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An Investigation of Teacher Trust in the Principal

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by

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ABSTRACT OF THE DISSERTATION

An Investigation of Teacher Trust in the Principal

by

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The purpose of this work was to understand the concept of trust, its meaning, antecedents, and outcomes as they applied to teacher trust in principals. Since there are very few in-depth studies specifically on trust in a school principal, research on trust from an organizational perspective was consulted. This body of research has numerous and valuable studies on trust in organizations that assisted in helping to understand how trust develops and flourishes within an organization's structure in general and how it applies to a school as a specific type of organization.

Data for this study were collected using a modification of a survey instrument from Mayer and Davis (1999) and McAllister (1995). Data from the four-part self-administered survey were used to build a structural equation model (SEM) that studied the relationships between teacher trust in the principal to the following: principal trustworthiness; teachers' propensity to trust; principal teacher interaction patterns; background similarity between the teacher and the principal; student demographics; and

overall school achievement. The data for this study were included responses from 377 teachers in 13 elementary schools in one Southern California school district.

The trust model developed in this study confirmed the existence of a second-order factor for trustworthiness which integrated the first-order factors for ability, benevolence, and integrity. This second-order factor was a strong predictor of teacher trust for their principals. As a result, a teacher's perceived trustworthiness of a principal can be viewed as being comprised of three distinct factors (ability, benevolence, and integrity).

Teacher propensity to trust other adults had its strongest influence on the actual level of trust teachers have for their principals. The propensity factor also influenced the extent to which teachers find their principals to be of trustworthy character. The propensity factor also had a negative relationship with the perception of principal benevolence—independent of the overall level of trustworthiness measured by the second-order factor. The specific frequency of interaction factor did not have an independent affect on the factor that measured a teacher's actual trust in his/her principal. A strong relationship between teachers viewing their principals as trustworthy and the frequency of principal/teacher interactions also was found—with trustworthiness as being dependent on frequency of interaction.

It was also demonstrated that the factor structures accounting for teacher trust of their principals are independent of the specific school context or the particular principal being evaluated. The factors of propensity and specific frequency of interaction also relied on common measurement items. Finally, a significant relationship between principal and teacher trust and background similarity between teachers and principals as

Zucker (1986) proposed was not found to exist. Student demographics and overall student achievement (though limited to one item) also did not have a significant relationship with teacher trust in the principal. Some discussion was also provided on the strength of the proposed model's fit and how it could possibly be improved.

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Chapter 1: Introduction and Overview of the Research

Introduction

A new principal is hired for an elementary school. Currently, student performance on standardized exams is faltering, attendance rates are low, student discipline issues are increasing…

Public school administrators and teachers are under pressure to improve student achievement--improve test scores, reduce attendance, and discipline issues, etc. The probability of the above hypothetical situation is all too high and school principals are searching for solutions. The California Department of Education provides annual data on student achievement for elementary schools. Below are some of its findings:

- On the California Standards Test (CST) in English Language Arts, elementary school students scored as follows—47% of second grade students, 57% of third graders, 38% of fourth graders, and 46% of fifth graders score below proficient (California Department of Education, 2009).
- On the California Standards Test (CST) in Mathematics, the numbers of students scoring below proficient are—37% of second graders, 35% of third graders, 34% of fourth graders, and 43% of fifth graders (California Department of Education, 2009).

Data are also gathered on expulsions, suspensions, and truancy information. For the 2008-2009 school-year, the total student enrollment in California was 6,252,031. Of this total, 26.52% of the students were classified as truant[1], 20,780 were expelled from

[1] Truant classification is based on if a student has 3 or more unexcused absences or has been tardy on 3 or more days (California Department of Education, 2009).

school, and 770,174 suspensions were issued (California Department of Education, 2009).

Data also show that the proficiency level of California middle and high school students on state standardized exams in English, Mathematics, Science, and Social Studies are also low especially among the following student subgroups—Hispanics, African Americans, students classified as English Language Learners, and socio-economically disadvantaged (California Department of Education, 2009). What can be done to improve student performance? Several studies have focused on the importance of trust in schools (Bryk, Easton, Rollow, & Sebring, 1994) and how it relates to student achievement. In schools that reported high levels of trust among faculty members, researchers have found gains in student performance—predominantly on standardized tests (Bryk & Schneider, 2002). Studies have also found that these schools have fewer discipline issues and higher attendance rates.

The issue of trust has become very important to schools and to organizations in general. The current workforce composition has increased in diversity—the minority percentage of the workforce was 17% in the 1980's and over 25% in 2000 (Bryk & Schneider, 2002). This increase in diversity causes individuals from different backgrounds to work together—being less able to rely on interpersonal similarity and common background experience to encourage willingness to work together (Bryk & Schneider, 2002). Establishing mutual trust provides one way for helping employees to effectively work together and collaborate on projects (Bryk & Schneider, 2002). Trust is

also needed because control mechanisms (i.e., a manager's direct supervision) need to be removed to empower employees and encourage self-direction (Bryk & Schneider, 2002).

There are two types of faculty trust that have been a focal point of recent study—trust among teachers and teacher trust in the principal (Tschannen-Moran & Hoy, 1997). Trust among teachers needs to exist to foster collaboration and willingness to work together (Tschannen-Moran & Hoy, 1997). Coleman (1990) states that "a group whose members manifest trustworthiness and place extensive trust in one another will be able to accomplish much more than a comparable group lacking trustworthiness and trust" (p. 304). Schools are faced each day with difficult issues—problems with school safety, students who are truant, students who continue to fail. They need to be able to come together to collaborate on problems and develop strategies—i.e. new instructional practices, effective classroom management strategies, etc. However, trust among teachers is not enough. The principal needs to be trusted to be able to lead the school staff in these collaboration efforts—to be able to provide guidance, resources, and support (Bryk & Schneider, 2002). A principal that is trusted also provides an environment where teachers can experience success and failure as part of the learning process (Boles & Troen, 1997).

Raising the level of student achievement is a high priority for school principals and their staff. The federal No Child Left Behind (NCLB) Act of 2001 requires that the California Department of Education determine whether or not each public school is making Adequate Yearly Progress (AYP) (California Department of Education, 2009). AYP covers four areas: participation rate, percent proficient, Academic Performance Index (API), and graduation rate. To satisfy the participation rate, 95% of students need

to participate in statewide assessments (California Department of Education, 2009). To score percent proficient, students must achieve percent targets on standardized exams in mathematics and in English Language Arts (California Department of Education, 2009). Schools must have a minimum API score of 620 or have at least one growth point from the previous year (California Department of Education, 2009). An API score is based on student performance on the state's standardized exams. To meet the graduation rate, only high schools must have at least an 83% graduation rate, an improvement of at least 0.1 from the previous year, or an improvement of at least 0.2 in the average two-year rate (California Department of Education, 2009).

If a public school fails to make its yearly AYP for two consecutive years it will be subject to becoming a Program Improvement (PI) school if it receives federal funding under Title I. A PI school faces the following possible measures if it does not meet AYP for more than two consecutive years after receiving PI status:

- Year three—school must provide staff professional development and revise school plan that focuses on raising the level of student achievement;
- Year four—implementation of revised school plan and offering additional professional development;
- Year five—continuing professional development and increasing district and school collaboration efforts to develop strategies to increase student performance;
- Year six—replacing all or some staff members, reopening of school as a charter, contracting with outside organization to manage school site, state takeover of

school, continuing professional development for staff, and collaboration with district; and

- Year seven—continue with changes made under year six until school makes AYP status for two consecutive years (NCLB Program Improvement School Requirements, 2009).

Statewide there are 2,263 public schools in PI status (PI Status Statewide Summary, 2009).

Purpose of the Study

How trust in the principal is established and maintained has been a difficult concept to explain. The research on trust in principals is recent and limited. These studies have been riddled with problems because of a variety of different explanations for why an individual trusts another—contributing to the confusion of explaining the concept of trust, its meaning, antecedents, and possible outcomes. Early research analyzed trust through the following varied perspectives:

- A behavioral intention or an internal action of the trustor (Mayer, Davis, & Schoorman, 1995; Rousseau et al., 1998; Lewis & Weigert, 1985);
- The result of the personal characteristics of the trustee (Butler & Cantrell, 1984);
- The motivator for cooperation or risk-taking (Lewis & Weigert, 1985); and
- As a personality trait that develops early in one's life and remains stable through adulthood (Rotter, 1967).

To help alleviate the confusion, some researchers attempted to establish the difference between trust as a situational state and trust as a personality variable, with trust

propensity defined as a stable individual difference that affects the likelihood that a person will trust (Mayer et al., 1995). Others were careful to separate trust from the issue of trustworthiness—the characteristics of the trustee that cause the trustor to trust that individual (Mayer et al., 1995).

Because of the differing viewpoints on general concept of trust, the study of trust in leadership has also been plagued with the same problems. Trust in leaders has been predominately analyzed in terms of two different theoretical perspectives—a relationship-based perspective and a character-based perspective (Dirks & Ferrin, 2001). The relationship-based perspective focuses on the nature of the relationship as a social exchange process (Konovsky & Pugh, 1994; Whitener et al., 1998). Parties provide or exchange benefits in response to the needs of the other as opposed to focusing on the potential benefit the nature of the exchange could result in (Clark & Mills, 1979). Individuals are expected to act honestly and with mutual consideration. The character-based perspective in contrast focuses on the perception of the trustee's character and how it influences a trustor's vulnerability in the relationship (Mayer et al., 1995). The character and relationship perspectives of trust in leadership have been relied on to explain trust in school principals.

The purpose of this work is to understand the concept of trust, its meaning, antecedents, and outcomes as they apply to teacher trust in principals. Since there are very few in-depth studies specifically on trust in a school principal, research on trust from an organizational perspective will be consulted. This body of research has numerous and valuable studies on trust in organizations that will assist in helping to understand how

trust develops and flourishes within an organization's structure in general and how it applies to a school as a specific type of organization. This study will also include an instrument that measures teacher trust in a principal.

Research Questions

This study was designed to investigate possible antecedents of teacher trust in an elementary school principal. It is hypothesized that the trustworthiness of the principal will be positively related to the level of teacher trust in that principal and that student demographics and student achievement will interact with the level of teacher trust in the principal to moderate or intensify the effects of the relationship. The analysis will also include an exploration of the influences of: a teacher's propensity to trust; background similarity of the principal and teacher; and frequency of interaction between the principal and teacher. It is also hypothesized that these factors may serve to also moderate or intensify the level of teacher trust in the principal.

These issues will be addressed through the following research questions:

1. How does a teacher's perception of a principal's competence, benevolence, and integrity affect his/her level of trust in that principal?
2. How does a teacher's propensity to trust affect his/her level of trust in the principal?
3. How does a teacher's frequency of interaction with the principal affect his/her level of trust in that principal?
4. How does the frequency of a specific type of interaction between the teacher and the principal affect the level of teacher trust in that principal?

5. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?
6. Do student demographics have an effect on the level of teacher trust in the principal?
7. Is the level of student achievement related to the level of teacher trust in the principal?

Overview

In the opening chapters of this study—Chapters 2 through 3 outline the theoretical and conceptual frameworks that have guided this research. Chapter 2 provides a summary of possible theories on outcomes and antecedents of trust—i.e. trustor's propensity to trust, trustworthiness of the trustee, background similarity of trustor and trustee, frequency of interaction between trustor and trustee, current level of organizational success. A visual representation of the concepts guiding this study and a brief explanation of how these theories will be applied to the teacher and the principal, as the trustor and trustee, respectively, is included. There is also a restatement of the questions and hypotheses that connect the predictions with theory. In Chapter 3, a literature review includes a discussion on trust in general, trust in organizations, trust between managers and subordinates, and teacher trust in principals.

Chapter 4 details the study's methods and offers an in-depth explanation of the design, the research instrument, the subjects, and the data collection process. Chapter 5 presents the results of the analyses and provides a discussion of the findings. Finally, in

Chapter 6, there is a summary of the findings and a conclusion that includes possible implications for both theory and practice.

Chapter 2: Theoretical Framework, Conceptual Framework, and Hypotheses

Theoretical Framework

Mayer et al. (1995) analyzes prior studies on trust and focuses on trust's antecedents and outcomes in developing a theoretical model to explain how an individual (trustor) trusts another (trustee) in an organization. They begin their focus on an antecedent of trust—a trustor's propensity to trust another person. In early trust research, Rotter (1967) defined trust as "as expectancy held by an individual or group that the word, promise, verbal or written statement of individual or group can be relied upon" (p. 651). Rotter's theory treated trust as a generalized expectation about the trustworthiness of another party—similar to a psychological trait. Mayer et al. (1995) refers to this generalized trait as an individual's propensity to trust. Propensity to trust is defined as "a stable within-party factor that will affect the likelihood the party will trust" (Mayer et al., 1995, p. 715) or can be explained as an individual having the general willingness to trust another. This willingness to trust another will impact how much trust a trustor will have for a trustee without having any background information or prior experiences with the trustee. This propensity can be influenced by the following factors: developmental experiences; personality types; and cultural backgrounds (Mayer et al., 1995; Hofstede, 1980).

Mayer and Gavin (2005) weaved together common characteristics of existing approaches to trust to develop a model of dyadic trust that clarifies the role of organizational interpersonal trust in risk taking. They define trust "as the willingness to be vulnerable to another party when that party cannot be controlled or monitored" (Mayer

& Gavin, 2005, p. 874; Mayer et al., 1999). Their theory also separates trust from its antecedents and outcomes. The trustor's perceptions regarding the trustee's trustworthiness are considered to be antecedents of trust. Trustworthiness is based on whether the trustor perceives the trustee has the following distinct characteristics:

- Ability: the trustee has the necessary skills and competence to carry out the requirements of the position;
- Benevolence: the trustee cares about the trustor's welfare;
- Integrity: the trustee acts accordingly to a set of principles that the trustor finds acceptable (Mayer & Gavin, 2005; Mayer et al., 1999).

They agree with Mayer et al. (1995) that the trustor's propensity to trust can help to explain trust before any relationship has developed. However, the interrelationship of ability, benevolence, and integrity is also important to consider. Ability is specific to a given task because the trustee may have the ability to accomplish a specific task but not necessarily another one (Mayer & Gavin, 2005). For example, a person may have the technical skills necessary for his/her job but have very little aptitude or training to build interpersonal communication. However, having the ability to do a specific task does not lead to trust alone. As a relationship begins to develop between the trustee and the trustor, the trustor can obtain information on the trustee's integrity through third-party sources and observations (Mayer & Gavin, 2005). As the relationship continues to develop, interactions between the trustee and trustor provide the trustor with information regarding the trustee's benevolence.

A key component of Mayer and Gavin (2005) perspective on trust is the relationship between trust and risk because risk is intrinsic to vulnerability (Deutsch, 1958). They contend that trust is a "generalized behavior intention to take risk, whereas its outcome is actually taking risk" in the relationship with the trustee (Mayer & Gavin, 2005, p. 874). Therefore, the trustor's behavior actually allows vulnerability to the trustee rather than a trustor being willing to be vulnerable. The theory also proposes that once a risk is taken by the trustor and positive organizational outcomes can result—increased collaboration, innovative ideas, etc. that lead to high performance. With these successes, the trustor's earlier perceptions of the trustee's trustworthiness will be strengthened and the level of trust will increase (Mayer & Gavin, 2005). This process can be continuous—the higher the level of trust can result in more risk taking (Mayer & Gavin, 2005). However, if negative outcomes result the trust that exists may be damaged.

Two other factors that affect trust relationships are background similarity and the frequency of interaction between the trustor and the trustee. Zucker (1986) studied interactions among unfamiliar persons—individuals who have little or no information about one another. Analyzing existing research on trust in organizations, she found that trust can be built and fostered between members of an organization sharing similar characteristics. She relied on two kids of indicators of similarity to help determine trust. The first type calls for an association in a common cultural system—ethnicity, family background, gender, national origin (p. 15). The second type deals with membership in a subculture within that expects certain expectations of its members to have because of any of the following—membership in a professional organization; professional certification

or license, a educational degree, etc. (p. 16). This study will focus on demographic characteristics of the trustor and the trustee—i.e. gender, ethnicity, age, level of education, years teaching and years as principal (Lowry, 1973). McAllister (1995) proposes that interpersonal trust can be affect-based—based on a relationship grounded in reciprocated interpersonal care and concern rather than motivated by self-interest. To be able to determine the other party's motives, there needs to be sufficient interaction to be able to make a confident attribution (McAllister, 1995; Lewis & Wiegert, 1985).

The existing student demographics as antecedents of trust will also be analyzed. There is no existing literature that discusses the possible direct and indirect effects of student demographics on the trustor-trustee relationship between teacher and the principal. However, there is research that connects student demographics to performance on standardized exams. In the present study, a school's API provides a measure of student performance on a specific type of standardized exam—the California Standards Test(s) (CSTs). The CSTs measures a student's proficiency level in English language arts, mathematics, science, and social science. The percentages of students scoring below proficiency on the CSTs show significant disparities in scores when disaggregated by the student's race-ethnicity, their English-language fluency, their parents' education, and their economic status (Cannon & Karoly, 2007). These disparities are referred to as achievement gaps. For example, on the English language arts portion of the CST[2]:

- Hispanic/Latino and Black/African American elementary students consistently fall behind their fellow non-Hispanic white students. Hispanic/Latino third grade

[2] Test includes four domains: reading; writing; written and oral language conventions; listening and speaking.

elementary students achieve proficiency at a rate of more than 30 percentage points less than whites perform (California of Department of Education, 2009).

- English learners in the fifth grade are behind their English-only speaking peers by more than 50 percentage points (California of Department of Education, 2009).
- More than 50 percentage points separate elementary grade students whose parents have less than a high school degree from those parents that hold a college and/or graduate degree (California of Department of Education, 2009).
- More than 60% of elementary students that are classified as economically disadvantaged are not reaching proficiency (California of Department of Education, 2009).

These achievement gaps between groups of students persist at the secondary level (Cannon & Karoly, 2007).

The research on achievement gaps has focused primarily and racial and socioeconomic status (SES) differences in school performance. Studies consistently have found that Hispanic and black students perform poorly compared to white and Asian students on standardized exams (Jencks & Phillips, 1998; Kao & Thompson, 2003; Clotfelter et al., 2006). Studies have also shown that students from lower SES families perform poorly compared to students from higher SES families (Cannon & Karoly, 2007). Limited English proficient students, most often from low SES backgrounds, have significantly lower test scores than their peers in grades 2 through 11 (Betts, Rueben, & Danenberg, 2000). English learners account for two-thirds of the gap California has in math and reading performance compared to other states (Cannon & Karoly, 2007).

There are several different perspectives that attempt to explain the impact of family and school factors on academic achievement. Berends, Lucas, Sullivan and Briggs (2005) provide a summary to some of the existing theories:

1. Economic, Human Capital Perspective: A basic economic model that links a child's achievement to family characteristics that is based on both theories of production and the human capital approach. This perspective contends that investments in an individual's knowledge, skills, habits, values, and areas of expertise may lead to such benefits as increased earnings (Becker, 1981, 1993). It holds that parents play a key role in the achievement of their children—using parent time, family income and resources, and a child's innate endowment to strengthen the possibility of success. In addition to a transmission of genetic ability, a child's achievement is also supported and conditioned by the learning environment that parents provide and by their preferences for schooling and expectations for their child's achievement (Becker, 1983). For example, studies show that when students have help from a parent with homework, they perform better in school (Suarez-Orozco & Suarez-Orozco, 1995). However, this is a challenge for many minority students due to the large number of single parent households and the increase in non-English or limited speaking parents—parents do not have the time and/or the understanding of the language to understand or assist their children with their work (Suarez-Orozco & Suarez-Orozco, 1995).
2. Status Attainment Perspective: Status attainment researchers add occupational status to income and educational attainment in their studies of how family

background is related to individual attainments (Coleman, 1990; Halles & Portes, 1973). This model has been applied to examining the relationships of social background characteristics (parent educational attainment, occupational status, income, etc) to specific student academic outcomes—i.e. grades and performance on standardized exams in cores subject areas (Bidwell & Friedkin, 1988). For example, research has shown that a parent's educational level affects his/her child's level of achievement (Cannon & Karoly, 2007).

3. Human Development Ecological Perspective: This perspective theorizes that individual development is influenced by the various social spheres that individuals experience which include families, schools, peer groups, and neighborhoods (Bronfenbreneer, 1979; 1986). For example, minority students often come from low-income households, which results in minority students being more likely to attend poorly funded schools—schools that often tend to employ less-qualified teachers and have fewer educational resources (Roscigno, Tomaskovic-Devey, & Crowley, 2006). Minority students are also over-represented in lower educational tracks—courses that are non-college preparatory and/or concentrate on remediation of basic reading, writing and/or mathematics skills. These courses tend to have less-qualified teachers, a less challenging curriculum, and few opportunities to advance into high educational tracks—i.e. advanced courses and/or college preparatory courses that are required to gain entrance to a college/university (Hallihan, 1994). Some research suggests that students in these lower tracks suffer from social psychological consequences of

being labeled as a slower learner, which often leads children to stop trying in school (Hallihan, 1994; Roscigno et al., 2006).

In the current study, the percentage of minority students (Latino/Hispanic and Black), the percentage of students on Free and Reduced Lunch[3], and the percentage of English Language Learners will be analyzed to determine their impact on the school's API and whether they affect the level of teacher trust in the principal.

Conceptual Framework

The conceptual framework that guides this study is depicted in Figure 2.1 and will examine the following research questions:

1. How does a teacher's perception of a principal's competence, benevolence, and integrity affect his/her level of trust in that principal?
2. How does a teacher's propensity to trust affect his/her level of trust in the principal?
3. How does a teacher's frequency of interaction with the principal affect his/her level of trust in that principal?
4. How does the frequency of a specific type of interaction between the teacher and the principal affect the level of teacher trust in that principal?
5. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?

[3] The Free and Reduced Lunch Program is a federally funded program, administered by the U.S. Department of Agriculture, that assists schools in providing free lunch to children that are living below, at, or slightly below the federal poverty level based on his/her parent's income (California Department of Education, 2009).

6. Do student demographics have an effect on the level of teacher trust in the principal?
7. Is the level of student achievement related to the level of teacher trust in the principal?

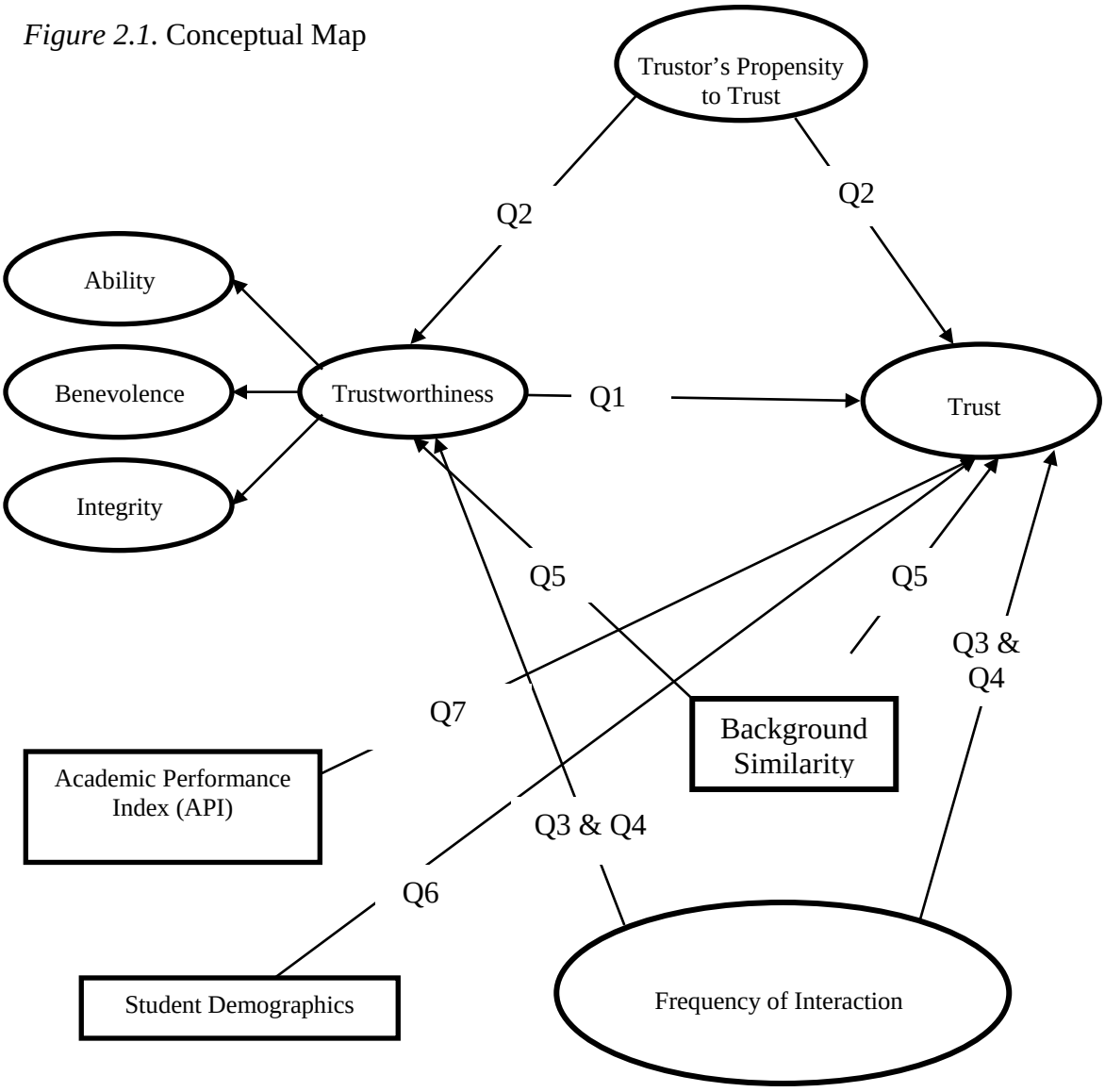
This framework will apply the following theories to interpret data collected in this study and assist answering the above questions:

- Propensity to trust as an antecedent of trust (Mayer et al., 1995);
- Trustworthiness of trustee as an antecedent of trust (Mayer et al., 1995; Mayer & Gavin, 2005);
- Background similarity (Zucker, 1986) and frequency of interaction (McAllister, 1995) as antecedents of trust. McAllister's (1995) work on frequency of interaction will also be built upon and include data collection on the frequency of specific types of interaction between a teacher and a principal.
- Student demographics as antecedents trust. Because of the lack of research, this study will extend the proposed relationship between demographics and student achievement to demographics and trust (Berends et al., 2005).
- The relationship between trust and possible outcomes (Mayer et al., 1995; Mayer & Gavin, 2005). The specific outcome to be analyzed will be existing level of student achievement as measured by API. However, the API will be used as an antecedent of trust rather than an outcome. This proposal is based on Mayer and Gavin's (2005) theory that with an organization's successes, the trustor's earlier perceptions of the trustee's trustworthiness will be strengthened and the level of

trust will increase. This process can be continuous—the higher the level of trust can result in more risk taking. However, if negative outcomes result the trust that exists may be damaged.

These frameworks will be applied to specifically analyze teacher trust in the principal. The manifest variables (i.e., API, Student Demographics)—the variables that were directly measured in the course of the investigation (Hatcher, 1994)—are boxed. The latent variables (i.e., Trustworthiness, Trustor's Propensity to Trust, Background Similarity, Frequency of Interaction, Trust)—which are hypothetical constructs that were not directly measured or observed (Hatcher, 1994)—are circled.

Figure 2.1. Conceptual Map



Hypotheses

The primary purpose of this project is to determine the relationship between the antecedents of trust and the level of teacher trust in the principal. The study will also determine if there is a relationship between a school's performance on California

Standards Tests (CST's) and the level of teacher trust in the principal. Table 2.1 summarizes the study's research questions and hypotheses:

Table 2.1

Research Questions, Hypotheses, and Support

Research Question	Hypotheses	Support for Question
1. How does a teacher's perception of a principal's competence, benevolence, and integrity affect his/her level of trust in that principal?	1.1 Principals will receive higher levels of trust from teachers who perceive the principals to be high on ability, benevolence, and integrity than will principals who are not perceived to be high on ability, benevolence, and integrity.	The trustor's perceptions regarding the trustee's trustworthiness (ability, benevolence, and integrity) are considered to be antecedents of trust (Mayer et al., 1999; Mayer & Gavin, 2005).
2. How does a teacher's propensity to trust affect his/her level of trust in the principal?	2.1 Principals will receive higher levels of trust from teachers who have a greater propensity to trust than from teachers who have a lower propensity to trust.	Propensity to trust is defined as "a stable within-party factor that will affect the likelihood the party will trust" or can be explained as an individual having the general willingness to trust another (Mayer et al., 1995; p. 715).
3. How does a teacher's frequency of interaction with the principal affect his/her level of trust in that principal?	3.1 Principals will receive higher levels of trust from teachers with whom they interact frequently than from teachers with whom they interact less frequently.	Interpersonal trust can be affect-based—based on a relationship grounded in reciprocated interpersonal care and concern rather than motivated by self-interest (McAllister, 1995).
4. How does the frequency of a specific type of interaction between the teacher and the principal affect the level of teacher trust in that principal?	4.1 Principals will receive higher levels of trust from teachers with whom they frequently have a specific type of interaction with than from teachers with whom they do not frequently have a specific type of interaction with.	To be able to determine the other party's motives, there needs to be sufficient interaction to be able to make a confident attribution (McAllister, 1995; Lewis & Wiegert, 1985).
5. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?	5.1 Principals will receive high levels from teachers who have background similarity to the principal than from teachers who do not have background similarity to the principal.	Trust can be built and fostered between members of an organization sharing similar characteristics—i.e. gender, ethnicity, age, etc. (Zucker, 1986).

6. Do the student demographics have an effect on the level of teacher trust in the principal?	6.1 Principals will receive higher levels of trust in schools with a lower percentage of minority students, students receiving Free and Reduced Lunch, and students classified as English Language Learners.	The percentage of minority students (Latino/Hispanic and Black), the percentage of students on Free and Reduced Lunch[4], and the percentage of English Language Learners will be analyzed to determine whether they may impact the level of teacher trust in the principal (See Berends et al., 2005).
7. Is the existing level of student achievement related to the level of teacher trust in the principal?	7.1 Schools sites where principals receive high levels of trust from teachers will be more likely to have high student achievement scores than will school sites where principals receive lower levels of trust from teachers.	Trust is a "generalized behavior intention to take risk, whereas its outcome is actually taking risk" in the relationship with the trustee (Mayer & Gavin, 2005, p. 874; Mayer et al., 1999). Once a risk is taken by the trustor and positive organizational outcomes can result—increased collaboration, innovative ideas, etc., that can lead to higher performance. This process is cyclical—with more success the level of trust can increase.

[4] The Free and Reduced Lunch Program is a federally funded program, administered by the U.S. Department of Agriculture, that assists schools in providing free lunch to children that are living below, at, or slightly below the federal poverty level based on his/her parent's income (California Department of Education, 2009).

Chapter 3: Review of Literature

What is Trust

Trust is difficult to explain and/or measure because it is based on subjective factors—beliefs, perceptions (Tschannen-Moran & Hoy, 1997). As a result, a variety of definitions for trust exist. Philosophically, trust has been explained as a focus on a trustee's trustworthiness— his/her competence and his/her ability to act ethically and morally (Baier, 1986; Hosmer, 1995). From an economic perspective, trust is the result of a rational decision—the trustor balancing risks and benefits (Coleman, 1990; Williamson, 1993; Bhattacharya, Devinney, & Pillutla, 1998). From an organizational viewpoint, trust is based on the trustor's belief that an individual or group will act in good faith and in the best interest of the whole organization (Coleman, 1990; Bradach & Eccles, 1989; Cummings & Bromiley, 1996). These existing definitions are narrow in focus—focusing on either the actions and/or characteristics of the trustor or the trustee. They also do not clearly separate possible antecedents of trust (factors that establish/foster trust) from the possible outcomes of trust (the consequences or the results).

Studies have also proposed that trust can take on various forms. Deterrence-based trust is the result of "utilitarian considerations that enable one party to believe that another will be trustworthy, because the costly sanctions in place for breach of trust exceeds any potential benefits from opportunistic behavior" (Rousseau, Sitkin, Burt, & Camerer 1998, p. 398; Ring & Van de Ven 1992; Shapiro, Sheppard, & Cheraskin, 1992). Calculus-based trust is based on a rational decision that "emerges when the trustor perceives that the trustee intends to perform an action that is beneficial" (Rousseau et al.,

1998, p. 399). Relational trust arises when trust is formed between a trustor and trustee because of repeated positive interactions over a period of time (Rousseau et al., 1998). Institutional-based trust is the result of institutional factors that can support trust—i.e. a collaborative culture (Rousseau et al., 1998; Miles & Creed, 1995), contractual obligations, and/or legal systems that can protect one's rights (Rousseau et al., 1998; Fukuyama, 1995). The researchers acknowledge that further study needs to occur to determine if having multiple forms of how trust is established or having one single form of trust that can be applied to multiple contexts would be more effective and less confusing in explaining the formation of trust.

In an attempt to find common themes among existing literature and clarify what trust is, Mayer et al. (1995) define trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer et al., 1995, p. 712). It is a definition that explicitly considers both characteristics and actions of the trustor and trustee. This definition is comprehensive—incorporating common elements that are shared among the various definitions that exist:

- The character and/or trustworthiness of the individual/party being trusted;
- The balancing of risk and benefit;
- The willingness or the propensity to trust of the trustor; and
- The expectation that the trustee will act in good faith and for the benefit of both parties.

More importantly, this definition incorporates possible antecedents of trust (i.e. propensity to trust) and outcomes (possibility of risk and/or benefit) and is also broad enough to be applied to the focus of this study—a teacher trusting a principal.

What Leads to Trust

Early research on trust emerged after World War II—the Soviet Union and the United States had entered into the Cold War and trust between the two countries was non-existent. Both countries had nuclear capabilities that could possibly completely destroy the other. The experimental application of a two-person, non zero-sum game, or otherwise termed a mixed-motive game was relied on to develop a theoretical foundation to explain trust (Deutsch, 1958; Loomis, 1959). In non-zero sum game of two people, rational individual behavior occurs only if mutual trust exists. The optimum strategy of the game was based on cooperation—a player would make decisions to further his interests while considering the interests of the other player. This work stemmed from Luce and Raiffa's (1957) research involving the concept of the "Prisoner's Dilemma." In this situation, two individuals are arrested under the suspicion of having committed a crime together. They are placed in separate rooms and the authorities attempt to questions them trying to gain enough evidence to convict both people. However, the authorities are not able to obtain the evidence they need. As a strategy, they offered a deal of a lesser charge to each one separately hoping to gain their cooperation in providing incriminating information. Both prisoners would lose if they provide information on their partner. However, if they trusted each other the most rational or cooperative decision would to be not to confess and neither could be charged (Deutsch, 1958).

Though limited to studying a specific context—experimental study involving a game in which wins or losses are a function of choice—the mixed-motive game theory focuses on a theme that is reoccurring in studies—the level of risk involved in trusting another. Various studies provide an explanation of balancing risk and trust from a social perspective (Hardin, 2002). According to this view, individuals are motivated by their own interests to trust another. Individuals choose to trust another when they assume that the risk of relying on others is beneficial to their own self-interests. This view focuses on making a rational decision to trust rather than reliability—balancing the possible consequences of trusting another with the benefits.

Other studies propose that the level of risk varies as the relational form and depth between the parties varies. Relational form is defined "as the type of interdependence in a given relationship and relational depth as a structural feature of a relationship that is the product of the importance, range, and number of points of contact among parties" (Sheppard & Sherman, 1998, p. 423). Four conceptualizations of trust are offered to explain the risks involved with interdependence and depth of the relationship: shallow dependence; shallow interdependence; deep dependence; and deep interdependence. Two risks exists for the trustor if shallow dependence is present—the risk of the trustee will be unreliable and that he/she will share sensitive information. Shallow interdependence occurs when both parties must "effectively coordinate behavior in order to achieve desired goals" (Sheppard & Sherman, 1998, p. 424; Thompson, 1967). As observed in shallow dependence, the risk of unreliability and lack of caution exists along with the risk of not being able to coordinate efforts (Sheppard & Sherman, 1998). With deep

dependence, a trustor often is not able to monitor the trustee's behavior (Sheppard & Sherman, 1998). As a result, the trustor can be subject to cheating, abuse, neglect, and possible risk to self-esteem. With deep interdependence, communication is critical or the risk of not being able to predict the other's needs or actions is high (Sheppard & Sherman, 1998). This model of trust is based on the form and depth of interdependence in a relationship—limiting its focus on analyzing the level of risk of the trustee.

In addition to the factor of risk, researchers have also focused on the actions of the trustee and trustor. The non-zero sum game illustrated the problem that distrust and suspicion caused if allowed to emerge. The uncooperative behavior of one party often causes the other to be competitive. If this occurs, the relationship between the two parties often ends in mutual loss. However, this loss could be avoided if one of the parties acted with conciliatory behavior preceded by open and honest communication—which is known as the Osgood Proposal (Osgood, 1959). Lindskold (1978) built on this proposal and developed a technique called Graduated and Reciprocated Initiatives in Tension Reduction (GRIT). For one party to help re-build collaboration and overcome suspicion, GRIT involved the following steps: open with a general statement; a clear announcement of each initiative; initiatives executed as announced; reciprocation invited, but not demanded; initiatives continued without reciprocation; initiatives susceptible to verification; maintain retaliatory capability; precise retaliation to escalation; diversify initiatives; and match any reciprocation in future initiatives (Lindskold, 1978). The goal was to re-establish a sense of mutual trust by one party demonstrating that he/she is trustworthy and can be counted on to be cooperative. In these early studies, research on

trust was expanded from analyzing the level of risk to include the concept of trustworthiness of the trustee.

Trustworthiness is based on the trustor's perception of the trustee's character. The proposed components of trustworthiness are as follows:

- Competence or ability: perceived capacity and capability of the trusted party—whether the trustee has the necessary skills and competence to do the job:
- Integrity: the trusted party's ability to keep promises and act with fairness, honesty, and full disclosure; and
- Benevolence: degree to which the trusted is perceived to care about and respect the trustor (Mayer et al., 1999; Mayer & Gavin, 2005; Montgomery, Jordens, & Little, 2008).

It is important to note that these characteristics are interrelated—having only the ability, the integrity, or the benevolence will not lead to trust alone. Increased interactions between the trustee and trustor also provide the trustor with further information regarding the elements of trustworthiness (McAllister, 1995; Mayer & Gavin, 2005).

The characteristics of trustworthiness have continued to be a focus of study. Building on earlier studies (Osgood, 1959; Lindskold, 1978), researchers concentrated on the characteristics or the motivation of the individual that is being trusted. Baier (1986) views trust as "the reliance on others' competence and their willingness to look after rather than harm what is entrusted to their care" (p. 236). Contemporary discussion on the philosophy of trust relies on Baier's work. The reason for this is that this perspective takes into account the competence and the motivation of the one being trusted (the

trustee) to act in the best interests of those that trust him/her (the trustor) (Baier, 1986). Rather than basing trust solely on reliability or one's self interest, a trustee acts out of the goodwill of others. This goodwill is based on one's desire to help or care for those who trust him/her. Even though this view dominants current studies, it needs to continued to be developed. An individual could be trustworthy without having goodwill towards others—he/she could act out of one's moral values (McLeod, 2002) or because he/she is committed to common decency (Holton, 1994).

Studies also focused on trying to explain the reason an individual has the capacity to trust—providing a developmental theory to explain one's ability to trust another. Erickson (1963) expanded Freud's theory that an individual's personality develops through a series of stages. Progress through each state is measured by an individual's success or lack of success in the previous stage. Based on work as a psychiatrist in clinical observations, Erickson claimed that the ability to trust is essential to having a healthy personality and to function as a member of society. He believed trust involved a reliance on another person's integrity. He proposed that this ability to trust resulted from early interactions with a maternal figure and a successful resolution of conflicts in his/her first year of life—i.e. being able to trust one to provide food, change his/her diaper, etc. (Erickson, 1963).

Even though Erickson's studies were limited to clinical observations of his patients, his work fostered a focus on another factor of trust—the trustee's propensity to trust another. Durkheim (1964) was one of these theorists that wrestled with this concept. As a sociologist, he focused his study on religion and morality. He argued that trust was

easier to establish and understand in the traditional world—a world in which an individual's work and life was rooted in agriculture to provide for himself and his family. In this world, an individual had little access to technology and had limited contact with others—mainly his family. Trust was established via personal knowledge of most of one's interlocutors (Durkheim, 1964). However, trust in the modern world is more difficult to define. Work is characterized as a division of labor—simple routine steps to create goods. These steps are often performed by lower-skilled workers or technology. Gone is the time when an individual works independently on his farm for the benefit of his family. Managers are now needed to oversee the workers that are creating the goods. Emphasis in the modern world is on social order and for trust to occur there must be a link between the values of society and the values of its members (Durkheim, 1964). Durkheim's work raises an important proposition regarding the fit between the requirements of society and those of its members—having shared values leads to higher levels of trust.

Later theories continued to build on viewing trust from a social perspective. Rotter (1970) was the first to use social learning theory to explain an individual's behavior as being determined by his goals. His work proposed that an individual responds with those behaviors that he/she has learned will result in the greatest satisfaction in any given situation. He used the term interpersonal trust and defined it as "an expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual can be relied upon" (Rotter, 1970, p. 657). Such trust is part of almost every daily decision—trusting a doctor to provide care, traveling in a safe airplane, etc. He

developed one of the earliest measures for trust (Rotter, 1967). An individual's disposition to trust and to attribute trustworthiness was gauged with a psychometric measure, known as the *Interpersonal Trust Scale* (Rotter, 1967). This measured the amount of agreement with statements about the trustworthiness of individuals—strangers, politicians, public figures, parents, teachers, etc. Though Rotter's work provided a general measure of trust, his work touched upon other possible factors of trust—past experiences and frequency of interaction with another individual—prior knowledge of the trustor that would help a trustee decide whether to trust him/her.

Various theories have been offered to explain why an individual trusts another:

- Trust based on a rational decision;
- Trust based on an individual having the capacity to trust; and
- Trust based an expectation that one will act in the best interest of both individuals.

However, these perspectives describe trust in general and often are limited in scope—focusing on one factor of trust—i.e. propensity to trust, trustworthiness, etc. The study of trust in organizations also needs to be reviewed to provide insight to how trust develops in an organization and whether characteristics or conditions of the organization may impact why trusts forms and/or exists. This is to better understand how trust develops at a specific type of organization—a school—and how a teacher trusts his/her principal at a school site.

Trust in Organizations

The study of trust in individuals has extended to the existence of trust in organizations. Zand (1971) studied trust and problem solving. Data were gathered from

individuals in a management development program. Groups were given problems and they had to develop a solution to deal with a specific conflict. Each group had a list of assumptions to work with. In one group, the members were to assume: that high levels of trust existed within the group; members are able to openly express their differences; and members were also able to share relevant information openly. High levels of give and take and mutual confidence in each other's support and ability were also assumptions of the high trust group. In the other group, the opposite was to be assumed—high levels of mistrust, very little freedom to discuss opinions and share information, and lack of confidence in another's ability and support. The study was designed to test assumptions regarding low levels of trust and resulting levels of misunderstandings that could result in conflict—conflict that parties often avoided dealing with. It was predicted that low levels of trust lead to a break-down in the ability of a staff to problem solve. The groups that assumed high levels of trust were able to able to exchange ideas more openly and develop clear objectives. Groups that reported high levels of mistrust were unable to find appropriate solutions too many of the problems presented. Team cohesiveness and ability to effectively problem solve were present in groups that reported high levels of trust. Though this data were gathered from a limited source—a group of management students given a set of assumptions that pre-determined their behavior as a team—it does provide some insight to how trust affects a group's ability to collaborate and what factors (open communication, sharing of information, confidence in ability) help determine what level of trust may exist.

Mayer et al. (1995) contend that interdependence usually exists among members of an organization because they collaborate and work together to fulfill individual and organizational goals. Such dependence on another party involves risk—the risk of self-serving behavior of one member that can damage the personal goals of another or of the organization itself. Trust among organizational members minimizes the possibility of this risk. Factors that can affect the trust of one party are:

- Trustor's propensity to trust or an individual's "general willingness to trust others" (Mayer et al., 1995, p. 715).
- The trustworthiness of the trustee which are based on his her ability, benevolence, and integrity (Mayer et al., 1995).

Jones and George (1998) extend this concept of interdependence and offer two types of trust that can exist in organizations: conditional and unconditional trust. Conditional trust is "a state of trust in which both parties are willing to transact with each other, as long as each behaves appropriately" (Jones & George, 1998, p. 536) and exists in most organizations. With a state of unconditional trust, " each party's trustworthiness is now assured, based on confidence in the other's values that is backed up by empirical evidence derived from repeated behavior interactions—knowledge of which is contained in each individual's attitude toward the other" (Jones & George, 1998, p. 537; Butler, 1983). Unconditional trust is the preferred form since in can result in increased cooperation and teamwork (Jones & George, 1998). In these more current studies, the researchers broaden their work to include more factors that can possibly affect the level

of trust that exists in an organization—propensity to trust, trustworthiness, and repeated interactions.

More attention has been given to the time of initial interaction between the trustor and trustee. McKnight, Cummings, and Chervany (1998) argue that trust within an organization needs to develop at the beginning of the members' relationship. Interacting with new employees is a common occurrence in the workplace. Initial trust in this case will not be based on past experiences or information about the new member since the parties have no past history. They identify the following factors that enable initial trust to be formed:

- Personality based: trust develops during infancy when his/her needs are met by a mother/caregiver (McKnight et al., 1998; Bowlby, 1982; Erikson, 1968).
- Institution based: trust is based on how safe an individual feels about a given situation because of an organization's set of guarantees, safety nets, or other structures (McKnight et al., 1998; Zucker, 1986).
- Cognition based: trust is based an individual's first impression of the other party (McKnight et al., 1998; Brewer, 1981; Lewis & Weigert, 1985; Meyerson et al., 1996).

It is important to note that all three factors can be present during that first meeting of members. The study does not go beyond the initial stages of the relationship between the trustor and the trustee and does not examine if there is a possibility that trust can form at a later time—after repeated interactions between the parties.

Organizations can also be structured to support trustworthiness and trust. Whitener et al. (1998) review the following organizational forms that provide varying degrees of control over its members:

- Owner-managed entrepreneurial form—the owner directly supervises all employees and makes all decisions;
- Vertically integrated functional organizations—operating responsibilities are delegated to specialists that operate under strict guidelines, budgets, and timelines;
- Diversified, divisionalized firm—divisions follow directions from a corporate office, but act autonomously;
- Mixed matrix form organizations— departments and temporary project teams exist in which the allocation and control of resources are decided through joint planning and negotiation;
- Network form organization—members share control, mutual dependence and work to accomplish common goals (Creed & Miles, 1996).

High control organizations that focus on centralization, formalization, and efficiency will hinder trustworthy behavior such as delegation of authority and open channels of communication (Whitener et al., 1998; Creed & Miles, 1996). Low control organizations that have greater decentralization, lower formalization, and pursue effectiveness, increase the opportunity for members to trust one another and to be able to participate in shared decision making and effective communication. This research focuses on how the structure of the organization supports the level of trust between the trustor and trustee.

Though it does not analyze the actions/characteristics of the trustor and trustee specifically, this body of research emphasizes how crucial trust is to the success of an organization.

Studies have also focused specifically on how trust can have positive effects on attitudes, perceptions, behaviors, and performance outcomes within organizations (Dirks & Ferrin, 2001). They analyze two models that describe how these positive effects of trust occur in an organization:

1. Trust results in a direct, or main, effects on various outcomes; and
2. Trust fosters or "hinders (i.e., moderates) the effects of other determinants on attitudinal, perceptual, behavioral and performances outcomes via two distinct perceptual process" (Dirks & Ferrin, 2001, p. 450).

Analyzing various existing quantitative studies based on trust as a main effect, the most significant direct effect trust had was on organizational citizenship behavior and individual performance. Under the second model, trust was found to moderate:

- The relationship between group members' motivation and group processes and outcomes (Dirks & Ferrin, 2001; Creed & Miles, 1996). If high levels of trust existed, motivation was found to have a significant effect on group performance (Dirks & Ferrin, 2001).
- Information exchange and cooperative behavior in the negotiation processes (Dirks & Ferrin, 2001). If high levels of trust existed, higher levels of information exchange and cooperation occurred (Dirks & Ferrin, 2001).

The study also points out an important concern for managers—trust can be at its weakest during layoffs, mergers, etc., and that implementing change efforts may be more successful if they were more proactive and done when trust levels are high (Dirks & Ferrin, 2001).

The research on trust in organizations provides valuable information on the possible benefits of trust existing among co-workers that can lead to higher performance through increased collaboration, ability to problem solve, effective communication, etc. However, in the additional information is needed to understand trust between specific members of an organization—a subordinate and his/her supervisor. A supervisor or manager has the responsibility and authority for overseeing the nuts and bolts of the organization to help raise productivity and profit—hiring, providing resources, evaluating employees' daily work, budgeting, making decisions, coordinating projects, etc. (Lunenburg & Ornstein, 2000). To some extent, these responsibilities parallel those of a school principal. A principal is also responsible for providing his/her staff with resources, managing the school budget, evaluating teachers and staff, etc. However, a principal's main goal is not one of profit. A principal works with staff members to develop and implement curricular and instructional strategies to help raise student achievement (Lunenburg & Ornstein, 2000). Despite these differences, the existing literature will provide a basis for explaining the dynamics involved in an individual trusting a person in a supervisory role.

Trust of Subordinates in Managers

Some studies have focused on trust among individuals holding specific management roles within an organization. Gabarro (1978) based his research on a series of clinical interviews held with a group of newly-appointed corporate presidents and their vice-presidents. From his interviews, he found that the vice-presidents trusted their superiors if they had integrity, valuable motives for decision making, and openness (Gabarro, 1978). The presidents trusted their subordinates if they demonstrated integrity, competency, and consistency in their actions (Gabarro, 1978). He proposed four stages of trust that developed between the two parties:

- Stage One: Initial impressions, familiarity, and the setting of expectations;
- Stage Two: Knowledge gathering, exploration, and identifying the bases of trust;
- Stage Three: Formulation of bases of influence;
- Stage Four: The accumulation of an interpersonal contract based on interpersonal influence, trust, and expectation (Gabarro, 1978).

This gradual development of trust led to a successful organizational relationship—ability to collaborate, problem solve as a team. Even though the study was limited to clinical interviews, common factors that have were proposed in earlier research continued to reemerge as crucial to the trust relationship among organizational members—trustworthiness and interaction between the trustor and trustee.

Other studies concentrated on trust between managers and their employees. Butler and Cantrell (1984) studied the perceptions of executives and their subordinates' views

on trust. They provided a multidimensional definition of trust by using the following five determinants: “the dimensions include (a) integrity, honesty, and truthfulness; (b) competence, technical and interpersonal knowledge and skills required to do one’s job; (c) consistency, reliability, predictability, and good judgment in handing situations; (d) loyalty or benevolent motives, willingness to protect and save face to a person; (e) openness or mental accessibility, willingness to share ideas and information freely” (Butler & Cantrell, 1984, p. 19). Like Gabarro (1978), their study found that a subordinate’s sense of integrity, competence, and consistency of one’s actions were of great importance to executives. They also found that executives and subordinates alike ranked the order for the dimensions of trust as follows from highest to of least importance: competence, integrity, consistency, loyalty, and openness (Butler & Cantrell, 1984).

Trustworthiness continues to be a focus in the study of trust. However, some research focus on a specific element of trustworthiness—whether a manager has a moral responsibility to protect the welfare or autonomy of his/her employees has stemmed from the study of what characteristics constitute trustworthiness. Soule (1998) studies the relationship between a manager and his/her employees from two organizational perspectives—mechanistic and organic (Miller, 1993). Under the mechanistic lens, this relationship is based on self-interest—the manager uses a system of incentives and consequences to motivate the workers to meet the interests of the organizations (i.e. selling more products, building more parts). Trust in the manager often fails to be established or maintained because worker morale can be lowered from fear of possible

consequences or loss of a job if the company needs to downsize to increase profits. From an organic perspective, the manager acts as a leader—one that fosters collaboration and trust among employees. Managers and employees work together to solve problems and make decisions. As a result, employee morale and productivity is high. Trust in the manager increases because they have a duty to practice policies that protect his/her employee's interests—i.e. protect job positions in the event of a merger, provide professional development.

The concept of protecting the welfare of employees has also been analyzed from a principal-agent and social exchange theory that parallels the mechanistic and organic perspectives (Whitener et al., 1998). A principal-agent relationship exists when one party (the principal) contracts with another party (the agent) to perform a task involving delegation of decision making in exchange for compensation. The employee is considered the agent and the manager to represent the interests of the principal. The relationship is characterized by self-interest and opportunism. It is very difficult for a manager to gain employee trust because managers often closely monitor employees and fails to delegate decision-making in an effort to lower the risk of the employees acting to further their interests at the expense of the company's. Under social exchange theory, a social element to the relationship exists even though there may be an economic basis for it. In this type of relationship, one party voluntarily provides a benefit to the other party that is obligated to reciprocate some form of benefit in return (Blau, 1964). A manager's trustworthiness can also be established with the following behaviors: consistency;

integrity; sharing and delegation of control; open communication; and demonstration of concern.

Current studies on trust in managers include analysis of trust, trustworthiness, and trust propensity. Colquitt, Scott, and LePine (2007) discuss three factors of trustworthiness that affect the development of trust of an employee in a manager:

- Ability: job knowledge and competence;
- Benevolence: supportiveness and perceived good intentions of the manager/leader;
- Integrity: the alignment of the managers' values and morals to those of his/her employees.

However, trustworthiness is not solely responsible for establishing employee trust in a manager. In a meta-analysis of 132 independent samples of articles on trust, they found trust propensity, or a dispositional willingness to rely on others, also has an impact on an employee's decision to trust his/her supervisor. This concept of trust propensity has been and continues to be proposed as an important antecedent for trust (Mayer et al., 1995; Mayer & Davis, 1999; Montgomery et al., 2008).

Two other possible antecedents for trust include interaction (McAllister, 1995) between the employee and the manager and an employee's background similarity with the manager (Zucker, 1986). McAllister (1995) addressed trust among managers in organizations. Data were gathered from a sample of 194 managers and professionals who completed surveys regarding working relationships within their organizations. The data indicates that the frequency of interaction between the parties helped to either strengthen

or diminish the trustor's perception of the trustee's trustworthiness (McAllister, 1995). Zucker (1986) gathered data from a case study of how trust is produced and proposes that the perception of trustworthiness can be based in part on the subordinate sharing a similar social and cultural background with his/her superior—particularly if the parties have little or no other information regarding one another.

The effective use of performance appraisal systems has also been connected to trust in management. Mayer and Davis (1999) propose that if an employee works diligently to improve the quality of a product or a process, that employee depends on the appraisal system to acknowledge that increased effort. Their study consisted of a field study of employee trust for managers. An implementation of a more acceptable performance appraisal system increased trust for top management. The improved appraisal system was designed to address some of the employees' concerns with the earlier system. The study also found that three factors of a manager's trustworthiness—ability, benevolence, and integrity—mediated the relationship between perceptions of the performance appraisal system and employee trust in the manager (Mayer & Davis, 1999). In a later study, Mayer and Gavin (2005) continued to study the relationship between managerial trust and employee performance. The researchers found increased employee performance to be the result of a decrease in distractions associated with trusting a manager. An employee was able to focus on their work and not worry about being under constant scrutiny and control of the manager (Mayer & Gavin, 2005).

In addition to their definition of trust, Mayer's et al. (1995) organizational theory on trust will be applied to this study as comprising part its theoretical framework because

it differentiates between outcomes and antecedents of trust. Their work proposes that an individual's propensity to trust is important to understanding why a person chooses to trust another without having any prior experiences with that person. This work also serves as a foundation to Mayer and Gavin's (2005) work on expanding this theory to include the trustee's trustworthiness and a trustor's experiences with the trustee as possible antecedents of trust. In addition, Zucker's (1986) and McAllister's (1995) work on antecedents of trust will also be incorporated into this study's theoretical framework to provide additional reasons why an individual trusts another—or in this case a teacher trusts his/her principal.

Teacher Trust in Principals

The study of trust in organizations has been built on in studying the level of trust that exists in school organizations. Based on existing definitions of trust, Tschannen-Moran and Hoy (2000) offer the following definition of trust that they apply to schools: "trust is one party's willingness to be vulnerable to another party based on the confidence that the latter party is (a) benevolent, (b) reliable, (c) competent, (d) honest, and (e) open" (p. 7; Mishra, 1996; Hoy & Tschannen-Moran, 1999). The characteristics that make an individual trustworthy are explained below:

a. Benevolence: The belief that one's well being and interests will be taken into consideration and protected by another party/individual (Tschannen-Moran & Hoy, 2000; Baier, 1986; Butler & Cantrell, 1984; Deutsch, 1958).
b. Reliability: The predictability and consistency of one's behavior (Tschannen-Moran & Hoy, 2000; Butler & Cantrell, 1984; Hosmer, 1995).

c. Competence: Dependence of one party on another to have the skills necessary to fulfill an expectation (Tschannen-Moran & Hoy, 2000; Baier, 1986; Butler & Cantrell, 1984; Mishra, 1996).
d. Honest: An individual's character, integrity and sense of genuineness (Tschannen-Moran & Hoy, 2000; Rotter, 1967).
e. Open: The ability to share information without hiding or concealing relevant details (Tschannen-Moran & Hoy, 2000; Butler & Cantrell, 1984; Mishra, 1996).

Tschannen-Moran and Hoy also stress that trust is based on interdependence—"where the interests of one party cannot be achieved without reliance upon another" (p. 7; Rousseau, Sitkin, Burt & Camerer, 1998). If interdependence is not present between parties, then trust does not need to exist (Tschannen-Moran & Hoy, 2000).

Tschannen-Moran and Hoy (2000) propose that with this interdependence comes vulnerability. This vulnerability comes with the potential loss, or risk, a trustor can experience if the trustee does not act appropriately causing potential harm and/or betrayal (Tschannen-Moran & Hoy, 2000; Lewis & Weigert, 1985). By accepting this risk, a trustor has a level of confidence that the trustee will act appropriately and in the best interests of the parties involved. Tshannen-Moran and Hoy (2000) contend that "the degree to which a person can reset in that uncertainty with a certain amount of confidence is the degree to which that person can be said to trust" (p. 8). Tschannen-Moran and Hoy (2000) explain three degrees of trust that can exist. Uneven trust occurs when the trustor may come to trust an individual in some areas but not in all—i.e. trusts and individual's level of competence more than one's level of benevolence. Unconditional or

identification-based trust occurs when there exists mutual understanding between parties that each can effectively act for the other party (Tschannen-Moran & Hoy, 2000; Lewicki & Bunker, 1996). Optimal trust exists when there is a balance between trusting too much and too little. Excessive trust can cause one or more individuals to exploit the relationship for their benefit (Tschannen-Moran & Hoy, 2000). Minimal trust, in contrast, can limit organizational growth—limited collaboration, communication, etc. (Tschannen-Moran & Hoy, 2000).

They identify three bases for developing trust in work relationships:

1. Calculative trust: In newly established relationships, trust is based on a rational decision--calculation of benefits of the relationship outweighing the possible risks (Tschannen-Moran & Hoy, 2000; Williamson, 1993).
2. Institution-based trust: Trust stems from social structures that grant trust—i.e. possessing a license or certification to practice a given profession, a signed contract among parties, etc. (Tschannen-Moran & Hoy, 2000; Creed & Miles, 1996). Institution-based trust can also result from informal social structures. An individual can trust another based on socially learned behavior patterns—the trusted individual's behavior will conform to the accepted norms or face the possibility of social disapproval (Tschannen-Moran & Hoy, 2000; McKnight et al., 1998).
3. Knowledge-based trust: Trust is based on a history of interaction and collaboration between the parties (Zucker, 1986).

These three basic conditions help lead to trust. As a relationship evolves, so does trust. Calculative trust, institutional and knowledge-based trust conditions can be seen as the stages where establishing trust at one level can lead to the development of trust in the next stage.

Tschannen-Moran (2001) extended this research to argue that to be effective, schools must foster a sense of collaboration (Goldring & Rallis, 1993; Mells, 1994; Louis, Kruse & Marks, 1996). Survey data (N=898) were gathered from forty-five elementary schools. Three types of collaborative relationships were discussed: principal-teacher; teacher-teacher; and parent-school. A correlation analysis was used to report that a significant factor in building a collaborative school climate is creating a trusting environment. In schools that reported a high level of trust, there existed high levels of collaboration among all parties—parents, teachers, administration.

Tschannen-Moran and Hoy's work dominates the body of research on trust in schools. Hoy and Tschannen-Moran (2003) later developed a trust scale that focused on the characteristics of trustworthiness—benevolence, reliability, competency, honesty and openness. The work of Hoy and Kupersmith (1984) was a foundation for their trust scale. Hoy and Kupersmith (1984) focused their analysis on faculty trust in colleagues and in principals. Hoy and Tschannen-Moran (1999) added an additional dimension to the Hoy and Kupersmith (1984) version—faculty trust in clients (students and parents/guardians). This body of research touches upon possible antecedents (i.e. trustworthiness) and outcomes (i.e. increased collaboration) of trust. However, the instrument that claims to measure the level of trust at a school site is narrow focus—the survey questions deal with

their proposed characteristics of trustworthiness and neglects other possible antecedents of trust—propensity, frequency of interaction, etc.—in determining the level of teacher in a principal.

Bryk and Schneider (2002, 2003) also collected data from elementary schools from 1994 to 1997 to assess trust in schools.[5] Their study focused in part on teacher trust in their colleagues and teacher trust in the principal. A survey using a Rasch Rating Scale was developed that focused on the following areas: respect for others and their opinions; personal regard; competence; and personal integrity. They offered the concept of relational trust where "each party in a relationship maintains an understanding of his or her role's obligations and holds some expectations about the obligations of the other parties" (Bryk & Schneider, 2002, p. 20). A three-level hierarchical linear model (HLM) was initially used to study the teacher survey responses. The levels were as follows: level one was the measurement model; level two represented the variation among teachers within the schools; and level three represented the variation across schools. Data were initially gathered from 460 elementary schools. However teacher background data were only available from 397 schools. In order to use the entire dataset a general hierarchical multivariate linear model was used to account for the missing data. Based on their model, they examined the relationship between the level of trust and student achievement in

[5] Sebring and Bryk (2000) focused on the quality of principal leadership. They examined schools that had made significant strides in student achievement as measured by standardized exams, graduation rates, and a low dropout rate. They reported that in these schools there existed quality relationships based on trust and collaboration between the principal and teachers. As a result, students were more likely to feel safe, genuinely cared for by teachers, and academically challenged (Sebring & Bryk, 2000). In schools with declining test scores, teachers that were interviewed often stated that they did not trust other teachers or administrators (Sebring & Bryk, 2000). Schools with reported low levels of trust in the principal had only a 1 and 7 chance of making significant gains on standardized exams compared to a 1 in 2 chance of schools that claimed to have high levels of principal trust (Sebring & Bryk, 2000).

reading and mathematics. The study claims that the higher the level of teacher trust in the principal and in their fellow teachers the greater the gains in student performance over time.[6] However, what the study fails to analyze in depth is whether the level of student achievement that exists serves as a result of trust (outcome) or the trust exists because of the high levels of student achievement (antecedent).

Studies have focused on what a principal can do to establish and sustain trust. Bulach and Peterson (1999) propose the following to improve levels of trust between a principal and teachers:

- Principals need to provide teachers with the opportunity to take an active role in school improvement—having the opportunity to evaluate the principal's performance, share thoughts on school programs, curriculum development, etc.
- Principals should provide quality time to listen to what teachers have to say, and respect confidentiality (Kouzes & Posner, 1993).
- Principals need to act with integrity—to not lead by copying the strategies from books, but to act with their own beliefs guiding them (Bolman & Deal, 1995).

The study also suggests that university leadership preparation programs are not providing sufficient training for future principals in how to develop trust among faculty members. For a principal to help establish and maintain relational trust he/she must also develop a vision, effectively manage daily operations, actively listen to staff members and avoid

[6] Bulach and Peterson (1999) conducted a study involving surveying 116 graduate students that were teachers and enrolled in a leadership preparation program. The purpose of the study was to analyze the levels of openness and trust that existed between teachers and principals in the Georgia public school system. Forty-five male principals and 71 female principals were the focus of the study—a different principal for each graduate student. The study found that the teachers believed that a trust in the principal and a principal's level of openness were important for school growth. However, they also agreed that there existed very low levels of both in principals in the Georgia public schools.

making unfair and inconsistent actions (Bryk & Schneider, 2003; Brewster & Railsback, 2003).

Conclusion

There are various studies that claim that the greater the degree of trust among faculty and in the principal the greater the chance for higher levels of student achievement (Bryk et al., 1994; Tschannen-Moran & Hoy, 2000). There are also sources on what may improve the level of trust at a school site—shared decision-making; open channels of communication; acting with integrity, providing support and resources (Bulach & Peterson, 1999; Brewster & Railsback, 2003). However, the studies are primarily based on observations and interviews. In most, trust is also not the primary focus of study. In addition, in the studies that measure the level of trust that exists at a school site deal predominately with the qualities of trustworthiness of the principal and/or the staff. Very little in-depth analysis regarding other possible antecedents of teacher trust have been studied as they have been in the study of trust in organizations and in managers—i.e. background similarity, propensity to trust, frequency of interaction; trustor and trustee demographics. The other issue that has not been adequately addressed is whether the current level of student achievement is a possible outcome and/or antecedent of trust.

Chapter 4: Methodology

Overview of Research Methodology

For this study, a cross-sectional survey[7] was developed to gather data from teachers regarding teacher trust in a principal.[8] The population target is comprised of California public school elementary teachers. The initial goal was to obtain a robust sample of the population. The researcher contacted various school districts in various California counties—Los Angeles, San Bernardino, San Diego, and Riverside. However, superintendents were reluctant to participate in the research study. Many districts were in the process of laying off administrators, classified staff, and teachers due to the federal and state-wide budget crisis. The superintendents feared that the teachers would cast the principals in an unfavorable light because of the anger and frustration of teachers that are facing a loss of employment. One district in Los Angeles County agreed to participate then removed its schools from participating in the survey after later deciding that it needed to lay-off several teachers and administrators in an attempt to address additional budget cuts. An elementary school district in San Diego County ultimately agreed to participate. However, the superintendent had one request—to protect the identities of the district, schools, teachers, and principals.

[7] A cross-sectional survey is used to collect data at one point in time from a sample selected to represent a larger population (Babbie, 1990).

[8] Babbie (1990) explains that survey research is one of the most common quantitative methods for gathering data. In survey research, the researcher selects a sample of respondents from a population and administers a standardized questionnaire, or survey, to them. This questionnaire can be a written document that can be administered and completed by the person being surveyed online, during a face to face interview, by telephone, or in a mailed self-administered format (Babbie, 1990). Using surveys, it is possible to collect data from a large or small population (Babbie, 1990). The purpose of the survey is to gather information that is relevant to the researcher's subject of study.

Two types of research methodology for administering the survey were considered: 1) the use of electronic mail (email) and the internet for all aspects of data collection (Dillman, 2002); and 2) the use of traditional mail. There are several advantages to using email to administer the survey questions:

- Eliminates the cost of paper and postage;
- Shortens time frame from contacting participants, disseminating the information, and completing the survey;
- Minimizes the participants' reluctance to honestly answer questions that hold a measure of social judgment (Schaefer & Dillman, 1998; Dillman, 2007).

However, some researchers have found that response rates for email surveys have had a significant lower participation rate than traditional mail surveys (Crawford, Couper, & Lamais, 2001). Both methods were presented to the superintendent. He did not mind having the researcher use the school email to make initial contact with the teachers and discuss the survey's purpose. However, he requested that the actual survey being mailed so that the teachers could anonymously complete the survey without the concern of their email/internet responses being traced to their school computer and/or email.[9]

To help address the superintendent's concerns and increase the response rate, a four-step process was used to administer the survey—a pre-notice, survey distribution, a reminder, and a letter of appreciation (Schaefer and Dillman, 1998; Babbie, 1990). The pre-notice, the reminder notice, and letter of appreciation were disseminated using each

[9] Some email accounts are screened by an unintended viewer before they reach the intended viewer and researchers are ethically required to protect the confidentiality of their respondents (Goree & Marszlek, 1995).

school's sites email system to electronically send teachers each notice. The survey was distributed using the following safeguards:

1. The surveys were mailed to each school site and coded School 1, School 2, etc., to maintain the confidentiality of the specific school site. The identity of the school sites would only be known to the researcher. The surveys would also protect the anonymity of the teacher—it would not require the name or any information that could possibly reveal the teacher's identity. The researcher will only be able to identify what school site the surveys were returned from.
2. Attached to each survey was a stamped return addressed envelope so a teacher could mail it at his/her convenience and not be concerned that any school personnel could possibly intercept the mail and read.
3. The identify of each principal would only be known to the researcher and coded in the study as Principal 1, Principal 2, etc.
4. Only the researcher would have access to the surveys and data file. They would be locked in a secure cabinet and destroyed at the conclusion of the study.
5. The researcher would have the appropriate training on the protection of human research subjects.

Using a combination of mail and email helped to shorten the time frame between the distribution of the survey and the reminder notice to encourage a higher participation rate (Crawford, Couper, & Lamias, 2001).

Participants

The study's sample is comprised of public school elementary teachers (N=515) from the population of 149,862.8 California elementary public school teachers (California Department of Education, 2009). The teachers are from 13 different elementary schools grades kindergarten through sixth that are part of a public school district San Diego County that serves more than 18,000 students. There are a total of 13 principals—one at each elementary school site. The district's overall student demographics are as follows: 7% African American; 8% Asian; 49% Latino/Hispanic; Filipino 3%; Multiple or No Response 3%; Pacific Islander less than 1%; and 29% White (California Department of Education, 2009). In addition, 51% of the students are classified as Economically Disadvantaged and 25% are classified as English Language Learners. The number of schools allowed access to an adequate sample of probable respondents that will help reach a 60%-70% response rate. The rate of return is crucial to the validity of a study. A 50% return rate is adequate, a 60% rate is better, and a 70% return rate excellent (Babbie, 1990). Table 4.1 describes each school site's student demographics. Table 4.2 reports students that are classified as eligible for Free and Reduced Lunch Program, and as an English Language Learner. Table 4.3 describes each school site's enrollment, number of teachers, and API (California Department of Education, 2009). All data are written as percent of total student body.

Table 4.1

Demographic Data of Each School (data current as of 2008-2009 school year)

School Sites	African-American	American Indian or Alaska Native	Asian	Hispanic or Latino	Filipino	Other	Pacific Islander	White
1	4.9	0	4.89	79.1	.87	0.26	0	9.98
2	3.51	0.91	2.39	48.14	2.39	0.28	.91	41.47
3	4.89	0	4.87	79.3	.91	0.07	0	9.96
4	2.23	0.35	1.37	85.75	1.73	0.63	0.11	7.83
5	3.78	0.77	4.2	45. 82	3.89	0.75	0.49	40.3
6	3.48	0.86	2.2	47.89	2.18	0.22	.86	42.31
7	2.25	0.32	1.39	85.78	1.71	0.63	0.11	7.81
8	2.31	0.29	1.27	85.81	1.67	0.73	0.13	7.79
9	2.19	0.31	1.41	86.12	1.8	0.39	0.09	7.69
10	3.48	0.65	8.84	24.7	3.4	0.48	1.05	57.4
11	3.82	0.79	4.01	46	4	0.27	0.51	40.6
12	3.49	0.86	2.51	48.37	2.4	0.16	.84	41.37
13	1.69	0	0.42	92.83	0.21	0.21	0.63	4.01

Table 4.2

Percentage of Students Classified as Free and Reduced Lunch and as English Language Learners of Each School (data current as of 2008-2009 school year)

School Sites	Free and Reduced Lunch	English Language Learners
1	75	73
2	38	22
3	74	74
4	75	74
5	31	17
6	37	20
7	76	73
8	77	75
9	76	75
10	19	9
11	32	18
12	39	21
13	79	78

Table 4.3

Enrollment, API, and Total Number of Teachers of Each School (data current as of 2008-2009 school year)

School Sites	Enrollment	Total Number of Teachers	API
1	750	38	760
2	742	38	825
3	748	37	763
4	730	37	771
5	817	41	775
6	740	37	820
7	935	47	770
8	924	46	773
9	881	45	771
10	925	46	851
11	817	41	777
12	745	38	824
13	474	24	767

Note. Pupil to teacher ratio is approximately 20:1.

Although the school district's demographics are similar to those of California public schools grades kindergarten through twelfth, some of the elementary schools face challenging social conditions. The 13 schools have a higher minority population (74%) and percentage of English Language Learners (47%) and students classified as Free and Reduced Lunch (68%). The ethnic breakdown of public school students grades

kindergarten through twelfth is .74% American Indian/Alaskan, 8.42% Asian, .63% Pacific Islander, 7.27% African American, 27.86% White (Not of Hispanic Origin), 49.02% Hispanic, and 3.37% other (California Department of Education, 2009). In addition, 24.2% of all public school students are English Language Learners and 52.6% are classified as Free and Reduced Lunch (California Department of Education, 2009). API for California public schools is as follows: 755 for public school grades 2-12; 790 for grades 2-6; 754 for grades 7-8; and 713 for grades 9-12 (California Department of Education, 2009). All of the elementary schools in this study are above 755 for their API, yet most are larger in size than the average California elementary school. Average school size is approximately 581 for elementary schools (pupil to teacher ratio 20.2), 854 for middle schools (pupil to teacher ratio 22.8), and 1475 for high schools (pupil to teacher ratio 23.3) (California Department of Education, 2009).

Survey Instrument

A four-part self-administered survey was developed and utilized in this study (Appendix A). It is a 50-item instrument structured in part on a 5-point Likert-type scale that ranges from 1 (Disagree strongly) to 5 (Agree Strongly) for the items on the teacher's perception of the principal's ability, integrity, and benevolence. The same scale was used for the items on a teacher's trust in the principal and for the teacher's propensity to trust. A 6-point Likert-type scale from 0 (Never) to 5 (Daily) was used for items on a teacher's frequency and specific frequency of interaction with the principal. To help increase the return response rate, the survey was formatted for ease of reading and

answering questions. Each section has a clear set of instructions. Part I includes items on the following:

- Teacher's (trustor's) perception of the trustworthiness of the principal (trustee); and
- Level of teacher (trustor) actual trust in the principal (trustee).

Part II of the questionnaire is devoted to items regarding the frequency of interaction between the teacher (trustor) and the principal (trustee) (McAllister, 1995). It includes questions regarding frequency of a specific type of interaction between the teacher and the principal. Part III of the questionnaire has questions regarding the teacher's (trustor's) propensity to trust (Mayer & Davis, 1999). Part IV includes questions on a teacher's background. The order of the questions is not random, but is clustered by topic in order to ease the difficulty of answering the questions (Babbie, 1990).

Parts I and III of the survey draw from existing surveys on trust in organizations. Mayer and Davis (1999) provide the first set of questions on propensity to trust, trustworthiness, and level of trust. These were from Schoorman, Mayer, and Davis' (1996a) study of organizational trust. They developed measures to determine one's propensity to trust and reflect the factors of trustworthiness—ability, benevolence, and integrity. Mayer and Davis (1999) refined these measures to specifically focus on top management. The dataset for their study was gathered from a plastics manufacturing firm in the Midwest. In a period of 14 months, three sets of surveys that included items on organizational trust were administered to 166, 170, and 193 employees and managers, respectively. All scales used a 5-point Likert type scale. The same questions and scales

are used in the current study—however, the language changes made it clear that the top management position in this study is a teacher's elementary school principal.

Part II of the survey includes questions about the frequency of interaction between the teacher (trustor) and the principal (trustee). McAllister's (1995) study on trust and cooperation in organizations provides the questions for measuring for frequency of interaction. McAllister (1995) The collected data from a sample of 194 managers and professionals in various industries who were currently enrolled in or a alumni of a master's of business administration program located in California. Respondents described the frequency of various forms of their work-related interaction with a manager on a seven-point scale ranging from 1 (one/two times in the last six months) to 7 (many times daily). This measurement has been slightly altered to measure frequency of interaction between the teacher and the principal. The scale is a six-point scale that ranges from 0 (never) to 5 (daily) to more closely follow the scale structure of the rest of the survey to assist with understanding (Babbie, 1990). The researcher created the rest of the questions on frequency of a specific type of interaction between a teacher and a principal—i.e. faculty meetings, emails, parent meetings, evaluation meetings, etc. (Edgerson & Kritsonis, 2006; Reitzurg, 1989).

Part IV asks respondents personal background information. To compare background similarity (Zucker, 1986) between the principal and the teacher, this section was compared to California Basic Educational Data Systems (CBEDS)[10] information on each of the principals. There are six multiple choice questions on the following: highest

[10] Provides background information and demographics on each staff member.

educational level obtained; gender; age; total years teaching; total years employed at current school site; demographic group teacher most identifies with. These questions are placed at the end of the survey so to not cause the respondent to perceive that the questionnaire is routine and boring and not complete it (Babbie, 1990). School data on student demographics and API scores were obtained from each school's 2008-2009 School Accountability Report (California Department Education, 2009).

The instrument was field-tested for ambiguity and to determine average response time. Initially, a small group of professional colleagues (approximately 5) was asked to review the pre-notice, letter of introduction, and the reminder notice. They also completed the survey to provide feedback regarding clarity of instructions, format of the survey and/or letters, and any other potential sources of confusion.

The next phase of field testing occurred with a cohort of graduate students enrolled in a master's and/or Ph.D. program in the field of education:

1. The letter of introduction was read and subjects were able to ask questions or provide comments regarding any concerns or suggestions for revision;
2. Subjects read the survey instructions and completed all four parts.

The subjects were able to provide feedback on each section of the survey. The researcher reviewed the feedback and made the necessary changes and revisions needed to help ensure that the final version of the survey was easy to understand and complete. The survey items were coded as follows in Table 4.4

Table 4.4

Coding of Survey Items

Item(s)	Code
Teacher School Site (TSCHOOL)	Numbered 1-13
Ability (ABILITY1-ABILITY6)	Scaled 1-5
Benevolence (BENE7-BENE11)	Scaled 1-5
Integrity (INTEGRITY12-INTEGRITY17)	Scaled 1-5
Note: INTEGRITY15 is a reverse-scored item.	
Trust (TRUST18-TRUST21)	Scaled 1-5
Note: TRUST18 and TRUST20 are reverse-scored items.	
Frequency of Interaction (FI1-FI4)	Scaled 0-5
Specific Frequency of Interaction (SFI5-SFI15)	Scaled 0-5
Propensity to Trust (PT1-PT8)	Scaled 1-5
Note: PT1 and PT4 are reverse-scored items.	
Teacher Highest Degree Obtained (TDEG)	1=B.A./B.S.
	2=M.A./M.S. (30 UNITS)
	3= M.A./M.S. (60 UNITS)
	4=EdD
	5=PhD
	6=Other
Teacher Gender (TGender)	0=Female
	1=Male
Teacher Age (TAGE)	1=22-32 years old
	2=33-43 years old
	3=44-54 years old
	4=55-65 years old

	5= 66 or more years old
Teacher Total Years Teacher (TYTA)	1=less than 1 year
	2=1-3 years
	3=4-6 years
	4=7-9 years
	5=10-12 years
	6=13-15 years
	7=16 or more years
Teacher Total Years Employed at Current School Site (TYT)	1=less than 1 year
	2=1-3 years
	3=4-6 years
	4=7-9 years
	5=10-12 years
	6=13-15 years
	7=16 or more years
Teacher Demographic Group (TDEMO)	1=African American
	2=American Indian/Alaska Native
	3=Asian
	4=Filipino
	5=Hispanic/Latino
	6=Pacific Islander
	7=White (not of Hispanic origin)
	8=Other

Randomization

Due to the unwillingness of districts to participate in this survey because of its sensitive nature, the sample size was limited to 515 teachers—of which 377 responded to the survey. As a result, respondents were not randomized and exploratory work of this study utilized all respondents.

Procedures

After formal written permission was obtained from the superintendent and the school sites, the following data collection procedures were used over the one-month period from:

- Week 1: Pre-notice was sent via district email to the population (Appendix B);
- Week 2: Per the superintendent's request, a packet was mailed to the school secretary (for distribution through teacher mailboxes) that contained a letter of introduction (Appendix C) and the survey (Appendix A) with a return addressed stamped envelope for each respondent to complete;
- Week 3: Respondents received an email reminder to complete the survey (Appendix D); and
- Week 4: A note of appreciation was sent via district email to the population that encouraged any last minute respondents to participate (Appendix E).
- Week 4: A final note of appreciation was sent to the superintendent for permission to conduct the survey.

Each notice included assurances that identities and responses would remain completely confidential and that no information which may identify subjects would be shared. Once

the final return date passed (June 15, 2009), surveys were held in a secure location until researcher was ready for analysis.

Response Rate

The survey was mailed to 515 elementary public school teachers at 13 different school sites within one school district. Of these, 377 teachers completed the survey—274 surveys were returned before and 103 surveys returned after the final notice of appreciation. All surveys returned were complete—they were no partial responses. Below, Table 4.5 provides the response rate for the entire final sample (N=377) and Table 4.6 provides the response rate for each school site. Teachers who did not return the survey are designated as nonresponsive in both tables.

Table 4.5

Data Collection Response Rates for Entire Sample (N=377)

	N	%
Complete Responses	377	73.2
Nonresponsive	138	26.8

Table 4.6

Data Collection Response Rates for Each School Site

Site	Complete (N)	Nonresponsive (N)	Rate of Return (%)
1	24	14	63.2
2	28	10	73.7
3	26	11	70.3
4	27	10	73

5	33	8	80.5
6	29	8	78.4
7	35	12	74.5
8	32	14	69.7
9	32	13	71.1
10	31	15	67.4
11	33	8	80.5
12	30	8	78.9
13	17	7	70.8

Details on Respondents

Demographic data from Part IV of the survey show that the majority of the teacher respondents are female (74%), have a Bachelor of Arts/Science as his/her highest degree obtained (52.5%), and are above the age of 32 years old (74.3%). In Figure 4.1, the majority of teacher respondents were White (Not of Hispanic Origin) (67.1%). In addition, Table 4.7 and Table 4.8 report the respondents' overall teaching experience. Figure 4.1 reports respondents' self-identified ethnic group membership.

Table 4.7

Total Years Teaching

Total Years Teaching	N	%
1-3 years	65	17.2
4-6 years	81	21.5
7-9 years	49	13
10-12 years	75	19.9

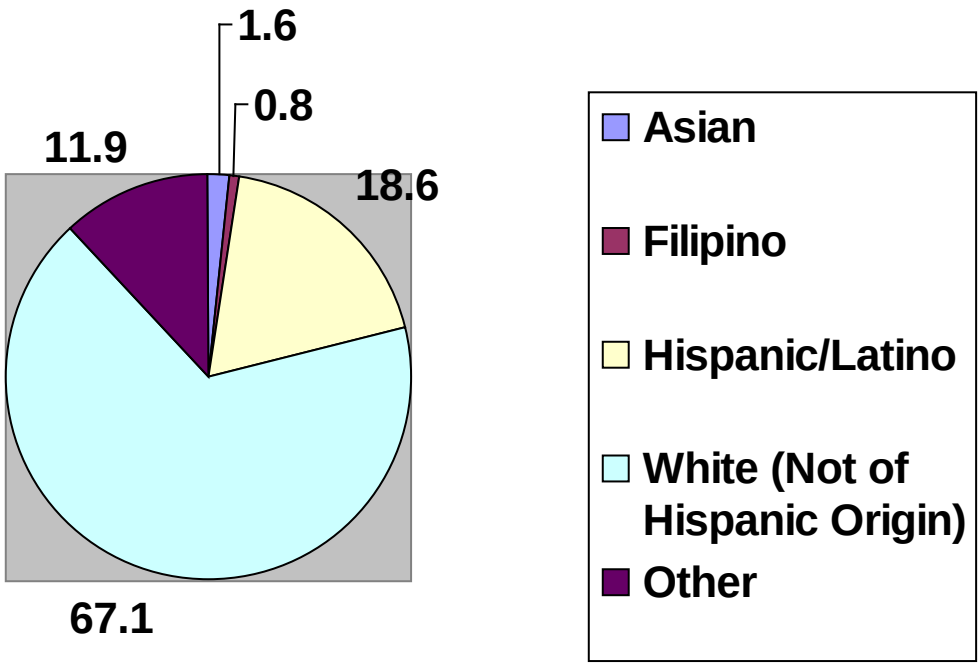
13-15 years	87	23.1
16 or more years	20	5.3

Table 4.8

Total Years Employed at Current School Site

Total Years Employed at School Site	N	%
Less than 1 year	18	4.8
1-3 years	160	42.4
4-6 years	85	22.5
7-9 years	41	10.9
10-12 years	12	3.2
13-15 years	49	13
16 or more years	12	3.2

Figure 4.1. *Respondents' Self-Identified Ethnic Group Membership in Percentages*



The teacher characteristics above parallel those of California public school teachers overall. Data collected on California public school teachers grades kindergarten through twelve in general show that approximately 70% of public school teachers are White (not of Hispanic origin), 47% have a Bachelor's of Arts/Science as his/her highest degree, 72% are female, and 28% are male (California Department of Education, 2009). A teacher's average years of service in education was 13.1 and average years in the district was 10.9 (California Department of Education, 2009). Similar background data were also collected on each school site principal from each school's profile and/or CBEDS report. Overall, the data showed that:

- 76.9% had earned a Master of Arts/Science (30 units);
- 69.2% were males;
- 92.3% were between the ages of 44-54 years;
- 46.2% taught between 7-9 years and 46.2% taught between 10-12 years;
- 53% were employed as a principal at his/her current school site 4-6 years; and
- 92.3% were White (not of Hispanic origin).

Data on public school administrators as a whole show that 67% are White (not of Hispanic origin), 33.1% hold a Master of Arts/Science (30 units), 36.9% hold a Master of Arts/Science (60 units), and 59.3% are female and 40.3% are male (California Department of Education). An administrator has an average of 19 years in education and 13.3 years in a school district (California Department of Education, 2009). Specific school site data on the principal and teachers are included in Tables 4.9 and 4.10 in Appendix F.

Chapter 5: Data Analysis, Results, and Discussion of Findings

Data Analysis

The Statistical Package for the Social Sciences (SPSS) with Analysis of Moment Structure (AMOS) was used to study a path model that involved both manifest and latent variables with multiple indicators for all latent constructs. The data analyses were broken down in steps to be able provide a full structural model of teacher trust for their principals based on the work of Mayer and Davis (1999), McAllister (1995), and Zucker (1986) to answer the research questions as outlined in Chapter 1:

1. How does a teacher's perception of a principal's competence, benevolence, and integrity affect his/her level of trust in that principal?
2. How does a teacher's propensity to trust affect his/her level of trust in the principal?
3. How does a teacher's frequency of interaction with the principal affect his/her level of trust in that principal?
4. How does the frequency of a specific type of interaction between the teacher and the principal affect the level of teacher trust in that principal?
5. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?
6. Do student demographics have an effect on the level of teacher trust in the principal?
7. Is the level of student achievement related to the level of teacher trust in the principal?

First, confirmatory factor analysis was used to verify a measurement model that demonstrated an acceptable fit to the data. The second part of the structural equation analysis was to provide a measurement model that was modified as needed so that it represented the theoretical, or causal, model being presented (Anderson & Gerbing, 1988; Hatcher, 1994). This theoretical model was then tested and revised until a theoretically meaningful and statistically acceptable model was found.

Step 1: Descriptive Analysis

The SPSS descriptive analysis initially provided the opportunity to explore the dataset and to carefully ensure that data were entered correctly and to determine that there was no missing information. Fortunately, all survey questions were answered by the respondents. Descriptive information on the entire sample (N =377) is in Table 5.1 to 5.7 below. Each table contains the range, minimum, maximum, mean, and standard deviation for each variable. An abbreviated description of each of the survey items (the complete survey is located in the Appendix A) is also included. Descriptive data on the entire sample and each school site are in Table 5.8 through 5.21 in Appendix G.

Table 5.1

Data on Teacher's Perception of Principal's Ability

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
ABILITY1	3	2	5	4.54	.618	Principal's capability to do job
ABILITY2	3	2	5	4.47	.668	Principal's success
ABILITY3	4	1	5	4.50	.708	Confidence in principal's skills

ABILITY4	3	2	5	4.51	.673	Principal's knowledge
ABILITY5	4	1	5	4.15	.885	Principal's capability to increase teacher performance
ABILITY6	3	2	5	4.56	.629	Principal is well-qualified

Note. Valid N=377

Table 5.2

Data on Teacher's Perception of Principal's Benevolence

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
BENE7	4	1	5	4.28	.887	Principal concerned about a teacher's welfare
BENE8	4	1	5	4.21	.865	Teacher's needs and desires important to principal
BENE9	4	1	5	4.47	.815	Principal would not knowingly hurt a teacher
BENE10	4	1	5	4.08	.893	Principal looks out for what is important to a teacher
BENE11	4	1	5	4.25	.871	Principal will help a teacher

Note. Valid N=377

Table 5.3

Data on Teacher's Perception of Principal's Integrity

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
INTEGRITY12	4	1	5	4.31	.863	Principal has a strong sense of justice

INTEGRITY13	4	1	5	4.36	.909	Principal will stick to his/her word
INTEGRITY14	4	1	5	4.46	.788	Principal tries to be fair
INTEGRITY15	4	1	4	4.04	1.180	Principal's actions/behaviors not consistent
INTEGRITY16	4	1	5	4.31	.849	Teacher likes the principal's values
INTEGRITY17	4	1	5	4.26	.927	Sound principles guide principal's behavior

Note. Valid N=377; INTEGRITY15 is a reverse scored item.

Table 5.4

Data on Teacher's Level of Trust in the Principal

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
TRUST18	4	1	5	3.96	1.056	Teacher would not let the principal have influence over issues that are important to him/her
TRUST19	4	1	5	2.74	1.172	Teacher would allow principal to have complete control over his/her future at school.
TRUST20	4	1	5	4.23	1.03	Teacher wishes he/she could keep an eye on the principal
TRUST21	4	1	5	4.06	.910	Teacher is comfortable giving the principal a task/problem that is critical to him/her without monitoring his/her actions

Note. Valid N=377; TRUST18 and TRUST20 are reverse scored items.

Table 5.5

Data on Frequency of Interaction between Teacher and Principal

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
FI1	4	1	5	3.77	.796	Principal initiating work-related interactions with teacher
FI2	4	1	5	3.52	.872	Teacher initiating work-related interactions with principal
FI3	3	2	5	4.10	.838	Interaction of teacher and principal at work
FI4	4	1	5	3.20	1.116	Interaction of principal and teacher informally or socially at work

Note. Valid N=377

Table 5.6

Data on Specific Frequency of Interaction between Teacher and Principal

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
SFI5	4	1	5	3.68	.779	Exchange of emails or telephone calls between teacher and principal
SFI6	4	1	5	3.46	.775	Teacher and principal meet to discuss problems/issues
SFI7	2	2	4	2.27	.454	Teacher and principal meet to discuss teacher's evaluations and/or observations
SFI8	0	3	3	3.00	.000	Teacher's attendance at a faculty meeting held by a principal

SFI9	2	3	5	3.48	.506	Teacher and principal supervise students together
SFI10	5	0	5	3.20	.794	Teacher and principal work on a project together
SFI11	2	3	5	4.25	.457	Teacher encounter of the principal out and about at the school
SFI12	4	1	5	1.67	.525	Principal urges a teacher to adopt district program guidelines or materials
SFI13	3	1	4	1.89	.529	Principal leads staff development or training sessions
SFI14	3	1	4	3.09	.710	Principal expresses praise/criticism of teacher activities
SFI15	3	1	4	2.46	.555	Principal has raised concerns about student behavior/discipline

Note. Valid N=377

Table 5.7

Data on a Teacher's Propensity to Trust

Variable	Range	Min	Max	Mean	Std. Dev	Content of Survey Question
PT1	4	1	5	4.04	1.180	Be cautious with strangers
PT2	4	1	5	2.70	.811	Experts tell the truth about limits of their knowledge
PT3	4	1	5	3.38	.745	People can be counted on to do what they say they will do

PT4	4	1	5	2.72	.880	Some is likely to take advantage of you if you are not alert
PT5	3	1	4	2.58	.733	Most salespeople are honest in describing their products
PT6	3	1	4	2.51	.758	Most repair people do not overcharge people who are ignorant of their specialty
PT7	4	1	5	3.18	.798	Most people answer public opinion polls honestly
PT8	4	1	5	3.38	.716	Most adults are competent at their jobs

Note. Valid N=377; PT1 and PT4 are reverse scored items.

Tables 5.1 through 5.4 report a strong negative skew in teacher responses—most of the item means are significantly above 4.0 on the 5-point scale that was used.[11] This negative skew indicates that teachers in this study perceived their principal as having high levels of ability, benevolence, and integrity. It also indicates that the teachers displayed high levels of trust in their principals. The negative skew also indicates that the data are not normally distributed which threatens the reliability of our conclusions. Two important assumptions of SEM in analyzing covariance and mean structures are the data are of a continuous scale and have a multivariate normal distribution (Byrne, 2010). The absence of multivariate normality in SEM can invalidate chi-square tests and produce erroneous standard errors that are needed to determine whether the model fits the data (Bentler, 1995).

[11]Items labeled TRUST18 and TRUST20 are reverse coded in order to keep the higher scores reflecting positive feelings of trust.

Tables 5.5 through 5.7 describe the frequency of teacher-principal interaction and the general propensity of teachers to trust others. These items are less skewed that those measuring a principal's ability, benevolence, integrity, and level of teacher trust in the principal. This indicates a varied amount of interaction between the teachers and the principals and a broader mix of propensities among the teachers in the sample.[12] Item SF18 which dealt with teachers reporting on the occurrence of principal led faculty meetings was completely consistent across all teachers. All teachers reported that these meetings occurred on a monthly basis in their schools. Because this item had zero variance it was dropped from further analysis in this study.

AMOS provided further confirmation that the sample data are not normally distributed. Assessment of normality for the ABILITY survey items is reported in Table 5.22. Skewness ranges from -2.732 to -.899 and multivariate kurtosis is 16.087. The critical ratios (CR) that are greater than 5 are indicative of data that are non-normal (Byrne, 2010). Multivariate kurtosis values of 1.96 or less mean there is non-significant kurtosis.[13] Values greater than 1.96 indicate there is significant kurtosis, which means significant non-normality. In this case, because of such a large multivariate kurtosis value of 16.087 and the CR values that are greater than five the data are significantly non-normal. Table 5.23 reports the observations farthest from the centroid (Mahalanobis distance). The higher Mahalanobis d-squared distance for a case, the more it is

[12] Items labeled PT1 and PT4 are reverse coded in order to keep the higher scores reflecting a greater propensity to trust.

[13] The multivariate value of 3.102 is Mardia's coefficient which means data are free from multivariate kurtosis (Mardia, 1970).

improbably far from the solution centroid under assumptions of normality.[14] Tables 5.24 through 5.35 provide the assessment for normality for the rest of the survey items (located in Appendix H).

Table 5.22

Assessment of Normality for ABILITY Items

Variable	Min	max	Skew	c.r.	Kurtosis	c.r.
ABILITY1	2.000	5.000	-1.398	-11.078	2.667	10.570
ABILITY2	2.000	5.000	-1.156	-9.163	1.188	4.707
ABILITY3	1.000	5.000	-1.732	-13.728	4.078	16.163
ABILITY4	2.000	5.000	-1.575	-12.485	3.039	12.044
ABILITY5	1.000	5.000	-.899	-7.125	.532	2.108
ABILITY6	2.000	5.000	-1.584	-12.555	3.216	12.746
Multivariate					16.087	15.939

Table 5.23

Observations Farthest from the Centroid (Mahalanobis distance) for ABILITY Items

Observation number	Mahalanobis d-squared	P1	p2
131	30.729	.000	.011
326	30.729	.000	.000
119	30.436	.000	.000
313	30.436	.000	.000
117	29.473	.000	.000
310	29.473	.000	.000

AMOS offers the bootstrapping procedure to specifically address non-normal distribution. The procedure computes a new critical value of the chi-square test of overall model fit by computing a new critical chi-square value (Bollen & Stine, 1993). It does so by drawing samples from the total population of responses. The input data are transformed to assume that the fitted model is true. The model is fit to the data and the

[14] The cases with the highest d-squared are outliers and may be deleted and the data reassessed for normality based on theoretical justification. However, no outliers were deleted from this study.

obtained chi-square is provided. This process is repeated on each of the bootstrap samples and the chi-square model fits statistics from each sample and computes their mean value—which becomes the critical value for the chi-square test from the original analysis.

However, there are some limitations and difficulties in applying to the bootstrapping procedure. The bootstrap sampling distribution is generated from one original sample which is assumed to be representative of the population. If the sample is not representative, the bootstrap procedure will lead to misleading results (Bollen & Stine, 1997). The bootstrap sample distribution also relies on the accuracy of estimates based on the original sample so the sample needs to be moderately large (Yung & Bentler, 1994). As a result, since the study has an entire sample size of N=377 (with each of the 13 schools having 17-35 respondents) and is not moderately large (N=800-1,200), the bootstrapping procedure was not used.

However, AMOS also offers different approaches to handle non-normal data. Maximum Likelihood (ML) and Generalized Least Squares (GLS) are the two typical estimations methods that are available in AMOS. The ML test statistics and standard errors appear "to be quite robust to nonnormality when the dataset had either symmetric and platykurtic distributions, or nonsymmetic and zero kurtoic distributions" (Chou, Bentler, & Satorra, 1991, p. 347). GLS is useful for large samples (N > 2,500), but has been found that it accepts incorrect models and returns inaccurate parameter estimates more often than the ML estimator for smaller samples (Chou et al., 1991). As a result, the ML estimator was relied on. It is the most common method and makes estimates based on maximizing the probability or likelihood that the observed covariances are drawn from a

population assumed to be the same as the coefficient estimates—essentially picking the estimates that have the greatest chance of reproducing the observed data (Pampel, 2000).

Step 2: Analysis of Mayer and Davis (1999) Trust Model

The next part of the structural equation model analysis involved analyzing the trust survey from Mayer and Davis (1999) that provided the majority of the survey items for the current study. They collected data for their study from small plastics manufacturing company located in the Midwest. They administered three waves of the survey to 166, 170, and 193 employees (p. 126). The initial survey provided a baseline measurement of trust and trustworthiness factors of top management. Data analyses from this survey were not provided in detail because during the second and third wave of the survey the company adopted a new performance appraisal system which was the focus of their study. The survey assessed the employees' perceptions of the top management's trustworthiness by including six items on a top manager's ability, five items on his/her benevolence, and six items on his/her integrity (p. 127). There were also four items on the employees' level of trust in the top management and eight items on the employees' propensity to trust (p. 127). In addition, the survey included items on the employees' perception on the adopted performance appraisal system. In the present study, all the trustworthiness, trust, and propensity survey items were retained. The performance appraisal items were excluded and the term "principal" replaced "top management" in the survey questions.

Mayer and Davis (1999) discussed the reliability of their trust survey that was built on the early work of Schoorman, Mayer and Davis (1996a) that indicated that the

factors of trustworthiness were distinct in a confirmatory factor analysis and that all scales had acceptable reliabilities. Cronbach's alphas for ability, integrity and benevolence were .93, .96, and .95 respectively (p. 127). Cronbach's alphas for trust were .82 and .71 for propensity—both also considered having acceptable reliabilities (p. 127). However, Mayer and Davis (1999) felt that the original survey had too many items for trustworthiness. A confirmatory factor analysis in LISREL 7 was used on the original items measuring trustworthiness and trust using list-wise deletion to determine what constructs were distinguishable from one another and from trust. The number of trustworthiness items was reduced based on this analysis for their survey instrument. After all survey administrations, they ran a confirmatory factor analysis and found the following Cronbach's alphas:

1. Ability—.85 for Wave 2 and .88 for Wave 3;
2. Benevolence—.87 for Wave 2 and .89 for Wave 3;
3. Integrity—.82 for Wave 2 and .88 for Wave 3;
4. Propensity to trust—.55 for Wave 2 and .66 for Wave 3; and
5. Trust—.59 for Wave 2 and .60 for Wave 3 (p. 127).

The next step was to compare fit statistics of the two substantive models.

The two substantive models in Mayer and Davis (1999) were the global model and proposed model. The global model represented all items loaded onto a single factor—illustrating that the employees did not differentiate the level of trust in top management and the factors of a top manager's trustworthiness. Their proposed model argued that the employees would differentiate each factor from the others. The proposed

model fit best on all the fit indexes used (i.e. chi-square, goodness-of-fit, adjusted goodness of fit, root-mean-square, residual, and the comparative fit index). Table 5.36 provides the confirmatory factor analyses of Wave 2 and Wave 3 (p. 129).

Table 5.36

Confirmatory Factor Analyses of Top Management Trust and Trustworthiness Factors

Model	Df	χ^2	GFI	AGFI	RMSR	CFI
Wave 2 (*n*=166)						
Null model	210	1826.30	.23	.16	.321	
Global factor model	189	385.23	.80	.76	.051	.88
Proposed model	183	251.38	.88	.84	.043	.96
Wave 3 (*n*=185)						
Null model	210	2479.36	.18	.10	.364	
Global factor model	189	428.60	.81	.77	.044	.89
Proposed model	183	327.99	.86	.82	.040	.94

Note. All models were tested using covariance matrices and maximum likelihood estimation. GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; RMSR = root-mean-square residual; CFI = comparative fit index.

A chi-square difference test was also completed to compare the fit of the two models. The difference in was significant which indicated that the proposed model provided a better fit for the dataset —for Wave 2, χ^2 (6, N=166) = 133.85, $p < .01$ and for Wave 3, χ^2 (6, N=185) = 100.61, $p < .01$. The rest of the analysis deals with the adoption of the new performance appraisal system and its effect on the level of trust and trustworthiness between Wave 2 and Wave 3 which were not included in the present study. Instead, other

factors and their effect on trust and trustworthiness were studied—school demographics, teacher's background similarity with the principal, frequency of interaction, etc.

However, the Mayer and Davis (1999) proposed model has questionable fit. To determine if the model fits the data, there are various statistics that can be used. The chi-square statistic may be used to test the null hypothesis that the model fits the data. The ratio of χ^2/DF needs to be close to the value 1 and rejected if greater than 2 (Hatcher, 1994; Byrne, 2010). However, the chi-square statistic is sensitive to sample size and departures from multivariate normality, and may reject a well-fitting model (Hatcher, 1994). A small sample size (N=100-150) is likely to lead to unstable final models if the initial analysis is followed by data driven model modifications (Hatcher, 1994). A large sample size (N=800-1,200) often results in model stability and is needed if many model modifications are required to find a well-fitting model (Hatcher, 1994). A sample size of about 300 subjects leads to adequate outcomes (MacCallum, 1986, Hatcher, 1994). In addition, a minimum of 10 subjects per estimated parameter is recommended (Hatcher, 1994).

As a result, other goodness of fit estimates can be used:

- The Goodness of Fit Index (GFI) is a measure of the relative amount of variance/covariance matrix of the sample data that is jointly explained by the hypothesized model. Values close to 1 indicating a good fit (Byrne, 2010). The GFI can also be influenced by sample size (Fan, Thompson, & Wang, 1999).
- The Adjusted Goodness of Fit Index (AGFI) is different from the GFI in that it adjusts for the number of degrees of freedom in the specified model (Byrne,

2010). Values close to 1 indicate a good fit. The AGFI can also be influenced by sample size.

- The Root Mean Square Error of Approximation (RMSEA) also measures fit. If the value of RMSEA is greater than 0.1 the model is considered to be a poor fit (Marcoulides & Hershberger, 1997). RMSEA is commonly used because it favors more complex models and for the following reasons: 1) adequately sensitive to model misspecification; 2) provides appropriate conclusions regarding model quality; and 3) possible to build confidence intervals (MacCallum & Austin, 2000).
- The Comparative Fit Index (CFI) evolved from the Normed Fit Index (NFI) because NFI had a tendency to underestimate small sample size (Bentler & Bonett, 1980). It compares the hypothesized model with the independent or null model. A good fitting model should have a CFI value close to 1 (Byrne, 2010). The Root Mean Square Residual (RMSR) represents the average residual value derived from the fitting of the variance/covariance matrix of the hypothesized model to the variance/covariance matrix of the sample data (Byrne, 2010). For a well-fitting model, the value should be less than .05 (Byrne, 2010).

The Mayer and Davis (1999) model was based on two small datasets—166 for the first wave and 185 for the second wave. The lack of a medium or large sample size creates doubt of whether the model is stable and has an adequate goodness of fit.

The other issue with the Mayer and Davis (1999) model is that they propose that their model is well-fitting based on their chi-square, GFI, and RMSR measures. Like

many researchers, their model is based on comparing nested models and offers a "close fit" to the data rather than an exact fit (Hatcher, 1994). Hayduk and Glaser (2000) argue against this use of nested models and this concept of "close fit" when determining a final model. They propose that comparing nested models is incapable of determining whether the proposed model contains the proper number of factors. With this process, the researcher attempts to determine if the model is failing due to structural inadequacy or measurement misspecification.

The process begins with a base model that reflects the researcher's best estimate at what the final structural equation model should be. Other models are constructed by relaxing constraints of the base model. Models are tested sequentially with the least constrained model first. Models are compared using chi-squared difference test, separate chi-square tests, and/or other goodness of fit measures like the RMSEA or RMSR (Hayduk & Glaser, 2000; Steiger & Lind, 1980). However, Hayduk and Glaser (2000) contend that the sequential testing of these models assumes that the base model is correct and does not test whether the factor form is correct. Without determining the proper number of factors, a model that provides a close fit can lead to erroneous measurement and structural assessments (Hayduk & Glaser, 2000). If a researcher compares nested models, they argue that the probability criterion should be set much higher than .05 to compensate for the favoring of the null hypothesis—that the model fits the data (the model's and the observed covariances matrices are equal). Under this argument, since the Mayer and Davis (1999) did not use this higher probability criterion with their proposed model (Wave 2, χ^2 (6, N=166) = 133.85, $p < .01$, GFI =.88, and RMSR=.043 and for

Wave 3, χ^2 (6, N=185) = 100.61, p < .01, GFI=.86, and RMSR=.040) their model could be considered weak (Hayduk & Glaser, 2000).

Step 3: Constructing the Structural Model of Teacher Trust

Despite the probability that the Mayer and Davis (1999) model provides an ill-fitting model, the purpose of this investigation was to apply their proposed model to teacher trust in his/her principal. Therefore, the next step in this analysis was performing a confirmatory factor analysis for each of the following latent factors:

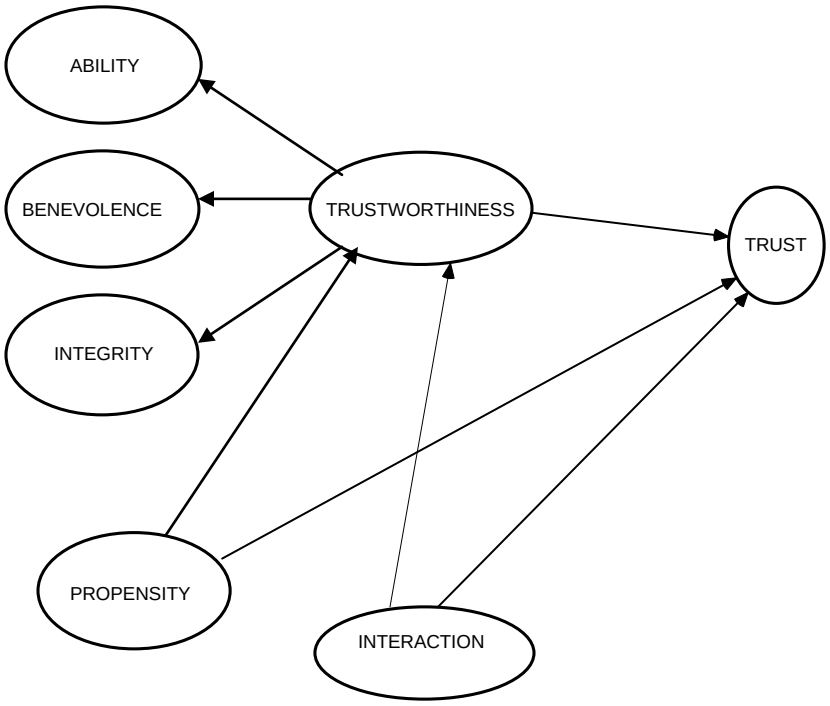
1. ABILITY: the principal has the necessary skills and competence to carry out the requirements of the position;
2. BENEVOLENCE: the principal cares about teacher welfare;
3. INTEGRITY: the principal acts accordingly to a set of principles that teachers find acceptable;
4. TRUST: Teacher trust of their principals;
5. PROPENSITY: Teacher propensity to trust others;
6. INTERACTION: The frequency of teacher and principal interactions in and out of the workplace.

Prior research has proposed that these factors have the following relationships as indicated in Figure 5.1 (Mayer & Davis, 1999; McAllister, 1995):

a. This model hypothesizes that teachers view their principals to be trustworthy if they perceive them to have ability, benevolence and integrity.

b. The model also hypothesizes that if a teacher holds a principal as trustworthy; the teacher tends to actually trust the principal.
c. These relationships are moderated by two other factors: the degree to which teachers have a general propensity to trust others and the frequency that principals and teachers interact in and out of the workplace.

Figure 5.1. *Teacher Trust of Principals Structural Model of Latent Factors*

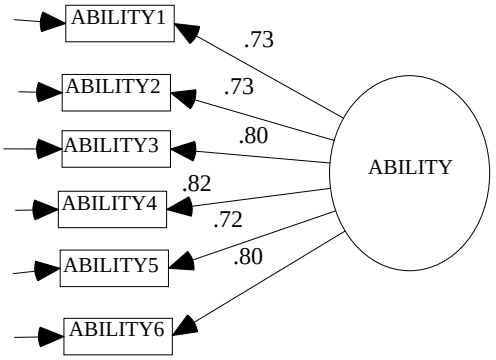


Confirmatory factor analyses were performed separately for each latent factor and are described below. The GFI and RMSEA statistics were used to determine fit of the model because the GFI may be the least sensitive to sample size and the RMSEA is favored for more complex models (Byrne, 2010).

Results

Confirmatory Analysis of the ABILITY Factor. Figure 5.2 reports the factor loadings for the six survey items that measured ABILITY. Each of the loadings is significant (p=.000). The AMOS output provides the GFI to be only .936 (df=9, p=.000), and the RMSEA to be .141. These fit statistics indicate that while the factor loadings are significant, the latent factor does not provide a good fit to the dataset.

Figure 5.2. *Confirmatory Factor Analysis of ABILITY Factor*

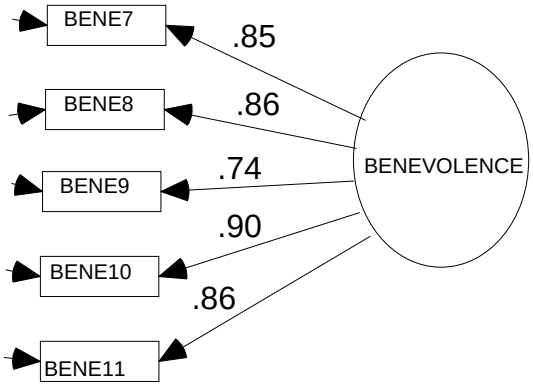


The scale reliability has an acceptable Cronbach's Alpha of .89 and the first maximum likelihood factor analysis is the only significant one—accounting for about 66% of the total sample variance for these six items. However, the correlated residuals (r=.653 and r=.714, respectively) that weaken the overall fit of the model are those between error term for ABILITY3 (I feel very confident about the principal's skills) and the following two items:

1. ABILITY1 (The principal is capable of performing his/her job); and
2. ABILITY4 (The principal has much knowledge about the work that needs to be done).

Confirmatory Analysis of the BENEVOLENCE Factor. Confirmatory factor analysis for the five BENEVOLENCE items produced a model that had a more acceptable fit to the data with a GFI of .98 (df=5, p=.002), and the RMSEA to be .085. As reported in Figure 5.3, the factors loadings are quite large and reliable (p=.000).

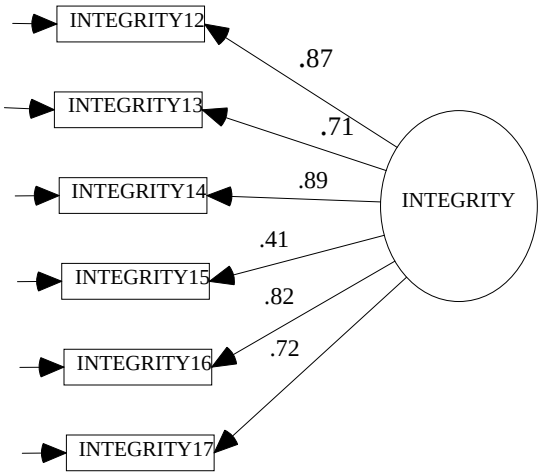
Figure 5.3. *Confirmatory Factor Analysis of the BENEVOLENCE Factor*



Cronbach's Alpha for this scale is an acceptable .92, and the first maximum likelihood factor analysis accounts for about 76% of the total variance of these five items. The residual variance correlation (r=.725) between BENE9 (The principal would not knowingly do anything to hurt me) and BENE10 (The principal really looks out for what is important to me) were the two items that most negatively impacted the model fit.

Confirmatory Factor Analysis of the INTEGRITY Factor. The six items used to measure INTEGRITY also produced an overall factor fit that was weaker than the ABILITY and BENEVOLENCE factors. Factors loadings are shown in Figure 5.4. Even though high reliability (p=.000) exists for all factor loadings, the GFI is .903 (df=9, p=.000) and the RMSEA is .179—indicating substantial correlations among the residuals for at least four of the survey items.

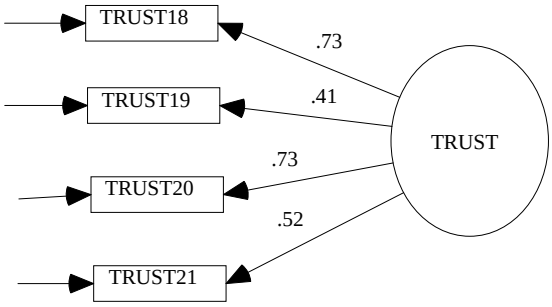
Figure 5.4. *Confirmatory Factor Analysis of the INTEGRITY Factor*



Cronbach's Alpha for this scale is an adequate .86, and the first maximum likelihood factor analysis accounts for about 63% of the total variance of these six items. The residuals for INTEGRITY16 (I like the principal's values) and INTEGRITY 17 (Sound principles seem to guide the principal's behavior) are strongly correlated (r=.697). The residuals for INTEGRITY12 (The principal has a strong sense of justice) and INTEGRITY15 (The principal's actions are not very consistent) are also strongly correlated (r=.757). It seems as if the teacher respondents linked principal values to principal decision making and principal justice to consistent behaviors.

Confirmatory Factor Analysis of the TRUST Factor. Figure 5.5 reports the factor loadings for the four survey items measuring TRUST. Even though high reliabilities (p=.000) exists for all factor loadings, the overall fit of this latent factor to the underlying survey items is not satisfactory. The GFI is .951 (df=2, p=.000) and the RMSEA is .220 which indicate substantial correlations among the residuals.

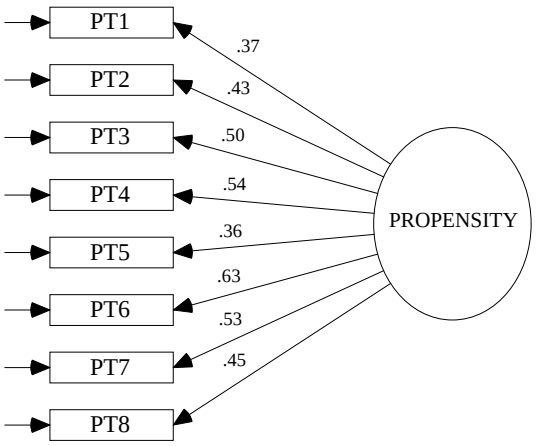
Figure 5.5. *Confirmatory Factor Analysis of the TRUST Factor*



The strongest residual correlation (r=.463) exists between TRUST19 (I would be willing to let the principal have complete control over my future at this school) and TRUST21 (I would be comfortable giving he principal a task or problem which was critical to me, even if I could not monitor his/her actions). The Cronbach's Alpha for these four items is only .69—suggesting enough for a group analysis, but not for the assignment of a trust value to specific individuals. The first and only significant maximum likelihood factor analysis also accounts for only 25% of the variance of these four items which leaves a substantial variance unaccounted for with this factor—however, there is only one component with an eigenvalue above 1.0.

Confirmatory Factor Analysis of the PROPENSITY Factor. Figure 5.6 reports the factor loadings for the eight survey items measuring PROPENSITY. Even though high reliabilities (p=.000) exists for all factor loadings, the overall fit of this latent factor to the underlying survey items is also not satisfactory. The GFI is .852 (df=20, p=.000) and the RMSEA is .180 which indicate a very limited fit of the PROPENSITY factor to the responses to these eight survey items.

Figure 5.6. *Confirmatory Factor Analysis of the PROPENSITY Factor*

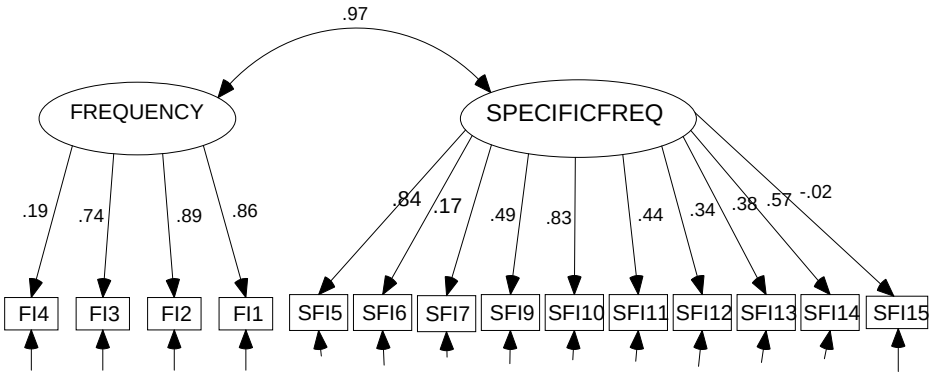


The most substantial correlation (r=.53) that exists between residuals is between items PT1 (One should be very cautious with strangers) and P4 (These days, you must be alert or someone is likely to take advantage of you). A second substantial residual correlation (r=.43) exists between item P5 (Most salespeople are honest in describing their products) and P6 (Most repair people will overcharge people who are ignorant of their specialty). The Cronbach's Alpha value of .70 and a first maximum likelihood factor analysis that accounts for only 33% of the sample variance on these eight survey items (and two other components report eigenvalues above 1.0) confirms the weakness in this factor.

Confirmatory Factor Analysis of Principal Teacher Interactions. Two types of principal teacher interactions are analyzed—general frequency of interaction (FREQUENCY) and specific types of frequency (SPECIFICFREQ). The four survey items assessing FREQUENCY were modeled after the interaction questions provided by

McAllister (1995).[15] The other 11 survey items assessing SPECIFICFREQ were included to study more specific school related interaction patterns among teachers and principals. Item SFI8 (How frequency do you attend a faculty meeting held by the principal?) was excluded from the analysis because of lack of variance since all respondents answered 3=Monthly. Figure 5.7 displays the two factor solution produced in a confirmatory factor analysis. The first factor, labeled FREQUENCY, was assessed by the four items from McAllister (1995). The second factor, labeled SPECIFICFREQ, was assessed by the ten school specific items developed for this survey. All of the items except SFI15 (How frequently has the principal raised concerns about student behavior or discipline?) produced reliable (p=.000) factor loadings on their respective factors.

Figure 5.7. Confirmatory Factor Analysis of Principal Teacher Interactions

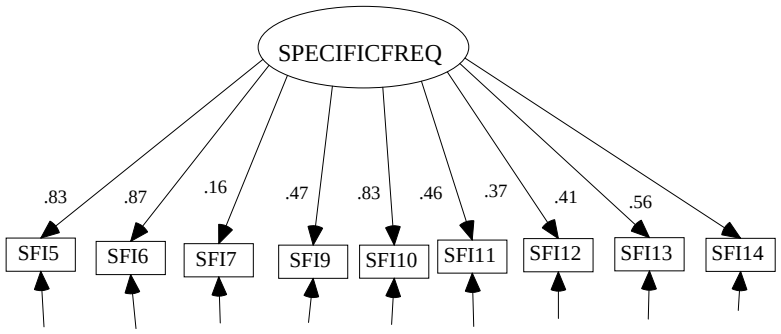


[15] McAllister (1995) proposes that the level of trust is affected in part by the frequency of interaction between the trustor and the trustee. In his survey, respondents described their interaction with a manager on a seven point scale ranging from 1 (once or twice in the last six months) to 7 (mainly times daily) (p. 38). A confirmatory factor analysis was run and the reliability estimate for frequency of interaction was .91. His four survey items were retained. However, the term "individual/person" was replaced with "principal." In addition, the scale was changed ranging from 0 (Never) to 5 (Daily) to more closely resemble the scale of the rest of the survey.

However, the overall fit statistics indicate a less than satisfactory overall fit among the 14 items with a GFI of .879 (df=76, p=.000) and a RMSEA of .103. The Cronbach's Alpha for FREQUENCY is .71 and for SPECIFIC FREQ is .78—illustrating a weaknesses in the items for these two scales. Since the two factors are correlated (r=.97), the FREQUENCY items were excluded from the study and the remainder of the analysis only included the SPECIFICFREQ construct. The item labeled SFI15 (concerning student behavior and discipline) was excluded from further analysis because it had an insignificant factor loading of -.02.

Confirmatory Factor Analysis of the SPECIFICFREQ Factor. Figure 5.8 reports the confirmatory factor analysis of the simplified principal teacher interaction construct. Even though high reliabilities (p=.000) exists for all factor loadings, the overall fit of this latent factor to the underlying survey items is not adequate with a GFI of .926 (df=27, p=.000) and the RMSEA of .109.

Figure 5.8. Confirmatory Factor Analysis of the SPECIFICFREQ Factor

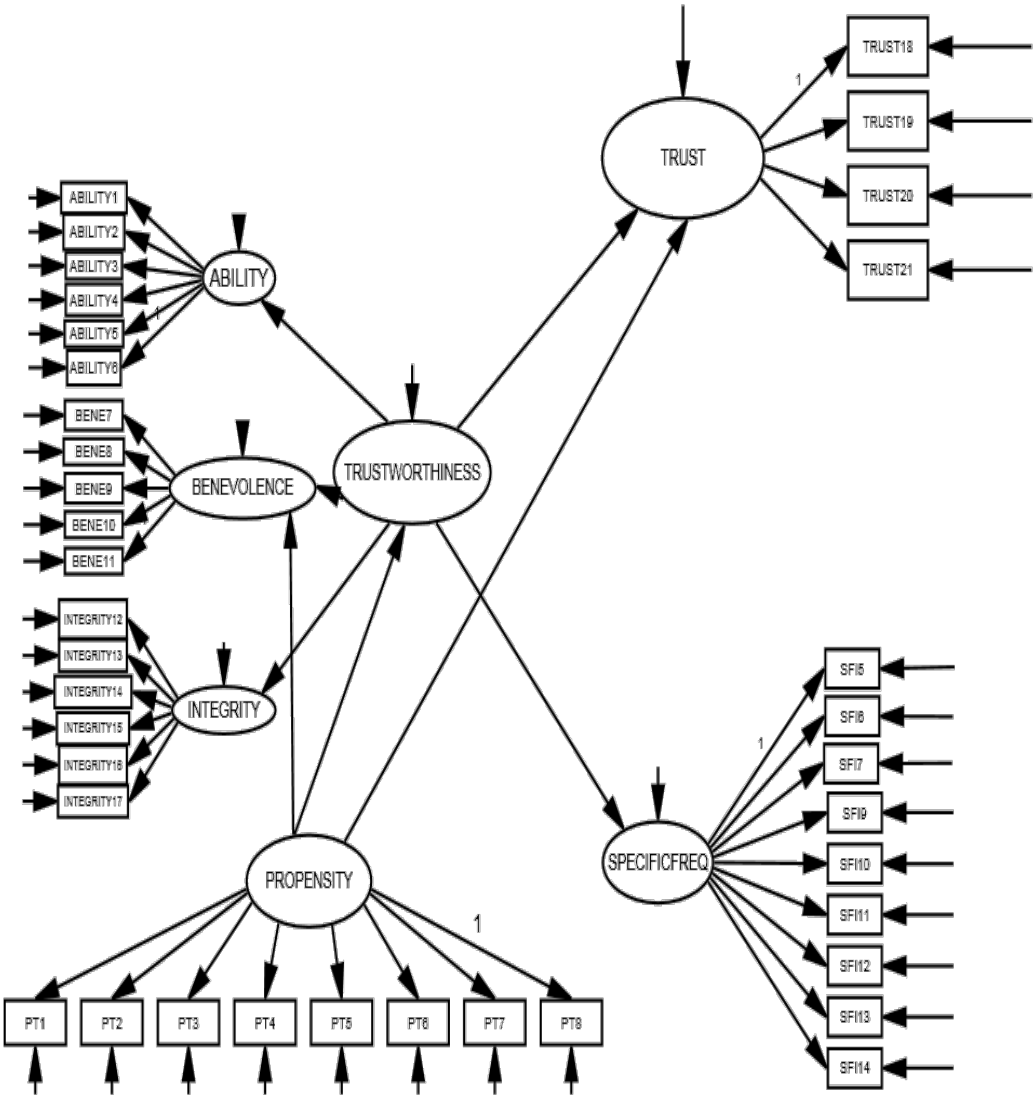


The problem is caused by residual correlations involving mutual correlations among all of SFI9 (How frequently do you help supervise students with the principal?), SFI12 (How

frequently has the principal urged you to adopt district program guidelines or materials?), SFI13 (How often has the principal led staff development or training sessions?), and SFI14 (How frequently has the principal expressed praise or criticism of teaching activities by any staff members?). These survey items are focused more on directly teaching students, while other items are more related to other aspects of the professional relationship between a teacher and a principal.

The Complete Hypothesized Structural Equation Model. Figure 5.9 depicts the global picture of the hypothesized structure of teacher trust in their principals which links together the six confirmatory factor analyses describe above. These six factors are linked in structural relationships indicating how ABILITY, BENEVOLENCE, and INTEGRITY are incorporated into a second-order factor, TRUSTWORTHINESS, and are influenced by PROPENSITY and SPECIFICFREQ to create TRUST—a willingness of teachers to actually trust their principals.

Figure 5.9. The Hypothesized Structural Equation Model



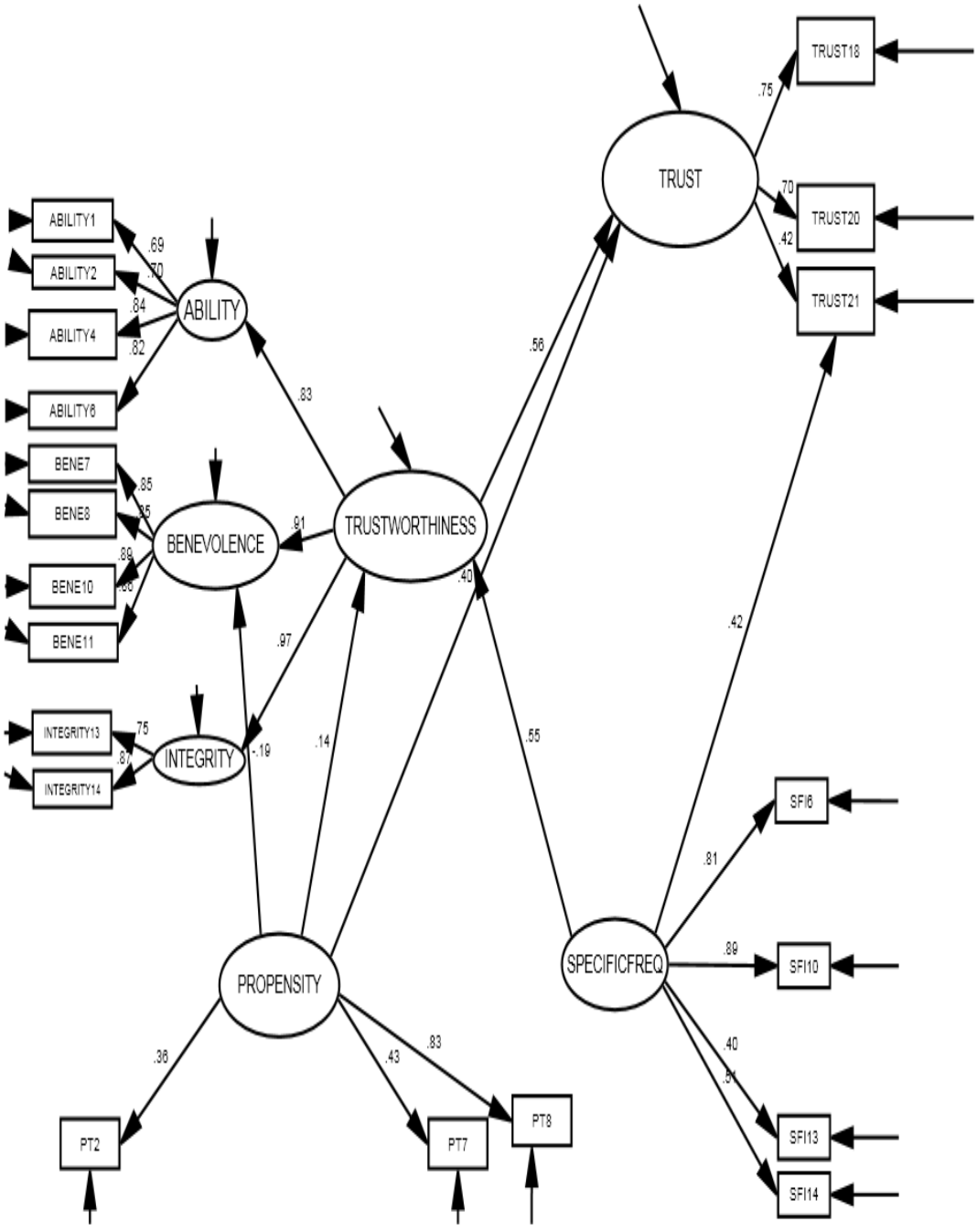
The fit statistics for this model (coefficients not shown) are a value of .698 for the GFI (df = 656, p = .000) and .098 for the RMSEA. High correlations among the residual variances in some of the measurement variables have caused the weaknesses in this structural model. The measurement variables are encapsulating some teacher attitudes and activities that are only obliquely related to the latent factors under study. To overcome this weakness in the overall model, several of the survey items have been deleted that were causing extraneous variance in order to develop the more parsimonious model presented in Figure 5.10.

A More Reliable Model of Principal Trust. The model in Figure 5.10 reports an acceptable model fit with a GFI of .905 (df=161, p=.000) and a RMSEA of .064. The original hypothesized conceptual model of how principals come to be trusted in schools was maintained while the measurement variables for each latent variable were reduced.[16]

[16] Use of modification indices, removal and transformation of outliers, and the use of the bootstrapping method did not improve model fit before reducing specific measurement items (Hatcher, 1994).

Figure 5.10. Full SEM for Teacher Trust in Principals

GFI=.905 (p=.000, df=161); ChiSq/df=2.557; RMSEA=0.064



However, deleting a significant number of measurement variables may have changed the essential meaning of each factor. Therefore, it is appropriate to review the remaining measurements in each factor structure:

1. The ABILITY factor was reduced from six measurement variables to the following four indicators:

- ABILITY1: The principal is very capable of performing his/her job.
- ABILITY2: The principal is known to be successful at the things he/she tries to do.
- ABILITY4: The principal has much knowledge about the work that needs to be done.
- ABILITY6: The principal is well qualified.

2. The BENEVOLENCE factor was reduced from five measurement variables to four:

- BENE7: The principal is very concerned about my welfare.
- BENE8: My needs and desires are very important to the principal.
- BENE10: The principal really looks out for what is important to me.
- BENE11: The principal will go out of his/her way to help me.

3. The INTEGRITY factor was reduced from six measurement indicators variables to two:

- INTEGRITY13: I never have to wonder whether the principal will stick to his/her word.
- INTEGRITY14: The principal tries to be fair in dealings with others.

The face validity of the items for these three factors of TRUSTWORTHINESS (ABILITY, BENEVOLENCE, and INTEGRITY) remains quite high. There are not obvious reasons why ABILITY3 and ABILITY5 do not fit the reduced model well. Item ABILITY3 is the only ABILITY survey item expressing a feeling of confidence which may account for its lack of fit. ABILITY5 is the only item to include a first person possessive pronoun "our" which may have caused it to have an oblique relationship to the remaining items. The lack of fit for BENE9 (The principal would not knowingly hurt me) is the only item with a negative term which may have rendered it oblique to the others. The INTEGRITY items removed from this factor include items with the terms "justice", "values" and "principles" in them. These items may be obliquely related to the BENEVOLENCE factor. The remaining two INTEGRITY items go to the core concepts of keeping one's word and dealing fairly with others.

4. The reduced PROPENSITY factor is composed of three items asking respondents whether:

- P2: Most experts tell the truth about the limits of their knowledge.
- P7: Most people answer public opinion polls honestly.
- P8: Most adults are competent at their jobs.

The deleted PROPENSITY items are the ones with a negative perception (worrying about strangers, about being overcharged, and about the lack of honesty of sales people).

5. More than half the measurement items devoted to assessing the frequency of interactions between teachers and principals had to be deleted from the model in order to

erase the intercorrelations among residuals. The remaining SPECIFICFREQ factor is composed of four items asking how frequently teachers:

- SFI6: How frequently do you meet with the principal to discuss problems and/or issues?
- SFI10: How frequently do you work on a project with the principal?
- SFI13: How often has the principal led staff development or training sessions?
- SFI14: How frequently has the principal expressed praise or criticism of teaching activities by any staff member?

The reasons why the exploratory analysis identified these variables as appropriate to the model while eliminating others are unclear. The reasons may lie in the fact that the SPECIFICFREQ indicators tended to have small standard deviations—there may not have been enough independent variance to constitute a more complex factor structure.

6. The final construct, labeled TRUST, measured the degree to which teachers actually trust their principals. The remaining TRUST factor is composed of the following three items:

- TRUST18: If I had my way, I wouldn't let the principal have any influence over issues that are important to me.
- TRUST20: I really wish I had a good way to keep an eye on the principal.
- TRUST21: I would be comfortable giving the principal a task or problem which was critical to me, even if I could not monitor his/her actions.

The item that needed to be eliminated from this factor, TRUST19 (I would let the principal have complete control over my future at this the school), had a substantially lower mean than the other three items. This may that teachers may have not be readily been able to accept this possibility of the principal having complete control without a teachers input as with the other trust items.

The revised model in Figure 5.10 needs additional explanation. First, the revised model confirms the existence of the second-order factor, TRUSTWORTHINESS, which integrates the ABILITY, BENEVOLENCE and INTEGRITY first-order factors. This second-order factor, TRUSTWORTHINESS, is a strong predictor of teacher trust for their principals (the path coefficient = .57). As a result, TRUSTWORTHINESS can be viewed as being composed of three distinct factors whose correlated components make up the global principal characteristic upon which teacher trust is founded. Second, teacher propensity to trust other adults (PROPENSITY) has its strongest influence on the actual level of trust teachers have for their principals (TRUST) (path coefficient = .41). The PROPENSITY factor also influences the extent to which teachers find their principals to be of trustworthy character (TRUSTWORTHINESS)—however, the path coefficient is small with a value of .10. The PROPENSITY factor also has a negative relationship with the perception of principal benevolence (BENEVOLENCE), that is independent of the overall level of trustworthiness measured by the second-order factor (path coefficient = -.18).

Third, the reduced SPECIFICFREQ factor did not have an independent affect on the TRUST factor measuring the extent of actual teacher trust in the principal. However,

the SPECIFICFREQ factor did have a significant influence on TRUST 21 (I would be comfortable giving the principal a task or problem which was critical to me, even if I could not monitor his/her actions). The item TRUST21 has the weakest link to the TRUST factor (a loading coefficient of only .41)—leaving substantial independent variance to be predicted by the SPECIFICFREQ factor. There is also a strong relationship between teachers viewing their principals as trustworthy (TRUSTWORTHINESS) and the frequency of principal/teacher interactions (SPECIFICFREQ) (path coefficient = .55). However, it is unclear which causal direction should be followed. It is possible that more frequent interactions lead to perceptions of greater trustworthiness. Yet, it also seems possible that believing one's principal to be trustworthy leads to more frequent interactions. Both path directions were tested and there was a slightly strong path coefficient (.522) with perceptions of trustworthiness as dependent on interaction frequency (compared to the reverse that had a path coefficient value of .550). This structure also slightly improved the model fit.

Fourth, it was also discovered that if two of the thirteen schools (School 1 and School 13) from the dataset were removed from the analysis this model produced adequate fit statistics when applied to the other eleven schools in an clustered (or stacked) model (not shown here). When the various path coefficients were successively constrained to be equal across all eleven schools, the model fit remained stable. This result demonstrates that the factor structures accounting for teacher trust of their principals is independent of the specific school context or the particular principal being evaluated. As a result, the factors of ABILITY, BENEVOLENCE, INTEGRITY,

TRUSTWORTHINESS and TRUST are fitted to the same measurement variables. The factors of PROPENSITY and SPECIFICFREQ also rely on common measurement items. What this means is that the levels of principal ability, benevolence, and integrity, in addition to the levels of trust and trustworthiness, do vary significantly from teacher to teacher and from principal to principal. However, the variations in the level of these characteristics combine measurements into sufficiently similar factor structures that no allowance needs to be granted for factor variance across schools.

Step 4: Building on the Revised Trust Model

Figure 5.10 depicts a robust structural model for teacher trust in a principal that relates teacher perception of a principal's trustworthiness to actual trust. The model also illustrates the influence of an overall propensity to trust and the patterns of interaction between teachers and principals. The next part of the analysis revolves around studying the impact of the following factors on the level of actual teacher trust in the principal:

- Background similarity of teachers and principals
- Student characteristics
- Student achievement

The following analyses will assist in answering the remaining research questions:

1. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?
2. Do student demographics have an effect on the level of teacher trust in the principal?

3. Is the level of student achievement related to the level of teacher trust in the principal?

The first part of this analysis dealt with the extent to which teachers share similar background characteristics with their principals in terms of gender, highest degree earned, total years teaching, total years at school site, age, and demographic identification. However, each of the original items was recoded to account for similarity. Gender, degree, and demographic group were coded 0 (Different) and 1 (Same). To narrow the number of choices for the survey, the survey response items on age, total years teaching, and total years at site were given in terms of ranges. Each were coded 0 Different Range) and 1(Same Range). Each age range spanned ten years—i.e. 22-32 years old, 33-43 years old, etc. Total years teaching and total years at site had the following choices: less than one year; 1-3 years; 4-6 years; 10-12 years; 13-15 years; and 16 years or more. Table 5.37 provides the change in codes for each of the original teacher survey items and principal variables and their recoding.

Table 5.37

Recoding of Teacher Survey Items and Principal Items

Original Teacher Item	Principal Item	Recode
TGENDER	PGENDER	SAMESEX
		0=Different Gender
		1=Same Gender
TAGE	PAGE	AGE
		0=Different Age Range
		1=Same Age Range

TYTA	PYTA	YRSTCH
		0=Different Total Years Teaching Range
		1=Same Total Years Teaching Range
TYT	PYT	YRSSITE
		0=Different Number of Years at Site Range
		1=Same Number of Years at Site Range
TDEG	PDEG	SAMEDEGREE
		0=Different Highest Degree Obtained
		1=Same Highest Degree Obtained
TDEMO	PDEMO	SAMEDEMO
		0= Different Demographic Group
		1=Same Demographic Group

Note. Principal characteristics not self-reported. Principal data were gathered from annual CBEDS and School Accountability Report Card.

The next part of the analysis provides frequency statistics of the recoded items located in Tables 5.38 through 5.43.[17]

Table 5.38

Frequency Statistics on SAMESEX

SAMESEX					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	358	95.0	95.0	95.0
	1.00	19	5.0	5.0	100.0
	Total	377	100.0	100.0	

[17] Descriptive analysis for teachers and principals is located in Chapter 4.

Table 5.39

Frequency Statistics on SAMEDEGREE

SAMEDEGREE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	274	72.7	72.7	72.7
	1.00	103	27.3	27.3	100.0
	Total	377	100.0	100.0	

Table 5.40

Frequency Statistics on AGE

AGE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	285	75.6	75.6	75.6
	1.00	92	24.4	24.4	100.0
	Total	377	100.0	100.0	

Table 5.41

Frequency Statistics on YRSTCH

YRSTCH					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	306	81.2	81.2	81.2
	1.00	71	18.8	18.8	100.0
	Total	377	100.0	100.0	

Table 5.42

Frequency Statistics on YRSSITE

YRSSITE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	285	75.6	75.6	75.6
	1.00	92	24.4	24.4	100.0
	Total	377	100.0	100.0	

Table 5.43

Frequency Statistics on SAMEDEMO

SAMEDEMO					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	143	37.9	37.9	37.9
	1.00	234	62.1	62.1	100.0
	Total	377	100.0	100.0	

Most teachers and principals do not share similar background characteristics:

- 5% of the teachers and principals have the same gender;
- 27.3% of the teachers and principals share the same highest degree obtained;
- 24.4% of teachers and principals are from the same age range;
- 18.8% are in the same total years teaching range; and
- 24.4% are in the same site for the same number of years range.

The highest common background characteristic is demographic group—62.1% of teachers and principals share the same demographic group.

Each of the six items dealing with similarity of background was analyzed as part of the full SEM model in Figure 5.10. Except for SAMEDEMO (-.33), the path coefficients from each item to trust were very small:

- YRSSITE (-.09)
- YRSTCH (.02)
- AGE (.06)
- SAMEDEGREE (.05)
- SAMESEX (-.04)

Their inclusion slightly weakened the fit of the model with a GFI of .867 and an RMSEA of .066—a strong residual correlation (r=.439) exists between YRSTCH and AGE. All items had a path coefficient that was not statistically significant at the $p < .01$ level except SAMESEX.

The analysis next turned toward analyzing only teacher characteristics as part of the model to determine if teachers of a specific gender, highest degree obtained, age, total years teaching, years at sight, and/or demographic group had an affect on the level of trust in the principal. Each specific type of characteristic was designated as a group in AMOS. However, the analysis failed and returned a non positive definite error for each of the groups based on small sample size. Next, all six teacher characteristics were run for the entire sample (N=377) and not separated by specific type. Each of their path coefficients to trust was also weak:

- TGENDER (-.31);
- TDEGREE (.09);

- TYRSTEACHR (-.04);
- TRYSSITER (-.02);
- TEMOGRR (-.08); and
- TAGER (.16)

Their inclusion in the model weakened its fit with a GFI of .782 and RMSEA of .102. Strong residual correlations did not exist among the variables. Path coefficients were not statistically significant at the $p < .01$ level except TGENDER and TAGER. As a result, the retention of two items—TGENDER and TAGER—provided a stronger model fit than retaining all six items with a GFI of .894 and a RMSEA of .064.

The next items analyzed as part of the model were school characteristics:

- MINORITYPOP—percentage of non-white students;
- ELLPOP—percentage of students that are English Language Learners;
- LAAPOP—percentage of students that are Hispanic and African American;
- SEDPOP—percentage of students that are on Free and Reduced Lunch.

Path coefficients to trust for each of the items were as follows: MINORITYPOP (-.66); ELLPOP (.50); LAAPOP (.41); AND SEDPOP (-.22). Inclusions of these items weakened the model fit significantly with a GFI of .609 and a RMSEA of .260. All of the items shared a strong mutual correlation of their residuals. However, all items had a path coefficient that was not statistically significant at the $p < .01$ level. As a result, each item was analyzed separately as part of the model and resulted in the following model fits:

- MINORITYPOP—path coefficient to TRUST is .09 with a GFI of .895 and a RMSEA of .067.

- ELLPOP— path coefficient to TRUST is .10 with a GFI of .894 and a RMSEA of .068.
- LAAPOP— path coefficient to TRUST is .08 with a GFI of .895 and a RMSEA of .067.
- SEDPOP— path coefficient to TRUST is .000 with a GFI of .893 and a RMSEA of .068.

However, all items still had a path coefficient that was not statistically significant at the $p < .01$ level.

The final item to be analyzed as part of the model was the Academic Performance Index (API)—the only measure of organizational consequence included in the study. The question that needs to be considered is whether schools with greater trust produced higher average student achievement or vice versa. Teacher achievement measures were not provided and the analysis relied on school wide averages—which may hinder the possibility of finding significant effects. The SEM analysis found no relationship between the teachers' reported trust level for their principals and the overall API achievement. The path coefficient from TRUST to API is .00 (coefficient not statistically significant at the $p < .01$ level). The path coefficient from API to TRUST is -.01 (coefficient not statistically significant at the $p < .01$ level).

This model confirms the existence of the three component factors of trustworthiness identified by Mayer et al. (1999) and demonstrates that there is a second-order global factor that helpfully summarizes the coordinated impact of these three component factors. Second, this study confirms that the principal/teacher interactions in

the school are related to the levels of trust, but provides no evidence that, in this school district, at least, there is any significant relationship between principal/teacher trust and the overall achievement of students in the schools, student demographics, teacher characteristics, and/or background similarity between teaches and their principals.

The major problem with this model is whether its fit can be considered to be acceptable based on the argument that the initial Mayer et al. (1999) model was the result of comparing nested models with a probability statistic less than .05 (Hayduk & Glaser, 2000). In attempting to retain as many measurement items as possible, the revised model's fit was stronger than the original with a GFI=.905 (p=.000, df=161), ChiSq/df=2.557, and RMSEA=0.64 and was based on an adequate sample size of N=377. In addition, the factor structure held for eleven out of the thirteen schools—two of which were removed for lack of variance. However, the question remains why items had to be removed to improve the fit of the model. It could be the result of a measurement error and/or a structural error. It could also be the characteristics of the current sample compared to the original—i.e. different context, highly skewed data, and/or a larger sample size needed.

Chapter 6: Summary and Implications

My objectives for this study were to investigate the concept of trust, its meaning, antecedents, and outcomes as they apply to teacher trust in principals. Seven research questions guided this study. The first question focused on a teacher's perception of three characteristics of a principal's trustworthiness (ability, benevolence, and integrity), one focused on a teacher's propensity to trust others, two questions dealt with frequency of interactions between a teacher and a principal, one question dealt with background similarity of teachers and principals, and the last two questions focused on the affect of student demographics and overall student achievement:

1. How does a teacher's perception of a principal's ability, benevolence, and integrity affect his/her level of trust in that principal?
2. How does a teacher's propensity to trust affect his/her level of trust in the principal?
3. How does a teacher's frequency of interaction with the principal affect his/her level of trust in that principal?
4. How does the frequency of a specific type of interaction between the teacher and the principal affect the level of teacher trust in that principal?
5. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?
6. Do student demographics have an effect on the level of teacher trust in the principal?

7. Is the level of student achievement related to the level of teacher trust in the principal?

Subjects were comprised of public school elementary teachers (N=377) who self-selected to participate in a survey that contained questions regarding the trustworthiness of their principals, their frequency of interaction with their principals, their overall propensity to trust others, their actual level of trust in their principals, and background demographic information. Demographic data were also gathered on each of the subjects' principals—one from each of the 13 school sites. Analyses of these data, framed by organizational theories on trust, assisted in meeting the original objectives of this study.

Summary of Findings

The data analyses were divided into broken steps to be able construct a well-fitting structural model for teacher trust in their principals. The initial trust model was based on the work of Mayer and Davis (1999) and their study on factors of trustworthiness and the actual level of trust in the individual's general propensity to trust. The model also incorporated McAllister's (1995) work on frequency of interaction between the trustor and trustee and Zucker's (1986) research on background similarity between the trustor and trustee. Student demographics and a measure of overall student achievement were also integrated into the model to determine their effect on the actual level of trust that existed.

The revised trust model developed in this study confirmed the existence of the second-order factor for trustworthiness which integrated the first-order factors for ability, benevolence, and integrity. A teacher considered a principal to be trustworthy if he/she

viewed the principal as possessing high levels of ability, benevolence, and integrity. Integrity had the greatest impact on trustworthiness—followed by benevolence and then ability.

A teacher's propensity to trust others was found to have its strongest affect on the actual level of trust teachers in their principals. The propensity factor also affected a teacher's perception of his/her principal's level of trustworthiness. Yet, the propensity factor was found to have a negative relationship with a teacher's perception of a principal's benevolence. This suggests that individuals who hold a greater propensity to trust believe that benevolence is assumed to be a characteristic of one who is trustworthy. Specific frequency of interaction was also found to have a strong relationship with a principal's trustworthiness—as the number of specific interactions increased so did the level of principal trustworthiness.

It was also demonstrated that the factor structure accounting for teacher trust of their principals was independent of the specific school context or the particular principal being evaluated. Finally, a significant relationship between principal and teacher trust and background similarity between teachers and principals as Zucker (1986) proposed was not found to exist. Student demographics and overall student achievement (though limited to one item) also did not have a significant relationship between teacher trust in the principal.

The findings of this study were based on a trust model that had a model fit with a GFI of .905 (df=161, p=.000) and a RMSEA of .064. This model was the result of confirmatory factor analysis of an existing trust model from Mayer and Davis (1999).

The problem is that the model did not retain all of the measurement items of the original model in order to improve fit. As many items as possible were retained as an attempt to salvage the existing model. The process of trimming the items ceased once a close fit was determined. However, current research on structural equation modeling suggest that a close fit for a model like the one found may not be acceptable since the original model was the result of using a nested model strategy—a strategy that fails to examine whether the model has the accurate number of factors (Hayduk & Glaser, 2010). As a result, the model may prove to be unstable if applied to a new dataset.

Implications for Theory

Despite the issues with the model fit, this study resulted in a trust model that remained stable for eleven out of the thirteen schools that participated in the study—two of which were removed because of the lack of variance. However, the problem is that the original Mayer and Davis (1999) model failed to remain stable in its application to this study's dataset. The question is why. First, the context and sample of the study are different—the original survey was given to employees of a small plastics industry at different times to determine the level of managerial trust after the implementation of a new performance evaluation system. The survey was administered to less than 200 individuals for each of the survey administrations. A small sample size has been found to lead to an unstable model (Hatcher, 1994). For the current study, the survey was administered once to 517 teachers and 377 teacher voluntarily responded. A sample size of at least 300 subjects increases the possibility of developing a stable model (Hatcher, 1994). The other difference between the two datasets was that the teacher data was highly

skewed—teachers in this study perceived their principals as having high levels of ability, benevolence, and integrity. The teachers also displayed high levels of trust in their principals. This highly skewed data indicates that the data are not normally distributed—which also threatens the possibility of finding a well-fitting and stable model (Hatcher, 1994). Attempts to address the lack of normally distributed data failed to improve the model fit—i.e. transformation and/or deletion of outliers and the bootstrapping procedure. Further study needs to occur to determine if the original model can be applied only to a sample that is normally distributed.

The other possible reason for the lack of a stronger model fit is errors in the measurement model. The measurement model describes the relationships between the latent factors and the indicator variables. An indicator variable with a nonsignificant factor loading should be dropped (or reassigned) from the model because it is not doing a good job of measuring the specified underlying construct.[18] However, Mayer and Davis (1999) did not provide an analysis of their factoring loadings to compare to the loadings in this study to determine if any of their items should have been dropped. In the revised model, measurement items were removed that that were causing extraneous variance and weakening the fit in the model. However, there are still some measurement items that still could be removed because of low factor loadings to achieve a stronger model fit—comprising the original model even further. Survey items may need to be revised for content and other potential problems—i.e. possible confusing and/or ambiguous wording.

[18] Before dropping a factor, however, the researcher should check its correlation with the dependent variable. A very small factor can have a large correlation with the dependent variable, in which case it should not be dropped.

In addition to a measurement model error, there is also the possibility of an error in the structural model. The structural or causal model describes relationships between constructs. Mayer and Davis (1999) used a nested model strategy to determine the structure of their final model which has been criticized for failure to determine the accurate number of factors (Hayduk and Glaser, 2010). It may be possible to improve the model fit by adding additional factors to the analysis. They proposed that three factors of trustworthiness (ability, benevolence, and integrity) and propensity to trust are antecedents of trust. However, there are other possible antecedents of trust that could tested as part of the model. For example, institutional-based trust is the result of institutional factors that can support trust—i.e. a collaborative culture, contractual safeguards, adequate resources, and a safe and organized working environment (Rousseau et al., 1998; Miles & Creed, 1995). One could study whether there is a relationship or effect of these factors on the level of trust and or trustworthiness in a supervisor—i.e. manager or principal. Another factor that could be investigated is the degree of control present in the organization and its affect on supervisor trust/trustworthiness. For example, if a supervisor delegates authority, encourages employee autonomy, and maintains open channels of communication would he/she be trusted more than one that did not.

McAllister's (1995) four items measuring frequency of interaction were also incorporated into this study's survey. One departure from McAllister involved adding additional items to the initial four to account for specific types of interactions between a teacher and a principal—items on teacher observations, discussions on student behavior,

etc. (Lewis and Wiegert, 1985). However, because of intercorrelations among the residuals many of the measurement items were removed—including all of McAllister's (1995) four items. The retained items included items were specific to teacher and principal interactions—meeting to discuss problems/issues, working on a project, attending principal-led meetings, and instances of the principal expresses praise/criticism of teaching activities. Further study needs to be conducted on the reasons why the exploratory analysis identified these variables as being appropriate to include in the model. One reason may be that the interaction indicators did not have sufficient independent variance to constitute a more complex factor structure. Another departure from McAllister (1995) was this study found that the model did not support his proposal that the number of interactions between an employee and a manager would have an effect on the level of supervisor trust. However, there was a strong relationship found between teachers viewing their principals as trustworthy and the frequency of principal/teacher interactions—with perceptions of trustworthiness being dependent on the frequency of interaction between the teacher and the principal. Yet, these findings may be jeopardized if the model needs to be revised further for a better model fit.

This study's was also unable to confirm existing theories that argue that there are significant relationships between the level of teacher trust in his/her principal and the following:

- Background similarity between a teacher and his/her principal;
- Student demographics; and
- Student achievement.

A larger sample size and/or stronger model may confirm or disregard this study's finding on background similarity and student demographics. In terms of student achievement, this study was limited to one measurement of student achievement—a school's API. Other measures of student achievement (i.e. a teacher's grades, student pass rate, etc.) and/or growth in a specified measure of student achievement over time may be found to have a significant relationship with the level of teacher trust in his/her principal.

Despite the problems with the original model, this project makes important contributions to the literature on organizational trust in the schools. First, it confirms the existence of the three component factors of trustworthiness that Mayer and David (1999) identified. It also demonstrates that there is a second-order global factor that helpfully summarizes the coordinated impact of these three component factors. Second, this study confirms that the principal/teacher interactions in the school are related to the levels of trust, but provides no evidence that, in this school district, at least, there is any important relationship between principal/teacher trust and the overall achievement of students in the schools. Third, it also confirms that there needs to be clarification and consistency in the literature on what an acceptable model fit is and how it can be obtained.

Implications for Practice and Policy

The primary reason that this study was conducted was to gain insight on what helps foster trust in a principal. Current studies suggest that higher levels of trust in the principal leads to increased collaboration among teachers and the principal in school improvement efforts—resulting in gains in student achievement, less student behavior and attendance issues, etc. (Tschannen-Moran, 2001; Hoy & Tschannen-Moran, 2003;

Bryk & Schneider 2002, 2003). However, most of these studies have been limited to measuring characteristics of a principal's trustworthiness (i.e. benevolence, integrity, competency/ability, etc.) and the level of principal trust rather than focusing on analyzing antecedents and/or outcomes of trust in depth. For example, these studies have tied trust to higher levels of student achievement—yet, there is a lack of analysis regarding whether the growth in student achievement was the result or the cause of the level of trust in the principal.

What this study proposes is that other factors other than a principal's trustworthiness need to be considered in studying the level of principal trust. This research is needed to help guide a principal's behavior and actions. One area to further research is the strong relationship between the frequency of interaction between a teacher and principal and a teacher's perception of a principal's trustworthiness. This study was limited to number of interactions. Further exploration could focus on what occurs during these interactions and/or the result of these occurrences that possibly could lead to higher levels of trust. As previously mentioned, another area of further study that needs to be explored is the whether there is a significant relationship between trust in the principal and growth in student achievement. The issue of whether low levels of student achievement (test scores, grades, etc.) will lead to low levels of principal trust or whether a principal can build trust despite lack of growth is one area to pursue. Another area would be if there are instances of low levels of trust despite high levels of student achievement and what the principal could do to rebuild trust (or what he/she is doing to destroy trust).

One important reason further analysis on principal trust is needed is because professional development and/or principal preparation programs have been found lacking in terms of providing training on how trust develops and is maintained among staff members (Bulach and Peterson, 1999; Bryk & Schneider, 2003; Brewster & Railsback, 2003). If further study provides more insight to what factors have the most impact or affect on trust, principal training programs and/or staff development could integrate this information into their curriculum to increase its value and applicability to principals that seek to build and/or increase trust.

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APPENDIX A

DIRECTIONS: PLEASE COMPLETE PARTS I-IV OF THE SURVEY. THANK YOU FOR YOUR TIME AND SUPPORT.

Part I: Please indicate the extent to which you agree or disagree with each of the following statements. You will do this by circling the appropriate number to the right of the statement. The following format shows each response number stands for:

5 = Agree Strongly 4 = Agree 3 = Neither Agree nor Disagree

2 = Disagree 1 = Disagree Strongly

1. The principal is very capable of performing his/her job.	**1**	**2**	**3**	**4**	**5**
2. The principal is known to be successful at the things he/she tries to do.	**1**	**2**	**3**	**4**	**5**
3. I feel very confident about the principal's skills.	**1**	**2**	**3**	**4**	**5**
4. The principal has much knowledge about the work that needs to be done.	**1**	**2**	**3**	**4**	**5**
5. The principal has specialized capabilities that can increase our performance.	**1**	**2**	**3**	**4**	**5**
6. The principal is well qualified.	**1**	**2**	**3**	**4**	**5**
7. The principal is very concerned about my welfare.	**1**	**2**	**3**	**4**	**5**
8. My needs and desires are very important to the principal.	**1**	**2**	**3**	**4**	**5**

9. The principal would not knowingly do anything to hurt me.	**1**	**2**	**3**	**4**	**5**
10. The principal really looks out for what is important to me.	**1**	**2**	**3**	**4**	**5**
11. The principal will go out of her/his way to help me.	**1**	**2**	**3**	**4**	**5**
12. The principal has a strong sense of justice.	**1**	**2**	**3**	**4**	**5**
13. I never have to wonder whether the principal will stick to his/her word.	**1**	**2**	**3**	**4**	**5**
14. The principal tries hard to be fair in dealings with others.	**1**	**2**	**3**	**4**	**5**
15. The principal's actions and behaviors are not very consistent.	**1**	**2**	**3**	**4**	**5**
16. I like the principal's values.	**1**	**2**	**3**	**4**	**5**
17. Sound principles seem to guide the principal's behavior.	**1**	**2**	**3**	**4**	**5**
18. If I had my way, I wouldn't let the principal have any influence over issues that are important to me.	**1**	**2**	**3**	**4**	**5**
19. I would be willing to let the principal have complete control over my future at this school.	**1**	**2**	**3**	**4**	**5**
20. I really wish I had a good way to keep an eye on the principal.	**1**	**2**	**3**	**4**	**5**
21. I would be comfortable giving the principal a task or problem which was critical to me, even if I could not monitor his/her actions.	**1**	**2**	**3**	**4**	**5**

<u>Part II:</u> Please indicate how often you interact with the principal for each of the following statements. You will do this by circling the appropriate number to the right of the statement. The following format shows each response number stands for:

5 = Daily **4 = Weekly** **3 = Monthly**

2 = Every Few Months **1 = Yearly** **0 = Never**

1. How frequently does the principal initiate work-related interaction with you?	**0 1 2 3 4 5**
2. How frequently do you initiate work-related interaction with the principal?	**0 1 2 3 4 5**
3. How frequently do you interact with the principal at work?	**0 1 2 3 4 5**
4. How frequently do you interact with the principal informally or socially at work?	**0 1 2 3 4 5**
5. How frequently do you exchange emails or telephone calls with the principal?	**0 1 2 3 4 5**
6. How frequently do you meet with the principal to discuss problems and/or issues?	**0 1 2 3 4 5**
7. How frequently do you meet with the principal to discuss your teacher evaluation and/or observations?	**0 1 2 3 4 5**
8. How frequently do you attend a faculty meeting held by the	**0 1 2 3 4 5**

principal?	
9. How frequently do you help supervise students with the principal?	**0 1 2 3 4 5**
10. How frequently do you work on a project with the principal?	**0 1 2 3 4 5**
11. How frequently do you encounter the principal out and about in the school building or grounds?	**0 1 2 3 4 5**
12. How frequently has the principal urged you to adopt district program guidelines or materials?	**0 1 2 3 4 5**
13. How often has the principal led staff development or training sessions?	**0 1 2 3 4 5**
14. How frequently has the principal expressed praise or criticism of teaching activities by any staff members?	**0 1 2 3 4 5**
15. How frequently has the principal raised concerns about student behavior or discipline?	**0 1 2 3 4 5**

<u>Part III:</u> Please indicate the extent to which you agree or disagree with each of the following statements. You will do this by circling the appropriate number to the right of the statement. The following format shows each response number stands for:

5 = Agree Strongly 4 = Agree 3 = Neither Agree nor Disagree

2 = Disagree 1 = Disagree Strongly

1.	**One should be very cautious with strangers.**	**1**	**2**	**3**	**4**	**5**
2.	**Most experts tell the truth about the limits of their knowledge.**	**1**	**2**	**3**	**4**	**5**
3.	**Most people can be counted on to do what they say they will do.**	**1**	**2**	**3**	**4**	**5**
4.	**These days, you must be alert or someone is likely to take advantage of you.**	**1**	**2**	**3**	**4**	**5**
5.	**Most salespeople are honest in describing their products.**	**1**	**2**	**3**	**4**	**5**
6.	**Most repair people will not overcharge people who are ignorant of their specialty.**	**1**	**2**	**3**	**4**	**5**
7.	**Most people answer public opinion polls honestly.**	**1**	**2**	**3**	**4**	**5**
8.	**Most adults are competent at their jobs.**	**1**	**2**	**3**	**4**	**5**

<u>Part IV</u>: Please circle the response that best describes you.

1.	**Highest degree obtained:**	**A. BA/BS B. MA/MS (30 units) C. MA/MS (60 units) D. EdD E. PhD F. Other: ____**
2.	**Gender:**	**A. Female B. Male**
3.	**Age:**	**A. 22-32 B. 33-43 C. 44-54 D. 55-65 E. 66+**
4.	**Total years teaching:**	**A. less than 1 year B. 1-3 years C. 4-6 years D. 7-9 years E. 10-12 years F. 13-15 years G. 16+ years.**

5. Total years employed at current school site:	**A. less than 1 year B. 1-3 years** **C. 4-6 years D. 7-9 years** **E. 10-12 years F. 13-15 years** **G. 16+ years.**
6. Demographic group you most closely identify with:	**A. African American** **B. American Indian/Alaska Native** **C. Asian D. Filipino E. Hispanic or Latino** **F. Pacific Islander G. White (not of Hispanic origin)** **H. Other**

APPENDIX B

May 2009

Dear Elementary School Teacher,

In few days, you will receive a request to complete a brief questionnaire for a research project being conducted for the Graduate School of Education at the University of California, Riverside. This research project seeks to better understand the relationships between elementary school teachers and their principals.

Please be assured that approval from the Institutional Review Board (IRB) from the University of California and from your school district has been received. The survey will be anonymous.

Your participation will guarantee that an adequate sample of elementary school teachers serving California public schools is included in the analysis. I hope to have approximately 500 participants in this study. Thank you for your time and consideration.

Sincerely,

Monica Makiewicz
Graduate Student Researcher
University of California, Riverside
(626) 281-0191
Email: mmakiewicz@gusd.net

APPENDIX C

May 2009

Dear Elementary School Teacher,

I am writing to ask for your assistance in an important study on teacher and principal relations at California Public Elementary Schools. This research project is being conducted for the Graduate School of Education at the University of California, Riverside.

Your contact information was provided by your school district. Both the university and the district have reviewed the study protocol and have formally approved the project.

The survey will be anonymous and will take approximately 15 minutes to complete. The completion and return of the survey will indicate your consent and willingness to participate in this study. This study is voluntary and there will be no consequences whether or not you decide to participate. You may also skip questions that you do not feel comfortable answering. The questionnaire is attached along with an addressed envelope to be able to return the survey via United States Postal Service (USPS).

If you have any questions or comments about this study, please feel free to contact me at the number or email address below. If you have any questions about your rights as a research participant, please contact the University of California Riverside Human Research Review Board at (951) 827-4811 or at IRB@ucr.edu.

Thank you in advance for assisting me with this important study.

Sincerely,

Monica Makiewicz
Graduate Student Researcher
University of California, Riverside
(626) 281-0191
Email: mmakiewicz@gusd.net

APPENDIX D

May 2009

Dear Elementary School Teacher,

Last week you received a letter and a survey asking for your assistance in a study of California Public School Elementary Teachers.

If you have already completed the survey, please accept my sincere thanks. If you would still like to participate, please do so today. I have attached a copy of the survey and you can return it through USPS. Accurate analyses are dependent upon a sufficient response rate, so I am grateful for your help.

If you have any questions, please feel free to contact me at the number or email address below. If you have any questions about your rights as a research participant, please contact the University of California Riverside Human Research Review Board at (951) 827-4811 or at IRB@ucr.edu.

Sincerely,

Monica Makiewicz
Graduate Student Researcher
University of California, Riverside
(626) 281-0191
Email: mmakiewicz@gusd.net

APPENDIX E

June 2009

Dear Elementary School Teacher,

Over the past few weeks, you have been requested to participate in a study of the relationships between teachers and principals in California Public Elementary Schools by completing a brief survey.

I would like to thank each one of you for your time and support. Your participation has helped ensure that an adequate sample was provided for this study and will lead to valuable analyses of teacher and principal relations.

If you have any questions about this study, please feel free to contact me at the number or email address below. If you have any questions about your rights as a research participant, please contact the University of California Riverside Human Research Review Board at (951) 827-4811 or at IRB@ucr.edu.

Sincerely,

Monica Makiewicz
Graduate Student Researcher
University of California, Riverside
(626) 281-0191
Email: mmakiewicz@gusd.net

APPENDIX F

Table 4.9

Principal Characteristics by School Site

School Site	Highest Degree Obtained	Gender	Age (Years)	Total Years Teaching	Total Years Principal at Site	Demographic Group
1	MA/MS (30 units)	Male	44-54	7-9	1-3	White (Not of Hispanic Origin)
2	MA/MS (30 units)	Male	44-54	10-12	1-3	White (Not of Hispanic Origin)
3	MA/MS (60 units)	Male	44-54	10-12	4-6	White (Not of Hispanic Origin)
4	EdD	Female	44-54	7-9	4-6	White (Not of Hispanic Origin)
5	MA/MS (60 units)	Male	44-54	10-12	7-9	White (Not of Hispanic Origin)
6	MA/MS (60 units)	Male	44-54	13-15	4-6	Hispanic/Latino
7	MA/MS (60 units)	Female	44-54	10-12	1-3	White (Not of Hispanic Origin)

8	MA/MS (60 units)	Female	44-54	7-9	4-6	White (Not of Hispanic Origin)
9	MA/MS (60 units)	Female	44-54	7-9	4-6	White (Not of Hispanic Origin)
10	MA/MS (60 units)	Male	44-54	10-12	4-6	White (Not of Hispanic Origin)
11	MA/MS (60 units)	Male	44-54	7-9	7-9	White (Not of Hispanic Origin)
12	MA/MS (60 units)	Male	44-54	10-12	7-9	White (Not of Hispanic Origin)
13	MA/BS (60 units)	Male	33-43	7-9	1-3	White (Not of Hispanic Origin)

Table 4.10

Teacher Characteristics by School Site (Largest Percentage Shown)

School Site	Highest Degree Obtained	Gender	Age (Years)	Years Teaching	Years at Site	Demographic Group
1	50% MA/MS	91.7% female	45% 22-32 years old	33.3% 7-9 years	75% 1-3	83.4% White (not of Hispanic

	(30 units).				years	origin)
2	75% BA./BS	57.1% female	46.4% 44-54 years old	28.6% 10-12 years; 28.6% 13-15 years	25% 4-6 years; 25% 13-15 years	75% White (not of Hispanic origin)
3	73.1% BA/BS	92.3% female	38.5% 22-32 years old	26.9% 1-3 years; 26.9% 4-6 years	76.9 % 1-3 years	76.9% White (not of Hispanic origin)
4	48.1% BA/BS	92.6% female	48.1% 33-43 years old	29.6% 4-6 years; 29.6% 13-15 years	40.7 % 1-3 years	55.6% White (not of Hispanic origin)
5	72.7% BA/BS	63.6% female	48.5% 33-43 years old	30.3% 1-3 years	39.4 % 4-6 years	60.6% White (not of Hispanic origin)
6	41.4% BA/BS	58.6% female	44.8% 44-54 years old	24.1% 13-15 years	24.1 % 4-6 years	72.4% White (not of Hispanic origin)
7	48.6% BA/BS	71.4% female	57.1% 33-43 years old	28.6% 4-6 years	40% 1-3 years	54.3% White (not of Hispanic origin)
8	43.8% BA/BS	87.5% female	56.3% 33-43 years old	28.1% 13-15 years	43.8 % 1-3	59.4% White (not of Hispanic

					years	origin)
9	43.8% BA/BS	81.3% female	40.6% 33-43 years old	34.4% 4-6 years	43.8 % 1-3 years	56.3 White (not of Hispanic origin)
10	67.7% BA/BS	58.1% female	41.9% 44-54 years old	41.9% 13-15 years	41.9 % 4-6 years	77.4% White (not of Hispanic origin)
11	69.7% BA/BS	66.7% female	33.3% 33-43 years old	33.3% 1-3 years	42.4 % 1-3 years	78.8% White (not of Hispanic origin)
12	66.7% BA/BS	60% female	46.7% 44-54 years old	30% 10-12 years	26.7 % 4-6 years	63.3% White (not of Hispanic origin)
13	88.2% BA/BS	88.2% female	41.2% 44-54 years old	29.4% 1-3 years; 29.4% 4-6 years; 29.4% 13-15 years	88.2 % 1-3 years	64.7% White (not of Hispanic origin)

APPENDIX G

Table 5.8

Social and Demographic Characteristics of the Sample

TEACHER, PRINCIPAL and SCHOOL Characteristics					
Variable	Label	Min	Max	Mean	Std Dev
Teacher Gender: 0 = F; 1 = M	TGENDER	0	1	0.26	0.44
Teacher is African American	TDEMOA	0	0	0.00	0.00
Teacher is American Indian/Alaska Native	TDEMOB	0	0	0.00	0.00
Teacher is Asian	TDEMOC	0	1	0.02	0.13
Teacher is Filipino	TDEMOD	0	1	0.01	0.09
Teacher is Hispanic	TDEMOE	0	1	0.19	0.39
Teacher is Pac Islander	TDEMOF	0	0	0.00	0.00
Teacher is White	TDEMOG	0	1	0.67	0.47
Teacher is Other	TDEMOH	0	1	0.12	0.32
Average School API Score	APISCHOOL	760	851	789.10	29.05
Percent Non-White Students	MINORITY	42.6	95.99	74.47	18.50
English Language Learner Population	ELLPOP	9	78	46.72	28.53
Socio-Economically Disadvantaged Population	SEDPOP	19	79	54.70	22.26
Total School Enrollment	ENROLL	474	935	803.41	105.66
Number of Teachers in School	NTEACHERS	24	47	40.44	5.21
Latino/Hispanic and African American Population	LAAPOP	28.18	94.52	67.80	21.29
Principal Degree Held (1 = BA/BS; 4 = EdD)	PDEGREE	2	4	2.30	0.60
Principal Gender (1 = F; 2 = M)	PGENDER	1	2	1.67	0.47
Principal Age (2 = 33-44; sd ~2.3; Mean ~43.5)	PPAGE	2	3	2.95	0.21
Principal Years in Teaching	PYRSTEACH	4	5	4.56	0.50
Principal Years as Principal	YRSP	2	4	2.98	0.73
Teacher Educ Level (1 = BA/BS; 4 = EdD)	TDEGREER	1	4	1.69	0.86
Tchr Age Grp (2 = 33-44; sd ~10 yrs; Mean ~35)	TAGER	1	4	2.17	0.95
Tchr Yrs Taught Grp (4 = 7-9 yrs; sd ~4.7 yrs)	TYRSTEACHR	2	7	4.26	1.56
Tchr Yrs in School (3 = 4-6 yrs; sd ~4.7 yrs)	TYRSSITER	1	7	3.17	1.58

Table 5.9

School 1

	Range	Min	Max	Mean	Std. Dev
ABILITY1	0	5	5	5.00	.000
ABILITY2	1	4	5	4.96	.204
ABILITY3	1	4	5	4.96	.204
ABILITY4	1	4	5	4.96	.204
ABILITY5	1	4	5	4.75	.442
ABILITY6	0	5	5	5.00	.000
BENE7	2	3	5	4.33	.761
BENE8	3	2	5	4.29	.908
BENE9	2	3	5	4.67	.637
BENE10	2	3	5	4.29	.751
BENE11	2	3	5	4.50	.722
INTEGRITY12	2	3	5	4.58	.654
INTEGRITY13	4	1	5	4.42	1.176
INTEGRITY14	3	2	5	4.63	.711
INTEGRITY15	3	2	5	4.58	.776
INTEGRITY16	2	3	5	4.58	.654
INTEGRITY17	1	4	5	4.71	.464
TRUST18	3	2	5	4.17	.868
TRUST19	4	1	5	3.37	1.173
TRUST20	2	3	5	4.37	.824
TRUST21	3	2	5	4.50	.780
FI1	3	2	5	4.00	.933

FI2	3	2	5	3.75	.794
FI3	3	2	5	4.46	.977
FI4	4	1	5	3.50	.933
SFI5	3	2	5	3.79	.721
SFI6	2	2	4	3.46	.658
SFI7	1	2	3	2.29	.464
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.63	.495
SFI10	1	3	4	3.58	.504
SFI11	1	4	5	4.46	.509
SFI12	1	1	2	1.79	.415
SFI13	3	1	4	2.04	.464
SFI14	2	2	4	3.25	.737
SFI15	2	1	3	1.96	.359
PT1	3	1	4	2.21	.833
PT2	3	1	4	2.92	.881
PT3	3	2	5	3.67	.868
PT4	3	2	5	3.00	.933
PT5	3	1	4	2.58	.830
PT6	3	1	4	2.54	.932
PT7	3	2	5	3.42	.776
PT8	3	1	4	3.33	.868

Note. Valid N=24

Table 5.10

School 2

	Range	Min	Max	Mean	Std. Dev
ABILITY1	2	3	5	4.54	.576
ABILITY2	1	4	5	4.54	.508
ABILITY3	2	3	5	4.46	.576
ABILITY4	2	3	5	4.46	.637
ABILITY5	2	3	5	4.11	.786
ABILITY6	2	3	5	4.57	.573
BENE7	2	3	5	4.43	.742
BENE8	2	3	5	4.21	.787
BENE9	3	2	5	4.61	.737
BENE10	3	2	5	4.11	.875
BENE11	3	2	5	4.32	.772
INTEGRITY12	4	1	5	4.25	.967
INTEGRITY13	4	1	5	4.32	.945
INTEGRITY14	3	2	5	4.54	.693
INTEGRITY15	4	1	5	4.11	1.257
INTEGRITY16	3	2	5	4.43	.790
INTEGRITY17	4	1	5	4.32	1.056
TRUST18	4	1	5	3.79	1.228
TRUST19	4	1	5	2.68	1.278
TRUST20	3	2	5	4.29	.937
TRUST21	3	2	5	4.14	.803
FI1	3	2	5	3.93	.716
FI2	3	2	5	3.75	.752

FI3	2	3	5	4.32	.612
FI4	3	2	5	3.46	.922
SFI5	2	3	5	3.79	.568
SFI6	3	2	5	3.50	.638
SFI7	2	2	4	2.50	.577
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.57	.504
SFI10	2	2	4	3.32	.612
SFI11	1	4	5	4.32	.476
SFI12	4	1	5	1.82	.772
SFI13	3	1	4	1.89	.629
SFI14	3	1	4	3.46	.793
SFI15	3	1	4	2.21	.630
PT1	3	1	4	2.11	.875
PT2	4	1	5	2.71	1.013
PT3	2	2	4	3.36	.678
PT4	3	1	4	2.57	.836
PT5	3	1	4	2.29	.763
PT6	2	1	3	2.36	.621
PT7	4	1	5	3.18	.819
PT8	4	1	5	3.25	.928

Note. Valid N=28

Table 5.11

School 3

	Range	Min	Max	Mean	Std. Dev
ABILITY1	1	4	5	4.58	.504
ABILITY2	1	4	5	4.85	.368
ABILITY3	1	4	5	4.69	.471
ABILITY4	1	4	5	4.73	.452
ABILITY5	1	4	5	4.69	.471
ABILITY6	1	4	5	4.88	.326
BENE7	2	3	5	4.15	.675
BENE8	3	2	5	4.35	.846
BENE9	2	3	5	4.46	.647
BENE10	2	3	5	4.23	.710
BENE11	2	3	5	4.38	.637
INTEGRITY12	2	3	5	4.50	.583
INTEGRITY13	4	1	5	4.31	.928
INTEGRITY14	1	4	5	4.54	.508
INTEGRITY15	2	3	5	4.50	.583
INTEGRITY16	3	2	5	4.35	.797
INTEGRITY17	1	4	5	4.46	.508
TRUST18	3	2	5	4.08	.796
TRUST19	4	1	5	3.38	1.023
TRUST20	2	3	5	4.31	.788
TRUST21	3	2	5	4.35	.745
FI1	3	2	5	3.92	.845

FI2	3	2	5	3.69	.679
FI3	3	2	5	4.38	.941
FI4	4	1	5	3.35	.977
SFI5	3	2	5	3.77	.652
SFI6	2	2	4	3.50	.648
SFI7	1	2	3	2.27	.452
SFI8	0	3	3	3.00	.000
SFI9	2	3	5	3.77	.514
SFI10	1	3	4	3.54	.508
SFI11	1	4	5	4.42	.504
SFI12	1	1	2	1.81	.402
SFI13	3	1	4	2.04	.445
SFI14	2	2	4	3.31	.679
SFI15	2	1	3	1.96	.344
PT1	3	1	4	2.27	.778
PT2	3	1	4	2.96	.871
PT3	3	2	5	3.65	.846
PT4	3	2	5	2.92	.935
PT5	3	1	4	2.58	.809
PT6	3	1	4	2.58	.857
PT7	3	2	5	3.38	.752
PT8	3	1	4	3.31	.838

Note. Valid N=26

Table 5.12

School 4

	Range	Min	Max	Mean	Std. Dev
ABILITY1	2	3	5	4.48	.580
ABILITY2	2	3	5	4.37	.688
ABILITY3	2	3	5	4.59	.572
ABILITY4	1	4	5	4.59	.501
ABILITY5	2	3	5	4.04	.759
ABILITY6	1	4	5	4.59	.501
BENE7	2	3	5	4.30	.869
BENE8	2	3	5	4.37	.565
BENE9	2	3	5	4.41	.694
BENE10	2	3	5	4.11	.641
BENE11	2	3	5	4.26	.712
INTEGRITY12	2	3	5	4.37	.688
INTEGRITY13	1	4	5	4.67	.480
INTEGRITY14	1	4	5	4.63	.492
INTEGRITY15	4	1	5	4.07	.997
INTEGRITY16	2	3	5	4.37	.565
INTEGRITY17	2	3	5	4.19	.786
TRUST18	4	1	5	4.07	1.072
TRUST19	3	1	4	2.56	.847
TRUST20	3	2	5	4.41	.888
TRUST21	2	3	5	4.22	.641
FI1	1	3	4	3.93	.267

FI2	1	3	4	3.67	.480
FI3	2	3	5	4.15	.602
FI4	4	1	5	3.00	1.109
SFI5	2	3	5	3.89	.506
SFI6	1	3	4	3.59	.501
SFI7	1	2	3	2.33	.480
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.48	.509
SFI10	2	2	4	3.26	.526
SFI11	1	4	5	4.19	.396
SFI12	1	1	2	1.63	.492
SFI13	2	1	3	1.89	.506
SFI14	2	2	4	3.15	.534
SFI15	1	2	3	2.59	.501
PT1	3	1	4	2.48	1.014
PT2	3	2	5	2.52	.700
PT3	2	1	4	3.07	.958
PT4	4	1	5	2.78	.934
PT5	2	2	4	2.74	.594
PT6	2	2	4	2.48	.753
PT7	2	2	4	3.04	.898
PT8	2	2	4	3.48	.643

Note. Valid N=27

Table 5.13

School 5

	Range	Min	Max	Mean	Std. Dev
ABILITY1	3	2	5	4.18	.882
ABILITY2	3	2	5	4.15	.939
ABILITY3	4	1	5	3.97	1.104
ABILITY4	3	2	5	3.97	1.045
ABILITY5	4	1	5	3.67	1.242
ABILITY6	3	2	5	4.09	.980
BENE7	4	1	5	3.82	1.310
BENE8	4	1	5	3.61	1.345
BENE9	4	1	5	4.06	1.345
BENE10	4	1	5	3.42	1.324
BENE11	4	1	5	3.70	1.357
INTEGRITY12	4	1	5	3.58	1.300
INTEGRITY13	4	1	5	3.67	1.291
INTEGRITY14	4	1	5	3.73	1.353
INTEGRITY15	4	1	5	3.58	1.347
INTEGRITY16	4	1	5	3.55	1.252
INTEGRITY17	4	1	5	3.61	1.273
TRUST18	4	1	5	3.48	1.176
TRUST19	4	1	5	2.42	1.324
TRUST20	4	1	5	3.70	1.262
TRUST21	4	1	5	3.27	1.306
FI1	3	1	4	2.85	.906

FI2	3	1	4	2.42	.867
FI3	3	2	5	3.27	.911
FI4	4	1	5	2.88	1.293
SFI5	4	1	5	2.82	1.044
SFI6	3	1	4	2.85	1.064
SFI7	0	2	2	2.00	.000
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.24	.435
SFI10	4	0	4	2.45	1.063
SFI11	1	4	5	4.09	.292
SFI12	1	1	2	1.39	.496
SFI13	2	1	3	1.70	.529
SFI14	2	1	3	2.45	.564
SFI15	2	2	4	2.76	.502
PT1	3	1	4	2.73	.876
PT2	3	1	4	2.82	.950
PT3	3	1	4	3.15	.795
PT4	2	2	4	2.91	.765
PT5	3	1	4	2.55	.794
PT6	3	1	4	2.61	.827
PT7	3	1	4	3.33	.816
PT8	3	2	5	3.48	.755

Note. Valid N=33

Table 5.14

School 6

	Range	Min	Max	Mean	Std. Dev
ABILITY1	1	4	5	4.52	.509
ABILITY2	2	3	5	4.41	.568
ABILITY3	2	3	5	4.48	.574
ABILITY4	1	4	5	4.55	.506
ABILITY5	2	3	5	4.14	.833
ABILITY6	1	4	5	4.59	.501
BENE7	2	3	5	4.31	.712
BENE8	2	3	5	4.21	.726
BENE9	3	2	5	4.55	.736
BENE10	2	3	5	4.14	.789
BENE11	3	2	5	4.28	.751
INTEGRITY12	2	3	5	4.34	.769
INTEGRITY13	2	3	5	4.28	.702
INTEGRITY14	2	3	5	4.55	.572
INTEGRITY15	4	1	5	4.03	1.210
INTEGRITY16	3	2	5	4.45	.783
INTEGRITY17	4	1	5	4.34	1.045
TRUST18	4	1	5	3.72	1.162
TRUST19	4	1	5	2.66	1.203
TRUST20	3	2	5	4.24	.951
TRUST21	3	2	5	4.14	.789
FI1	3	2	5	3.97	.731
FI2	3	2	5	3.79	.726

FI3	2	3	5	4.28	.591
FI4	3	2	5	3.52	.871
SFI5	2	3	5	3.76	.577
SFI6	3	2	5	3.52	.688
SFI7	2	2	4	2.45	.572
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.59	.501
SFI10	2	2	4	3.24	.577
SFI11	1	4	5	4.28	.455
SFI12	1	1	2	1.69	.471
SFI13	3	1	4	1.90	.618
SFI14	3	1	4	3.38	.775
SFI15	1	2	3	2.21	.412
PT1	2	1	3	2.03	.731
PT2	3	1	4	2.69	.761
PT3	2	2	4	3.31	.660
PT4	3	1	4	2.52	.829
PT5	3	1	4	2.31	.761
PT6	2	1	3	2.34	.614
PT7	2	2	4	3.07	.651
PT8	3	2	5	3.28	.751

Note. Valid N=29

Table 5.15

School 7

	Range	Min	Max	Mean	Std. Dev
ABILITY1	1	4	5	4.60	.497
ABILITY2	2	3	5	4.46	.657
ABILITY3	2	3	5	4.60	.553
ABILITY4	1	4	5	4.57	.502
ABILITY5	2	3	5	4.03	.707
ABILITY6	1	4	5	4.57	.502
BENE7	2	3	5	4.23	.843
BENE8	2	3	5	4.26	.561
BENE9	2	3	5	4.40	.695
BENE10	2	3	5	4.06	.639
BENE11	2	3	5	4.23	.731
INTEGRITY12	2	3	5	4.31	.676
INTEGRITY13	1	4	5	4.66	.482
INTEGRITY14	1	4	5	4.54	.505
INTEGRITY15	4	1	5	4.06	1.056
INTEGRITY16	2	3	5	4.37	.547
INTEGRITY17	2	3	5	4.20	.759
TRUST18	4	1	5	4.06	1.110
TRUST19	4	1	5	2.54	.919
TRUST20	4	1	5	4.29	1.017
TRUST21	2	3	5	4.23	.646
FI1	2	3	5	4.00	.243
FI2	2	3	5	3.80	.473

FI3	2	3	5	4.14	.601
FI4	4	1	5	2.91	1.147
SFI5	2	3	5	3.94	.482
SFI6	2	3	5	3.69	.530
SFI7	1	2	3	2.37	.490
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.57	.502
SFI10	1	3	4	3.31	.471
SFI11	1	4	5	4.17	.382
SFI12	2	1	3	1.74	.505
SFI13	2	1	3	2.03	.514
SFI14	2	2	4	3.29	.519
SFI15	1	2	3	2.60	.497
PT1	3	1	4	2.40	1.090
PT2	3	2	5	2.66	.765
PT3	2	2	4	3.49	.702
PT4	4	1	5	2.69	.993
PT5	2	2	4	2.66	.539
PT6	2	2	4	2.37	.646
PT7	2	2	4	3.00	.907
PT8	2	2	4	3.51	.658

Note. Valid N=35

Table 5.16

School 8

	Range	Min	Max	Mean	Std. Dev
ABILITY1	2	3	5	4.47	.567
ABILITY2	2	3	5	4.38	.660
ABILITY3	2	3	5	4.50	.568
ABILITY4	1	4	5	4.59	.499
ABILITY5	2	3	5	4.09	.818
ABILITY6	1	4	5	4.62	.492
BENE7	2	3	5	4.34	.865
BENE8	2	3	5	4.28	.634
BENE9	2	3	5	4.41	.615
BENE10	2	3	5	4.16	.677
BENE11	2	3	5	4.28	.729
INTEGRITY12	2	3	5	4.47	.671
INTEGRITY13	1	4	5	4.59	.499
INTEGRITY14	1	4	5	4.59	.499
INTEGRITY15	4	1	5	3.97	1.062
INTEGRITY16	2	3	5	4.44	.564
INTEGRITY17	2	3	5	4.25	.718
TRUST18	4	1	5	4.22	.870
TRUST19	3	1	4	2.63	.793
TRUST20	4	1	5	4.34	1.81
TRUST21	2	3	5	4.19	.644
FI1	1	3	4	3.91	.296

FI2	1	3	4	3.69	.471
FI3	2	3	5	4.09	.588
FI4	4	1	5	2.97	1.150
SFI5	2	3	5	3.88	.554
SFI6	2	3	5	3.59	.615
SFI7	1	2	3	2.25	.440
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.37	.492
SFI10	2	2	4	3.16	.515
SFI11	1	4	5	4.25	.440
SFI12	1	1	2	1.59	.499
SFI13	2	1	3	1.91	.466
SFI14	2	2	4	3.06	.504
SFI15	1	2	3	2.63	.492
PT1	3	1	4	2.50	.984
PT2	1	2	3	2.47	.507
PT3	2	2	4	3.53	.718
PT4	4	1	5	2.75	.916
PT5	2	2	4	2.63	.554
PT6	2	2	4	2.53	.842
PT7	2	2	4	2.97	.933
PT8	2	2	4	3.44	.564

Note. Valid N=32

Table 5.17

School 9

	Range	Min	Max	Mean	Std. Dev
ABILITY1	2	3	5	4.56	.564
ABILITY2	2	3	5	4.44	.669
ABILITY3	2	3	5	4.59	.560
ABILITY4	1	4	5	4.56	.504
ABILITY5	2	3	5	4.00	.803
ABILITY6	1	4	5	4.59	.499
BENE7	2	3	5	4.22	.870
BENE8	2	3	5	4.34	.602
BENE9	2	3	5	4.38	.660
BENE10	2	3	5	4.13	.707
BENE11	2	3	5	4.22	.751
INTEGRITY12	2	3	5	4.38	.707
INTEGRITY13	1	4	5	4.66	.483
INTEGRITY14	1	4	5	4.63	.492
INTEGRITY15	4	1	5	4.03	1.092
INTEGRITY16	2	3	5	4.41	.560
INTEGRITY17	2	3	5	4.25	.762
TRUST18	4	1	5	4.09	1.146
TRUST19	4	1	5	2.59	.946
TRUST20	4	1	5	4.28	1.054
TRUST21	2	3	5	4.22	.659
FI1	2	3	5	3.94	.354

FI2	2	3	5	3.72	.523
FI3	2	3	5	4.19	.644
FI4	4	1	5	3.06	1.134
SFI5	2	3	5	3.88	.554
SFI6	2	3	5	3.59	.560
SFI7	1	2	3	2.34	.483
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.44	.504
SFI10	2	2	4	3.22	.553
SFI11	1	4	5	4.25	.440
SFI12	1	1	2	1.66	.483
SFI13	2	1	3	1.91	.530
SFI14	2	2	4	3.09	.530
SFI15	1	2	3	2.59	.499
PT1	3	1	4	2.31	.998
PT2	3	2	5	2.56	.669
PT3	2	2	4	3.44	.716
PT4	4	1	5	2.59	.837
PT5	2	2	4	2.78	.553
PT6	2	2	4	2.50	.762
PT7	2	2	4	2.94	.914
PT8	2	2	4	3.44	.669

Note. Valid N=32

Table 5.18

School 10

	Range	Min	Max	Mean	Std. Dev
ABILITY1	2	3	5	4.77	.497
ABILITY2	1	4	5	4.74	.445
ABILITY3	2	3	5	4.77	.497
ABILITY4	1	4	5	4.77	.425
ABILITY5	2	3	5	4.61	.558
ABILITY6	1	4	5	4.84	.374
BENE7	1	4	5	4.81	.402
BENE8	2	3	5	4.68	.541
BENE9	1	4	5	4.90	.301
BENE10	2	3	5	4.55	.568
BENE11	1	4	5	4.74	.445
INTEGRITY12	2	3	5	4.68	.541
INTEGRITY13	4	1	5	4.48	.890
INTEGRITY14	2	3	5	4.65	.551
INTEGRITY15	4	1	5	4.00	1.414
INTEGRITY16	3	2	5	4.55	.768
INTEGRITY17	3	2	5	4.61	.715
TRUST18	3	2	5	4.23	.845
TRUST19	4	1	5	2.68	1.492
TRUST20	4	1	5	4.48	.851
TRUST21	3	2	5	4.16	.735
FI1	3	2	5	3.77	.717
FI2	3	2	5	3.52	.890

FI3	3	2	5	4.29	.938
FI4	4	1	5	3.42	1.232
SFI5	2	3	5	3.77	.669
SFI6	3	2	5	3.48	.724
SFI7	1	2	3	2.03	.180
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.35	.486
SFI10	4	1	5	3.32	.909
SFI11	2	3	5	4.16	.523
SFI12	1	1	2	1.87	.341
SFI13	1	1	2	1.77	.425
SFI14	2	2	4	3.23	.717
SFI15	2	2	4	2.81	.543
PT1	2	1	3	2.16	.688
PT2	3	1	4	2.42	.765
PT3	2	2	4	2.94	.680
PT4	3	1	4	2.26	.773
PT5	3	1	4	2.68	.871
PT6	3	1	4	2.52	.926
PT7	2	2	4	3.26	.575
PT8	1	3	4	3.26	.445

Note. Valid N=31

Table 5.19

School 11

	Range	Min	Max	Mean	Std. Dev
ABILITY1	3	2	5	4.36	.895
ABILITY2	3	2	5	4.27	.876
ABILITY3	4	1	5	4.12	1.083
ABILITY4	3	2	5	4.09	1.042
ABILITY5	4	1	5	3.85	1.253
ABILITY6	3	2	5	4.30	.951
BENE7	4	1	5	4.00	1.299
BENE8	4	1	5	3.79	1.317
BENE9	4	1	5	4.21	1.244
BENE10	4	1	5	3.64	1.319
BENE11	4	1	5	3.85	1.278
INTEGRITY12	4	1	5	3.82	1.236
INTEGRITY13	4	1	5	3.76	1.275
INTEGRITY14	4	1	5	3.97	1.262
INTEGRITY15	4	1	5	3.64	1.388
INTEGRITY16	4	1	5	3.73	1.180
INTEGRITY17	4	1	5	3.82	1.211
TRUST18	4	1	5	3.64	1.055
TRUST19	4	1	5	2.48	1.326
TRUST20	4	1	5	3.67	1.291
TRUST21	4	1	5	3.39	1.273
FI1	3	1	4	2.88	.893
FI2	3	1	4	2.45	.905

FI3	3	2	5	3.33	.924
FI4	4	1	5	2.85	1.253
SFI5	4	1	5	2.91	.980
SFI6	3	1	4	2.85	1.004
SFI7	0	2	2	2.00	.000
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.24	.435
SFI10	4	0	4	2.52	1.064
SFI11	1	4	5	4.09	.292
SFI12	1	1	2	1.39	.496
SFI13	2	1	3	1.67	.540
SFI14	2	1	3	2.45	.564
SFI15	2	2	4	2.76	.502
PT1	3	1	4	2.67	.890
PT2	3	1	4	2.82	.917
PT3	3	1	4	3.12	.820
PT4	2	2	4	2.94	.788
PT5	3	1	4	2.58	.867
PT6	3	1	4	2.61	.827
PT7	3	1	4	3.36	.783
PT8	3	2	5	3.39	.747

Note. Valid N=33

Table 5.20

School 12

	Range	Min	Max	Mean	Std. Dev
ABILITY1	2	3	5	4.50	.572
ABILITY2	2	3	5	4.33	.606
ABILITY3	2	3	5	4.47	.571
ABILITY4	2	3	5	4.57	.626
ABILITY5	2	3	5	4.10	.845
ABILITY6	1	4	5	4.40	.498
BENE7	2	3	5	4.30	.651
BENE8	2	3	5	4.10	.712
BENE9	3	2	5	4.60	.724
BENE10	2	3	5	4.00	.830
BENE11	3	2	5	4.20	.714
INTEGRITY12	2	3	5	4.40	.621
INTEGRITY13	2	3	5	4.37	.765
INTEGRITY14	2	3	5	4.47	.571
INTEGRITY15	4	1	5	4.13	1.224
INTEGRITY16	3	2	5	4.43	.774
INTEGRITY17	4	1	5	4.30	.988
TRUST18	4	1	5	3.63	1.098
TRUST19	4	1	5	2.77	1.165
TRUST20	3	2	5	4.33	.922
TRUST21	3	2	5	4.13	.819
FI1	3	2	5	4.07	.828
FI2	3	2	5	3.77	.858

FI3	2	3	5	4.27	.691
FI4	3	2	5	3.53	.860
SFI5	3	2	5	3.83	.747
SFI6	3	2	5	3.60	.814
SFI7	1	2	3	2.47	.507
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.57	.504
SFI10	2	2	4	3.17	.592
SFI11	2	3	5	4.13	.507
SFI12	3	1	4	1.70	.651
SFI13	3	1	4	1.87	.629
SFI14	3	1	4	3.17	.791
SFI15	1	2	3	2.27	.450
PT1	3	1	4	2.37	.765
PT2	2	2	4	2.77	.728
PT3	2	2	4	3.40	.621
PT4	3	1	4	2.57	.774
PT5	3	1	4	2.33	.758
PT6	2	2	4	2.47	.571
PT7	2	2	4	3.27	.691
PT8	3	2	5	3.37	.765

Note. Valid N=30

Table 5.21

School 13

	Range	Min	Max	Mean	Std. Dev
ABILITY1	1	4	5	4.59	.507
ABILITY2	2	3	5	4.41	.618
ABILITY3	2	3	5	4.41	.712
ABILITY4	1	4	5	4.41	.507
ABILITY5	2	3	5	4.18	.809
ABILITY6	2	3	5	4.35	.702
BENE7	1	4	5	4.59	.507
BENE8	1	4	5	4.59	.507
BENE9	1	4	5	4.59	.507
BENE10	2	3	5	4.59	.618
BENE11	2	3	5	4.71	.588
INTEGRITY12	1	4	5	4.59	.507
INTEGRITY13	1	4	5	4.71	.470
INTEGRITY14	1	4	5	4.82	.393
INTEGRITY15	4	1	5	4.18	1.425
INTEGRITY16	1	4	5	4.82	.393
INTEGRITY17	1	4	5	4.82	.393
TRUST18	1	4	5	4.65	.493
TRUST19	4	1	5	3.53	1.125
TRUST20	2	3	5	4.53	.717
TRUST21	2	3	5	4.12	.781
FI1	1	4	5	4.35	.493
FI2	1	4	5	4.35	.493

FI3	1	4	5	4.65	.493
FI4	4	1	5	3.47	1.231
SFI5	1	4	5	4.18	.393
SFI6	1	4	5	4.18	.393
SFI7	1	2	3	2.18	.393
SFI8	0	3	3	3.00	.000
SFI9	1	3	4	3.59	.507
SFI10	1	4	5	4.29	.470
SFI11	1	4	5	4.76	.437
SFI12	1	1	2	1.71	.470
SFI13	1	2	3	2.12	.332
SFI14	2	2	4	3.12	.697
SFI15	1	2	3	2.29	.470
PT1	3	1	4	2.59	.870
PT2	2	2	4	3.00	.866
PT3	1	3	4	3.59	.507
PT4	3	2	5	3.18	.951
PT5	2	2	4	3.00	.500
PT6	2	2	4	2.94	.429
PT7	2	2	4	3.24	.562
PT8	2	2	4	3.29	.686

Note. Valid N=17

APPENDIX H

Table 5.24

Assessment of Normality for BENEVOLENCE Factor

Variable	min	max	skew	c.r.	kurtosis	c.r.
BENE7	1.000	5.000	-1.238	-9.812	1.475	5.847
BENE8	1.000	5.000	-1.316	-10.431	2.094	8.299
BENE9	1.000	5.000	-2.017	-15.990	4.958	19.649
BENE10	1.000	5.000	-1.212	-9.607	2.131	8.444
BENE11	1.000	5.000	-1.506	-11.941	2.949	11.687
Multivariate					13.989	16.233

Table 5.25

Observations Farthest from the Centroid (Mahalanobis Distance) for BENEVOLENCE FACTOR

Observation number	Mahalanobis d-squared	p1	p2
127	28.189	.000	.013
321	28.189	.000	.000

Table 5.26

Assessment of Normality for INTEGRITY Factor

Variable	min	max	Skew	c.r.	kurtosis	c.r.
INTEGRITY12	1.000	5.000	-1.550	-12.286	3.003	11.901
INTEGRITY13	1.000	5.000	-1.894	-15.011	4.042	16.021
INTEGRITY14	1.000	5.000	-2.083	-16.510	5.761	22.832
INTEGRITY15	1.000	5.000	-1.445	-11.451	1.226	4.857
INTEGRITY16	1.000	5.000	-1.480	-11.729	2.515	9.967
INTEGRITY17	1.000	5.000	-1.446	-11.461	2.058	8.155
Multivariate					27.919	27.663

Table 5.27

Observations Farthest from the Centroid (Mahalanobis Distance) for INTEGRITY Factor

Observation number	Mahalanobis d-squared	p1	p2
279	40.935	.000	.000
15	36.105	.000	.000

Observation number	Mahalanobis d-squared	p1	p2
18	36.105	.000	.000
67	36.105	.000	.000
65	31.147	.000	.000

Table 5.28

Assessment of Normality for PROPENSITY Factor

Variable	min	max	Skew	c.r.	Kurtosis	c.r.
PT1	1.000	4.000	.095	.751	-.770	-3.053
PT2	1.000	5.000	.357	2.828	-.245	-.971
PT3	1.000	5.000	-.587	-4.650	-.325	-1.287
PT4	1.000	5.000	.449	3.560	-.176	-.697
PT5	1.000	4.000	-.180	-1.426	-.230	-.910
PT6	1.000	4.000	.344	2.730	-.373	-1.479
PT7	1.000	5.000	-.334	-2.651	-.882	-3.494
PT8	1.000	5.000	-.616	-4.884	.264	1.044
Multivariate					4.613	3.540

Table 5.29

Observations Farthest from the Centroid (Mahalanobis distance) for PROPENSITY Factor

Observation number	Mahalanobis d-squared	p1	P2
17	39.026	.000	.002
69	39.026	.000	.000
33	28.392	.000	.001

Table 5.30

Assessment of Normality for FREQUENCY Factor

Variable	min	max	skew	c.r.	Kurtosis	c.r.
FI4	1.000	5.000	-.374	-2.969	-.607	-2.406
FI3	2.000	5.000	-.788	-6.247	.166	.659
FI2	1.000	5.000	-.711	-5.636	.487	1.928
FI1	1.000	5.000	-1.025	-8.129	1.970	7.809
Multivariate					2.605	3.650

Table 5.31

Observations Farthest from the Centroid (Mahalanobis Distance) for FREQUENCY Factor

Observation number	Mahalanobis d-squared	P1	p2
131	17.208	.002	.486
326	17.208	.002	.143
327	16.516	.002	.063

Table 5.32

Assessment of Normality for TRUST Factor

Variable	min	max	skew	c.r.	kurtosis	c.r.
TRUST21	1.000	5.000	-1.095	-8.678	1.278	5.065
TRUST20	1.000	5.000	-1.346	-10.667	1.341	5.315
TRUST19	1.000	5.000	.043	.338	-.909	-3.603
TRUST18	1.000	5.000	-1.109	-8.793	.851	3.374
Multivariate					10.049	14.082

Table 5.33

Observations Farthest from the Centroid (Mahalanobis Distance) for TRUST Factor

Observation number	Mahalanobis d-squared	p1	p2
124	25.712	.000	.014
135	25.712	.000	.000
318	25.712	.000	.000
169	22.893	.000	.000
236	22.893	.000	.000

Table 5.34

Assessment of Normality for SPECIFICFREQ Factor

Variable	min	max	skew	c.r.	kurtosis	c.r.
SFI15	1.000	4.000	.199	1.576	-.761	-3.016
SFI14	1.000	4.000	-.358	-2.835	-.267	-1.057
SFI13	1.000	4.000	.426	3.378	2.869	11.369
SFI12	1.000	5.000	.401	3.176	3.503	13.885
SFI11	3.000	5.000	.820	6.496	-.439	-1.740
SFI10	.000	5.000	-1.050	-8.321	2.668	10.573
SFI9	3.000	5.000	.141	1.121	-1.821	-7.218

Variable	min	max	skew	c.r.	kurtosis	c.r.
SFI7	2.000	4.000	1.233	9.776	-.018	-.073
SFI6	1.000	5.000	-.799	-6.335	1.042	4.129
SFI5	1.000	5.000	-.929	-7.362	1.565	6.202
Multivariate					25.210	15.798

Note. SFI18 excluded from analysis because of lack of variance.

Table 5.35

Observations Farthest from the Centroid (Mahalanobis Distance) for SPECIFICFREQ Factor

Observation number	Mahalanobis d-squared	p1	p2
33	50.806	.000	.000
267	48.157	.000	.000