
<td>Constant</td>
<td>68.609***</td>
<td>.</td>
<td>8.926</td>
</tr>
<tr>
<td><strong>High Schools with Robust Standard Errors(n=117) $R^2=0.895$</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-Principal Trust</td>
<td>-0.081</td>
<td>-0.061</td>
<td>0.068</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
<td>-0.124*</td>
<td>-0.107</td>
<td>0.060</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>0.233**</td>
<td>0.203</td>
<td>0.079</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>0.368***</td>
<td>0.236</td>
<td>0.075</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.057</td>
<td>0.029</td>
<td>0.115</td>
</tr>
<tr>
<td>White %</td>
<td>-0.096</td>
<td>-0.046</td>
<td>0.234</td>
</tr>
<tr>
<td>English Language Learner %</td>
<td>14.973</td>
<td>-0.036</td>
<td>18.192</td>
</tr>
<tr>
<td>Special education %</td>
<td>-160.320***</td>
<td>-0.313</td>
<td>25.865</td>
</tr>
<tr>
<td>Free and reduced lunch %</td>
<td>-90.213***</td>
<td>-0.514</td>
<td>23.357</td>
</tr>
<tr>
<td>Constant</td>
<td>106.473***</td>
<td>.</td>
<td>21.689</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p <0.001
High Schools. Up roughly 20% from the previous model, this model explains 89.5% of the total variance in student achievement. Similar to elementary/middle school model teacher-teacher trust’s (β=-0.107, p<0.05) relationship with student achievement is counterintuitive. Teacher-parent trust (β=0.203, p<0.01) and student-teacher trust (β=0.236, p<0.001) are both individually positive and significant. Regarding the added controls, special education (β=-0.313, p<0.001) and free and reduced lunch percentage (β=-0.514, p<0.001) were negatively associated with student achievement. Though some differences exist between the groups, this stage of the analysis provides evidence to suggest that varying measures of school trust can be used to predict student achievement.

Stage Five

Moving forward with investigating the relationship school trust and teacher job satisfaction may have with student achievement, I added student achievement from two years prior to the model to control for other school-level variables that may not already be captured in the previously used school-level controls. Results from this stage do not provide enough evidence to suggest that school trust and teacher job satisfaction have a statistically significant relationship with student achievement.

Elementary and Middle Schools. As displayed in Table 9, this model explains 90.7% of the total variance when predicting ISAT scores. The variables that are statistically significant according to their individual t-statistics included prior achievement from 2011 (β=0.859, p<0.001) and White percentage (β=0.054, p<0.05). Though none of the measures of school trust or teacher job satisfaction are found to be individually significant, they are found to be jointly significant (f(5,448)=2.25, p<0.05). As are the student characteristics (f(4,448)=2.90, p<0.05), not including prior achievement. Using the variance inflation factor, or VIF, function to explore
multicollinearity I found that the greatest threat came from free and reduced lunch percentage (VIF=5.55), but the value was too low to warrant any concern. This model does not provide substantial evidence to suggest that school trust and teacher job satisfaction have a statistically significant relationship with student achievement.

Table 9: Predicting Student Achievement with Student Characteristics and Prior Achievement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standardized Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elementary and Middle Schools with Robust Standard Errors (n=459) R²=0.907</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-Principal Trust</td>
<td>-0.036</td>
<td>-0.042</td>
<td>0.020</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
<td>0.014</td>
<td>0.019</td>
<td>0.013</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>0.035</td>
<td>0.039</td>
<td>0.022</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>0.005</td>
<td>0.007</td>
<td>0.014</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.071</td>
<td>0.052</td>
<td>0.042</td>
</tr>
<tr>
<td>ISAT 2011</td>
<td>0.838***</td>
<td>0.859</td>
<td>0.029</td>
</tr>
<tr>
<td>White %</td>
<td>0.054*</td>
<td>0.054</td>
<td>0.024</td>
</tr>
<tr>
<td>English Language Learner %</td>
<td>2.001</td>
<td>0.020</td>
<td>1.705</td>
</tr>
<tr>
<td>Special education %</td>
<td>-7.133</td>
<td>-0.020</td>
<td>4.616</td>
</tr>
<tr>
<td>Free and reduced lunch %</td>
<td>-2.158</td>
<td>-0.024</td>
<td>2.606</td>
</tr>
<tr>
<td>Constant</td>
<td>6.220</td>
<td></td>
<td>3.607</td>
</tr>
<tr>
<td><strong>High Schools (n=103) R²=0.977</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-Principal Trust</td>
<td>-0.035</td>
<td>-0.026</td>
<td>0.029</td>
</tr>
<tr>
<td>Teacher-Teacher Trust</td>
<td>-0.043</td>
<td>-0.035</td>
<td>0.026</td>
</tr>
<tr>
<td>Teacher-Parent Trust</td>
<td>0.070</td>
<td>0.060</td>
<td>0.040</td>
</tr>
<tr>
<td>Student-Teacher Trust</td>
<td>0.056</td>
<td>0.036</td>
<td>0.036</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.083</td>
<td>0.041</td>
<td>0.063</td>
</tr>
<tr>
<td>PSAE 2011</td>
<td>0.775***</td>
<td>0.753</td>
<td>0.049</td>
</tr>
<tr>
<td>White %</td>
<td>0.170*</td>
<td>0.082</td>
<td>0.070</td>
</tr>
<tr>
<td>English Language Learner %</td>
<td>9.547</td>
<td>0.023</td>
<td>7.985</td>
</tr>
<tr>
<td>Special education %</td>
<td>-45.537**</td>
<td>-0.086</td>
<td>13.837</td>
</tr>
<tr>
<td>Free and reduced lunch %</td>
<td>-10.999</td>
<td>-0.062</td>
<td>9.301</td>
</tr>
<tr>
<td>Constant</td>
<td>13.745</td>
<td></td>
<td>9.961</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p <0.001

High Schools. As seen above, this model explains 97.7% of the total variance when predicting PSAE scores. The variables that are found to be individually significant included prior achievement (β=0.753, p<0.001), white percentage (β=0.082, p<0.05), and special education percentage (β=-0.086, p<0.01). Similarly to the elementary and middle school model,
the measures of school trust and teacher job satisfaction are found to be jointly significant \((f(5, 92)=2.58, p<0.05)\), as are student characteristics \((f(4, 92)=10.28, p<0.01)\). Neither model in stage five provide enough evidence to suggest that school trust or teacher job satisfaction have a statistically significant relationship with student achievement, but due to the joint significance test it does suggest that further investigation is warranted.

**Stage Six**

The purpose of this stage of the analysis is to compare the relationship school trust and teacher job satisfaction has with student achievement. I chose to use the models from stage three that showed individually significant measures of school trust and teacher job satisfaction, instead of the later model with school-level controls which did not. The models are kept identical except that they used the composite variable of school trust. As shown in table 10, both school trust and teacher job satisfaction are individually significant, but they do not have a statistically different relationship with student achievement (elementary and middle schools: \(f(1,466)=0.35, p>0.05\), high schools: \(f(1,114)=0.01, p>0.05\)).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standardized Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elementary and Middle Schools with Robust Standard Errors ((n=469) R^2=0.151)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Trust</td>
<td>0.248**</td>
<td>0.218</td>
<td>0.081</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.279***</td>
<td>0.198</td>
<td>0.076</td>
</tr>
<tr>
<td>Constant</td>
<td>20.469***</td>
<td></td>
<td>4.094</td>
</tr>
<tr>
<td><strong>High Schools ((n=117) R^2=0.449)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Trust</td>
<td>0.623**</td>
<td>0.374</td>
<td>0.193</td>
</tr>
<tr>
<td>Teacher Job Satisfaction</td>
<td>0.661**</td>
<td>0.332</td>
<td>0.231</td>
</tr>
<tr>
<td>Constant</td>
<td>-42.461***</td>
<td></td>
<td>9.928</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p <0.001
DISCUSSION AND CONCLUSIONS

The purpose of this study was to investigate the relationship among school leadership, school trust, and teacher job satisfaction in an attempt to explore its association with student achievement. This section will focus on discussing the results, limitations, and implications in an effort to fulfill its purpose. Specifically, I will discuss the results of each stage of the analyses further while tying the evidence to the research questions. Then, data and method limitations of the study will be illuminated. Finally, implications for policy, practice, and future research will be discussed.

To begin, I will focus on addressing my first research question by investigating the results of the first two stages of the analysis. These stages provide evidence to better understand the relationship school leadership behaviors have with school trust and teacher job satisfaction. My second research question interprets the results of stage three, four, and five to show if school trust and teacher job satisfaction had a relationship with student achievement. My third and final research question is investigated using stage six of the analysis to observe if school trust and teacher job satisfaction’s relationship with student achievement is the same. This section provides insight on how school leadership behaviors have a relationship with school trust and teacher job satisfaction, but that this relationship does not have significant association with student achievement.

The first stage of the analysis provides justification to explore the associations among school leadership, school trust, and teacher job satisfaction using pairwise correlations. After finding significant correlations, the second stage of analysis found that both principal behaviors (i.e., instructional and teacher influence) are significant and positive predictors of both school trust and teacher job satisfaction. Furthermore, the strength of both leadership behaviors is
relatively the same in both models. This provides evidence to suggest that school leaders can exercise strong instructional and collaborative leadership behaviors for the purpose of facilitating strong cultures of school trust and to increase teacher job satisfaction. This evidence also supports the findings from Wahlstrom and Louis (2008) that suggest that principals who score higher on instruction and collaborative leadership behaviors are typically associated with stronger measures of teacher-principal trust. The second stage of the analyses suggests that strong school leadership behaviors have a positive relationship with increased levels of schools trust and teacher job satisfaction.

The third, fourth, and fifth stages of the analyses focus on exploring the relationship among student achievement, school trust, and teacher job satisfaction. In stage three, the model without school-level controls or prior achievement, I find a negative relationship with a variety of trust measures. These results contradict findings from a variety of other studies (Adams & Forsyth, 2013; Adams, 2014; Louis, Dretzke, & Wahlstrom, 2010). For example, in stage three’s elementary and middle school model there is a negative relationship between teacher-principal trust and student achievement ($\beta=-0.112, p<0.05$) which directly contradicts findings from Louis, Dretzke, & Wahlstrom (2010). Additionally, there is similarly negative relationship between teacher-teacher trust and student achievement in the high school model ($\beta=-0.261, p<0.05$). This contradicts Tschannen-Moran, Parish, and Dipaola (2006) findings on the association of teacher professionalism, defined closely to teacher-teacher trust, with student achievement. This trend continues into stage four where there is an integration of school-level controls in the form of student characteristics, though the contradicting significance only lies with teacher-teacher trust. These results may be a result of controversy surrounding Chicago
Public Schools (i.e. teachers cheating on standardized tests and the more recent issue of merit pay), or be a result of data limitations.

Some results from stage three are more logical. Student-teacher trust has a slightly negative relationship in elementary and middle school model (β=-0.087, p<0.05), but a positive relationship in the high school model (β=0.265, p<0.05). This suggests that students’ trust in their teachers is more important as they age. It may also suggest that the younger elementary and middle school students do not fully understand the meaning of trust, or the items used by CCSR to capture it. In both groups of stage three, teacher-parent trust is found to be statistically and positively significant (elementary and middle schools: β=0.716, p<0.01, high schools: β=0.738, p<0.01), and their relative magnitudes are roughly two to seven times greater than the other measures of school trust. One possible explanation may be that this measure is indicative of the alignment of cultural values between the school (i.e. teachers) and the families’ of students. Another possible explanation may be that this measure is more of a measure of income, suggesting that lower income communities have less contact with the school and do not have the opportunity to build trusting relationships that are more common in higher income schools. The results from stage three suggest that school-level controls may be able to more accurately capture results.

Stage four integrates school-level controls into the model in the form of student characteristics. Student-teacher trust is significant in the high school model, but not the elementary/middle school model. This provides support to the discussion in stage three that as students’ age, the meaning of trust may be better understood. It may also suggest that student’s attitude towards schooling and their source of motivation may be more dependent on the trust they have in their teachers in later years (i.e. high school). Teacher-parent trust continues to be
significant in both models, and as suggested before, may be related to other factors (i.e. cultural values, income, etc.). In sum, this stage of the analysis provides evidence to suggest that school trust can be used to predict student achievement.

Stage five of the analysis adds student characteristics and prior student achievement to the previous model and is not able to provide evidence to suggest that school trust and teacher job satisfaction have a relationship with student achievement. The only statistically significant variables are prior achievement and varying student characteristics. As addressed earlier, this may have been caused by the controversial events that have occurred in Chicago in recent years (i.e. cheating on standardized tests, and merit pay), and may not be observed with other similar populations. Regardless, in both the elementary/middle school and high school groups measures of school trust and teacher job satisfaction are jointly significant. This suggests that they may have an association with student achievement that is not already captured using school-level data and linear regression. Due to this and the contrasting results among stages three through five, I recommend that further investigation is conducted using the recommendations mentioned in the next section.

Stage five of the analysis attempts to discover if the relationship school trust and teacher job satisfaction have with student achievement is significantly different from another. Using the model from stage three, with a composite variable of school trust, the model does not reveal a significant difference between the relationship of school trust and teacher job satisfaction on student achievement. This suggests that their relationship with student achievement is relatively the same, and suggests they are conceptually related as supported by the literature review earlier. The following section will discuss limitations of the study.
Limitations

The results of this study should be interpreted carefully due to the limitations of the data and methods. In relation to the data limitations, the sample was collected from a school district that is not representative of the general population of the United States, and would be best generalized to other challenging urban populations that have high minority and high free-and-reduced lunch percentages. Furthermore, Chicago Public Schools has faced some controversial issues that may have an influence on the results of this study as suggested by the contradictory findings related to teacher-teacher trust. This may be a consequence of using school-level data, and future studies would likely benefit from using student-level and teacher-level data. In relation to method limitations, a mixed-method analysis may be able to add further understanding when investigating the relationships in this study specifically, teacher-teacher trust. In addition, utilizing a statistical method that takes into account the sequence of the relationships (i.e. path analysis or structural equation model) may help to more accurately capture results. These adjustments will help to improve future studies and better understand the complexity of the relationships observed.

Implications and Conclusions

The implications of this study can be applied to three primary groups: state educational agencies, local educational agencies, and future research. At the state level, instructional and collaborative leadership behaviors can be promoted in their school leadership standards, certification exams, and competencies in an effort to improve measures of school climate. These changes would also impact the curriculum in state universities which produce potential school leaders before they enter local training programs. At the local level, policymakers and practitioners can use professional development to expand the capacity of existing school leaders,
and the curriculum of training programs for potential school leaders, by producing training focused on stronger instructional and collaborative leadership behaviors. As a placement indicator, school districts hiring school leaders may look for candidates with strong instructional and collaborative leadership skills in an effort to place them in schools that could benefit from a leader that can nurture trusting relationships and teacher job satisfaction. Although the link to student achievement is not firmly established in this study, the literature and joint significance of school trust and teacher job satisfaction on student achievement suggests that this may be due to the limitations of the study. For example, Johnson, Kraft, and Papay (2012) found that positive teacher job satisfaction was associated with lower levels of teacher turnover, which led to higher levels of student achievement. The evidence from this study suggests that these changes at the state and local level will help to improve school trust and teacher job satisfaction, especially in historically challenging settings.

In future research, finding the magnitudes of school trust and teacher job satisfaction not significantly different from another suggests that future studies should include both measures when attempting to predict student achievement. While recognizing the limitations of the study, replication of this study in other settings (i.e. rural, suburban, higher ELL populations, etc.) may also reveal different associations between the variables. For example, evidence suggests that school leaders’ behaviors change based on their context (Grissom & Loeb, 2011; Bloom & Owens, 2011), which may have an impact of the relationships analyzed in this study. These implications are likely to improve the quality of future studies as the research community continues to try and understand school leadership.

In conclusion, there are three main contributions that this study provides. First, stronger school leadership behaviors, both collaborative and instructional, predict stronger school trust
and higher teacher job satisfaction. This was shown in stage two of the analyses and was
reinforced by the comparing the magnitudes of instructional and collaborative leadership
behaviors, and finding that they were not significantly different from one another. Second, in the
model with student characteristics and prior achievement, school trust and teacher job
satisfaction have a jointly significant association with student achievement. Although no
measures were individually significant in stage five of the analyses, it does suggest that further
investigation may be able to reveal more significant results. Third, the magnitudes of school trust
and teacher job satisfaction were not significantly different from one another in stage six of the
analyses. This supports the literature review which suggests that due to similarities in definition,
teacher job satisfaction has a place among school trust when trying to predict student
achievement. This study helps to better understand the relationship school leadership has with
school trust and teacher job satisfaction and lays the foundations for investigating their
relationship with student achievement.
REFERENCES


BIOGRAPHICAL SKETCH

In the spring of 2013, Cameron Lindahl received his Bachelor of Science degree in Elementary Education at Florida State University while working as a research assistant for the Florida Center for Reading Research (FCRR). When Cameron was accepted into the Educational Policy and Evaluation Master’s program in the fall of 2013, he accepted a graduate assistantship with FCRR where he had the opportunity to work on a variety of projects under the Regional Educational Laboratory Southeast primarily focusing on school leaders in both traditional and alternative settings, investigating “Beating the Odds” schools that are outperforming other schools based on demographic characteristics, and analyzing charter school systems. Upon graduation from his Master’s program in fall 2014, Cameron is seeking a full-time teaching position in a Title-I setting before pursuing a role in educational leadership.