Chapter 5
Teacher Trust in the Principal: Factor Structure and Effects

Monica Makiewicz and Douglas Mitchell

5.1 Introduction

Public school administrators and teachers are under pressure to improve student achievement—raise test scores, improve attendance, reduce discipline problems, etc. Several recent studies have focused on the importance of trust in schools (Bryk et al. 1994; Romero 2010) as a factor contributing to student achievement. In schools reporting high levels of trust among faculty members, researchers have found gains in student performance—predominantly on standardized tests (Bryk and Schneider 2002). Studies have also found that these schools have fewer discipline issues and higher attendance rates (Bryk et al. 1994).

The issue of trust has become very important to schools and to organizations in general (Bryk and Schneider 2002). As Bryk and Schneider report, 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. This increase in diversity requires individuals from different backgrounds to work together—less able to rely on interpersonal similarity and common background experience to encourage collaboration. Establishing mutual trust provides one way for helping employees to effectively work together and collaborate on projects. Trust is also needed because control mechanisms (e.g., a manager's direct supervision) need to be removed to empower employees and encourage self-direction.

Particularly with respect to school leadership and teacher professionalization, two types of faculty trust have been a focal point of recent study—trust among teachers and teacher trust in the principal (Tschannen-Moran and Hoy 1998). In addition, several studies have focused on faculty trust in students and parents as being

M. Makiewicz (✉)
Glendale High School, 6611 Quail Court, La Verne, CA 91750, USA
e-mail: mmakiewicz@gusd.net

D. Mitchell
University of California, Riverside, 2753 Royal Hill Drive, Riverside, CA 92506, USA
e-mail: douglas.mitchell@ucr.edu

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predictive of achievement (Forsyth et al. 2011). Trust among teachers needs to exist to foster collaboration and willingness to work together (Tschannen-Moran and Hoy 1998). 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—school safety, truant students, persistent academic failure. They need to be able to come together to collaborate on problems and develop strategies—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 collaborative efforts—provide guidance, resources, and support (Bryk and Schneider 2002). Trusted principals also provide an environment where teachers can experience success and failure as part of the learning process (Boles and Troen 1997).

Catalyzed by the widely recognized work of Bryk and Schneider (2002), organizational trust has become a core concept in the analysis of school reform and improvement. How trust in a school principal is established and maintained has been difficult to explain, however. The research on trust in principals is recent, limited in volume, and built on earlier studies of trust. These studies have developed a substantial variety of explanations for why one individual trusts another. Early research variously conceptualizes trust as:

- A behavioral intention or an internal action of the trustee giving their trustors confidence (Mayer et al. 1995; Rousseau et al. 1998; Lewis and Weigert 1985);
- Something in the developed personal characteristics of the trustee evoking confidence from trustors (Butler and Cantrell 1984);
- An action or condition that motivates trustors' cooperation or risk taking (Lewis and Weigert 1985);
- 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 carefully separate trust as an act of reliance from trustworthiness—the characteristics of the trustee that elicit the trusting response (Mayer et al. 1995).

These differing viewpoints complicate efforts to synthesize available research. Overall, trust in leaders is generally analyzed from one of two different theoretical perspectives: trust as an effect of developed relationships or trust as an attribute of trustee character (Dirks and Ferrin 2001). The relationship-based perspective looks at social exchange processes (Konovsky and Pugh 1994; Whitener et al. 1998). Trusted parties provide or exchange benefits in response to the needs of the others (Clark and Mills 1979; Fiske 1992). From this perspective trusted individuals are seen as acting honestly and with mutual consideration. The character-based perspective examines trustee characteristics and how they influence a trustor's willingness to trust (Mayer et al. 1995). Both the character and the relationship perspectives have been relied on to examine trust in school principals.

This paper adopts the character based approach and utilizes the concepts and data collection methods developed by Mayer et al. (1995; see also Mayer and Davis 1999). Mayer et al. (1995) analyze prior studies of trust and focus on trust's antecedents and outcomes to develop a theoretical model for explaining how individuals (trustors) come to trust influential others (trustees) in complex organizations. They begin with an antecedent of trust—the trustors general propensity to trust other people. Here they use a concept of trust similar to that used in Rotter's (1967) early work where trust is defined as "an expectancy held by an individual or group that the word, promise, verbal or written statement of [another] individual or group can be relied upon" (p. 651). Rotter's theory treats trust as a psychological disposition or trait—a generalized expectation about the trustworthiness of another party. Mayer et al. (1995) refers to this generalized trait as an individual's propensity to trust. This propensity is defined as "a stable within-party factor that will affect the likelihood the party will trust" (Mayer et al. 1995, p. 715). That is, individuals have various levels of a general willingness to trust others. This willingness to trust others will impact how much trust a trustor will have for a trustee without regard to background information or prior experience with the trustee. This propensity has been found to be influenced by developmental experiences, personality types. and cultural backgrounds (Mayer et al. 1995; Hofstede 1980).

Mayer and Gavin (2005) analyzed the common characteristics of existing approaches to trust to develop a model of dyadic trust that clarifies the role of 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 and Gavin 2005, p. 874; Mayer and Davis 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 and Gavin 2005; Mayer and Davis 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 one task but not another (Mayer and 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, by itself, lead to trust. Trust is built as a relationship begins to develop between the trustee and the trustor. As the relationship continues to develop, interactions between the trustee and trustor provide the trustor with information regarding the trustee's benevolence. The trustor can also obtain information on the trustee's integrity through third-party sources and observations (Mayer and Gavin 2005).

A key component of the Mayer and Gavin (2005) perspective on trust is the relationship between trust and risk because risk is intrinsic to trustor vulnerability (Deutsch 1958). They contend that trust is a generalized behavior with an, "intention to take risk, whereas its outcome is actually taking risk" by a trustor in a relationship with a trustee (Mayer and Gavin 2005, p. 874). The trustors' risk taking behaviors actually make them vulnerable to the trustee, rather than simply being willing to be vulnerable as a predisposition. The theory also proposes that when risks are taken by trustors, positive organizational performance outcomes will tend to result due to increased collaboration, innovative ideas, etc. With these successes, the trustor's earlier perceptions of the trustee's trustworthiness is strengthened and the level of trust increases (Mayer and Gavin 2005). This process can be continuous and self-reinforcing as higher levels of trust result in more risk taking (Mayer and Gavin 2005). However, negative organizational outcomes result in the trust that previously existed being damaged.

Two other factors can strengthen trust relationships: (1) trustor/trustee background similarity and (2) frequent interactions 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 kinds 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 that holds common expectations of its members regarding any of the following: membership in a professional organization, professional certification or license, an educational degree, etc. (p. 16). Though not the primary aim of this study, the data reported here includes some analysis of the 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 arises from the positive affect derived from relationships grounded in reciprocated interpersonal care and concern and is not 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 and Weigert 1985).

Data collected for this study are used to validate the factor structure of teacher trust in principals and address the following research questions:

1. How do teacher perceptions of a principal's competence, benevolence, and integrity affect their level of trust in that principal?
2. Do teachers have a measureable propensity to trust that affects their trust in principals?
3. Does the frequency of interaction between teachers and principal affects trust levels?
4. How does a teacher's background similarity to the principal affect his/her level of trust in that principal?
5. Is the level of teacher trust for principals linked to school wide student achievement?

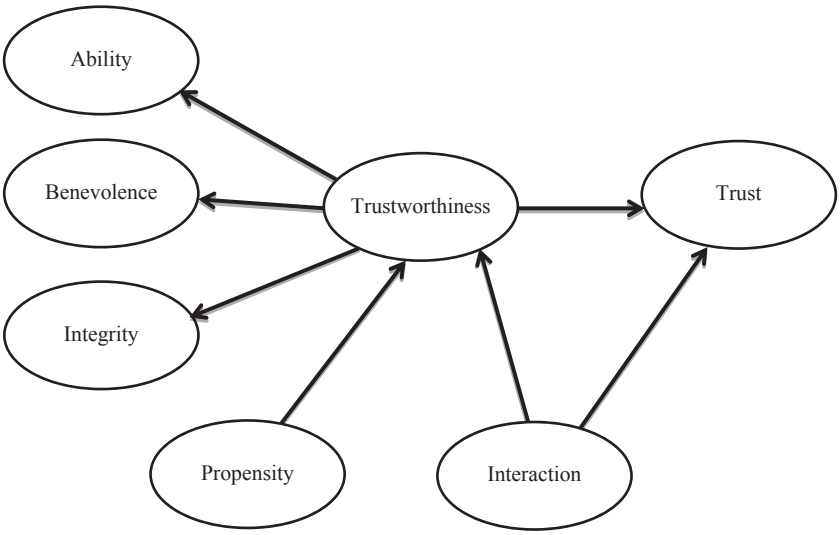

Fig. 5.1 Hypothesized latent factor structure for teacher trust of principals

5.2 Methods

Data for this study were collected using a modification of a survey instrument developed by Schoorman et al. (1996a). The modification replaced the private sector term "manager" with the public school category "principal" as the focal trustee to be evaluated (see the modified survey in Appendix A and descriptive statistics for survey responses in Appendix B). Data from the four-part self-administered survey were analyzed using the IBM Structural Equation Modeling (SEM) program AMOS ©. The AMOS model links six latent factors: (a) principal perceived Ability, (b) principal Benevolence toward teachers, (c) principal perceived Integrity, (d) overall principal Trustworthiness, (e) teachers' general Propensity to trust others, (f) the frequency of various types of principal-teacher Interaction patterns, and (g) the actual Trust level teachers report having for their principals. The hypothesized relationships among these latent factors are shown in Fig. 5.1.

In addition to these latent factors, our study gathered six demographic data elements on teachers and their principals: Age, Gender, Ethnicity, Education, Years in Teaching, and Years in Current Position. Finally, overall school achievement as measured by Academic Performance Index (API) scores published by the California Department of Education for 2008-09 was collected for each school. Part I of the survey includes items on the following:

- Six questions assessing teachers' perceptions of the professional ability of their principal
- Five questions assessing teachers' perceptions of the benevolence of their principals

- Six questions assessing teacher perceptions of their principal's integrity, and
- Four questions assessing the willingness of teachers to actually trust their principals (Mayer et al. 1995; Mayer and Gavin 2005).

Part II of the questionnaire probes the frequency of various types of interaction between teachers and principals (McAllister 1995). Part III asks about the general propensity of teachers to be trusting individuals (Mayer and Davis 1999). Part IV asks the six socio-demographic items used to test for the influence of common background characteristics. Findings from earlier studies by Mayer et al. (1995), using confirmatory factor analysis, documented the scale reliability of the survey instrument. Their analysis found that trustworthiness to consist of three distinct factors with Cronbach's α reliabilities of 0.93, 0.95, 0.96, respectively. Their propensity to trust factor was also reliable with a Cronbach's α of 0.71 to 0.75. A Likert type scale is used throughout the survey.

A total of 377 teachers from 13 elementary schools in one Southern California school district responded to the survey. All teachers in each school were asked to participate, responding groups ranged in size from 17 to 47 with an average of 31.3 per school. Mean-substitution was used to eliminate a total of four missing values. The data were then analyzed using AMOS Structural Equation Modeling software.

5.3 Data Analysis: Procedures and Results

Data analysis was undertaken in four steps. First, univariate descriptive statics indicated that the items used to measure the three components of trustworthiness (ability, benevolence and integrity) and the four items measuring the overall level of principal trust were substantially skewed toward the high end of the item scales making it necessary to shorten the scales to 3-point scales by combining the lowest two scores with the middle range score to form the lowest levels of trustworthiness and trusting attitudes. The teachers in this school district had substantial confidence in the trustworthiness of all of the principals they evaluated, and were generally predisposed to trust them highly. Additionally, one item, Survey Part II, item #8, "How frequently do you attend a faculty meeting held by principal?" had no variance (all respondents replied with a "3" indicating that they met monthly). This item was dropped from further analysis. Descriptive statistics for all survey items are reported in Appendix B.

The second step in developing an overall model of teachers' trust was to determine whether the seven hypothesized latent factors adequately summarize the overall structure of survey responses. To do this, an AMOS confirmatory factor analysis was run for each cluster of measurement variables. The results of this series of confirmatory analyses are as follows:

1. Ability (Survey items 1–6): The confirmatory model for the ability items produced a Goodness of Fit Index (GFI) of 0.948 ($df = 9$; $p = 0.000$; RMSEA = 0.122),

indicating a relatively weak fit between the assumed factor and the data from these teachers. Factor loadings were strong, however, ranging from 0.74 to 0.84 (with $p=0.000$ for all loadings), and the Cronbach's Alpha for these items as a scale is 0.89, indicating that by traditional scale analysis this is a reasonably strong factor. Thus, we decided to preserve this factor and then see if we could produce an overall model with an acceptable fit to the data by trimming one or more of the measurement variables from the final model.

2. Benevolence (Survey items 7–12): Confirmatory factor analysis for the five benevolence items produced a model that had a somewhat more acceptable fit to the data with a GFI of 0.98 (df=5, $p=0.002$), and the RMSEA to be 0.085. Factor loadings for the confirmatory factor are quite large and reliable, ranging from 0.76 to 0.90 ($p=0.000$ in all cases). Cronbach's Alpha for this scale is an acceptable 0.92, and this maximum likelihood factor accounts for about 76% of the total variance of these five items. Nevertheless, as will become evident below, the factor is sufficiently ill-fitting to the data that variable trimming will be required to produce an acceptable comprehensive model.
3. Integrity (Survey items 13–18): The six items used to measure integrity produced an overall factor fit that was weaker than the ability and benevolence factors. Except for survey item #15 "Principal actions and behaviors are not consistent", the factor loadings for the items in this factor are reasonably high (ranging from 0.71 to 0.89) with reliability of $p=0.000$ for all items, including #15. The GFI for this factor is 0.903 (df=9, $p=0.000$) and the RMSEA is 0.179—indicating substantial correlations among the residuals of these survey items, presaging a need to significantly trim measurement variables to produce an empirical model of this theoretical construct. Nevertheless, Cronbach's Alpha for this scale is an adequate 0.86, and the first maximum likelihood factor analysis accounts for about 63% of the total variance of these six items.
4. Trust (Survey items 19–21): The four survey items measuring trust produced only a relatively weak confirmatory factor. Even though high reliabilities ($p=0.000$) exists for all factor loadings, the overall fit of this latent factor to the underlying survey items is not satisfactory. The GFI is 0.951 (df=2, $p=0.000$) and the RMSEA is 0.220 which indicate substantial correlations among the residuals. The strongest residual correlation ($r=0.463$) 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 0.69—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.
5. Interaction (Survey items 1–15 of Part II): Two types of principal teacher interactions are analyzed—general frequency of interaction (Survey Part II, items 1–4) and specific types of frequency (Survey Part II, items 5–15). The four survey items assessing frequency were modeled after the interaction questions provided

by McAllister (1995). The other 11 survey items assessing specific types of frequency were included to study more specific school related interaction patterns among teachers and principals. When combined, these 15 items produce a two factor solution. The first factor, general frequency, represents correlations among the four items from McAllister (1995). The second factor, specific frequency, reflects correlations among the 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 ($p=0.000$) factor loadings on their respective factors.

The overall fit statistics indicate a less than satisfactory overall fit among the interaction items. The GFI is only 0.879 (df=76, $p=0.000$) and the RMSEA is 0.103. The Cronbach's Alpha for general frequency is 0.71 and for specific frequency is 0.78—indicating weaknesses in the items for these two scales. Since the two factors are correlated ($r=0.97$), the general frequency items were excluded from further the study and the remainder of the analysis included only the specific frequency construct. Once again, it became clear that the measurement items would need to be culled to identify items that compose a more coherent factor for use in the general trust model.

6. Propensity (Survey items 1–8 in Part III): Factor loadings for the eight survey items measuring propensity are relatively low (0.36 to 0.54), but are reliable at the $p=0.000$ level. Despite high factor loading reliabilities, however, the overall fit of this latent factor to the underlying survey items is not satisfactory. The GFI is only 0.852 (df=20, $p=0.000$) and the RMSEA is 0.180 indicating a very limited fit of the propensity factor to the responses to these eight survey items. The Cronbach's Alpha value of 0.70 and a first maximum likelihood factor analysis that accounts for only 33% of the sample variance on these eight survey items confirms the weakness in this factor (and two other components report eigenvalues above 1.0 indicating a multi-factor structure for the propensity items). Clearly significant measurement adjustments will need to be made to enable this factor to be considered in an overall model.
7. Trustworthiness (A second order factor accounting for correlation among the ability, benevolence and integrity factors): Since this second order factor has no independent measurement variables, it was examined only during construction of the comprehensive factor structure model described below.

The third step in the data analysis was to create a fitted model of the relationship among the latent factors by maintaining the theoretical framework shown in Fig. 5.1, but trimming from the analysis measurement items that produce significant variance that is uncorrelated with the latent factor being measured and, therefore, destroying the ability of the model to fit the measured date.

After trimming the weak measurement variables, a global picture of principal trust illuminated by the teacher survey data emerged. The best fitting model is presented in Fig. 5.2. As indicated by the seven ellipses shown in the figure, principal trustworthiness maps the relationships among three underlying perceptual factors of ability, benevolence [bene], and integrity. Four survey questions remain as

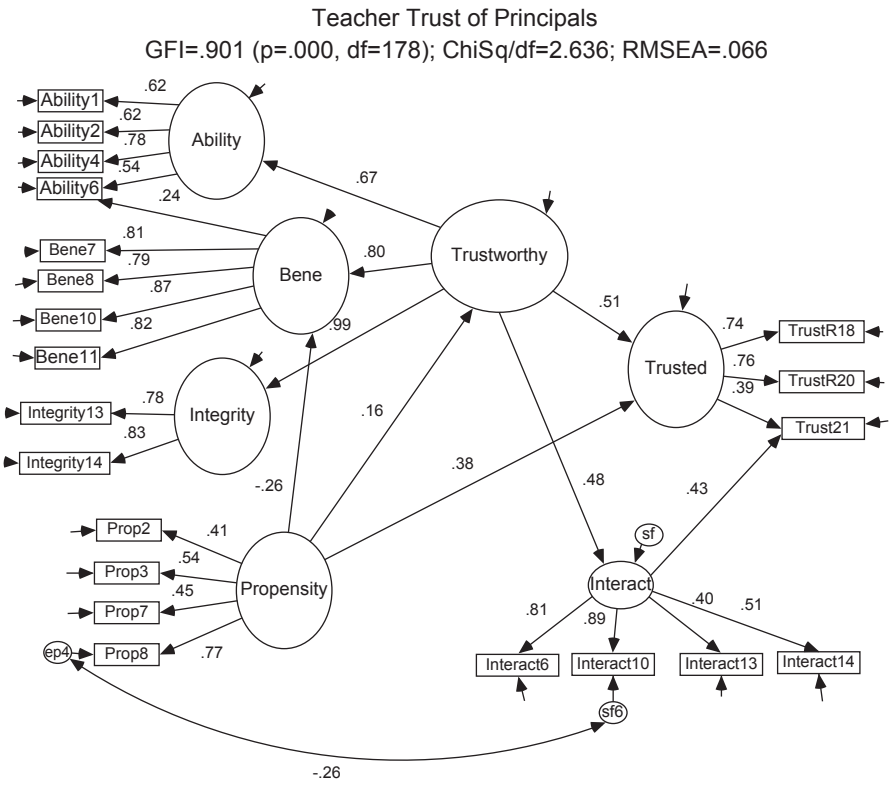

Fig. 5.2 A model of principal trust

acceptable indicators of principal ability. These questions ask respondents to assess whether the principal is, (1) "capable of performing his/her job," (2) "successful in things he/she tries to do," (4) knowledgeable, "about the work," and (6) "well qualified." The question asking about being "well qualified" which Mayer et al. found to be a component of ability was, by these teachers, also associated with the benevolence [bene] factor. In addition to this item, benevolence includes assessment of whether the principals are, (7) "concerned about my welfare," (8) seeing my needs and desires as, "important," (10) he/she "looks out" for me, and (11) is going out of his/her way to "help me." Only two of the integrity items ultimately fit into this structural model: (13) whether the principal will "stick to his/her word," and (14) "be fair in dealings with others." Thus, while only 10 of the 17 measurement items borrowed from Mayer and his colleagues are retained in the final structural model, these 10 items continue to reflect an adequate representation of the three Mayer et al. factors of trustworthiness—ability, benevolence and integrity. The retained items certainly have an acceptable level of face validity to encourage continued use of the Mayer et al. labels for the three latent factors.

In contrast with Mayer and colleagues who used more traditional factor and scale analysis, and stopped with the identification of three independent trustworthiness factors, our research hypothesized the existence of a second-order factor composed of the shared variance among these three first order factors. As can be seen by the overall fit statistics (GFI > 0.90 and RMSEA = 0.066), the existence of this second order factor is confirmed by the data from the 377 teachers in this study.

The remaining latent factors in Fig. 5.2 (propensity, interaction [interact], and trusted) measure the context of principal trust. In its trimmed form, propensity is composed of four survey items asking respondents whether: (2) "most experts tell the truth," (3) people will "do what they say they will do," (7) people answer "polls honestly," and (8) "adults are competent at their jobs." The final, Interact, factor is also composed of four items which ask how frequently teachers, (6) "meet with the principal to discuss problems," (10) "work on a project with the principal," (13) the principal leads, "staff development or training," and (14) the principal has "expressed praise or criticism of teaching." Although the factor structure is broadly acceptable, there remained a significant correlation between the residuals of Propensity 8 and Interact 10. This anomaly has no obvious explanation. The final construct, labeled "trusted" preserves three of the four trust questions which ask whether the teachers: (18) would "not let the principal have influence", (20) would "keep an eye on the principal," and (21) "would be comfortable giving the principal a task or problem" (items #18 and #20 are reverse coded to measure trust rather than mistrust).

5.4 Results

Several important observations are supported by the model presented in Fig. 5.2. First, while not all of Mayer and colleagues items are retained for teachers in this study, there is a strong structural framework of three first-order factors composing a global principal trustworthiness second-order factor. Second, this second order factor is a strong predictor of teacher trust for their principals (the path coefficient = 0.51). Third, the general propensity to trust has a substantial impact on both the teachers' perceptions of the trustworthiness of the principals and on their decision to actually trust him/her. Fourth, surprisingly, the propensity factor has a negative influence on the teachers' perceptions that their principals are benevolent. Fifth, the frequency of various kinds of interaction between teachers and principals constitute an interaction factor (i.e., frequencies are intercorrelated), and this latent factor is both the consequence of teacher perceptions of principal trustworthiness and a contributor to just one of the measurement variables assessing their willingness to actually trust (item #21 on being comfortable giving the principal a critical task or problem).

Having identified a robust structural model relating trustworthiness perceptions to actual trust and identified the influence of an overall propensity to trust and the patterns of interaction between teachers and principals, we turned attention to

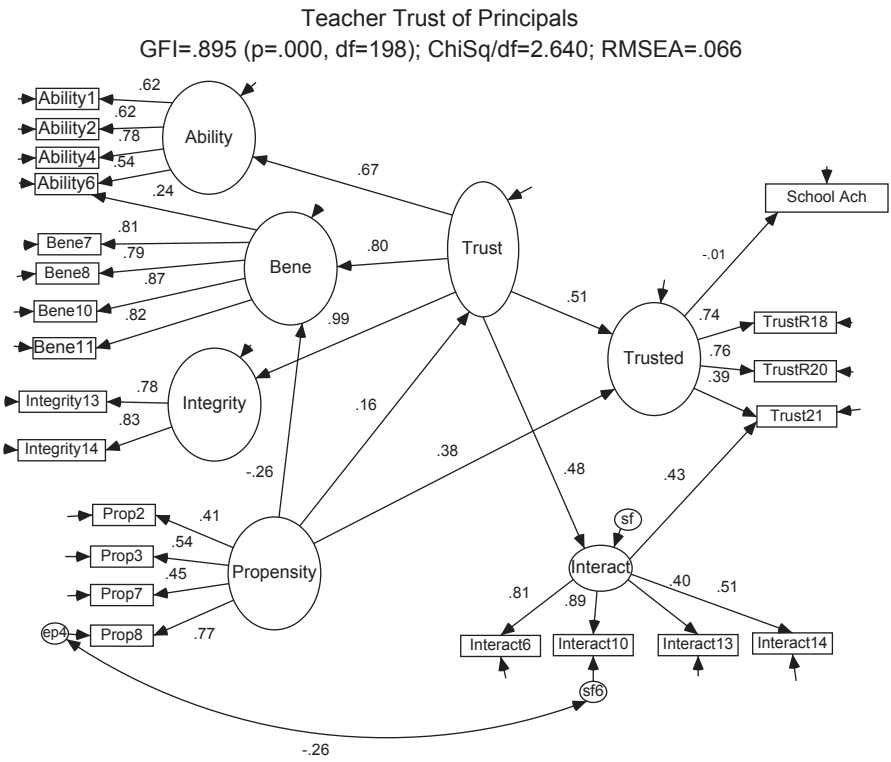

Fig. 5.3 The contribution of trust to school-wide achievement

one measure of organizational consequence—whether schools with greater trust had produced higher average student achievement. We did not have teacher by teacher achievement measures and were forced to rely on school wide averages, likely blunting the prospects of finding significant effects. As shown in Fig. 5.3, as feared, we found no relationship between the teachers' reported trust level for their principals and the overall achievement among their students. The path coefficient from "trusted" to "school ach" is a mere −0.01 (and this is the only coefficient shown in Fig. 5.2 that is not statistically significant at the $p < 0.01$ level).

Finally, we examined the relationships between teacher and principal demographic characteristics and the structure of the trust model. Put simply, we found no significant relationships between principal and teacher demographics and any of the latent factors shown in Figs. 5.2 and 5.3. It is unclear from the data for this study, however, whether the lack of relationship is due to the limited variability in the sample, the overall high levels of trust in this school district, weak demographic measures, or some other contextual factor. In any event, our data do not support any inferences about the demographic links between teacher and principal trust relationships.

5.5 Discussion

This project makes two important contributions to the literature on organizational trust in the schools. First, it not only confirms the existence of the three component factors of trustworthiness identified by Mayer and his colleagues, it 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.

The objectives for this study were to investigate the concept of trust, its meaning, antecedents, and outcomes as they apply to teacher trust in principals. 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. A variety of research design specialists caution against biases in judgment that arise from self-selection decisions to participate (or not) in a research study. Jaccard and Jacoby (2010, p. 293–294), for example, describe ten different biasing effects that may arise ranging from not understanding the base-rate of a behavior when identifying the amount of it seen in a particular setting to wishfully thinking that the most desirable outcomes are the most frequently observed. In the current study, these biases are probably fairly low because we have examined thirteen different schools and found that one statistical model fits essentially all cases equally well. 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.

The data analyses were undertaken in order to construct a well-fitting structural model of teacher trust in their principals. The initial trust model was based on the work of Mayer and Davis (1999) and their study of the factor structure of trustworthiness and the actual level of trust given an 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 demographic contributions to the model were made to determine how they might be affecting the actual level of trust in schools. A measure of overall student achievement was also tested to see if teacher trust levels have a significant relationship with overall school level student performance.

The trust model developed from the data in this study confirms the existence of a second-order factor for trustworthiness which integrates the first-order factors for ability, benevolence, and integrity. Teachers consider their principals to be trustworthy if they view the principal as possessing high levels of ability, benevolence, and integrity. Integrity has the greatest impact on trustworthiness—followed by benevolence and then ability. A teacher's propensity to trust others was found to have its strongest effect on the actual level of trust teachers express for their principals. The

propensity factor also affects teacher perceptions of principal trustworthiness. While propensity to trust has an overall effect on principal trustworthiness, it is negatively related to the benevolence component of trustworthiness. This result is unexpected and may indicate that teachers with higher propensity to trust base their judgments of trustworthiness more on the basis of principal ability and integrity and give less weight to perceptions of benevolence—perhaps because they feel most people are benevolent and do not scrutinize the principals from this perspective. Specific frequency of interaction has a strong link to perceived trustworthiness. As the number of specific interactions increased so did the level of principal trustworthiness. The causal direction is uncertain, however. In Fig. 5.2, the coefficient shown is 0.48 with interaction frequency as the dependent variable (that is, increases in trustworthiness lead to increased rates of interaction). The linkage was tested in both directions, however, and the coefficient would be 0.46 with trustworthiness as the dependent variable. Very modest disturbances in the data could be responsible for the appearance of a stronger link with interaction as dependent on trustworthiness. There is no reason to suppose that the relationship is not interactive with greater trustworthiness producing more frequent interaction, which in turn promotes greater trustworthiness.

The factor structure accounting for actual teacher trust of their principals was found to be independent of the specific school context or the particular principal being evaluated. This was found by first constructing the structural equation model using the school identifier as a grouping variable and creating a "stacked" model allowing each school to produce its own coefficients of relationship. With the model stacked, we gradually constrained all coefficients to be identical across all of the schools. Placing these constraints did not degrade the model fit (indeed, the coefficient constrained model fits somewhat more parsimoniously than does the independent groups model). Thus, it is safe to conclude that the factor structure of the trust relationships between teachers and their principals is not significantly dependent on which school one looks at, but is, rather, a general characteristic of all thirteen schools in this study.

We also noted that, a significant relationship between principal and teacher trust and background similarity between teachers and principals as Zucker (1986) proposed does not exist in this dataset. Student demographics and overall student achievement also show no significant relationship to the trust that exists between the teachers and principals in this study.

Although this study was based on a trust model proposed by Mayer and Davis (1999), results of confirmatory factor analysis only weakly supported the Mayer and Davis model. The model developed here was unable to retain all of the measurement items of the original model without destroying the model fit. By trimming ill-fitting items, however, a robust model for the Mayer and Davis three-factor construct was identified. The final trust model remained stable for the thirteen schools in the study even when all model coefficients were constrained to be equal across schools (though two of the thirteen schools had too little response variance to be included wen the schools were separated).

McAllister's (1995) four items measuring frequency of interaction were incorporated into this study's survey. Additionally, eleven items assessing specific types of interaction between teachers and principal were included. These items covered

such things as teacher observations, discussions on student behavior (Lewis and Weigert 1985). Strong correlations among the residuals of these interaction measurements led to a majority of the items being removed—including all of McAllister's (1995) four items. The retained items covered meetings 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. Findings in this study depart from McAllister's (1995) conclusion that the frequency of interaction between employees and managers affect the level of supervisor trust. The relationship is much stronger to the perceived trustworthiness of the principal than to the actual level of trust.

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

- Background similarity between a teacher and his/her principal (Zucker 1986);
- Student demographics (Zucker 1986); and
- Student achievement (Tschannen-Moran 2001; Hoy and Tschannen-Moran 2003; Bryk and Schneider 2002, 2003).

A larger sample size and/or stronger model may find stronger links between trust and teacher and/or principal backgrounds and/or student demographics and achievement. This study was limited to a single aggregate measurement of student achievement—a school's Academic Performance Index score. 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 have significant relationships to the level of teacher trust in their principals.

The primary objective of this study was to gain insight on what helps foster trust in principals. 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, fewer student behavior and attendance issues, etc. (Tschannen-Moran 2001; Hoy and Tschannen-Moran 2003; Bryk and 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. Research is needed to help guide a principal's behavior and actions. One area for 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. 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 of principal trust is needed is because professional development and/or principal preparation programs have been found lacking in training regarding how trust develops and is maintained among staff members (Bulach and Peterson 1999; Bryk and Schneider 2003; Brewster and Railsback 2003). If further study provides more insight to what factors have the most impact or effect 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 trusting relationships.

Appendix A

***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

***Part II*: 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 principal?	0 1 2 3 4 5
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

***Part III*: 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

***Part IV*: 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

Survey Response Descriptive Statistics

Table B1 Teacher perceptions of principal trustworthiness and trust

Variable	Label	Min	Max	Mean	Std Dev
Principal ABILITY items					
P is capable of performing his/her job.	ABILITY1	2	5	4.54	0.62
P is known to be successful.	ABILITY2	2	5	4.47	0.67
I feel confident in P's skills.	ABILITY3	1	5	4.50	0.71
P has knowledge of work to be done.	ABILITY4	2	5	4.51	0.67
P has specialized capabilities for work.	ABILITY5	1	5	4.15	0.88
P is well qualified.	ABILITY6	2	5	4.56	0.63
Principal BENEVOLENCE items					
P is concerned about my welfare.	BENE7	1	5	4.28	0.89
My needs/desires are important to P.	BENE8	1	5	4.21	0.87
P would not knowingly hurt me.	BENE9	1	5	4.47	0.82
P looks out for what is important to me.	BENE10	1	5	4.08	0.89
P goes out of his/her way to help me.	BENE11	1	5	4.25	0.87
Principal INTEGRITY items					
P has strong sense of justice.	INTEGRITY12	1	5	4.31	0.86
P will stick to his/her word.	INTEGRITY13	1	5	4.36	0.91
P tries to be fair in dealing with others.	INTEGRITY14	1	5	4.46	0.79
P's actions and behaviors are not consistent.	INTEGRITY15	1	5	4.04	1.18
I like the P's values.	INTEGRITY16 (R)	1	5	4.31	0.85
Sound principles guide P's behavior.	INTEGRITY17	1	5	4.26	0.93
Principal TRUST items					
I wouldn't let P influence issues important to me.	TRUST18 (R)	1	5	3.96	1.06

Table B1 (continued)

Variable	Label	Min	Max	Mean	Std Dev
I would let P have complete control over school.	TRUST19	1	5	2.74	1.17
I wish I could keep an eye on the P.	TRUST20 (R)	1	5	4.23	1.03
I would give P critical task or problem	TRUST21	1	5	4.06	0.91

Note: Items labeled with (R) are reverse coded

Table B2 Frequency of teacher/principal interactions and propensity to trust items

Variable	Label	Min	Max	Mean	Std Dev
FREQUENCY of INTERACTION items					
P initiates work-related interactions?	FI1	1	5	3.77	0.80
I initiate work-related interactions?	FI2	1	5	3.52	0.87
Interact with P at work?	FI3	2	5	4.10	0.84
Interact with P informally or socially at work?	FI4	1	5	3.20	1.12
Exchange emails or phone calls with P?	SFI5	1	5	3.68	0.78
Meet to discuss problems or issues?	SFI6	1	5	3.46	0.77
Meet to discuss evaluation/observation?	SFI7	2	4	2.27	0.45
Help supervise students with P?	SFI9	3	5	3.48	0.51
Work on project with P?	SFI10	0	5	3.20	0.79
Encounter P out and about school grounds?	SFI11	3	5	4.25	0.46
P urged you to adopt guidelines/materials?	SFI12	1	5	1.67	0.52
P has led staff training/development?	SFI13	1	4	1.89	0.53
P has expressed praise or criticism of teaching?	SFI14	1	4	3.09	0.71
P has raised concerns about student discipline?	SFI15	1	4	2.46	0.55
PROPENSITY to TRUST items					
One should be cautious with strangers.	PT1	1	4	2.37	0.90
Experts tell truth about their limits.	PT2	1	5	2.70	0.81
Most people do what they say they will.	PT3	1	5	3.38	0.75
Be alert or people will take advantage of you.	PT4	1	5	2.72	0.88
Sales people honestly describe their products.	PT5	1	4	2.58	0.73
Repair people will not overcharge you.	PT6	1	4	2.51	0.76
People answer opinion polls honestly.	PT7	1	5	3.18	0.80
Most adults are competent at their jobs.	PT8	1	5	3.38	0.72

Table B3 Social and demographic characteristics of the sample

Variable	Label	Min	Max	Mean	Std Dev
TEACHER, PRINCIPAL and SCHOOL Characteristics					
Teacher Gender: 0=F; 1=M	TGENDER	0	1	0.26	0.44
Teacher is Afro American	TDEMOA	0	0	0.00	0.00
Teacher is Native American	TDEMOB	0	0	0.00	0.00
Teacher is Asian American	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

Table B3 (continued)

Variable	Label	Min	Max	Mean	Std Dev
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
ELL Population	ELLPOP	9	78	46.72	28.53
Spec Ed 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
Free/Reduced Lunch Eligible	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

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