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## AN EMPIRICAL TEST OF CONCLUSIONS FROM EFFECTIVE SCHOOLS RESEARCH

**ABSTRACT:** Effective schools variables identified in several literature reviews were collapsed into 6 constructs, and the independent effect of each construct was empirically tested on student achievement level. The data for this analysis were taken from the National Educational Longitudinal Study for the years 1988, 1990, and 1992. The regression analysis of the data indicates that the most important effective schools characteristics are an achievement-oriented school culture, principal autonomy in hiring and firing teachers, and high teacher morale. No evidence was found that teacher empowerment, teacher education level, most principal influences, and quality of relations between the administration and the school are related to student performance.

Over the past 3 decades, educational researchers have embarked on an incessant quest to uncover the correlates of effective schooling. The myriad studies have culminated in several rich literature reviews that, in sum, afford policy makers and practitioners alike an appreciation of how achievement effects manifest themselves. In this study, I empirically scrutinized the conclusions of these reviews to better inform the debate on education reform.

I examined the reviews listed in Table 1, to ascertain the most cited effective schools variables. Although these studies present a lavish array of achievement correlates, there is a general consistency and pattern to their conclusions. These conclusions appear to collapse into six factors: employment of quality teachers, teacher participation and satisfaction, principal leadership and involvement, a culture of academic achievement, positive relations with the central school administration, and high parental involvement. Each is briefly described below.

### Employment of Quality Teachers

Most studies appear to cite effectiveness of teachers as an essential ingredient of quality schooling. Teacher educational backgrounds, in-service training, teaching experience, verbal ability, teacher preparation time, and instructional strategies are regularly regarded to be indicators of teacher quality.

### Teacher Participation and Satisfaction

The literature appears to be mixed with respect to how much influence teachers should have in schools. Edmonds (1979) and Block (1983) concluded that teachers should not have substantial or controlling influence over decision making, whereas other researchers suggest that teacher participation positively affects student achievement. In the industrial relations literature, several researchers have found a positive association between unionized teachers and achievement (Eberts & Stone 1984, 1987; Milkman, 1989; Nelson & Gould, 1988; Register & Grimes, 1991), but have not yet shown that union-induced participation is an important linkage in this association (Zigarelli, 1994). Perhaps effective schools are simultaneously loosely and tightly

coupled on teacher input, and teachers have great autonomy within the classroom but little influence over school policy matters.

Many researchers have reported that effective schools have a collegial, familial environment that culminates in high teacher morale and satisfaction. I hypothesized that such factors contribute to greater student performance.

### Principal Leadership and Involvement

All of the effective schools research concluded that principals with strong leadership skills and a willingness to actively participate in the classroom create better schools. Moreover, schools that afford principals more control over hiring and firing of personnel, but do not overwhelm them with other managerial tasks, are believed to be more effective.

### A Culture of Academic Achievement

Most educators agree that one nebulous feature of effective schools is a climate of academia. In such a climate, achievement is the prevailing norm in the school. It is an accepted value of the school's culture.

Although intangible, indicators of an academic culture are high expectations for students, frequent monitoring of student progress, emphasis on basic skill acquisition, a significant amount of time in class, and a clear, academically oriented mission of the school.

### Positive Relations With the Central School Administration

Support from and cooperation with the superintendent, the school board, and the central office are often cited as contributing to better schooling. In an earlier study (Zigarelli, 1994), I reported that better relations and tighter coupling between administration and the classroom culminates in more productive teachers and greater student achievement.

### High Parental Involvement

Almost universally, effective schools researchers agree that the more parents are involved in a school, the better the educational experience of the students. More voluntary activity on the part of parents is expected to improve overall student performance.

### Method

I used the National Educational Longitudinal Study of 1988 (NELS 88) to assess the effects of six effective schools variables on student achievement. The Department of Education (DOE), in conjunction with the National Opinion Research Center (NORC) and the Educational Testing Service (ETS), constructed survey questionnaires and administered them to a panel of students who were 8th graders in 1988 (base year), 10th graders in 1990 (first follow-up), and 12th graders in 1992 (second follow-up). NORC conducted most of these hour-long surveys in school, soliciting information on student "background, language use, home environment, perceptions of

self, plans for future, jobs and household chores, school experiences and activities, work, and social activities" (DOE 1994, p. 22). The students also completed achievement tests, designed by ETS, in the areas of reading comprehension, mathematics, science, and history/citizenship/geography. (1) A total of 24,599 students participated in the base year survey; however, information for only 16,842 students is available across all three waves of NELS 88.

The DOE also surveyed parents, principals, and teachers as part of NELS 88. Parents of 22,651 of the base-year students completed questionnaires in 1988. The base year parent survey was used to collect information about "family background and socio-economic characteristics, and the character of the home educational support system" (DOE 1989, p. 1).

Although I used only 1,100 public schools for this analysis, 1,296 public and private high schools participated in the first follow-up in 1990. I obtained a 60-min school questionnaire, completed by the principal or headmaster, from 97% of the participating schools. The questionnaire was designed "to collect information about school, student, and teacher characteristics; school policies and practices; the school grading and testing structure; school programs and facilities; parental involvement in the school; and school climate" (DOE 1992b, p. viii). Principals and headmasters completed questionnaires again in 1992.

Most students were evaluated by two of their teachers in 1990 in order to elicit teacher assessments of NELS students' classroom performance. Additionally, this teacher survey provided "background information about the teachers and the schools, including both teacher demographic and professional characteristics, and information about school activities, such as parent-teacher and teacher-school interactions, time commitments to various tasks, and perceptions of school climate and culture" (DOE 1992c, p. 1). In 1990, 9,987 teachers provided evaluations for 14,908 of the participating students.

The combination of these questionnaires made it possible to construct the relevant variables to test the conclusions from effective schools research. All variable definitions and constructions are detailed in the Appendix. Also, to ensure a representative sample, each observation has been assigned a weight by the DOE. According to DOE documentation, "IT]he general purpose of weighting survey data is to compensate for unequal probabilities of selection and to adjust for the effects of nonresponse" (DOE 1992a, p. 42). Therefore, I selected the weights for the panel of eighth graders who also participated in the 1990 and 1992 follow-up surveys for use in this study; one should be able to generalize from the results presented herein to the population of 1988 eighth graders.

Summary statistics for the variables used in this study are reported in Table 2. All observations were weighted before computing measures of central tendency and dispersion. Half of the 7,407 students in the sample were female, and 82% were Caucasian. The regional distribution was 18.3% Northeast, 31.4% North Central, 35.7% South, and 14.5% West. Approximately 14% of the students attended urban schools and 44% attended suburban schools.

The students, 45.8% of whom were in an academic track, reported averaging 10.5 h of homework both inside and outside of school per week. Moreover, they averaged 312 min of classroom time per day. About 10% of their parents had volunteered their time for the school.

The parents related ambitious expectations for their children's education. Only 18.5% expected their child to finish with a high school or vocational school diploma; 61.3% expected a college education; 10.3% expected a master's degree; and 9.7% expected a medical degree, a doctorate, or a law degree.

In this study, 46.7% of the teachers held a bachelor of arts degree, and 49.1% held an advanced degree. The principals rated 32.2% of the teachers excellent, 47.9% good, 15.1% fair, and 4.7% poor. Teachers averaged 58 min per day in preparation for class.

In this study, I conducted a straightforward linear regression analysis; the six constructs described in Section I were regressors, and the student's score on the 12th-grade battery of examinations was the dependent variable. The regression was weighted to produce a nationally representative sample.

To partial out the independent and unbiased effects of these effective schools constructs, I controlled student effort (hours of homework completed, teacher perception of student's effort), student ability (pretest score, academic track), student demographics (race, sex), parents' influence (parental expectations for the student's education, parents' socioeconomic status), and school demographics (region of the country, urbanized location, school size).

## Results

The regression results, separated into the six effective schools components, are reported in Table 3. Equation 1 was used to estimate effective schools parameters individually, whereas Equation 2 was used to estimate the interaction of principal influences, teacher control influences, teacher quality influences, and school relations influences. In this way, Equation 2 tested the proposition that several independent influences work as a system to generate achievement effects.

Student, parent, and school controls are also listed for both equations. As expected, these control variables demonstrate that student ability and effort, as well as parental influences, strongly affect student achievement level. Also, as expected, in both models, school culture, as measured by the extent to which the school emphasizes achievement and the number of minutes students spend in class each day, had a positive and significant effect. This finding is wholly consistent with the literature reviews.

The effect of principal influences is less clear. Equation 1 presents no evidence that principal involvement in school policy, in the distribution of funds, in purchasing, or in the improvement of teaching contributes to student achievement. A principal's management responsibilities can make a difference, however, when he or she hires and fires teachers and staff. This coefficient, significant at the 1% level, strongly supports the notion that the more autonomy a principal has in such personnel decisions, the greater students' school performance will be. In Equation 2, the interaction of these four constructs, interpreted to mean a school in which the principal is involved in all aspects of school management, was not significant. Accordingly, one cannot conclude that, in general, active principals necessarily lead to better schooling.

The quality of relations among the administration, the school, and its teachers was not related to achievement. This was the case whether relations variables were separated or interacted. The same was true for the teacher empowerment constructs: teacher influence in school policy, classroom policy, and course content. None of these variables even approached significance in either direction. Even as one broad construct (a school in which teachers enjoy responsibility in management and classroom policy), the effect was neither positive nor significant.

Surprisingly, teacher quality also was not significant. Although in Equation 1 the percentage of teachers categorized as good and the amount of teacher preparation time were positive and almost indistinguishable from zero, no statistical evidence exists here to state otherwise. Teacher education level was more clearly unrelated to achievement, for the percentage of teachers with an advanced degree had no impact on test scores. Teacher morale, however, was important, consistent with the myriad studies that hypothesize an association between teacher satisfaction/collegiality and student performance. When all of those constructs interacted, Equation 2 yielded a coefficient in the expected direction, but it had no significant effect on achievement.

Finally, the percentage of parents volunteering in a school did not reach statistical significance, but it was close enough to suggest that it may have some influence. No firm evidence is offered here, though.<sup>2</sup>

## Conclusions

In totality, the regressions present a multifarious picture of what may contribute to a school's success. The effective school is one in which mastery of the course material is the cultural norm, students place a high priority on learning, and there is plenty of classroom time to learn. As demonstrated by the coefficient on morale, it is also a place where teachers get along with one another and are satisfied with their work environment. Principals are empowered to hire and fire teachers unencumbered by contractual handcuffs or by administrative bureaucracy. Additionally, perhaps, parents generously volunteer their time and teachers are afforded much time to prepare their classes.

There is no evidence to support the claims that the following school variables influence student achievement: teacher empowerment and autonomy, continuing teacher education, most principal management responsibilities, or warm relations between the school and the administration. Teacher organizations vigorously advance both the empowerment and continuing education arguments at their conventions, at the bargaining table, and in policy circles. In at least one state, New Jersey, the dominant teacher union has proposed that teachers must obtain a master's degree to remain certified. This study suggests that these contentions have no merit. Moreover, it also invites a reconsideration of the claims that increasing principal responsibilities and improving school relations will promote achievement.

It is intriguing that so few effective schools variables appear to significantly influence achievement. Given the literature, there is now little doubt that a school effect on achievement exists. In this study, I pursued the estimation of this school effect by including measures of school demographics, school culture, principal, teacher and parent influence in the school,

teacher quality and satisfaction, and quality of relations within and outside the school. However, the omission of school environment variables not available in these data may contribute to the inference that few school variables seem to matter. Insofar as this is the case, this constitutes a limitation of this study and warrants further research.

A second, perhaps more intuitive, explanation for the apparent unimportance of effective schools variables emerges upon further regression analysis. An estimation of student achievement with only the effective schools variables on the right side of the equation explains little variance ( $R^2 = .0527$ ). This assessment sharply contrasts with a model that estimates achievement using only student ability and effort variables ( $R^2 = .7292$ ) or a model that includes only parental influences as regressors ( $R^2 = .2369$ ). In the final analysis, achievement seems to be much more a function of student and family variables than of schooling variables. School effects exist, as demonstrated by this and many other studies, but they are dwarfed by effects that have little to do with the schooling environment. Accordingly, as the effective schools debate continues and educators and policy makers struggle to identify what works in educating children, one should remain cognizant that the greatest influences on a student achievement level are often beyond the control of the teacher or the school.

## NOTES

*1. All tests have been validated by ETS; all coefficient alpha reliabilities exceed .77 (DOE 1992a, Appendix 1, p. 22). Full details regarding the test items and validation are available through the Psychometric Report for NELS:88 for all three waves of testing.*

The base-year test battery served as a control for student ability before the student entered high school. The second follow-up battery served as the dependent measure of student achievement in the 12th grade. The test forms varied in difficulty, so it would have been inappropriate to use raw scores for comparison and analytical purposes. Instead, according to ETS:

Item Response Theory (IRT) was employed to calculate scores that could be compared regardless of which test form the student took. A core of items shared among the different test forms made it possible to establish a common scale. IRT uses a pattern of right, wrong, and omitted responses to the items actually administered in a test form, and the difficulty, discriminating ability and 'guess-ability' of each item, to place the student on a continuous ability scale. It is then possible to estimate the score the student would have achieved if all of the items in all of the test forms would have been administered. The "IRT-Estimated Number Right" scores in the data base represent these estimates for all of the 35 items on two overlapping reading forms, the 58 items on three mathematics forms, and the 25 and 30 items in science and history exams.

IRT has several other advantages over raw number-right scoring. By using the overall pattern of right and wrong responses to estimate ability, it can compensate for the possibility of a low ability student guessing several hard items correctly. If answers on several easy items are wrong, a correct difficult item is, in effect, assumed to have been guessed. Omitted items are also less likely to cause distortion of scores, as long as enough items have been answered right and wrong to establish a clear pattern. Raw scoring necessarily treats omitted items as if they had been

answered incorrectly. While this may be a reasonable assumption in a motivated test, where it is in students' interest to try to do their best on all items, this may not always be the case in NELS:88. (DOE 1992a, Appendix 1, p. 22)

2. A third regression was run to test interaction among the principal, teacher quality, teacher influence, school relations, and parent-volunteer constructs. A positive, significant coefficient would imply that all of these variables, working as a large, simultaneous system, generate greater student performance. However, the t value on this coefficient was merely 0.679.

Table 1.--Literature Reviews

Author variables	Effective schools
Edmonds (1979)	Teachers satisfied with jobs, task oriented, believe students can achieve, have little influence over educational policy decisions Principal a leader and supports teachers Culture conducive to learning: high expectation for students, emphasis on basic skills acquisition Adult/parent volunteers
Block (1983)	Teacher education and training, experience, verbal ability, effective instructional strategies, good teacher-administration relations, high teacher morale, teacher respect for the principal, a family climate, teacher input but not control over curriculum Principal facilitates an academic climate and is active in hiring and in the classroom Active monitoring of student progress Safe environment and strong discipline Parental involvement
Purkey and Smith (1983)	Teacher collegiality, sense of community experimentation with teaching, involvement in decision making, staff development Principal is a leader Culture of achievement with maximum learning time, high expectations for



students, an academic curriculum with few electives, clear goals  
 Order and discipline  
 School autonomy

Coyle and Witcher (1992) Teachers satisfied with jobs, high teacher morale, agreement with principal's vision, collegial atmosphere, teacher involvement in decision making, experimentation with teaching  
 Principal takes a strong leadership role, spends significant portion of the day on instruction-related activities  
 Culture where achievement is emphasized and expectations for students are high  
 Low student-teacher ratio  
 Consistent and enforced rules  
 Central office support of the school

Downer (1991) Effective teachers and instructional strategies, teacher decision making, and collaboration  
 Principal a strong leader  
 Culture that emphasizes achievement, and, where expectations for students are high, clear goals and mission  
 Positive relations with administrative management  
 Positive relations with parents

Table 2.--Summary Statistics

Variable	N	M	SD
Posttest	7.407	144.710	391.866
Pretest	7.407	116.930	329.799
Hwkhours	7.407	10.498	88.182
Effort	7.407	8.710	24.615
Academic	7.407	0.457	6.397
General	7.407	0.390	6.264
Othtrack	7.407	0.151	4.604
White	7.407	0.824	4.879

Asian	7.407	0.027	2.089
Black	7.407	0.082	3.529
Hisp	7.407	0.054	2.919
Amer Ind	7.407	0.007	1.118
Female	7.407	0.500	6.420
SES	7.407	0.051	9.287
Expecths	7.407	0.101	3.869
Expectvc	7.407	0.085	3.592
Expectcl	7.407	0.613	6.253
Expectms	7.407	0.102	3.899
Expectdr	7.407	0.097	3.806
Emph ach	7.407	15.731	28.747
Clastime	7.407	312.171	580.176
Prin pol	7.407	20.023	41.713
Prin pur	7.407	12.573	34.875
Prin hir	7.407	12.298	32.716
Prin tch	7.407	3.320	20.408
Mgmt tel	7.407	10.533	22.869
Tchr tel	7.407	-1.777	11.851
Prt vol	7.407	10.285	147.254
Tchr pol	7.407	11.298	43.846
Tchr cls	7.407	16.142	25.308
Tchr con	7.407	8.922	34.419
Poortchr	7.274	4.660	57.677
Fairtchr	7.292	15.140	151.002
Goodtchr	7.407	47.903	238.959
Exctchr	7.407	32.180	271.307
Nobapct	7.318	0.003	0.163
Ba pct	7.402	0.467	2.750
Mast edd	7.407	0.491	2.851
Unk pct	6.993	0.003	0.242
Tchrprep	7.407	57.987	222.443
Morale	7.407	3.789	9.905
Nrtheast	7.407	0.182	4.963
Nrthentr	7.407	0.314	5.960
South	7.407	0.357	6.154
West	7.407	0.145	4.525

Urban	7.407	0.139	4.446
Suburban	7.407	0.443	6.379
Rural	7.407	0.416	6.330
Schsize	7.407	1,049.500	7,745.310

Note. Explanations for the variables are given in the Appendix.

Table 3.--Regression Analysis

Variable	Equation 1	Equation 2
<b>School culture</b>		
Emph ach	0.294** (0.097)	0.354*** (0.087)
Clastime	0.023*** (0.004)	0.023*** (0.004)
<b>Principal influence</b>		
Prin pol	-0.084 (0.069)	
Prin pur	0.050 (0.077)	
Prin hir	0.264** (0.084)	
Prin tch	-0.117 (0.125)	
Principal		0.000 (0.000)
<b>School relations</b>		
Mgmt rel	-0.067 (0.116)	
Tchr rel	0.212 (0.217)	
Relations		0.028 (0.019)
<b>Teacher influence</b>		
Tchr pol	-0.054 (0.061)	
Tchr cls	0.099 (0.009)	
Tchr con	0.053 (0.080)	
Teacher infl		0.000 (0.000)
<b>Teacher quality and satisfaction</b>		

Goodtchr	0.021	
	(0.015)	
Exctchr	-0.0095	
	(0.014)	
Mast edd	0.911	
	(0.893)	
Tchrprep	0.017	
	(0.010)	
Morale	0.731**	
	(0.290)	
Teacher qual		0.000
		(0.000)
Parent volunteers		
Prt vol	0.022	0.024
	(0.016)	(0.016)
Student variables		
Pretest	0.833***	0.832***
	(0.008)	(0.009)
Hwkhours	0.293***	0.295***
	(0.027)	(0.028)
Effort	1.474***	1.485***
	(0.104)	(0.104)
Academic	4.807***	4.714***
	(0.418)	(0.416)
Asian	0.805	0.757
	(1.139)	(1.139)
Black	-4.805***	-5.029***
	(0.719)	(0.715)
Hisp	-2.978***	-2.951***
	(0.849)	(0.848)
Variable	Equation 1	Equation 2
Amer Ind	-2.785	-3.235
	(2.110)	(2.101)
Female	-3.694**	-3.726***
	(0.373)	(0.373)
Parent variables		
SES	2.280***	2.362***
	(0.298)	(0.297)
Expectcl	2.461***	2.431***
	(0.506)	(0.505)
Expectms	2.702***	2.672***
	(0.773)	(0.772)
Expectdr	5.403**	5.493***

	(0.789)	(0.798)
School controls		
Nrtheast	0.295 (0.721)	-0.272 (0.689)
Nrthcntr	-2.482*** (0.630)	-2.873 (0.614)
South	-2.899*** (0.613)	-3.113*** (0.603)
Urban	0.983 (0.657)	0.870 (0.643)
Suburban	-0.710 (0.449)	-0.508 (0.442)
Schlsize	0.002*** (0.001)	0.002*** (0.001)
Intercept	11.218*** (3.362)	17.123*** (2.439)
R(2)	0.742	0.741
Adjusted R(2)	0.740	0.740
Observations	7.407	7.407

Note. The dependent variable was posttest. Standard errors are in parentheses.

\*p = .05; \*\*p = .01; \*\*\*p = .01.

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## **APPENDIX Variable Definitions and Constructions**

Dependent variable

Posttest: Second follow-up (12th grade) test

Construction: IRT estimates score on reading, mathematics, science, history

Posttest =  $f22xrirr + f22xmirr + f22xsirr + f22xhrr$

Alpha = .920

Student controls

Pretest: Base year (8th grade) test

Construction: IRT estimated score on reading, mathematics, science, history

Pretest = by2xrirr + by2xmirr + by2xsirr + by2xhirr  
Alpha = .907

Academic, general, othtract: Student's curricular track as of 12th grade (academic, general, other); all coded 1, 0; f2s12a

Hwkhours: Total hours student spent on homework hours both in school and out of school per week

Construction: Averaged from 10th and 12th grade

Hwkhours = (fls36a1 + fls36a2 + f2s25f1 + f2s25f2) / 2

Effort: Teacher perception of individual student's effort (for two different classes in the 10th grade)

Construction: Teacher perception that student works hard (coded 1, 0) + teacher perception of how often student does homework (scaled 1 to 6) + teacher perception of how often student is attentive (scaled 1 to 6);

Effort = fltl-2 + fltl-15 + fltl-18  
Alpha = .843

Asian, Black, White, Hisp, Amer-ind: Student's race (coded 1, 0)

fl race

Female: Whether student is a female (coded 1, 0)

fl sex

Parent variables

Expecths, expectvc, expectel, expectms, expectdr: Parental expectations for student's education when student was in 8th grade (high school, vocational school after hs, college, master's, Ph.D./M.D.-- coded 1, 0)

byp76

SES: Composite socioeconomic status of parents as of 1990 (student in 10th grade)

Construction: The DOE constructed this variable to be a function of five standardized components: Father's and mother's educational levels, father's and mother's occupations, and family income.

fl ses

Culture of achievement

emph-ach: School emphasizes achievement

Construction: From principal questionnaire, 1990: Students in this school place high priority on learning + class activities are highly structured + teachers press students to achieve + students are expected to do their homework (all scaled 1 to 5).

Emph-ach = flc93b + flc93c + flc93d + flc93e

Alpha = .738

Clastime = minutes per day students are in class

Construction: Class periods per day times class minutes per period; Clastime = flc8\*fl c9

Principal leadership and involvement

Prin-pol: Principal's influence over policy matters

Construction: Influence setting teacher performance standards + influence setting curriculum guidelines + influence over instructional practices + influence establishing homework policies + influence in creation of new programs (all scaled 1 to 5)

Prin-pol = flc98d + flc98e + flc98f + flc98h + flc98i

Alpha = .781

Prin--pur: Principal's influence in distribution of funds and in purchasing

Construction: Influence over purchasing school supplies + influence over purchasing school equipment + influence over distribution of funds in school (all scaled 1 to 5)

Prin-pur = flc98j + flc98k + flc98l

Alpha = .877

Prin-hir: Principal's influence over hiring and firing staff

Construction: Influence hiring teachers + influence hiring custodians + influence dismissing teachers (all scaled 1 to 5)

Prin-hir = flc98a + flc98b + flc98c



Alpha = .710

Prin-tch: Teachers' perception of principal's influence to improve teaching (scaled 1 to 6)

flt4-8a

Principal: Interaction of prin-pol, prin-pur, prin-hir, and prin-tch

School relations

Mgmt-rel: Quality of school's relationship with administration (principal questionnaire)

Construction: School's relations with superintendent + school's relations with school board + school's relations with central office (all scaled 1 to 4)

Mgmt-rel = flc99b + flc99c + flc99d

Alpha = .852

Tchr-rel: Quality of relationship between administration and teachers (principal questionnaire)

Construction: - high conflict between administrator and teachers (scaled -5 to -1)

Tchr-rel = -flc93m

Relations: Interaction of mgmt-rel and tchr-rel

Parental volunteers

Prt-vol: Percentage of parents (0 to 100) volunteering their time (principal questionnaire)

Prt-vol = flc101

Teacher influence

Tchr-pol: Teacher influence over school policy decisions (teacher questionnaire)

Construction: Teacher influence over disciplinary policy + teacher influence over in-service programs + teacher influence over student curricular grouping + teacher influence over establishing curriculum (all scaled 1 to 5)

Tchr-pol = flt4-9a + flt4-9b + flt4-9c + flt4-9d

Alpha = .742

Tchr-cls: Teacher control over classroom policy (teacher questionnaire)

Construction: Teacher control over teaching techniques + teacher control over student discipline + teacher control over amount of homework (all scaled 1 to 6)

Tchr-clc = flt2-17c + flt2-17d + flt2-17e  
Alpha = .664

Tchr-con: Teacher control over content of courses (teacher questionnaire)

Construction: Teacher helped choose textbook (coded 1, 0) + teacher control over text/materials (scaled 1 to 6) + teacher control over course content (scaled 1 to 6)

Tchr-con -- flt2-13a + flt2-17a - flt2-17b  
Alpha = .657

Teacher infl: Interaction of tchr-pol, tchr-clc, and tchr-con

Teacher quality and satisfaction

Poortchr, fairtchr, goodtchr, exttchr: Principal's perception of percentage of poor, fair, good, excellent teachers in the school

flc92a, f2c92b, flc92c, flc92d

Morale: Teacher perception of whether teacher morale is high (scaled 1 to 5)

Morale = flc93f

NoBApct, BA-pct, mast-edd, unk-pct: Percentage of teachers with no BA degree, with a BA, with a master's of Ed.D., or with an unknown degree

Construction: Number of teachers with each degree divided by the number of teachers in the school

NoBApct = flc44a / flc35  
BA-pct = flc44b / flc35  
Mast-edd = (flc44c + flc44d) / flc35  
Unk-pct = flc44e / flc35

Note. flc35, number of teachers in the school, was converted to midpoints for categories of teachers in school

Tchrprep: Number of teacher preparation minutes per day (principal questionnaire)

Tchrprep = flc48

Teacher qual: Interaction of goodtchr, exttchr, morale, mast-edd, tchrprep

School controls

Nrtheast, nrthcntr, south, west: Region of country; coded 1, 0

g1Oregon

Urban, suburban, rural: Urbanized location; coded 1, 0

glOurban

Schisize: Student population of school

fl scenrl (midpoints used)

Note. Cronbach's alphas are given for constructs that are an amalgam of two or more related variables. Factor analysis was used to determine which variables were related. All variable names were defined by the U.S. Department of Education.