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CONTEXTUAL FACTORS RELATED TO ELEMENTARY PRINCIPAL TURNOVER

Purpose of the Study

The issue of school leadership instability and how it affects schools and student achievement has been studied. The question of how to predict turnover of the principal remains an unknown. The purpose of this research was to search for possible relationships between certain contextual variables and principal turnover and to test the independent variables as predictors of principal turnover frequency. It was believed that exploring the relationships of eight contextual variables associated with frequency of principal turnover might provide needed information for the field of educational leadership and for superintendents and boards of education. The eight contextual variables studied were: superintendent turnover rate, building enrollment, student attendance, student mobility, pupil-teacher ratio, teacher attendance, student achievement in reading, and student achievement in mathematics.

Theoretical Perspective

The theoretical basis for the present study is the key role the principal plays in school reform (Hipp, 1997; Kowalski, 1999; Oberman, 1996; Ogawa & Hart, 1985). The idea that principal stability is related to school improvement is based on the following beliefs: that for reform to be meaningful, it must take place at the school level (Fullan, 1991, 1993; Hall & Hord, 2001); that change at the school level involves a cultural dimension (Deal & Peterson, 1990; Peterson & Deal, 1998; Stolp, 1994); and that a change in school culture takes time. Estimates of the time required for significant school reform at a given school are five to seven years (Deal & Peterson, 1999; Fullan, 2001; Villa, Thousand, Meyers, & Nevin, 1996). For these reasons, it is important to understand the frequency of changes in who is the principal.

The literature refers to changes in the principalship as *principal succession* or *principal turnover*. In the present study, principal turnover refers, as it does in the literature (e.g., Grusky, 1960; Hart, 1993; Miskel & Cosgrove, 1985), to the change from one principal to another principal. Grusky (1960), a social scientist, was one of the first to recognize that leadership turnover promotes instability in an organization. That principal turnover is seen as an important event is evidenced by some calling it a succession crisis (Grusky, 1960).

Principal turnover differs subtly, but importantly, from *principal turnover frequency*. The term principal turnover frequency connotes a broader phenomenon that involves the change of a principal as well as the frequency with which this occurs. When leadership is transferred frequently, the impact on the organization and its performance may be different than from a single succession. For example, Macmillan and Meyer (2003)

studied school districts that routinely move principals. They conducted a six-year study based on Michael Fullan's (2001) idea that to institute a change initiative in secondary schools requires six years. They asked "Is institutional rotation different from unplanned succession? and "Does teachers' experience with administrative turnover, whether this turnover is mandated or otherwise, affect their perceptions of the principalship and the school's culture?" (MacMillian & Meyer, p. 3). Their results have not yet been completed.

The study reported here focused on the frequency of principal turnover. The term "principal turnover frequency" refers to the frequency with which principals in Ohio public schools were replaced over a seven-year time span.

Principal succession is examined in schools for the consequences on school personnel, programs, culture, and student achievement. Although considerable research has been conducted on the effects of principal turnover, little is known about factors or conditions present within schools and school districts which may contribute to high or low principal turnover. Because a school administrator's work is specific to the building (Kowalski, 1995), it is important to understand the context within which succession occurs as well as the effect (Fauske & Ogawa, 1987; Grusky, 1960; Hart, 1993; Rosenholtz, 1989). Yee and Cuban (1996) suggest that research is needed on how organizational, environmental, and individual factors have created longer or shorter tenures in the superintendency.

Based on his 1993 meta-analysis on principal succession, Hart concluded: "The question whether succession per se is a salutary or disruptive event in organizations remains unanswered" (p. 45). Since then, there is still no agreement on the effect of principal turnover on school outcomes and student achievement and what factors may be related to the turnover. Because the findings on the effects of principal turnover are varied and inconclusive, educational researchers, administrators, and policymakers need to develop a better understanding of the dynamics of principal turnover and the implications of change in the principalship (MacMillan & Meyer, 2003). This need for empirical information provided the stimulus for this study.

Research Question and Methods

In this study the researcher attempted to determine empirically if differences in principal turnover frequency in public elementary schools could be predicted by contextual variables in the school districts and the schools. Principal turnover frequency was a variable defined by this author as the frequency of changes (i.e., number of principals) in this position in a school over a seven-year period from the 1996/97 school year (FY1997) through the 2002/03 school year (FY2003). The contextual variables were (a) turnover rates in the superintendent's position, (b) building enrollment, (c) student attendance rate, (d) student mobility, (e) pupil-teacher ratio, (f) teacher attendance rate, (g) student achievement in reading, and (h) student achievement in mathematics.

The author raised this research question: How accurately do the eight independent variables predict principal turnover frequency? This researcher assumed that effective principals who remain in their positions for five years or longer may positively impact school culture that leads to improvement in student achievement (Deal & Peterson, 1999; Fullan, 1993; Villa et al., 1996).

This was a correlational study to examine the relationships among independent variables associated with frequency of principal turnover. A multiple stepwise regression equation was used to predict principal turnover frequency from the eight contextual variables and an ANOVA tested the statistical significance of the variance accounted for in principal turnover by these variables.

Data Sources

Seven years of school data from FY1997 to FY2003 were analyzed. A proportional, stratified, random sampling procedure was used to select 109 elementary schools in southwest Ohio from whose records data were collected. Of the 109 schools, 68 were urban, 26 were suburban, and 15 were rural. A multiple stepwise regression equation was used to predict principal turnover frequency from the eight contextual variables.

Selection of the sample. The interest of this researcher was to identify a regional population that would include a sufficient number of urban schools to make them the focus of the study. It was also important that the regional population include contrasting settings–suburban and rural. A 19-county geographic region of southwestern Ohio was identified as the population area (see Figure 1).

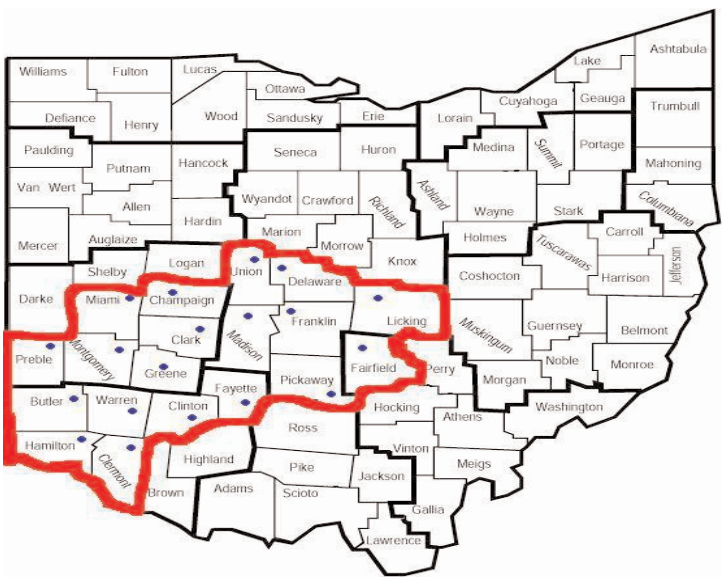

Figure 1. Schools in these 19 Ohio counties comprise the study population.

Variables. The predictor variables considered were contextual ones—one school district variable (superintendent turnover) and seven organizational (in school) variables—that may affect principal turnover rates. (see Appendix A for definition of variables). The goal was to test whether the contextual variables could predict frequency of turnover in the principalship.

Seven years of data, from FY1997 through FY2003, were collected for each variable for each school. Data for all seven years were averaged for each variable for each school; the average values (means) were used in the regression analysis. In-school predictor variables included building enrollment, student attendance, student mobility, pupil-teacher ratio, teacher attendance, and student achievement in reading and mathematics. Building enrollment is the number of students reported to the state on October 31 of each year. Student attendance is the school reported average daily membership for each school year. Student mobility is the school reported number of students in the school for less than the full year. The number of classroom teachers for regular education and special education self-contained classes was used to get the pupil-teacher ratio in a school. School reported teacher attendance rate for each building represented teacher attendance. Reading and mathematics achievement was measured using fourth grade state of Ohio achievement test scores (formerly called proficiency tests).

Average principal turnover frequency was the criterion variable. Principal turnover frequency is defined as the number of principals at a building site. If there were three principals in a school during those years, the principal turnover frequency was 3. Turnover includes all changes in the principalship in those schools, both because of voluntary decisions made by the principal (some may have chosen to leave for reasons of promotion, money, benefits, retirement, or fewer demands offered in another position) and involuntary decisions (the superintendent or board chose to replace the principal). Turnover frequency is a continuous variable. Table 1 presents principal turnover frequencies by setting—urban, suburban, and rural.

Table 1

Number of Principals for FY2003–FY1997 by School Setting

Setting	*N* of schools	*M*	*Mdn*	Mode	Range	*SD*
Urban	68	2.37	2.00	2.00	4	0.83
Suburban	26	1.77	1.50	1.00	4	0.99
Rural	15	2.44	2.00	2.00	4	1.09

Review of the literature showed that superintendent turnover, the first predictor variable, is cited by Alsbury (2003), Balfanz and MacIver (2000), Hart (1993), Hess (1999), Kowalski (1995), Mackinnon (2003), Rosenholtz (1989), and Yee and Cuban (1996) as a factor that may or may not produce positive results in a school.

Other predictor variables selected were what Rosenholtz (1989) defines as "background characteristics that may indirectly mediate the

effects of workplace conditions" (p. 168). Rosenholtz's study of the school environment concluded the school setting has an influence on teachers. Rosenholtz showed that attributes in the school surroundings are related to school success. Schools with high principal turnover may not have much school success, so each of these variables was considered in light of its impact on teachers. What affects teachers also affects principals. These other predictor variables are also the criteria used by the Ohio Department of Education (ODE) as indicators of school success. Pupil-teacher ratio is a variable that Griffith (1999) and Rosenholtz (1989) believe may affect teachers' work habits if they feel overtaxed and professionally constrained. Teacher attendance is often a reflection of satisfaction experienced by teachers on the job. According to the Columbus report on student mobility, high student mobility in a school has an impact on teachers and principals. Teachers said student mobility causes frustration for teachers and negatively impacts school test scores (Community Research Partners, 2003).

Student achievement in both reading and mathematics was used as independent variables because of a provision in the No Child Left Behind Act (2001). Ohio law in 2003 stated that the State Board of Education must establish a standard unit of improvement for school districts and buildings and specify the percentage of performance indicators that a district or building must meet to make progress (Ohio Revised Code, 2003). Districts are required to write a three-year continuous improvement plan. This law subjects schools on Academic Watch or Academic Emergency to intervention by the ODE. Ohio House Bill 3 (2003) states that if, after three years under a continuous improvement plan, an Academic Emergency district has a building within the district that is still in academic emergency because it fails to show improvement on the performance indicators that the building had not met, then the district must undertake at least one of the following actions to attempt to improve the building's performance.

The first is to replace the building principal. Another alternative is to reconfigure the entire school. Permitting parents to enroll their children in another more successful school is also a possible consequence. Other alternatives are: developing a comprehensive alternative plan; instituting a new curriculum; contracting with outsiders to operate the building; or closing the building. Since accountability pressures through standardized tests (called achievement tests in Ohio) were begun, principals have been anxious about test scores at their schools and the possibility of losing their positions. Scores of basic skills in reading and mathematics are provided by ODE. Scrutinizing state standardized test results data was intended to reveal a connection between low test scores and principal turnover. The data provided by the ODE website for the years FY1997 to FY2003 include scores for fourth grade in citizenship, reading, math, writing, and science. Scores for fourth graders in reading and mathematics were used.

Data Collection

Data for all seven years included in the averages used in this study were collected from the ODE Education Management Information Sys-

tem (EMIS). The ODE requires that each school district submit an EMIS report annually that includes a variety of statistical information about the school district in general and school buildings specifically. The data are available electronically for public perusal and use. This author established 59 databases for this study from the ODE (n.d.) website sources. The secondary analysis of established data was necessary in order to create the databases to calculate the principal turnover frequency and each of the eight variables for seven years.

Data Analysis

In order to answer the research question, several tests were performed. First, Pearson's Product-Moment Correlations were run for all the predictor variables to check for multicollinearity. Then a multiple stepwise regression equation was generated to predict principal turnover based on the remaining contextual variables (those which were not eliminated because of multicollinearity) in the school. Mertler and Vannatta (2001) recommend that a stepwise multiple regression may be used in studies that are exploratory in nature. It was appropriate to use a stepwise multiple regression since this research study had a large set of predictors (eight) initially. It helped determine whether or not there were variables that contributed meaningfully to the overall prediction. As Mertler and Vannatta (2001) explain:

> At each step, tests are performed to determine the significance of each independent variable already in the equation as if it were to enter last. That is, if a variable entered into the analysis is measuring much of the same construct as another, this reassessment may determine that the first variable to enter may no longer contribute anything to the overall analysis. So, that variable would then be dropped out of the analysis. Even though it was at one time a "good" predictor, in conjunction with others, it may no longer serve as a substantial contributor. (p. 170)

The equation representing the multiple regression analysis (1) was:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 \quad (1)$$

The proportion or percentage of the variability in the turnover frequencies that is accounted for or explained by the eight predictors (R^2) is reported. A p value of .05 was used to determine significance. This was evaluated via an F-test.

Limitations

1. Generalization of the findings of the study is limited to the schools in a 19 county region of Ohio that served as the population.
2. The data were confined to public elementary schools. But the grades in the elementary schools varied. There were schools with one or two grade levels, while some were K–5 or K–6, and still others ranged

K–8. In order to be included, a school had to have grades through fourth grade.

3. Correlation does not speak to the issue of cause and effect. Even if multiple variables were found to be statistically significant, causation cannot be inferred (Huck, 2000; Newman & Benz, 1998). "Regardless of whether a relationship is causal, a correlation allows prediction: thus such relationships are extremely useful" (Krathwohl, 1998, p. 413).
4. The literature supports the idea that principals are key to school reform leading to student achievement. However, showing a relationship between principal stability and student achievement is more complex in that it is not a direct relationship. "The basic problem involves the number of intervening variables that stand between the direct cause (stability of the principal) and the effect (test scores)" (Hanson, 2003, p. 28). Some of the confounding variables are: instructional methods of teachers, teacher motivation, parental attitudes, organizational structure of the district, availability of resources, and student variables. Another problem was a general belief that the quality of leadership is directly related to educational improvement. Although principal leadership has an indirect effect on student achievement, how leaders achieve improvement in schools is still important and as yet unknown (Heck & Hallinger, 1999).
5. Another limitation addresses reasons for the turnover of the principal. Principals leave for positive and negative reasons. Positive aspects are promotion and opportunities for higher levels of leadership. Negative reasons are removal by superiors of principals who are ineffective, or principals who leave because of unsatisfactory conditions (Miklos, 1988). No evidence about reasons for principals leaving their positions was included in the study.
6. To ascertain the number of principals at each designated school the data set included school years FY1997 to FY2003 and the principals during those years. The data were limited to these years and did not show whether or not the principal at a school in FY1997, the first year included in the count of principals, had been in place for a number of years prior to that date. Similarly, the end of the frequency count, FY2003, did not take into account the length of future service of those principals in place that final year.
7. Another limitation pertains to problems of operationalization of the predictor variables. For all but one of the variables, seven years of information were available; however, for student mobility, only four years of data were collected by ODE. For student mobility, the operational definition changed. For FY2003, the state's operational definition was "percentage of students in the building less than 1 year." However, for school years FY2000 to FY2002, the definition by the state was "percentage of students in the same school for less than half a year."
8. The methods of analysis and levels of analysis were also a limitation. There is uncontrolled variance and causal inference (i.e., the amount

of inference readers draw from the data is not intended to show cause and effect). However, what was expected to be a limitation, the problem of multicollinearity (that is, that some of the predictor variables were closely related to each other), was resolved by doing Pearson's Product-Moment Correlations.

9. A final limitation pertained to the criterion variable—principal turnover frequency. This information was obtained by getting the name of every principal for each of the seven years in every school. To compute number of principals, the last names were studied. In the case of female principals who changed their last names, this may have created the illusion that there was a different principal in place.

Results

Findings indicated that the only predictor variable that was statistically significant in predicting principal turnover was student achievement test scores on Ohio reading and math achievement tests (formerly called proficiency tests) in fourth grade. As the percentage of students who passed fourth grade Ohio reading and math achievement tests increased, the frequency of principal turnover decreased.

"Multicollinearity is a problem that arises when there exists moderate to high intercorrelations among predictor variables (IVs) to be used in a regression analysis" (Mertler & Vannatta, 2001, p. 169). When two independent variables are highly correlated (indicating multicollinearity), it means that they contain much of the same information and therefore measure the same thing. "Not only does one gain little by adding to a regression analysis variables that are measuring the same thing, but multicollinearity can cause real problems for the analysis itself" (Mertler & Vannatta, 2001, p. 169).

To identify multicollinearity we examined the Pearson's Product-Moment Correlations Matrix for the sample to see which of the predictor variables had moderate to high intercorrelations. Appendix B shows that the mean percentage of students passing fourth grade reading achievement tests was highly correlated with the mean percentage of students passing fourth grade math achievement tests ($r = .963$), and both reading and mathematics achievement test results were highly correlated with mean student attendance rates ($r = .865$, $r = .813$, respectively).

Stepwise multiple regression was conducted to determine which of the independent variables (building enrollment, student mobility, pupil-teacher ratio, teacher attendance, and percentage of students who passed achievement tests in mathematics) might predict principal turnover frequency. To combat multicollinearity, the problematic variables (mean student attendance rates and mean percentage of students who passed fourth grade reading achievement test) were deleted. According to Mertler and Vannatta (2001), "if the information in one variable is being 'captured' by another, no real information is being lost by deleting one of them" (p. 169). The decision to remove another variable, number of superintendents, was

made since that information does not give independent data for each building. The researcher began with eight predictor variables. However, because of co-linearity, three were eliminated. The final equation (2) was:

$$\text{Principal Turnover} = a + b_{\text{Building enrollment}}X_{\text{Building enrollment}} + b_{\text{Student mobility}}X_{\text{Student mobility}} + b_{\text{Pupil-teacher ratio}}X_{\text{Pupil-teacher ratio}} + b_{\text{Teacher attendance}}X_{\text{Teacher attendance}} + b_{\text{\% of students passing fourth grade OH mathematics test}}X_{\text{\% of students passing fourth grade OH mathematics test}} \quad (2)$$

Regression results indicate an overall model of one predictor (percentage of students who passed the fourth grade math achievement tests) that significantly predicts principal turnover frequency, $R^2 = .067$, $F(1, 88) = 6.37$, $p < .05$. This model accounted for 6.7% of variance in principal turnover frequency. Although the percentage of students who passed the fourth grade reading achievement tests was removed from the equation due to multicollinearity, when that predictor variable is used separately it also predicts principal turnover frequency. A summary of the regression model is presented in Table 2.

Table 2

Model Summary

Model	*R*	R^2	Adjusted R^2	*Std. Error of the estimate*
1	.256	.067	.057	.877

Note. Predictors: (Constant), Mean % of students who passed fourth grade math proficiency tests. Dependent variable: Number of principals.

A summary of regression coefficients is found in Table 3 and indicates that this variable was the only one of the five variables that significantly contributed to the model.

Table 3

Regression Coefficients for 4th Grade Math Achievement Variable

		Unstandardized coefficients		Standardized coefficients		
Model		B	*SE*	β	*t*	*p*
1	(Constant)	2.613	.173		15.107	.000
	Mean % of students who passed 4th grade math achievement tests	-.010	.004	-.260	-2.524	.013

Note. Dependent variable: Number of principals.

Findings regarding excluded variables are found in Table 4.

Table 4

Regression Results for Excluded Variables in the Stepwise Regression

Variable	β	*t*	*p*
Mean building enrollment	-.080	-.762	.448
Mean student mobility	-.016	-.128	.898
Mean pupil-teacher ratio	-.034	-.332	.741
Mean teacher attendance rate	.125	1.191	.237

Note. Predictors in the model: Mean % of students who passed 4th grade math achievement tests. Dependent variable: Number of principals.

In sum, the only predictor variable found to influence principal turnover was percentage of students passing Ohio mathematics achievement tests. The findings suggest a positive relationship: When students are achieving, principal retention improves.

Discussion and Conclusions Related to the Research Question

Regression results revealed building enrollment showed no predictive value on principal turnover. Because the regression equation used mean building enrollment for all schools in the sample, there is no evidence to conclude that a small elementary school is more conducive to a principal remaining for longer periods of time than a large elementary school. The results emerging from the analysis contradict this author's personal experience as an urban educator. Many urban principals lack assistant principals and are frustrated by the amount of time they must spend disciplining students. The larger the enrollment, the more time they focus on discipline. Using disciplinary issues was not an option as a variable in this study, because the ODE did not request these statistics until recently, and each school district has a different policy for how it reports behavioral incidents. The question of the interaction between building size and setting should be explored in future research.

Higher achievement may indicate that the principal is able to engender a culture in the school where all stakeholders have a shared vision and purpose and work toward them collectively. Similarly, lack of student success may frustrate and disappoint staff and principals. The school culture at low-achieving schools could be described as toxic in that principals may not want to deal with it and therefore choose to find another job. It is also likely that principals are involuntarily moved out of these schools when they cannot improve student achievement. This is one suggested remedy for those schools not meeting Annual Yearly Progress from the No Child Left Behind Act (2003).

Recommendation for Further Research

There were eight contextual factors studied and only two (percentages of students passing math and reading achievement tests) were found

to relate to elementary principal turnover. Future study should look at other contextual factors, such as finances of the district and school; student records for discipline, suspensions, and expulsion; and parent involvement. Parental involvement (a school variable considered for this study, but rejected) is an issue that has bearing on the school, reform measures, and the principal's work. In some cases parental involvement (either too much or too little) affects principal morale and may lead to principal turnover. It would be worthwhile to do ethnographic studies of schools that are undertaking reform and have had a change of principals to explore the local dynamics of parental participation.

Another avenue to explore is focusing on schools that do not meet Adequate Yearly Progress and identifying variables in these schools and how they correlate with either high or low principal turnover frequency.

Educational Significance of the Study

Authors in educational leadership (e.g., Deal & Peterson, 1999; DuFour & Eaker, 1998; Fullan, 1993, 2001; Zmuda, Kuklis, & Kline, 2004) have addressed the importance of the principal being an instructional leader. Results of this study add further evidence to their conclusion. Therefore, graduate schools of educational administration should provide courses emphasizing instructional leadership as a necessary component of the job. School district administrators and other educational policymakers must provide professional development programs for new and experienced principals in how to be more knowledgeable and effective in teaching and learning.

Empirical studies focusing on student achievement and leader stability like those of Ogawa and Hart (1985) and Hart and Ogawa (1987) found that small but identifiable differences in school performance on mathematics and reading tests were attributable to the tenure of principals and superintendents. This study confirms their findings. Echoing Ogawa and Hart (1985) and Hart and Ogawa (1987), this author recommends further search for the nature of leader turnover effects.

"At a time when Congress has set a twelve-year timetable for bringing every American student to 'proficiency' in core subjects, we delude ourselves if we think we can transform thousands of weak schools into strong ones without paying urgent attention to those who lead them" (Broad Foundation & Thomas B. Fordham Institute, 2003, p.16). Policymakers and administrators need to understand the dynamics of succession and its repercussions for the implementation of change initiatives. So much of a school's effectiveness and success is influenced by the leader that it is incumbent upon educational researchers to make principal turnover the focus of future research.

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Appendix A

Dependent Variable and Independent Variables

Variable	Data collected for each school year
Dependent variable Principal turnover frequency	Number of principals at a building site from FY1997 to FY2003
Independent variable 1 Turnover rates of superintendent	Number of superintendents in a school district from FY1997 to FY2003
Independent variable 2 Building enrollment	Number of students reported on October 31 of each year from FY1997 to FY2003
Independent variable 3 Student attendance rate	School reported average daily membership (ADM) from FY1997 to FY2003 (or 2000)
Independent variable 4 Student mobility	School reported number of students in school for less than one year for FY2000 to FY2003
Independent variable 5 Pupil-teacher ratio	Number of classroom teachers by regular education and special education classes for each building each year divided by student enrollment for each year, FY1997 to FY2003
Independent variable 6 Teacher attendance	School reported teacher attendance for FY1997 to FY2003
Independent variable 7 Student achievement in reading	4th grade proficiency test scores (now called achievement tests) in reading for FY1997 to FY2003
Independent variable 8 Student achievement in mathematics	4th grade proficiency test scores (now called achievement tests) in mathematics for FY1997 to FY2003
Setting	
Urban schools	Schools located in large urban centers with student populations that have high concentrations of poverty
Suburban schools	Schools surrounding major urban centers distinguished by very high income levels, almost no poverty, and a very high proportion of adult population characterized as professional/administrative
Rural schools	Schools in two groups: The first group is rural districts from the Appalachian area of Ohio with high poverty and low socioeconomic status families as measured by average income levels and percent of population with some college experience. The second group is small, very rural districts outside of Applachia. They have a work force profile that is similar to schools in group 1, but with much lower poverty rates.

Appendix B

Pearson's Product-Moment Correlation Coefficient Matrix for Sample (N = 109)

		Number of superintendents	Mean building environment	Mean student attendance rates	Mean student mobility rates	Mean pupil-teacher ratio	Mean teacher attendance rates	Mean % of students passing 4th grade OH reading proficiency tests	Mean % of students passing 4th grade OH math proficiency tests	Number of principals
Number of superintendents	Pearson Correlation	1								
	Sig. (2-tailed)									
Mean building enrollment	Pearson Correlation	-.251*	1							
	Sig. (2-tailed)	.009								
Mean student attendance rates	Pearson Correlation	-.526*	.040	1						
	Sig. (2-tailed)	.000	.682							
Mean student mobility rates	Pearson Correlation	.094	-.115	-.377*	1					
	Sig. (2-tailed)	.330	.232	.000						
Mean pupil-teacher ratio	Pearson Correlation	.140	.113	.094	-.035	1				
	Sig. (2-tailed)	.187	.287	.379	.746					

(continued)

Appendix B *(continued)*

		Number of superintendents	Mean building environment	Mean student attendance rates	Mean student mobility rates	Mean pupil-teacher ratio	Mean teacher attendance rates	Mean % of students passing 4th grade OH reading proficiency tests	Mean % of students passing 4th grade OH math proficiency tests	Number of principals
Mean teacher attendance rates	Pearson Correlation	-.076	-.145	.283*	.117	.135	1			
	Sig. (2-tailed)	.431	.131	.003	.225	.203				
Mean % of students passing 4th grade OH reading proficiency tests	Pearson Correlation	-.596*	.220*	.865*	-.424*	.009	.186	1		
	Sig. (2-tailed)	.000	.021	.000	.000	.936	.052			
Mean % of students passing 4th grade OH math proficiency tests	Pearson Correlation	-.593*	.259*	.813*	-.400*	-.003	.149	.963*	1	
	Sig. (2-tailed)	.000	.006	.000	.000	.980	.121	.000		
Number of principals	Pearson Correlation	.284*	-.247*	-.209*	.050	-.034	.017	-.244*	-.256*	1
	Sig. (2-tailed)	.003	.010	.029	.607	.753	.863	.011	.007	

* Correlation is significant at the 0.05 level (2-tailed).