MCCPS Board of Trustees

Personnel Committee Meeting

Amended on October 12, 2021 at 6:37 PM EDT

Date and Time
Tuesday October 12, 2021 at 7:00 PM EDT

Location
ZOOM LINK https://marbleheadcharter.zoom.us/j/85204151368?pwd=anB2NnRGblBQMjRPQ3dJV2hDK3N1Zz09

17 Lime Street
Marblehead, Massachusetts
01945

Agenda

	Purpose	Presenter	Time
I. Opening Items			**7:00 PM**
Opening Items			
A. Call the Meeting to Order		James Rogers	2 m
B. Record Attendance and Guests		Katie Sullivan	1 m
C. Accept Remote Participation	Vote	James Rogers	2 m
In light of the ongoing COVID-19 coronavirus outbreak, Governor Baker issued an emergency Order on March 12, 2020, allowing public bodies greater flexibility in utilizing technology in the conduct of meetings under the Open Meeting Law. Can we make a motion to accept this Executive Order for this meeting of the Personnel Committee, on October 12, 2021.			
D. Approve Minutes	Approve Minutes	Katie Sullivan	5 m
Approve minutes for Personnel Committee Meeting on September 14, 2021			
II. Old Business			**7:10 PM**

	Purpose	Presenter	Time
Personnel Committee			
A. Personnel Committee Membership	Discuss	James Rogers	2 m

Review the committee membership needs of the Personnel Committee. Identify potential candidates for membership on the committee.

B. POLICY REVIEW	Discuss	James Rogers	5 m

CONTINUE DISCUSSIONS OF POLICY REVIEW AS PERTAIN TO SCOPE OF PERSONNEL COMMITTEE

1. Links to Personnel Policies
    1. Marblehead - https://www.marbleheadschools.org/district/mps-policy-manual
        1. Scroll down to section G - Personnel
    2. Salem Personnel - https://www.salemk12.org/cms/One.aspx?portalId=268138&pageId=537199

III. New Business - Discussion of Internal Survey — 7:17 PM

A. Consideration of adding an internal survey instrument	Discuss	John Steinberg	20 m
B. Preparation for Presentation to the Board	Discuss	Katie Sullivan	10 m

Head of School evaluation process part 1

IV. Action Items — 7:47 PM

A. Review Action Items from Meeting	FYI	Katie Sullivan	5 m

Review Action Items form meeting, including who is responsible, item to be completed and time frame for status report or completion.

V. Closing Items — 7:52 PM

A. Adjourn Meeting	Vote	James Rogers	5 m

Coversheet

Approve Minutes

Section:	I. Opening Items
Item:	D. Approve Minutes
Purpose:	Approve Minutes
Submitted by:	
Related Material:	Minutes for Personnel Committee Meeting on September 14, 2021

APPROVED

MCCPS Board of Trustees

Minutes

Personnel Committee Meeting

Date and Time
Tuesday September 14, 2021 at 7:00 PM

Location
ZOOM LINK https://marbleheadcharter.zoom.us/j/85204151368?pwd=anB2NnRGblBQMjRPQ3dJV2hDK3N1Zz09

17 Lime Street
Marblehead, Massachusetts
01945

Committee Members Present
Artie Sullivan (remote), John Steinberg (remote), Katie Sullivan (remote), Peter Cheney (remote)

Committee Members Absent
James Rogers, Jen Stoddard

I. Opening Items

A. Call the Meeting to Order

Artie Sullivan called a meeting of the Personnel Committee Committee of MCCPS Board of Trustees to order on Tuesday Sep 14, 2021 at 7:11 PM.

B. Record Attendance and Guests

C.

Accept Remote Participation

Katie Sullivan made a motion to In light of the ongoing COVID-19 coronavirus outbreak, Governor Baker issued an emergency Order on March 12, 2020, allowing public bodies greater flexibility in utilizing technology in the conduct of meetings under the Open Meeting Law. Can we make a motion to accept this Executive Order for this meeting of the Personnel Committee, on August 24, 2021.
John Steinberg seconded the motion.
The committee **VOTED** to approve the motion.

D. Approve Minutes

John Steinberg made a motion to approve the minutes from Personnel Committee Meeting on 08-24-21.
Artie Sullivan seconded the motion.
The committee **VOTED** to approve the motion.

II. Old Business

A. Feedback - HOS Goals for SY-21-22

The Board approved the HOS Goals.

B. Staffing Updates

No new staffing updates.

C. Review HR Knowledge Assessment

There has been no additional meeting yet with the HR Knowledge company but they will be working on feedback on the Handbooks.

D. Review of Staff & Student Parent Handbooks

HR Knowledge will be providing feedback on these in the near future.

E. Personnel Committee Membership

Sarah Westwood will not be joining the committee but Jenn Stoddard will join this committee as a faculty member.
Peter will promote it at the upcoming Curriculum Night.

F. POLICY REVIEW

III. New Business

A. HOS Evaluation Training-Part 1 will be in November

We will discuss this Nov. 30, 2021 presentation to the Board at the next meeting.

B. New HOS Survey

John shared several documents from what we used for our original "in house" survey in 2011-2012 including the survey questions (statements), results, and reports. The committee discussed them and we will read through the information, give it some thought, and discuss them further (Ideally, by the January meeting.)

IV. Action Items

A. Review Action Items from Meeting

Next meeting: Oct. 12, 2021

V. Closing Items

A. Adjourn Meeting

There being no further business to be transacted, and upon motion duly made, seconded and approved, the meeting was adjourned at 7:50 PM.

Respectfully Submitted,
Katie Sullivan

Documents used during the meeting

None

Coversheet

Consideration of adding an internal survey instrument

Section:	III. New Business - Discussion of Internal Survey
Item:	A. Consideration of adding an internal survey instrument
Purpose:	Discuss
Submitted by:	
Related Material:	Scoring.doc Form1.docx Ebmeier_2003.pdf Empirical Linkages.pdf

Scales on the Peer Collaboration Survey

Transfer the scores from each survey to the appropriate boxes below. Use one sheet per questionnaire. (Strongly agree=5, agree=4, uncertain=3 disagree=2, strongly disagree=1). Reverse the scoring for questions in bold. (i.e., Strongly agree=1, agree=2, uncertain=3 disagree=4, strongly disagree=5)

Value of Improvement as a Teacher--the extent to which the teacher values self-improvement

	1.	It is really important to me to be constantly improving as a teacher.
	16.	I spend a lot of time trying new teaching techniques
	31.	It is a prime responsibility of a teacher to be constantly improving their own instruction
	45.	Teachers need to be constantly learning and growing to be effective in the classroom.

Peer Support of Innovation--peer support of a teacher's attempt to be innovative in the classroom

	2.	Teachers in this building support other teachers' attempts to be innovative in their classrooms.
	17.	If I try something really new in my teaching, other teachers in my building will support my risk taking.
	32.	Teachers in this building are very supportive of teachers who try new teaching methods.
	47.	Teachers in this building will support innovation even if it is less than successful.

Trust of Peers-Personal Support--teacher's belief that other teachers care about his or her welfare

	3.	I am satisfied with the trust I have in this building's teachers.
	18.	I can count on teachers in this building to support my efforts to be a better teacher.
	33.	Teachers in this building can be trusted.
	46.	Teachers in this building will willingly try to help me improve my instruction.

Confidence in Peer Ability--the teacher's confidence in peer ability

	4.	I have a general feeling of confidence in other faculty members.
	19.	Teachers in this building are very competent.
	34.	I am satisfied with the professional competence and teaching ability of my teaching colleagues.
	48.	Teachers in this building are very good in the classroom.

Commitment to Teaching--the teacher's commitment to the profession of teaching.

	5.	I am proud to be a teacher.
	20.	Teaching is an excellent profession.

	35.	I tend to identify with teaching and strongly support it when it is attacked.
	49.	I would leave teaching for another profession if I could.
	59.	I tell my friends that I will stay in teaching for many years to come.
	61.	If offered a better salary, I would move to another profession.
	63.	This job gives me professional satisfaction.
	65.	I enjoy my school work very much.

Commitment to Building Goals--the teacher's belief in the goals and values of the school in which they work**.**

	6.	I believe in the goals and objectives of this school.
	21.	I am not satisfied with the goals and objectives emphasized by this school.
	36.	The values of this school are inconsistent with my own values.
	50.	Unlike this school, I would like to work in a school that holds the same values as I do.

Satisfaction with Working Conditions--the teacher's view of the quality of the working conditions at his or her school including: balanced workloads, staff friendliness, social activities, communication across teachers and students**.**

	7.	Working conditions in this school are good.
	22.	The workload is adequately balanced among the faculty members of this school.
	37.	I am satisfied with the amount of work I am expected to do.
	51.	There are sufficient social activities for the faculty.
	60.	The social contact between students and faculty is friendly.
	62.	Faculty members are friendly to one another.

Personal Efficacy--the teacher's belief that he or she can make a difference in student learning**.**

	8.	If a student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept.
	23.	When the grades of my students improve, it is usually because I found more effective teaching approaches.
	38.	When I really try, I can get through to most difficult students.
	64.	If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next session.
	9.	When a student does better than usual, many times it is because I exerted a little extra effort.

	24.	If a student in my class becomes disruptive and noisy, I fell assured that I know some techniques to redirect him/her quickly.
	10.	If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.
	25.	When a student is having difficulty with an assignment, I am usually able to adjust it to his/her level.
	39.	When a student gets a better grade that he/she usually gets, it is usually because I found better ways of teaching that student.
	52.	Even a teacher with good teaching abilities may not reach many students.

External Efficacy--the teacher's belief that external factors such as family background, intelligence, and home environment are more important than what transpires in the classroom**.**

	11.	If students are not disciplined at home, they aren't likely to accept my discipline.
	26.	A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.
	40.	The hours in my class have little influence on students compared to the influence of their home environment.
	53.	The amount that a student can learn is primarily related to family background.
	57.	If parents would do more with their children, I could do more.
	66.	The influence of a student's home environment can be overcome by good teaching

Involvement in Decision Making--teacher's involvement in making decisions at the building level

	12.	I am currently involved in making decisions at the building level that affect my teaching.
	27.	I am able to make all of the important decisions about how and what I teach.
	41.	I have a great deal of control over the teaching method I use and the curriculum I teach.
	54.	I have input into the decisions that affect me directly in this school.

Principal Support of Innovation--the extent to which the teacher believes the principal supports innovative instruction

	13.	The principal at this school strongly supports innovative approaches to instruction.
	28.	I can count on the principal to support me if I want to try something new.
	42.	The principal in this building is very supportive of teachers who try new things in their classrooms.

Collaboration Among Peers--the extent to which teachers interact with other teachers about instruction issues

	14.	I often work with other teachers to help me improve my instruction.
	29.	I generally get excellent ideas from fellow staff members.
	43.	I find that talking with other teachers about instructional issues can help me improve my own instruction
	55.	I often talk to fellow teachers about instructional issues.

Opportunity for Peer Feedback--the extent to which the teacher receives and gives feedback from other teachers about his or her instruction

	15.	Other teachers often visit my classroom and offer improvement suggestions.
	30.	I frequently observe other teachers in their classrooms.
	44.	I often sit down with other teachers and talk about instructional issues in our classrooms.
	56.	I receive a lot of feedback about my instruction from other teachers.
	58.	I often share ideas about instruction with other teachers.

Clinical Supervision Survey

Instructions:

Please read each question, then carefully consider each possible response. When you have selected the response in each section that reflects your true feeling, not what you think colleagues expect, then circle the appropriate response for that question**. When you are finished, please place the questionnaire in the provided envelope, seal, and return to the individual who gave it to you. Please rest assured that no one will know how you individually responded to the questions.**

Part A. Background Information

1. Are you male or female?
   a. male
   b. female

2. What is your race or ethnic group?
   a. Black
   b. Hispanic
   c. Native American
   d. Asian or Pacific Islander
   e. White

3. Including this year, how long have you taught school?
   a. 1 year or less
   b. 2-4 years
   c. 5-8 years
   d. 9-12 years
   e. 13-20 years
   f. 21 years or more

4. How long have you taught in this building?
   a. 1 year or less
   b. 2-4 years
   c. 5-8 years
   d. 9-12 years
   e. 13-20 years
   f. 21 years or more

5. What grade level(s) are you teaching?
   a. lower elementary (K-3)
   b. upper elementary
   c. middle school/junior high school
   d. high school
   e. not assigned to a particular level

6. How much formal preparation do you have?
   a. Bachelor's degree
   b. Some graduate work but less than a Master's degree
   c. Master's degree
   d. More than a Master's degree but not doctorate
   e. Doctor's degree

Part B. Opinions About Teaching

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	It is really important to me to be constantly improving my teaching skills.	SA	A	?	D	SD
2.	Teachers in this building support other teachers' attempts to be innovative in their classrooms.	SA	A	?	D	SD
3.	I am satisfied with the trust I have in this building's teachers.	SA	A	?	D	SD
4.	I have a general feeling of confidence in other faculty members.	SA	A	?	D	SD
5.	I am proud to be a teacher.	SA	A	?	D	SD
6.	I believe in the goals and objectives of this school.	SA	A	?	D	SD
7.	Working conditions in this school are good.	SA	A	?	D	SD
8.	If a student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept.	SA	A	?	D	SD
9.	When a student does better than usual, many times it is because I exerted a little extra effort.	SA	A	?	D	SD

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
10.	If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	SA	A	?	D	SD
11.	If students are not disciplined at home, they aren't likely to accept my discipline.	SA	A	?	D	SD
12.	I am currently involved in making decisions at the building level that affect my teaching.	SA	A	?	D	SD
13.	The principal at this school strongly supports innovative approaches to instruction.	SA	A	?	D	SD
14.	I often work with other teachers to help me improve my instruction.	SA	A	?	D	SD
15.	Other teachers often visit my classroom and offer improvement suggestions.	SA	A	?	D	SD
16.	I spend a lot of time trying new teaching techniques.	SA	A	?	D	SD
17.	If I try something really new in my teaching, other teachers in my building will support my risk taking.	SA	A	?	D	SD
18.	I can count on teachers in this building to support my efforts to be a better teacher.	SA	A	?	D	SD
19.	Teachers in this building are very competent.	SA	A	?	D	SD
20.	Teaching is an excellent profession.	SA	A	?	D	SD
21.	I am not satisfied with the goals and objectives emphasized by this school.	SA	A	?	D	SD
22.	The workload is adequately balanced among the faculty members of this school.	SA	A	?	D	SD
23.	When the grades of my students improve, it is usually because I found more effective teaching approaches.	SA	A	?	D	SD
24.	If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	SA	A	?	D	SD
25.	When a student is having difficulty with an assignment, I am usually able to adjust it to his/her level.	SA	A	?	D	SD
26.	A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.	SA	A	?	D	SD
27.	I make the important decisions about how and what I teach.	SA	A	?	D	SD
28.	I can count on the principal to support me if I want to try something new.	SA	A	?	D	SD
29.	I generally get excellent ideas from fellow staff members.	SA	A	?	D	SD
30.	I frequently observe other teachers in their classrooms.	SA	A	?	D	SD

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
31.	It is a prime responsibility of a teacher to be constantly improving his or her own instruction.	SA	A	?	D	SD
32.	Teachers in this building are very supportive of teachers who try new teaching methods.	SA	A	?	D	SD
33.	Teachers in this building can be trusted.	SA	A	?	D	SD
34.	I am satisfied with the professional competence and teaching ability of my teaching colleagues.	SA	A	?	D	SD
35.	I tend to identify with teaching and strongly support it when it is attacked.	SA	A	?	D	SD
36.	The values of this school are inconsistent with my own values.	SA	A	?	D	SD
37.	I am satisfied with the amount of work I am expected to do.	SA	A	?	D	SD
38.	When I really try, I can get through to most difficult students.	SA	A	?	D	SD
39.	When a student gets a better grade that he/she usually gets, it is usually because I found better ways of teaching that student.	SA	A	?	D	SD
40.	The hours in my class have little influence on students compared to the influence of their home environment.	SA	A	?	D	SD
41.	I have a great deal of control over the teaching method I use and the curriculum I teach.	SA	A	?	D	SD
42.	The principal in this building is very supportive of teachers who try new things in their classrooms.	SA	A	?	D	SD
43.	I find that talking with other teachers about instructional issues can help me improve my own instruction.	SA	A	?	D	SD
44.	I often sit down with other teachers and talk about instructional issues in our classrooms.	SA	A	?	D	SD
45.	Teachers need to be constantly learning and growing to be effective in the classroom.	SA	A	?	D	SD
46.	Teachers in this building will willingly try to help me improve my instruction.	SA	A	?	D	SD
47.	Teachers in this building will support innovation even if it is less than successful.	SA	A	?	D	SD
48.	Teachers in this building are very good in the classroom.	SA	A	?	D	SD
49.	I would leave teaching for another profession if I could.	SA	A	?	D	SD
50.	Unlike this school, I would like to work in a school that holds the same values as I do.	SA	A	?	D	SD
51.	There are sufficient social activities for the faculty.	SA	A	?	D	SD
52.	Even a teacher with good teaching abilities may not reach many students.	SA	A	?	D	SD

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
53.	The amount that a student can learn is primarily related to family background.	SA	A	?	D	SD
54.	I have input into the decisions that affect me directly in this school.	SA	A	?	D	SD
55.	I often talk to fellow teachers about instructional issues.	SA	A	?	D	SD
56.	I receive a lot of feedback about my instruction from other teachers.	SA	A	?	D	SD
57.	If parents would do more with their children, I could do more.	SA	A	?	D	SD
58.	I often share ideas about instruction with other teachers.	SA	A	?	D	SD
59.	I tell my friends that I will stay in teaching for many years to come. (V19)	SA	A	?	D	SD
60.	The social contact between students and faculty is friendly.	SA	A	?	D	SD
61.	If offered a better salary, I would move to another profession.	SA	A	?	D	SD
62.	Faculty members are friendly to one another.	SA	A	?	D	SD
63.	This job gives me professional satisfaction.	SA	A	?	D	SD
64.	If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next session. (V38)	SA	A	?	D	SD
65.	I enjoy my school work very much.	SA	A	?	D	SD
66.	The influence of a student's home environment can be overcome by good teaching.	SA	A	?	D	SD

HOW SUPERVISION INFLUENCES TEACHER EFFICACY AND COMMITMENT: AN INVESTIGATION OF A PATH MODEL

HOWARD EBMEIER, *University of Kansas*

ABSTRACT: Although teacher supervision is a commonly practiced activity in schools, little is currently known about its effect on teachers or the mechanism by which supervision affects instruction. The purpose of this study was to test a model that describes how supervision works in schools to influence teacher efficacy and commitment. This hypothesized model was based on Tschannen-Moran, Hoy, and Hoy's original conceptions about how teacher efficacy is developed and nurtured but was modified to include variables associated with supervision and organizational agency. The model was then tested through structural equation modeling. Results indicated the data fit the conceptual model quite well. A second independent data set was employed as a replication sample and confirmed the linkages proposed in the original model. Results indicated supervision has a profound impact on teachers' commitment and efficacy levels, but the paths that influence these variables are complex and indirect. Teachers' belief in the importance principals attached to the teachers' instructional activities seemed to be of great value in predicting teacher efficacy and, indirectly, teacher commitment. Teachers' satisfaction and trust in their peers also played an important and independent role in the development of teachers' commitment to teaching and their efficacy beliefs.

Although formative teacher evaluation, often called supervision, is a common feature of life in schools, very little is known about its direct or indirect effect on teachers or the mechanism by which teacher supervision influences classroom instruction. Authors over the last 40 years have lamented the lack of definitive studies on supervision.[1] Most of the extant reports that could be classified

[1]A. Denham, "Clinical Supervision: What We Need to Know About Its Potential for Improving Instruction," *Contemporary Education* 49 (Fall 1977): 33–37. Denham reported he could locate no studies in *Review of Educational Research* that focused on supervision, improvement of instruction, or efforts of any kind to improve instruction. As of December 2000, there were seven articles related to teacher evaluation or supervision; however, only Darling-Hammond's focused review of the design and implementation of teacher evaluation processes in school organizations (*Review of Educational Research* 53 [Fall 1983]: 285–328) is of use in constructing a

as research-based are descriptive, are correlational, or compare group means. Few of these studies are guided by explanatory models or employ analytical techniques designed to uncover such models.[2] Indeed, some noted authors in the field have questioned the value of doing research in this area, given the lack of a conceptual grounding in the existing literature.[3]

In summarizing research on supervision in the *Journal of Curriculum and Supervision*, Alfonso concluded that the "lack of research and continuing disagreement on the definition and the purposes of supervision in education have . . . contributed to weak preparation programs for instructional supervisors."[4] Indeed, as Davis points out, what little research-based information is available is not used in evaluation practices by most school districts.[5] Thus, we have a widely employed administrative practice based on a weak conceptual grounding that is supported by few empirical studies and lacks an overall model that might serve to guide future research.

The general lack of a conceptual foundation for much of the past research on supervision, although disappointing, has led some investigators to search for possible models in other areas that could help explain or provide insight about how the supervision process in schools might affect selected outcomes. One field of research that seems potentially useful and already has existing explanatory mod-

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larger picture of the effects of principal supervision on teachers. Between 1982 and 2000, only 5 percent of the articles in the major, widely circulated journals, which often focus on supervision (*Educational Leadership*, the official publication of the Association for Supervision and Curriculum Development; the *Journal of Curriculum and Supervision*, ASCD's research outlet; *Educational Evaluation and Policy Analysis*; and *Review of Educational Research*), dealt with teacher supervision. Fewer than 2 percent of those articles were categorized by the ERIC document collection system as research based. The *Journal of Personnel Evaluation in Education* is the only journal exclusively devoted to personnel evaluation in education. Since it began publication in 1987, *JPEE* has published 94 articles that reported new knowledge resulting from quantitative and qualitative studies on a personnel evaluation topic (35 percent of the total number of articles published in the journal), yet only 20 of those articles concentrated on formative teacher supervision.

[2]D. Davis, "History and Summary Analysis of Articles Published in the *Journal of Personnel Evaluation in Education:* Documenting the First Twelve Years," *Journal of Personnel Evaluation in Education* 13 (Fall 1999): 5–26.

[3]P. Holland and N. Garman, "Toward a Resolution of the Crisis of Legitimacy in the Field of Supervision," *Journal of Curriculum and Supervision* 16 (Winter 2001): 95–111.

[4]R. Alfonso, "Supervision: Needed Research: A Research Agenda," *Journal of Curriculum and Supervision* 5 (Winter 1990): 181–188.

[5]D. Davis, "History and Summary Analysis of Articles Published in the *Journal of Personnel Evaluation in Education:* Documenting the First Twelve Years," *Journal of Personnel Evaluation in Education* 13 (Fall 1999): 5–26.

els is teacher efficacy. The literature in this field has generally been based on Bandura's social cognitive theory, a unified theory of behavioral change concerned with human agency, or the ways that people exercise some level of control over their lives.[6] Central to the exercise of control is a sense of self-efficacy, or a belief in one's capacity to achieve success in a given situation.

Interest in examining teacher efficacy as an outcome variable influenced by supervision is justified given the powerful influence teacher efficacy seems to have on classroom practice and subsequent student achievement.[7] In addition, empirical research completed by Ebmeier and Nicklaus[8] has also demonstrated that a specific form of supervision termed developmental supervision can produce enhanced levels of teacher efficacy and presumably academic achievement.[9] The mechanism by which this effect is produced is, however, unknown.

Although evidence suggests a causal link between active teacher supervision and increased levels of individual teacher efficacy, Ebmeier and Nicklaus report that if peer teachers are assigned the supervision responsibility (instead of the building principal) the effect sizes go down markedly.[10] Clearly this indicates other intervening

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[6]See A. Bandura, "Self-efficacy: Toward a Unifying Theory of Behavioral Change," *Psychological Review* 84 (March 1977): 191–215; A. Bandura, *Social Foundations of Thought and Action: A Social Cognitive Theory* (Englewood Cliffs, NJ: Prentice-Hall, 1986); A. Bandura, *Self-efficacy: The Exercise of Control* (New York: W. H. Freeman, 1997).

[7]See R. Allinder, "The Relationship Between Efficacy and the Instructional Practices of Special Education Teachers and Consultants," *Teacher Education and Special Education* 17 (Spring 1994): 86–95; P. Ashton and R.Webb, *Making a Difference: Teachers' Sense of Efficacy and Student Achievement* (New York: Longman, 1986); S. Gibson and M. Dembo, "Teacher Efficacy: A Construct Validation," *Journal of Educational Psychology* 76 (August 1984): 569–582; C. Meijer and S. Foster, "The Effect of Teacher Self-efficacy on Referral Chance," *Journal of Special Education* 22 (Fall 1988): 378–385; A. Woolfolk and W. Hoy, "Prospective Teachers' Sense of Efficacy and Beliefs About Control," *Journal of Educational Psychology* 82 (Fall 1990): 81–91; M. Tschannen-Moran, A. Hoy, and W. Hoy, "Teacher Efficacy: Its Meaning and Measure," *Review of Educational Research* 68 (Summer 1998): 202–248; and R. Goddard, W. Hoy, and A. Hoy, "Collective Teacher Efficacy: Its Meaning, Measure, and Impact on Student Achievement," *American Educational Research Journal* 37 (Summer 2000): 479–507.

[8]H. Ebmeier and J. Nicklaus, "The Impact of Peer and Principal Collaborative Supervision on Teachers' Trust, Commitment, Desire for Collaboration, and Efficacy," *Journal of Curriculum and Supervision* 14 (Summer 1999): 351–378.

[9]C. Glickman, S. Gordon, and J. Ross-Gordon, *Supervision and Instructional Leadership: A Developmental Approach* (Boston: Allyn & Bacon, 2001).

[10]H. Ebmeier and J. Nicklaus, "The Impact of Peer and Principal Collaborative Supervision on Teachers' Trust, Commitment, Desire for Collaboration, and Efficacy," *Journal of Curriculum and Supervision* 14 (Summer 1999): 351–378.

variables are at work. Indeed, social cognitive theory associated with the efficacy research acknowledges that individual teacher efficacy operates within a broad network of sociostructural influences.[11] Apparently, to understand how teacher efficacy develops and is sustained, one must examine school contextual variables as well. Thus, the analysis of how teacher supervision influences teacher efficacy must also include variables that represent organizational influences if a more complete picture is to be obtained.

The purpose of this study was to investigate possible linkages among teacher efficacy, teacher commitment, teacher supervision, and a defined set of organizational variables (confidence in the principal, commitment to the building's goals, satisfaction with working conditions, confidence in peers). The goal of this investigation was to begin to understand, through path analytic modeling, how principal supervision of teachers influences individual teacher efficacy and commitment, and what organizational influences play a collateral role in this process.

THE GUIDING CONCEPTUAL MODEL

For research that involves path modeling, the study must have a sound conceptual grounding. Indeed, path analytic techniques assume there is some theoretical understanding about the ordering of the variables. These prior assumptions then allow one to draw tentative conclusions about the soundness of the proposed model. If the collected data fit the proposed theoretical model, then the model itself gains credibility.

Because we lack well-developed models to use in research on teacher supervision, a model proposed by Tschannen-Moran, Hoy, and Hoy to explain how teacher efficacy is developed and sustained was adopted as an initial frame of reference in this study.[12] The original model was then extended to include variables measuring support of teaching through active supervision and variables measuring school organizational influences. In addition, a dimension measuring Commitment to Teaching (an outcome variable implied by the Tschannen-Moran, Hoy, and Hoy model) was included to add robustness.

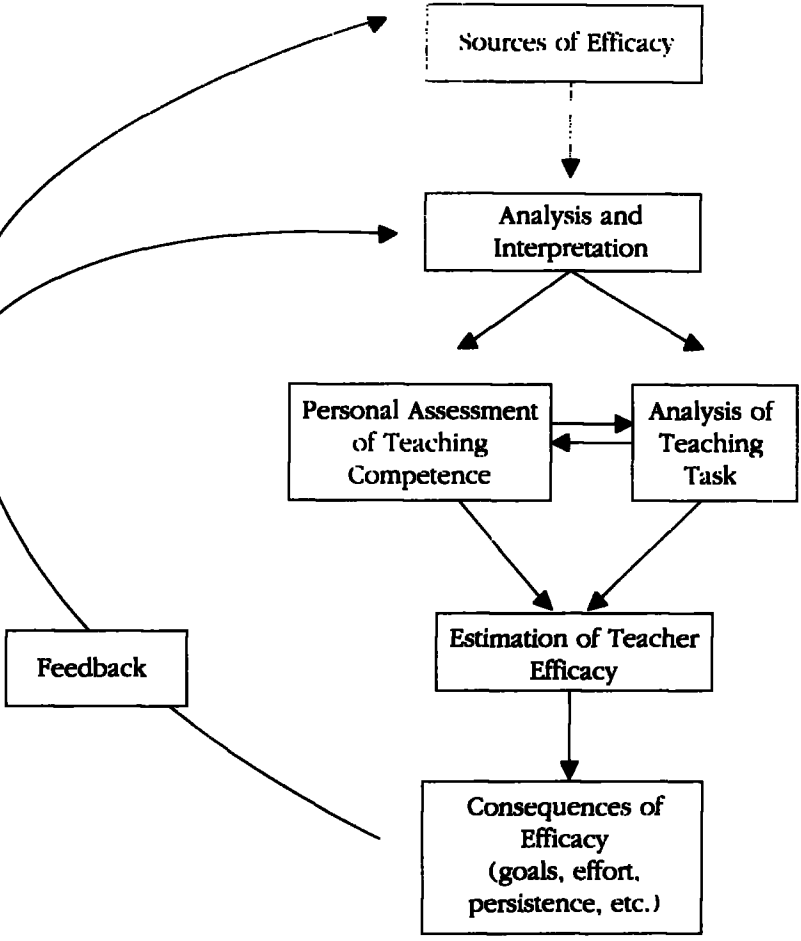
The Basic Underlying Model

Tschannen-Moran, Hoy, and Hoy's model (see Figure 1) begins by assuming the major influences on teacher efficacy beliefs are ini-

[11]A. Bandura, *Self-efficacy: The Exercise of Control* (New York: W. H. Freeman, 1997), p. 6.

[12]M. Tschannen-Moran, A. Hoy, and W. Hoy, "Teacher Efficacy: Its Meaning and Measure," *Review of Educational Research* 68 (Summer 1998): 202–248.

Figure 1. Tschannen-Moran, Hoy, and Hoy Model of Teacher Efficacy



tially based on the attributional interpretation of four sources of information originally suggested by Bandura:

- Mastery experiences—the extent to which a teacher has the opportunity to experience success in a given endeavor. Successful experiences raise efficacy beliefs, which contributes to the expectation that performance will be proficient in the future.
- Physiological arousal—the extent to which performances can be attributed to internal or controllable causes, not simply luck. The level of arousal, either of anxiety or excitement, also plays an important role.

- Vicarious experiences—the extent to which a teacher has learned by observing the performances or skills of others and can identify with the performer.
- Verbal persuasion—the extent to which the teacher has received specific performance feedback from a supervisor or colleague. Receiving encouragement to the extent that it boosts risk-taking performances increases efficacy.

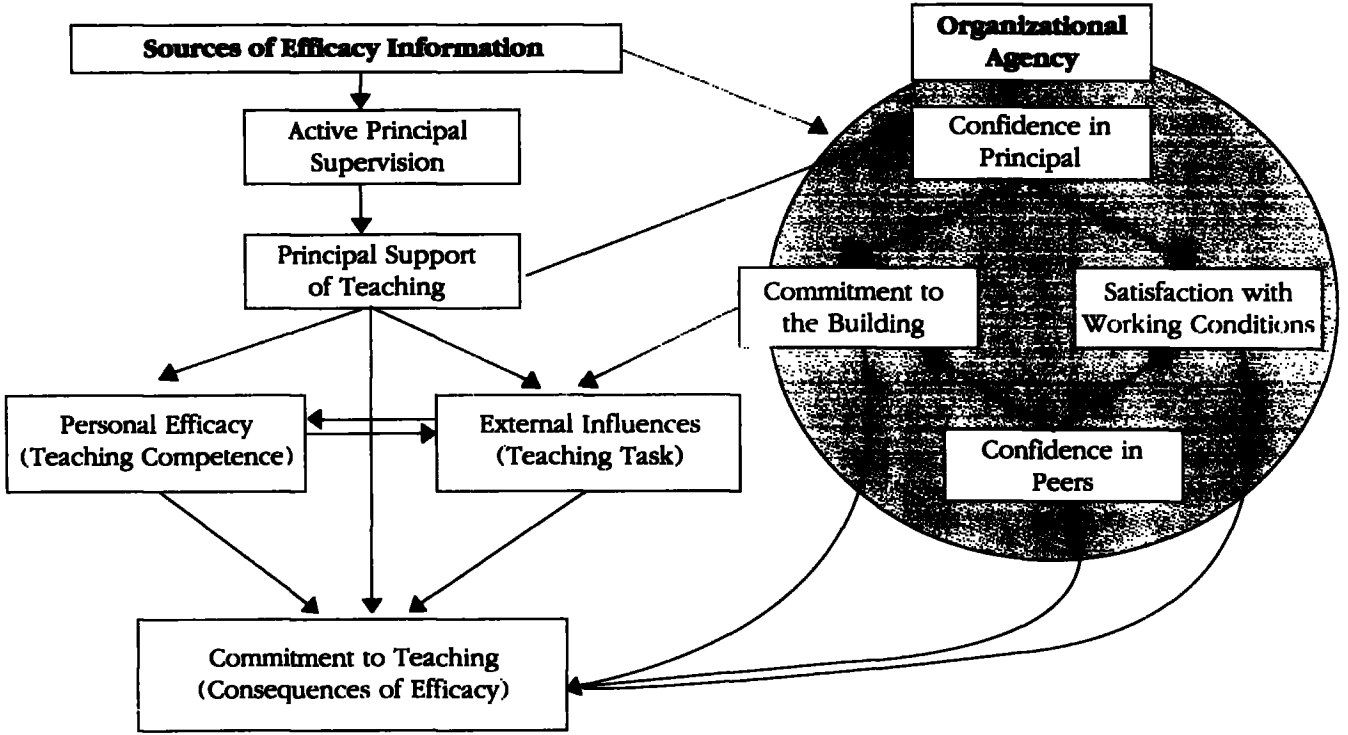
According to this model, efficacy beliefs are also tempered by context. Teachers may feel efficacious in one situation but not in another. Indeed, this belief in self-efficacy may vary across subject area, grade levels, or even different activity structures within the same classroom. Therefore, according to the Tschannen-Moran, Hoy, and Hoy model, when teachers make efficacy judgments, they consider the difficulty of the situation (labeled Analysis of Teaching Task in their model) and weigh that against their perceived beliefs of their own competencies as teachers (Personal Assessment of Teaching Competence). If they believe they have the personal teaching strengths necessary to overcome the perceived environmental difficulties (poor student ability, lack of parent support, inadequate equipment, and so forth), then strong efficacy beliefs emerge (labeled Estimation of Teacher Efficacy).

In the Tschannen-Moran, Hoy, and Hoy model, these final efficacy beliefs strongly influence actual teacher behavior (goal selection, instructional effort, persistence, and so forth), which affects student achievement. Tschannen-Moran, Hoy, and Hoy suggest that these teacher behaviors, which they term Consequences of Efficacy, in turn provide performance feedback to the original sources of efficacy (mastery experiences, physiological arousal, vicarious experiences, and verbal persuasion), thus completing the cycle.

Figure 2 displays the conceptual model that guided this study. The model includes both the task analysis (labeled External Influences) and the components related to personal assessment of teaching competence (labeled Personal Efficacy) suggested by the original model. The variable found in the original study labeled Consequences of Efficacy was measured by Commitment to Teaching.

One modification of the original model was made out of necessity. Tschannen-Moran, Hoy, and Hoy hypothesized that after teachers examine the task and their own skills, they make a final estimate of their own efficacy in the particular situation. Unfortunately, no existing instruments capture this final teacher efficacy estimate. When these final efficacy estimates are needed, researchers tend to add together the scales that measure task and personal efficacy. Constructing a new scale that is a combination of other scales raises

Figure 2. A Conceptual Model of the Relationships Among Efficacy, Organizational Agency, and Supervision



important measurement and conceptual problems in structural equation modeling. To overcome these problems, the conceptual model tested in this study deleted the Final Estimation of Teacher Efficacy dimension found in the original Tschannen-Moran, Hoy, and Hoy model.[13] Instead, the model proposed in this study assumed teacher behavior was influenced jointly by the External Influences and Personal Efficacy factors without going through the intermediate step (Estimate of Teacher Efficacy) proposed by the original model.

The basic elements of the Tschannen-Moran, Hoy, and Hoy model (Analysis of Teaching Task Constraints, Assessment of Individual Teacher Competence, and Consequences of Efficacy Beliefs) appear in the lower-left side of the overall model proposed in this study (Figure 2).

Extensions of the Basic Model

Although no other modifications were made to the original Tschannen-Moran, Hoy, and Hoy model, two extensions were incorporated into the model tested in this study. First, the original model suggested that teacher efficacy is influenced by prior mastery experiences, vicarious experiences, social persuasion, and emotional states. Given recent research linking principal behaviors to teacher efficacy, it seems obvious that one important source of these four efficacy-building factors is the principal.[14] One aspect of principal leadership that is likely to influence teacher efficacy is active teacher supervision. Clearly, principal support of teaching through supervision activities can provide feedback, encouragement, emotional support, reinforcement, and modeling experiences, which are suggested as sources of efficacy in the original Tschannen-Moran, Hoy, and Hoy model. Indeed, Chester and Beaudin reported that if new teachers were given greater opportunity for collaboration with other adults

[13]Clearly, a better test of the original Tschannen-Moran, Hoy, and Hoy model would be to include measures of all three efficacy-related concepts (teacher's estimate of the task, teacher's estimate of his or her own ability, and final efficacy estimates considering the prior two factors). To better test the original model, one would need to clearly specify the context, students, and subject field to obtain a measure of an individual teacher's estimation of his or her overall efficacy after consideration of the needed task and the teacher's personal skills. This study's ability to strictly test the proposed Tschannen-Moran, Hoy, and Hoy model was compromised by the lack of inclusion of the overall estimate of the efficaciousness of the situation and the necessary model rearrangement.

[14]W. Hoy and A. Woolfolk, "Teachers' Sense of Efficacy and the Organizational Health of Schools," *Elementary School Journal* 93 (March 1993): 355–372; H. Ebmeier and J. Nicklaus, "The Impact of Peer and Principal Collaborative Supervision on Teachers' Trust, Commitment, Desire for Collaboration, and Efficacy," *Journal of Curriculum and Supervision* 14 (Summer 1999): 351–378.

and if more classroom observations were conducted (characteristics of sound supervision), greater teacher efficacy resulted.[15]

To capture this source of potential efficacy due to interactions with the principal, two additions to the original model were included. The first is termed Active Principal Supervision; it measured the extent to which the principal engaged in activities normally associated with supervision (classroom observations, feedback to the teacher, goal setting, and so forth). If supervision is to influence teacher efficacy, the principal must take an active role. This variable measured the extent to which these activities occurred. The second addition was called Principal Support of Teaching, which captured the teacher's belief that the principal took an active interest in the teacher's improvement efforts. These additions to the original model appear in the left half of Figure 2.

Another extension of the basic model suggested by Tschannen-Moran, Hoy, and Hoy adds a cluster of variables often associated with organizational agency, or the influence of the organization on individual behavior (Confidence in the Principal, Commitment to the Building, Satisfaction with Working Conditions, and Confidence in Peers). Although they never incorporated organizational agency into the formal model, Tschannen-Moran, Hoy, and Hoy originally suggested that teacher efficacy is influenced by organizational agency through reciprocal relationships between the school context and teacher efficacy beliefs. Teachers' sense of efficacy is thus related to a number of school-level variables such as climate, decision-making structures within the school, general school support systems, a sense of community within the staff, and several other factors.[16]

Just as a principal's support of teaching can be a source of prior mastery experiences, vicarious experiences, social persuasion, and emotional states, so too can the interactions and belief systems resident in the building's staff and culture. The original Tschannen-Moran, Hoy, and Hoy model stipulates the importance of organizational influences in the development of individual teacher efficacy but never identifies the source(s). The extension described here partially attributes individual teacher efficacy development and maintenance to factors associated with organizational agency.

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[15]M. Chester and B. Beaudin, "Efficacy Beliefs of Newly Hired Teachers in Urban Schools," *American Educational Research Journal* 33 (Spring 1986): 233–257.

[16]W. Hoy and A. Woolfolk, "Teachers' Sense of Efficacy and the Organizational Health of Schools," *Elementary School Journal* 93 (March 1993): 355–372; M. Tschannen-Moran, A. Hoy, and W. Hoy, "Teacher Efficacy: Its Meaning and Measure," *Review of Educational Research* 68 (Summer 1998): 202–248.

Although it is clear from prior research that teacher efficacy is influenced by organizational variables, it is less obvious which variables are the most important and how they interact with one another. To make decisions about which variables to include in the tested model, the original sources of efficacy were reexamined. Decisions were then made about which organizational variables might best help facilitate the development of a teacher's efficacy. From review of the four sources of efficacy, it is clear that these sources all operate through either the principal or teacher colleagues. Thus, two important organizational agency variables to include are Confidence in Peers and Confidence in the Principal. The variable Confidence in the Principal was then linked back to Principal Support of Teaching using the same logic as presented in the Tarter, Sabo, and Hoy study, which examined the relationship among supportive principal behavior, faculty collegiality, faculty trust, and effectiveness.[17]

Confidence in Peers was conceived as being correlated to Confidence in the Principal, but a source of efficacy-building activities separate from those connected to Active Principal Supervision. Strong support for inclusion of this variable comes from the writings of Bandura and Goddard, Hoy, and Hoy, who have described the importance of collective efficacy, which they define as a collective belief of the teaching staff about the organization's capabilities to innovate and attain its goals.[18]

Two other organizational agency variables were added. First, Satisfaction with Working Conditions was included and conceived as an outcome of Confidence in the Principal and Confidence in Peers. Measures of teacher satisfaction have long been associated with teacher professional commitment and are important predictors of career withdrawal.[19] Second, a variable termed Commitment to the Building was included as a measure of organizational commitment and viewed as an outcome of Confidence in the Principal and Confidence in Peers. It was also viewed, as can be observed from Figure 2, as a predictor of the extent to which teachers viewed ex-

[17]C. Tarter, D. Sabo, and W. Hoy, "Middle School Climate, Faculty Trust, and Effectiveness: A Path Analysis," *Journal of Research and Development in Education* 29 (Fall 1995): 41–49.

[18]A. Bandura, *Self-efficacy: The Exercise of Control* (New York: W. H. Freeman, 1997); R. Goddard, W. Hoy, and A. Hoy, "Collective Teacher Efficacy: Its Meaning, Measure, and Impact on Student Achievement," *American Educational Research Journal* 37 (Summer 2000): 479–507.

[19]P. Lam, Y. Foong, and S. Moo, "Work Life, Career Commitment, and Job Satisfaction as Antecedents of Career Withdrawal Cognition Among Teacher Interns," *Journal of Research and Development in Education* 28 (Summer 1995): 230–235.

ternal constraints as impediments to effectiveness (Estimated External Influences).

Addition to the Basic Model

The primary intent of this article was to investigate the relationships between active principal supervision and individual teacher efficacy. However, extant research also suggests important connections among teacher efficacy, teacher commitment, and principal supervision.[20] For example, teacher efficacy has been linked to level of professional commitment for both inservice elementary and middle school teachers and preservice teachers.[21] In addition, extensive work has investigated the linkages among various measures of organizational agency (work satisfaction, morale, trust, and so forth) and teacher commitment. Thus, a dimension called Commitment to Teaching was added to the model to make the tested model more inclusive and potentially more robust in terms of explaining how supervision affects teachers.

This addition is consistent with the basic Tschannen-Moran, Hoy, and Hoy model, which suggests that a teacher's concept of efficacy influences his or her goal selection, effort, persistence, and other actions. Commitment to Teaching, the outcome variable added to the model, is simply one of many alternative measures of what Tschannen-Moran, Hoy, and Hoy term the Consequences of Teacher Efficacy in their original model.

THE OPERATIONAL MODEL

Figure 2 presents the hypothesized model used as the starting point for investigating the interactive relationships among the variables in this study. Support for inclusion of variables in this operational model and the hypothesized paths comes primarily from the Tschannen-Moran, Hoy, and Hoy model but also from three additional sources. First, the large literature base from organizational the-

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[20]K. Seashore-Lewis, "Effects of Teacher Quality Work Life in Secondary Schools on Commitment and Sense of Efficacy," *School Effectiveness and School Improvement* 9 (March 1998): 1–27; P. Reyes, "Preliminary Models of Teacher Organizational Commitment: Implications for Restructuring the Workplace," ED 349680 (Madison, WI: Center on Organization and Restructuring of Schools, 1992).

[21]T. Coladarci, "Teachers' Sense of Efficacy and Commitment to Teaching," *Journal of Experimental Education* 60 (Summer 1992): 323–337; E. Evans and M. Tribble, "Perceived Teaching Problems, Self-efficacy, and Commitment to Teaching Among Preservice Teachers," *Journal of Educational Research* 80 (December 1986): 81–85.

ory has investigated similar constructs for many years.[22] Although this research primarily uses simple correlational analytic techniques, these studies are helpful in identifying possible variables and paths to include in any potential model useful for understanding how supervision works in schools.

The second literature base is much smaller and includes experimental studies about various aspects of the supervision process and its effects.[23] These research studies move beyond the correlational stage with manipulation of the independent variable and confirmation of a causal linkage between principal supervision and a number of other variables. They are, however, still "black box" in nature; therefore they offer little guidance concerning the mechanism by which supervision actually influences these outcome variables.

The third set of studies, all undertaken within the last 10 years, uses path analytic techniques to attempt to uncover possible linkages among teacher affective variables (motivation, efficacy, satisfaction, commitment, and so forth) and measures of school effectiveness. Although these studies do not directly focus on the supervision process, many of the variables and paths identified in these studies parallel those included in the tested model.[24]

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[22]For comprehensive reviews of this literature, see H. Ebmeier and A. Hart, "The Effects of a Career-ladder Program on School Organizational Processes," *Educational Evaluation and Policy Analysis* 14 (Fall 1992): 261–282; P. Reyes, *Teachers and Their Workplace: Commitment, Performance, and Productivity* (Newbury Park, CA: Sage Publications/Corwin Press, 1990); N. Pitner, "The Study of Administrator Effects and Effectiveness," *Handbook of Research in Educational Administration,* ed. N. Boyan (New York: Longman, 1988); P. Hallinger and R. Heck, "Reassessing the Principal's Role in School Effectiveness: A Review of Empirical Research, 1980–1995," *Educational Administration Quarterly* 3 (Fall 1996): 5–44; E. Bridges, "Research on the School Administrator: The State of the Art, 1967–1980," *Educational Administration Quarterly* 18 (Summer 1982): 12–33.

[23]See C. Seins and H. Ebmeier, "The Impact of Developmental Supervision on Teacher Reflective Thinking: An Empirical Study," *Journal of Curriculum and Supervision* 11 (Summer 1996): 299–319; H. Ebmeier and J. Nicklaus, "The Impact of Peer and Principal Collaborative Supervision on Teachers' Trust, Commitment, Desire for Collaboration, and Efficacy," *Journal of Curriculum and Supervision* 14 (Summer 1999): 351–378.

[24]For specific examples, see P. Hallinger and R. Heck, "Reassessing the Principal's Role in School Effectiveness: A Review of Empirical Research," *Educational Administration Quarterly* 32 (1996): 5–44; R. Heck and G. Marcoulides, "School Culture and Performance: Testing the Invariance of an Organizational Model," *School Effectiveness and School Improvement* 7 (March 1996): 76–95; for reviews of this literature, see A. Chase, "School Level Factors Predicting Teachers' Senses of Professional Engagement, Efficacy, Commitment, and Job Satisfaction: An Application of Structural Equation Modeling," ED347693 (1991): 1–39; and R. Heck, T. Larsen, and G. Marcoulides, "Instructional Leadership and School Achievement: Validation of a Causal Model," *Educational Administration Quarterly* 26 (May 1990): 94–125.

The operational model presented in Figure 2 makes four assumptions based on extant literature. First, principal supervision in the form of actively supporting and encouraging effective instruction leads directly to teacher confidence in the building administration and to personal efficacy, and indirectly to commitment to teaching.[25] Second, teacher confidence and trust in peers leads directly to satisfaction with working conditions, commitment to building goals, and commitment to teaching, and indirectly to a greater sense of personal and external efficacy.[26] Third, confidence in teaching peers engenders a commitment to building goals and leads indirectly to a belief by teachers that they can overcome external obstacles such as poor student attendance. This results in a greater sense of a teacher's own sense of personal efficacy.[27] Finally, a strong sense of personal

[25]For examples of supporting literature, see M. McBride and K. Skau, "Trust, Empowerment, and Reflection: Essentials of Supervision," *Journal of Curriculum and Supervision* 10 (Spring 1995): 262–277; B. Billingsley, L. Cross, and P. Littrel, "The Effects of Principal Support on Special and General Educators' Stress, Job Satisfaction, School Commitment, Health, and Intent to Stay in Teaching," *Remedial and Special Education* 15 (September 1994): 297–310; W. Firestone and B. Wilson, "Using Bureaucratic and Cultural Linkages to Improve Instruction: The Principal's Contribution," *Educational Administration Quarterly* 21 (Spring 1985): 7–30; S. Bossert, D. Dwyer, B. Rowan, and G. Lee, "The Instructional Management Role of the Principal," *Educational Administration Quarterly* 18 (Spring 1982): 34–63; K. Peterson and J. Martin, "Developing Teacher Commitment: The Role of the Administrator," in *Teachers and Their Workplace: Commitment, Performance, and Productivity*, ed. P. Reyes (Newbury Park: Sage Publications, 1990), pp. 225–240; W. Hoy, C. Tarter, and L. Witkoskie, "Faculty Trust in Colleagues: Linking the Principal with School Effectiveness," *Journal of Research and Development in Education* 26 (Fall 1992): 38–45; C. Anderson, "The Search for School Climate: A Review of the Research," *Review of Educational Research* 52 (Fall 1982): 368–420.

[26]B. Fresko, D. Kfir, and F. Nasser, "Predicting Teacher Commitment," *Teaching and Teacher Education* 13 (May 1997): 429–438; K. Hipp, "Teacher Efficacy: Influence of Principal Leadership Behavior" (paper presented at the annual meeting of the American Educational Research Association, New York, 1996); C. Riehl and J. Sipple, "Making the Most of Time and Talent: Secondary School Organizational Climates, Teaching Task Environments, and Teacher Commitment," *American Educational Research Journal* 33 (Winter 1996): 873–901; M. Pennington, "Work Satisfaction, Motivation, and Commitment in Teaching English as a Second Language," ED404850 (1995); C. Tarter, D. Sabo, and W. Hoy, "Middle School Climate, Faculty Trust, and Effectiveness: A Path Analysis," *Journal of Research and Development in Education* 29 (Fall 1995): 41–49; R. Clay, H. Heller, and C. Perkins, "The Relationship Between Teacher Job Satisfaction and Principal Leadership Style," *Journal of School Leadership* 3 (January 1993): 74–86; C. Tarter, J. Bliss, and W. Hoy, "School Characteristics and Faculty Trust in Secondary Schools," *Educational Administration Quarterly* 25 (August 1989): 294–308.

[27]P. Reyes, "Preliminary Models of Teacher Organizational Commitment: Implications for Restructuring the Workplace," ED349680 (Madison, WI: Center on Organization and Restructuring of Schools, 1992); E. Anderman, S. Belzer, and

efficacy coupled with commitment to building goals, trust and confidence in peers, and satisfaction with working conditions results in a greater commitment to teaching.[28]

METHOD

Sample

Participants in the study were full-time, K–12 teachers in a large Midwestern metropolitan area. Two separate samples were collected for the analysis; one sample served as the basis for construction of the structural equation model (calibration data set), and the other data set was used to validate the initially developed model (validation data set). Data for calibration and validation samples were derived from surveys of teachers conducted between 1993 and 1998. Students in an educational administration master's degree program at a large Midwestern state university identified participating teachers; thus, the sample could best be characterized as one of convenience. Participants were asked to complete a short, 50-item questionnaire and return it to the graduate students for collection in their classes. A 95 percent final response rate was obtained after deleting cases with more than 5 percent missing data. Mean values for each question were then substituted for remaining missing values in the data set. A less than 1 percent substitution rate occurred for the entire data set.

Table 1 describes the background characteristics of the teacher participants. For comparative purposes, summary statistics collected from a large (N = 4,500) and representative sample of teachers in the Midwest are also included in the table. As indicated by comparing the two data sets in Table 1, the sample of teachers is reasonably reflective of the general teaching population except that the sample

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J. Smith, "Teacher Commitment and Job Satisfaction: The Role of School Culture and Principal Leadership" (paper presented at the annual meeting of the American Educational Research Association, Chicago, 1991); M. Smylie, "Teacher Efficacy at Work," in *Teachers and Their Workplace: Commitment, Performance, and Productivity,* ed. P. Reyes (Newbury Park, CA: Sage Publications, 1990).

[28]D. Taylor and A. Tashakkori, "Predicting Teachers' Sense of Efficacy and Job Satisfaction Using Climate and Participatory Decision Making" (paper presented at the annual meeting of the Southwest Educational Research Association, San Antonio, 1994); T. Coladarci, "Teachers' Sense of Efficacy and Commitment to Teaching," *Journal of Experimental Education* 60 (Summer 1992): 323–337; A. Chase, "School Level Factors Predicting Teachers' Senses of Professional Engagement, Efficacy, Commitment, and Job Satisfaction: An Application of Structural Equation Modeling," ED347693 (1991); M. Imber and W. Neidt, "Teacher Participation in School Decision Making," in *Teachers and Their Workplace: Commitment, Performance, and Productivity,* ed. P. Reyes (Newbury Park, CA: Sage Publications, 1990), pp. 67–86.

Table 1. Background Characteristics of Teacher Participants Expressed as Percent of Total (Calibration Sample N = 222, Validation Sample N = 332)

Category and Level	Population[1]	Calibration Sample	Validation Sample
Gender			
Male	30.8	19.8	18.1
Female	69.2	79.3	81.9
Race or Ethnic Group			
Black	1.0	3.2	3.6
Hispanic	0.5	2.3	0.6
Native American	1.6	1.0	0.6
Asian or Pacific	0.2	1.0	0.3
White	96.5	91.9	94.6
Teaching Experience			
1st Year	5.1	8.6	13.9
2–5 Years	11.0	22.5	18.1
6–10 Years	13.2	16.2	16.8
11–15 Years	14.4	11.3	12.6
16–20 Years	30.1	24.8	23.8
21 Years or More	26.2	16.3	14.8
Experience in Current Building			
1st Year	12.6	23.9	22.3
2–5 Years	24.8	29.7	31.6
6–10 Years	19.8	16.2	24.7
11–15 Years	13.8	11.3	12.4
16–20 Years	18.5	9.0	6.3
21 Years or More	10.6	6.3	2.7
Teaching Assignments			
Lower Elementary	22.1	23.0	23.2
Upper Elementary	25.7	18.9	21.4
Middle School	13.0	21.6	27.7
High School	28.0	24.3	22.6
Specials or Special Education	12.8	6.7	5.1
Education			
Bachelor's Degree	12.5	12.6	20.2
Bachelor's Degree Plus	38.5	35.6	32.2
Master's Degree	14.5	16.2	20.5
Master's Degree Plus	33.0	29.3	27.1
Doctorate	1.4	0.9	0.0

[1]Statistics are derived from survey data collected from 200 school districts in Missouri and Kansas and are representative of teachers in the Midwest from which the sample was drawn.

Note: Percentages may not total 100 because of rounding or non-responses.

included slightly more elementary teachers. The calibration sample consisted of data collected between 1997 and 1998, whereas the validation sample was collected between 1993 and 1996. Identical surveys and collection processes were employed across both samples.

Instrumentation

One instrument with multiple sections was administered to both sample groups (calibration and validation) of teachers. Each question on the instrument was assigned to one of the scales described below and in Table 2. Although reliability estimates were available for each scale from previous research, to ensure that the scales were reliable and valid employing the data collected in this study, explanatory factor analysis using the calibration data set was undertaken, followed by the calculation of reliability estimates. Results from these analyses revealed good support for each of the nine scales. Cross loadings were rare, and the nine scales accounted for 76 percent of the overall variance. Cronbach reliability estimates for each of the nine scales were acceptable, ranging from a high of 0.93 for the Active Principal Supervision Scale to a low of 0.71 for the Satisfaction with Working Conditions Scale. This analysis was followed by confirmative factor analysis (described in the next section) to estimate the overlap and duplication among the nine scales. Conceptual definition and Cronbach reliabilities derived from the data collected in this study are presented in Table 2. The derivation and description of each scale follows.

Commitment and Trust Scales. The questions for the two commitment scales (Commitment to Building Goals and Commitment to Teaching) and the two trust scales (Confidence in Peers and Confidence in the Principal) were derived from the *Diagnostic Assessment of School and Principal Effectiveness* instrument.[29] This instrument has been used by more than 500 schools and has excellent validity and reliability estimates. Because this study focused specifically on the supervision process, appropriate questions from the original instrument were extracted and reformatted into four new scales. Orthogonal factor analysis was then undertaken to help establish the mathematical cohesiveness of each of the scales. Results from the analysis of data collected from prior research revealed good support for each of the four scales. Cross loadings were rare, and the four scales accounted for 54.4 percent of the overall variance. Cronbach reliability estimates for each of the four scales were acceptable, ranging from a high of 0.91 for the Confidence in the Principal scale to

[29]H. Ebmeier, *Diagnostic Assessment of School and Principal Effectiveness* (Topeka, KS: United School Administrators, 1990).

Table 2. Questions Supporting Each Scale

Principal Support of Teaching—The teacher's belief that his or her principal was supportive of his or her attempts to become a better teacher and was willing to take an active part in this improvement process. (Reliability 0.90)

- My principal is very supportive of my attempts to become a better teacher
- My principal is very helpful to me as I attempt to improve the instruction in my classroom.
- My principal sincerely cares about helping me improve my teaching techniques.
- I have a great deal of trust in my principal and believe he/she really cares about my continued improvement as a professional.

Confidence in the Principal—The teacher's trust in the competence, communication skills, and overall satisfaction with his or her principal. (Reliability 0.91)

- I have confidence in the building administrators.
- I am satisfied with the trust I have in this building's administrator(s).
- I am satisfied with the professional competence and leadership of my building administrator(s).
- There are open lines of communications between faculty and the building administration.
- Decisions in this building are predictable and fair.

Confidence in Peers—The teacher's confidence in and satisfaction with his or her teaching peers. (Reliability 0.81)

- I have a general feeling of confidence in other faculty members.
- I am satisfied with the trust I have in this building's teachers.
- I am satisfied with the professional competence and teaching ability of my teaching colleagues.

Commitment to Teaching—The teacher's commitment to the profession of teaching. (Reliability 0.85)

- I am proud to be a teacher.
- Teaching is an excellent profession.
- I tend to identify with teaching and strongly support it when it is attacked.
- I would leave teaching for another profession if I could.
- I tell my friends that I will stay in teaching for many years to come.
- If offered a better salary, I would move to another profession.
- This job gives me professional satisfaction.
- I enjoy my school work very much.

Commitment to Building Goals—The teacher's belief in the goals and values of the school in which they work. (Reliability 0.77)

- I believe in the goals and objectives of this school.
- I am not satisfied with the goals and objectives emphasized by this school.
- The values of this school are inconsistent with my own values.
- Unlike this school, I would like to work in a school that holds the same values as I do.

Active Principal Supervision—The extent to which the principal actively participated in a clinical supervision process through observations, data collection, feedback, goal setting, and improvement strategies. (Reliability 0.93)

Table 2. Questions Supporting Each Scale *(continued)*

As part of the supervision/evaluation cycle, my principal often helps collect data which I find useful to help me improve my own instruction.
During a supervision/evaluation conference, my principal is very useful in helping me set goals on which I can work.
As a result of my principal's questioning during supervision/evaluation conferences, I have been stimulated to analyze my own teaching.
During the supervision/evaluation conferences, my principal asks probing questions that really make me think.
My principal and I often discuss the instructional strategies I use in my classroom.
I often look to my principal as a person who can individually help me improve the instruction in my class.
My principal offers specific improvement suggestions during supervision/evaluation conferences.
My principal encourages me to use more than one instructional strategy when I teach.
My principal frequently observes my classroom.
When my principal observes my classroom, he/she looks for specific things upon which we agreed.

Satisfaction with Working Conditions—The teacher's view of the quality of the working conditions at his or her school, including balanced workloads, staff friendliness, social activities, communication across teachers and students. (Reliability 0.71)

Working conditions in this school are good.
The workload is adequately balanced among the faculty members of this school.
I am satisfied with the amount of work I am expected to do.
There are sufficient social activities for the faculty.
The social contact between students and faculty is friendly.
Faculty members are friendly to one another.

Personal Efficacy—The teacher's belief that he or she can make a difference in student learning. (Reliability 0.71)

If a student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept.
When the grades of my students improve, it is usually because I found more effective teaching approaches.
When I really try, I can get through to most difficult students.
If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next session.
When a student does better than usual, many times it is because I exerted a little extra effort.
If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.
If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.
When a student is having difficulty with an assignment, I am usually able to adjust it to his/her level.

(Table continues on next page)

Table 2. Questions Supporting Each Scale *(continued)*

When a student gets a better grade than he/she usually gets, it is usually because I found better ways of teaching that student.
Even a teacher with good teaching abilities may not reach many students.

External Influences—The teacher's belief that external factors such as family background, intelligence, and home environment are more important than what transpires in the classroom. (Reliability 0.78)

If students are not disciplined at home, they aren't likely to accept my discipline.
A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.
The hours in my class have little influence on students compared to the influence of their home environment.
The amount that a student can learn is primarily related to family background.
If parents would do more with their children, I could do more.
The influence of a student's home environment can be overcome by good teaching.

a low of 0.77 for the Commitment to Building Goals scale. Representative questions and operational definitions appear in Table 2.

Personal Efficacy and External Influences Scales. Bandura's social cognitive theory suggests behavior is affected by both task expectations (the judgments an individual makes about the likely consequences of specific behavior in a particular situation) and efficacy expectations (an individual's belief about his or her own capabilities to achieve a certain end). Building on Bandura's reasoning and the subsequent work of Ashton and Webb, Gibson and Dembo developed a questionnaire designed for inservice teachers that measured these two dimensions of efficacy.[30] Their original Teacher Efficacy Scale included 30 statements on a 6-point Likert scale ranging from "strongly agree" to "strongly disagree." Factor analysis by Gibson and Dembo and later Woolfolk and Hoy supported the existence of these two factors; however, both studies concluded only 16 of the original 30 items were needed to obtain acceptable reliability coefficients.[31] This study employed the reduced set of 16 questions as measures of efficacy. Ten questions measured the concept of Personal Efficacy expectations, and six questions addressed the Exter-

[30]P. Ashton and R. Webb, *Making a Difference: Teachers' Sense of Efficacy and Student Achievement* (New York: Longman, 1986); S. Gibson and M. Dembo, "Teacher Efficacy: A Construct Validation," *Journal of Educational Psychology* 76 (August 1984): 569–582.

[31]A. Woolfolk and W. Hoy, "Prospective Teachers' Sense of Efficacy and Beliefs About Control," *Journal of Educational Psychology* 82 (March 1990): 81–91.

nal Influences dimension.[32] Separate orthogonal factor analysis on the data obtained in this study supported the existence of two factors, which accounted for 44.3 percent of the overall variance. The Cronbach reliabilities of the two scales have been reported in the 0.70 to 0.90 range, depending on the study. Operational definitions and sample questions appear in Table 2.

Active Principal Supervision Scale. The Active Principal Supervision Scale was included on the questionnaire to assess the degree to which key elements of supervision were employed. The 10 questions on the scale (see Table 2) ask the teacher to what extent certain behaviors or processes that are characteristic of active supervision occurred. The Cronbach reliability estimate for this scale derived from previous data was 0.90. Two separate validity studies were conducted to confirm that the scale accurately measured the extent of the principal's use of active supervision. Both studies administered the scale to a large sample of teachers, followed by personal interviews with a 30 percent sample of the same group. In both cases, the results from the personal interviews of the teachers and the scores from the Active Supervision Scale were highly correlated (>0.70).[33]

Principal Support of Teaching Scale. This scale was created specifically for this study and measured the principal's general support of the teacher as he or she attempted to improve his or her instructional effectiveness. The scale consisted of four questions assessing principal support, helpfulness, and caring about instructional improvement. The overall reliability of the scale using the data collected for this study was 0.90.

Satisfaction with Working Conditions Scale. The six questions on the Satisfaction with Working Conditions Scale were derived from the *Diagnostic Assessment of School and Principal Effectiveness* instrument.[34] These questions measured the extent to which teachers viewed the quality of working conditions in their school as healthy

[32]The general efficacy literature often refers to these concepts as General and Personal Teaching Effectiveness, although from examination of the questions constituting each scale, it is obvious that the former could better be described as a measure of the extent to which external factors such a family background impinge on teaching.

[33]For additional details, see C. Seins and H. Ebmeier, "Developmental Supervision and the Reflective Thinking of Teachers," *Journal of Curriculum and Supervision* 11 (Summer 1996): 299–319; and B. Armstrong, "A Study to Determine the Teachers' Perception of the Principal's Use of Developmental Supervision and Its Effect on Teachers' Efficacy" (unpublished Ed.D. dissertation, University of Kansas, 1993).

[34]H. Ebmeier, *Diagnostic Assessment of School and Principal Effectiveness* (Topeka, KS: United School Administrators, 1990).

and satisfying. The six questions were selected to measure global satisfaction as opposed to facet scales, which focus on the individual components of job satisfaction (pay, promotion, supervision, benefits, rewards, communication, and so forth). Reliability and validity estimates for this scale are reasonably good and have been reported elsewhere. The general format of the scale and the nature of the questions asked are very similar to the widely accepted instruments in the field.[35]

Data Analysis[36]

Structural equation modeling, based on the EQS program, was used to identify potentially important theoretical relations and to test the plausibility of a postulated causal system comprising the nine latent variables.[37] SEM models have two basic elements. The measurement model delineates the associations between measured and latent variables (i.e., how well the concepts measured on the instrument are reflected in the data). The structural model estimates the direct and indirect effects among latent variables. This study followed a stepwise procedure similar to Anderson and Gerbing's recommendation, in which the acceptability of the measurement of constructs is evaluated first, before proceeding to an evaluation of relations among the nine constructs.[38]

Analyses were conducted in five stages. First, two separate sets of data were collected and served as the calibration and validation samples. Preliminary analysis identified cases having unusual characteristics in each group (total of 9). Deletion of these cases resulted in a calibration sample size of 222 and validation sample size of 332. Second, to reduce the sheer number of individual questions from the original survey, selected items from the original questionnaires were combined to form multiple measurement indicators of each construct. Grouped questions (testlets) measured the same concept and were selected because of similarity and previous factor loadings.

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[35]For a discussion of the characteristics of the most common instruments measuring job satisfaction, see P. Spector, *Job Satisfaction: Application, Assessment, Consequences, and Causes* (Thousand Oaks, CA: Sage Publications, 1997), p. 5.

[36]The analysis for this study follows the suggestions and examples contained in B. Byrne, *Structural Equation Modeling with EQS and EQS/Windows: Basic Concepts, Applications, and Programming* (Thousand Oaks, CA: Sage Publications, 1994).

[37]P. Bentler, *EQS: Structural Equations Program Manual* Version 3.0 (Encino, CA: BMDP Statistical Software, Inc., 1995).

[38]J. Anderson and D. Gerbing, "Structural Equation Modeling in Practice: A Review and Recommended Two-step Approach," *Psychological Bulletin* 103 (May 1988): 411–423.

This resulted in a reduction from 56 to 42 individual indicators of the 9 latent variables. Third, confirmative factor analyses (CFAs) were used to establish and finely tune the measurement model. Fourth, once the measurement model was established, the observed data from the calibration sample were fitted to the hypothesized model and subsequently assessed for goodness-of-fit. Given evidence of inadequate fit, the model was re-specified to include additional causal paths (identified by the Lagrange Multiplier Test) as those that would contribute most to a significantly better fitting model. Once the final best-fitting model was determined, nonsignificant parameters (as identified by the Wald Test) were deleted. Fifth, the final model was cross-validated by testing against the validation sample.

RESULTS

Results of the confirmative factor analysis revealed that the overall measurement model fit exceptionally well (CFI = 0.935, RCFI = 0.953[39]); no additional parameters were specified a posteriori, and the analysis proceeded directly to the second phase—the testing of the structural relationships among the latent variables. Results of model-fitting procedures indicated that the initial hypothesized model (Model 1—Figure 2) yielded a good fit to the data (CFI = 0.911, Robust CFI = 0.921). Nonetheless, a secondary test (LM-Test) indicated that one correlational path, if incorporated into the model, would lead to a slightly better fitting model. Thus, Model 1 was re-

[39]Preliminary analysis indicated multivariate non-normality in the analysis of covariance structures; thus, the robust statistic is also included and probably represents a more accurate CFI value.

Assessment of model fit was based on multiple criteria that reflected statistical, theoretical, and practical considerations; these were (a) the Chi-Squared likelihood ratio statistic, (b) the Robust and normal Comparative Fit Index, (c) the Satorra-Bentler Scaled Statistic, and (d) the substantive meaningfulness of the model. The CFI and its derivative the RCFI (calculated with no assumptions about the shape of the data distribution) are revised versions of the Bentler-Bonett normed fit index that adjusts for degrees of freedom. Each one ranges from zero to one and is derived from the comparison of a restricted model (i.e., one in which structure is imposed on the data) with a null model (one in which each observed variable represents a factor). The CFI provides a measure of complete covariation in the data, with a value greater than 0.90 indicating a good fit of the model to the actual data. The SB incorporates a scaling correction for the Chi-Squared statistics when distributional assumptions are violated. Its computation takes into account the model, the estimation method, and the sample kurtosis values. The SB has been shown to more closely approximate Chi-Square than the usual test statistics, to have robust standard errors, and to perform as well or better than the usual asymptotically distribution-free methods generally recommended for non-normal multivariate data.

specified to include a correlational path leading from Active Principal Supervision to Confidence in Peers.[40]

Finally, application of the Wald Test to the re-specified model identified four nonsignificant causal paths. These parameters were subsequently deleted. This re-specification resulted in the same well-fitting, yet more parsimonious model.[41]

The final model is presented schematically in Figure 3. In this representation, the latent constructs are shown in boxes with the construct name. All indicators have been omitted from this representation in the interest of clarity. The lines between constructs indicate predictive relationships, with the arrowhead showing the predictive direction and the numbers on the lines the strength of the predictive relationship described by standardized beta coefficients (units of standard deviation difference in the predicted construct per one unit standard deviation difference in the predictor construct). The numbers presented at the bottom of the chart represent the percentage of variance explained by the model for the identified variable.[42]

Test of Model Replication

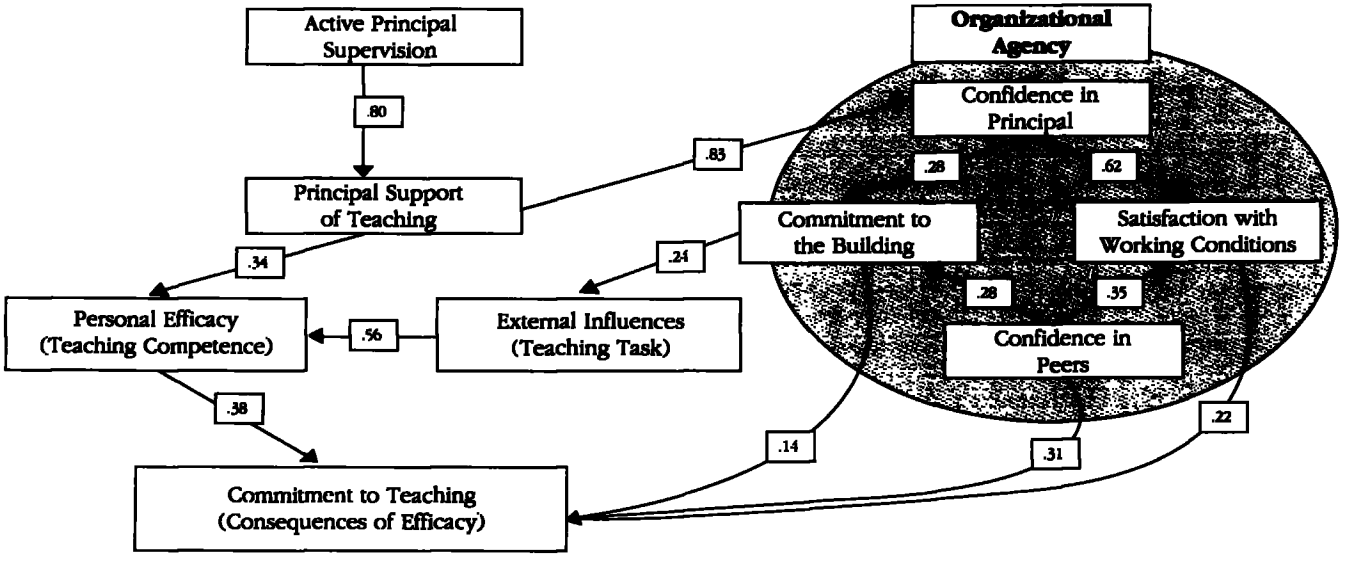
For purposes of cross-validation, the final model was tested for its replication across a second independent sample (validation sample) in two ways. First, the validation sample was fit to the original reduced structural model. Results revealed the validation data supported the previously derived structural model (CFI = 0.927, Robust CFI = 0.949). Second, each specified causal path was constrained equally across calibration and validation samples and then tested statistically. Judgment of replicability was based on the goodness-of-fit of the constrained model and the probability level of the equality constraints as determined by the LM-Test. Results revealed the model to be well-fitted (CFI = 0.940, Chi-Square $_{(890)}$ = 1490.011), with only 3 of the 16 equality constraints exceeding a 0.05 probability level. These findings argue for the statistical equivalence of the model structure across independent samples.

[40]To assess the extent to which the newly specified model exhibited an improvement in fit over its predecessor, the difference in Chi-Square between the two models was calculated. This differential is itself Chi-Square-distributed, with degrees of freedom equal to the difference in degrees of freedom and can therefore be tested statistically; a significant delta Chi-Square indicates a substantial improvement in model fit. Results of this comparison of models indicated a significant improvement and a better fitting model (CFI = 0.928, Robust CFI = 0.947).

[41]As expected, given findings of multivariate kurtosis noted earlier, the SB yielded a Chi-Square value that was substantially lower than the usual Chi-Square statistic (711.04 compared to 604.32).

[42]These values were calculated as one minus the square of the disturbance term.

Figure 3. Final Paths in Conceptual Model



Percent of Variance Explained by the Final Model

Principal Support of Teaching	65%	Commitment to the Building	23%
Confidence in Principal	65%	Satisfaction with Working Conditions	60%
Personal Efficacy	47%	Commitment to Teaching	55%
External Influences	6%		

The correlation between Active Principal Supervision and Confidence in Peers (r=0.32) has been omitted for clarity.

DISCUSSION

The hypothesized and final models of causal structure relating the multiple dimensions of organizational factors, principal supervision behaviors, and teacher efficacy beliefs were remarkably similar. Most of the suggested paths present in the final model are supported by the original Tschannen-Moran, Hoy, and Hoy model, the early correlation work carried out since the 1950s, and the findings of the more methodological advanced studies based on mediated-effects models.[43] Substantial overlap in the findings reported by Chase was also observed. This is significant because her study represents the only work parallel to this project. She focused on many of the same constructs (although measured and defined slightly differently) and constructed a similar path diagram.[44] The final structural model suggests some interesting hypotheses that have importance for the practice of supervision.

Usefulness of the Original Efficacy Model

Although this study was not designed as a strict test of the original Tschannen-Moran, Hoy, and Hoy model, the data collected for this analysis did support the majority of paths first suggested or implied by the model. This lends credence to the use of the Tschannen-Moran, Hoy, and Hoy model (or a modified version) not only to help understand the efficacy literature but also to help explain how teacher formative supervision might work in schools. It also helps better link the burgeoning field of efficacy research to the extant work in teacher evaluation. If the original model is modified as demonstrated by the tested model in this study (Figures 2 and 3), then other fields of research such as organizational theory might also be more clearly connected to the work in formative supervision in a predictable and meaningful way.

Clearly, important conceptual work clarifying the meaning and measure of the final efficacy estimator (Estimation of Teacher Efficacy) resulting from the interaction between the constructs of Teaching Task and Assessment of Teaching Competence needs to be undertaken before the original Tschannen-Moran, Hoy, and Hoy model can be fully examined. That is, the newly defined model needs to specify how the final estimate of teacher efficacy is different from or

[43]P. Hallinger and R. Heck, "Reassessing the Principal's Role in School Effectiveness: A Review of Empirical Research, 1980–1995," *Educational Administration Quarterly* 32 (February 1996): 5–44.

[44]A. Chase, "School Level Factors Predicting Teachers' Senses of Professional Engagement, Efficacy, Commitment, and Job Satisfaction: An Application of Structural Equation Modeling," ED347693 (1991)

a combination of the two contributing efficacy constructs. Without this clarity, the model presents some interpretation problems and its applicability to other fields is limited. Given this limitation, however, the model tested in this study did lend support to the ideas about the development and maintenance of teacher efficacy first suggested by Tschannen-Moran, Hoy, and Hoy in their various publications. The original model is very helpful in building more complex models that help us understand the multiple paths between and among the actions of principals as they engage in supervision, organizational-level variables such as peer teacher support, and the various forms of teacher efficacy. Without the earlier conceptual work of Tschannen-Moran, Hoy, and Hoy, this study would not have been possible.

Importance of Valuing Teaching

When principals demonstrate an interest in the instructional process (the core business of teachers), it is predictable that teachers respond by developing more respect for and confidence in the principal. Indeed, 65 percent of the variance in Confidence in the Principal could be explained by the degree to which a principal supported good teaching. As others have noted and the data from this study support, this validation of the importance of the instructional process leads to greater satisfaction and commitment and the probability of instructional improvement.[45]

Active principal supervision in the form of frequent classroom observations and conferencing activities, although essential to teachers' professional development, as pointed out by Stiggins and Duke,[46] in itself does not directly influence a teacher's confidence, trust, or support of the principal. Results from this study indicate that the effects of principal supervision on teacher affective reactions (confidence, commitment, satisfaction) are obtained only through the extent to which teachers believe the principal is interested in and committed to supporting teaching. Active supervision helps set the stage but must be accompanied by other principal activities that focus on classroom teaching, such as placing greater emphasis on teaching, rewarding sound teaching, and providing technical and symbolic leadership.[47]

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[45]S. Zepeda and J. Ponticell, "At Cross-purposes: What Do Teachers Need, Want, and Get from Supervision?" *Journal of Curriculum and Supervision* 14 (Fall 1998): 68–87.

[46]R. Stiggins and D. Duke, *The Case for Commitment to Teacher Growth: Research on Teacher Evaluation* (Albany, NY: State University of New York Press, 1988).

[47]K. Peterson and J. Martin, "Developing Teacher Commitment: The Role of the Administrator," in *Teachers and Their Workplace: Commitment, Performance, and Productivity*, ed. P. Reyes (Newbury Park, CA: Sage Publications, 1990), pp. 225–240.

These activities help convince teachers of the high value the principal places on the instructional process. Similar observations were noted by Heck, Larsen, and Marcoulides when they examined the relationship between instructional leadership and student achievement.[48]

This implies that formal and often ritualized teacher evaluation practices common across many school districts are of little value in building teacher-principal relationships that lead to improvement of instructional practices. Only when the principal engages in activities that actively demonstrate commitment to teaching is there any real hope for building trust, increasing teacher commitment, and building individual teacher efficacy. In effect, the supervision practices common in our schools do not seem to be directly connected to any of the variables that influence individual teacher instructional improvement (building trust, increasing commitment to building goals, increasing commitment to teaching, general satisfaction with teaching, and personal efficacy). This partly explains the widespread disdain teachers generally have for teacher evaluation practices.[49] Teachers view the supervision process as a potential way for the principal to demonstrate commitment to teaching. If they believe the principal shows personal support for teaching as opposed to athletics, student control, parent special interests, and so forth, then confidence, commitment, and trust follow.

Importance of Peers

When teachers are supported by their peers as well as their principals, they are likely to take greater risks to improve their instruction, remain in the teaching profession, and show more interest in building activities and goals.[50] Indeed, support and commitment

[48]R. Heck, T. Larsen, and G. Marcoulides, "Instructional Leadership and School Achievement: Validation of a Causal Model," *Educational Administration Quarterly* 26 (May 1990): 94–125.

[49]S. Zepeda and J. Ponticell, "At Cross-purposes: What Do Teachers Need, Want, and Get from Supervision?" *Journal of Curriculum and Supervision* 14 (Fall 1998): 68–87; A. Blumberg, *Supervisors and Teachers: A Private Cold War*, 2nd. ed. (Berkeley, CA: McCutchan, 1980); P. Peterson and M. Comeaux, "Evaluating the Systems: Teachers' Perspectives on Teacher Evaluation," *Educational Evaluation and Policy Analysis* 12 (Spring 1990): 3–24; J. Cousins, "Using Collaborative Performance Appraisal to Enhance Teachers' Professional Growth: A Review and Test of What We Know," *Journal of Personnel Evaluation in Education* 13 (Spring 1995): 199–222.

[50]W. Hoy, J. Hannum, and M. Tschannen-Moran, "Organizational Climate and Student Achievement: A Parsimonious and Longitudinal View," *Journal of School Leadership* 8 (July 1998): 336–372; P. Lam, Y. Foong, and S. Moo, "Work Life, Career Commitment, and Job Satisfaction as Antecedents of Career Withdrawal Cognition Among Teacher Interns," *Journal of Research and Development in Education* 28 (Summer 1995): 230–235.

are linked and have been shown to be a critical aspect of effective schools.[51] From a student's perspective, increased commitment usually translates into extra time and energy devoted to helping students after school hours, greater interest in student welfare issues, increased interest in adopting instruction and curricula to fit student interests and needs, and an overall interest in increasing contact time with students. From a faculty member's perspective, there is widespread agreement that productive peer relationships are an important ingredient in improving teacher practice, getting better achievement results, and improving communications within the building.[52]

Results from this study and Chase's similar findings support the importance of peer trust in influencing commitment to building goals, commitment to teaching, and overall satisfaction with working conditions as suggested by the correlational literature base.[53] The paths supported by the data suggest that teachers' trust in and satisfaction with colleagues are directly responsible for a significant percentage of variance in the commitment and satisfaction variables.

However, principal supervision, although correlated with satisfaction and trust of peers, does not appear to be a causative factor. Teachers apparently view their colleagues as a unique source of influence—correlated to but not directly linked to the activities of the principal. This finding supports earlier path-analytic work by Hoy, Tarter, and Witkoskie, who reported that supportive principal leadership produced collegiality and trust in principals, but not trust in teacher colleagues.[54] Thus, while active principal supervision indirectly influences confidence in the administration (through a perceived support of teaching, as discussed above) and eventually satisfaction with working conditions, teacher satisfaction and trust of peers play a strong and direct role in teachers' commitment to building goals, commitment to teaching, and particularly teachers' satisfaction with building working conditions. Clearly, peers are very important to teachers and help shape in a major way their views of the

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[51]S. Rosenholtz, *Teachers' Workplace: The Social Organization of Schools* (White Plains, NY: Longman, 1989).

[52]R. Barth, *Improving Schools from Within* (San Francisco, CA: Jossey Bass, 1990); C. Tarter, D. Sabo, and W. Hoy, "Middle School Climate, Faculty Trust, and Effectiveness: A Path Analysis," *Journal of Research and Development in Education* 29 (Fall 1995): 41–49; and S. Rosenholtz, *Teachers' Workplace: The Social Organization of Schools* (White Plains, NY: Longman, 1989).

[53]A. Chase, "School Level Factors Predicting Teachers' Senses of Professional Engagement, Efficacy, Commitment, and Job Satisfaction: An Application of Structural Equation Modeling," ED347693 (1991).

[54]W. Hoy, C. Tarter, and L. Witkoskie, "Faculty Trust in Colleagues: Linking the Principal with School Effectiveness," *Journal of Research and Development in Education* 26 (Fall 1992): 38–45.

school environment. Principals influence these variables only indirectly through the building of confidence and trust in their leadership, which strengthens commitment to building goals and then commitment to teaching. Principals through the supervision process alone do not seem to have a direct impact on commitment to teaching or satisfaction with working conditions.

Supervision and Teacher Professional Commitment

Commitment to the core values of the school and the teaching profession has long been considered an indirect measure of school effectiveness. Gaining commitment of teachers increases the probability they will behave in ways consistent with organizational and professional goals; work more cooperatively and collaboratively with others; and seek ways to further the mission of the school and the profession. Peterson and Martin contend that through the culture of the school and the actions of the principal, this commitment can be enhanced by (1) increasing the clarity of the organizational mission; (2) developing consensus about norms, values, and beliefs; (3) structuring the nature of the reward system to reinforce desired school goals and norms; and (4) providing leadership that is technical and symbolic.[55]

Results from this study indicate commitment to the teaching profession is influenced by both the principal and peers, although not along the same paths. By providing support for teaching (symbolic leadership and increasing goal clarity), principals build confidence in the administration, which creates commitment to the building and ultimately generates commitment to teaching. Principals also influence commitment to teaching through enhancing personal efficacy. Indeed, Coladarci reported significant correlations between commitment and both personal and external efficacy, although data from this study indicate a more indirect relationship between external efficacy and commitment.[56] Peers more directly influence commitment to teaching through establishment of trusting relationships and establishment of satisfying working relationships. Pragmatically, this finding suggests that improving teacher retention in schools is really a function of making sure teachers establish functional and supportive relationships with other teachers and believe the principal cares about and supports teachers' efforts in the classroom.

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[55]K. Peterson and J. Martin, "Developing Teacher Commitment: The Role of the Administrator," in *Teachers and Their Workplace: Commitment, Performance, and Productivity*, ed. P. Reyes (Newbury Park, CA: Sage Publications, 1990).

[56]T. Coladarci, "Teachers' Sense of Efficacy and Commitment to Teaching," *Journal of Experimental Education* 60 (Summer 1992): 323–337.

Supervision and Teacher External Efficacy

A teacher's external efficacy (a belief that he or she can overcome external conditions such as low ability of entering students or inadequate supplies) does not seem to be greatly influenced by organizational variables. Only 6 percent of the variance in this factor is explained by the model. Similar results were obtained by Taylor and Tashakkari, who reported that school climate variables accounted for very little of the variance in teachers' sense of efficacy.[57] Although the principal does have some influence through a complex chain of variables (support of teaching to confidence in the principal to commitment to building goals to external efficacy), apparently most teachers form opinions about the teachability of a group of students primarily using cues from outside the school. If that is true, then school slogans such as "all children can learn" that are currently popular in the nation's school districts will have little influence on the external efficacy beliefs of teachers. If school districts wish to employ teachers with high external efficacy beliefs, it is probably better to focus on the initial selection practices in the human resource office than to attempt to change attitudes through the supervision process.

Supervision and Teacher Personal Efficacy

Teacher efficacy is often cited as a key to improving the quality of schooling and has been found to relate significantly to many valued outcomes, including teachers' classroom behavior, student learning, and change in teacher practice through staff development.[58] Bandura contends efficacy develops largely from four sources: information derived from actual performance; information derived from vicarious experiences, primarily from seeing or visualizing other people perform; information from verbal persuasion and the attempts of others to convince teachers they can perform particular tasks; and information derived from physiological indices such as trembling or sweating before or during a task. Increasing teacher efficacy in terms of Bandura's sources is typically operationalized by involving teachers in decision making about their classroom activities; supporting classroom innovations; encouraging collaboration among teachers; increasing clarity with regard to school goals; providing feedback to

[57]D. Taylor and A. Tashakkari, "Predicting Teachers' Sense of Efficacy and Job Satisfaction Using School Climate and Participatory Decision Making" (paper presented at the annual meeting of the Southwest Educational Research Association, San Antonio, TX, 1994).

[58]M. Smylie, "Teacher Efficacy at Work," in *Teachers and Their Workplace: Commitment, Performance, and Productivity*, ed. P. Reyes (Newbury Park, CA: Sage Publications, 1990).

teachers about their classroom performance; and providing opportunities for teachers to observe the practice of other professionals.

Results from this study indicate an indirect linkage between supervision and personal teaching efficacy (personal ability to affect learning). This influence is transmitted through the teacher's belief in the principal's support of teaching and is a significant influence. Other influence comes from the external efficacy belief. If teachers believe they can overcome external conditions, this will strongly influence their beliefs about their own teaching competence. Taken together, these two variables account for about 47 percent of the variance. Principals likely influence personal efficacy by offering improvement assistance through coaching and praise. The conferencing often associated with supervision helps clarify important goals (as previously discussed) in addition to providing substantive feedback about the teacher's performance. In many cases, supervision is teacher directed, thus increasing the teacher's sense of control of classroom processes and staff development opportunities. The principal can also provide opportunities for teachers to observe other teachers or videotapes of best practice. This clearly increases a teacher's vicarious experiences, which Bandura identifies as essential for increasing a teacher's sense of efficacy. Finally, the close interaction between the principal and the classroom teacher through conferencing is a clear signal to the teacher of administrative support for innovations and teaching, which might lead to improved practice. This symbolism through a principal's focus on teaching during staff meetings and in internal communications undoubtedly plays an important role in building teaching efficacy.

CONCLUSIONS

Given the predictive power of the final model and its reproducibility using a distinct data set, the utility of constructing models that attempt to explain the mechanism by which principal supervision influences school-level factors seems warranted. The model developed in this study clearly indicates that the behaviors of school principals play important roles in the development of teacher efficacy, work satisfaction, and job commitment. It is also clear that this influence of principals is indirect. Principals' specific actions work only through a complex series of interactions with other intermediate variables. Sometimes this chain of intermediate variables is quite lengthy. The most potent predictors of efficacy, commitment, and job satisfaction are the relational constructs—those that represent a teacher's perceptions of his or her administrators as caring and concerned with the core business of the teacher's classroom. Chase re-

ported similar results.[59] A teacher's peers also play a profound and independent role in influencing commitment and satisfaction but have much less influence on individual teacher efficacy. Taken together, as Chase concluded and this study supports, the importance of principals' actions and peer influence suggest that if we wish to improve teachers' dispositions toward their work (and presumably effectiveness), we need to pay close attention to ways of improving teachers' perceptions of their relationships with those with whom they work.

It is also clear that supra-school factors play an important role in predicting teachers' relations with their peers, relations with administrators, and beliefs about themselves. Although the model presented in this study accounts for a significant amount of variance overall, some factors (Ability to Overcome External Conditions in particular) were poorly predicted by the latent variables included in the study. Clearly, additional work needs to be undertaken to identify influential factors that help account for variance in these constructs. Pragmatically, this indicates that much of the variance in these factors may be beyond the influence of the principal and peers and thus not amenable to change after the individual is employed.

Lastly, caution should be used when interpreting the results of this study. Although the developed model serves a useful purpose in helping to explain the supervision process, other models might be equally explanatory. In addition, many other variables and constructs could logically be included as predictors in future studies. This study focused primarily on teacher affective factors; other studies could concentrate on the principal's impact on observable teacher behaviors or student achievement—not just attitudes. In addition, as Byrne discovered when comparing teacher burnout across elementary and secondary teacher samples, alternate models might emerge and be more appropriate for different types of school organizations.[60]

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[59]A. Chase, "School Level Factors Predicting Teachers' Senses of Professional Engagement, Efficacy, Commitment, and Job Satisfaction: An Application of Structural Equation Modeling," ED347693 (1991).

[60]B. Byrne, "Burnout: Testing for the Validity, Replication, and Invariance of Causal Structure Across Elementary, Intermediate, and Secondary Teachers," *American Educational Research Journal* 31 (Fall 1994): 645–673.

Empirical Linkages among Principal Behaviors and Intermediate Outcomes: Implications for Principal Evaluation
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Empirical Linkages Among Principal Behaviors and Intermediate Outcomes: Implications for Principal Evaluation

Joe Snyder
Howard Ebmeier

Abstract

This article examines the causal relationships among principal behaviors, school organizational processes, and intermediate outcomes in the school context. Hoy and Miskel's (1987) adaptation of Parsons' (1960, 1961) four organizational functions for schools and Pitner's (1988) causal model for principal effects provided the theoretical framework. Multiple intermediate outcomes were employed to determine school and principal effectiveness. Teachers, students, and parents from 30 schools were surveyed and provided data for 24 variables in a nonexperimental, empirical study. Hypothesized causal models of four blocks of variables—school context; principal behaviors; school functions; and teacher, parent, and student outcomes—were investigated by path analysis. This analysis yielded significant paths in 18 trimmed models and indicated that principals have significant direct effects on teacher outcomes of morale, job satisfaction, commitment, and teacher perception of innovation, and low indirect effects on student sense of academic futility and acceptance of school norms and parent satisfaction. Teacher perceptions of the four school processes provided three significant paths

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to outcomes, whereas parent perceptions of the processes provided eight significant paths. Parents provided more causal links to student outcomes from school processes than did teachers. School contexts of organizational level and SES had significant effects on student and parent variables. The findings indicated the appropriateness of the theoretical model as a means to evaluate principal and school effectiveness. Principals can be evaluated directly in terms of their effects on teachers but only indirectly for their effects on students and parents.

Introduction

Recently there has been a resurgence of public concern about the effectiveness of schools and a renewed appreciation of the important role principals play in the educational process. This attention has been matched by research on principals' behavior (see Boyan, 1988, for a comprehensive review), school effectiveness (see Levine & Lezotte, 1990), and popular work outside education focusing on leadership and organizational excellence in general (Peters & Austin, 1985; Peters & Waterman, 1982). Concurrent with this interest in describing characteristics of effective schools, there has been an increased interest in administrator evaluation. For instance, between 1974 and 1984, the number of states that mandated formal evaluation of administrators increased from 9 to 27. Similarly, the number of school systems reporting that formal evaluation procedures existed within their districts increased from 39.5% in 1968 to 85.9% in 1984 (ERS, 1985).

Unfortunately, although the frequency of administrative evaluations has increased markedly, the quality of the assessments does not appear to have substantially improved (Marcoulides, 1990; Marcoulides & Heck, 1992). They often assess trivial principal behaviors employing methods and instruments that frequently lack even the rudiments of sound practice. Problems with existing instruments and processes for evaluating principals typically fall into two categories—technical and conceptual. Technical problems are frequently described in terms of reliability and validity benchmarks, including:

- over-reliance on the supervisor as the sole source of input (concurrent validity),
- reliance on opinion data gathered from individuals who are not in a good position to observe the principal's behaviors or whose discrimination skills are not sufficiently developed to produce reliable or valid results (discriminate validity),
- reliance on generic rating scales that have poorly defined criteria for those ratings (criterion-related validity),

- failure to incorporate a substantial body of knowledge regarding effective administrative practice into existing instruments (content validity),
- failure to collect evaluative information from clients of the school (ecological validity),
- failure to design separate instruments for summative or formative evaluations and frequent use of instruments for purposes for which they were not designed (content validity), and
- failure to establish reliability across raters and over time (internal reliability).

Conceptual problems with existing principal evaluation instruments are often linked directly to the conflicting definitions of the purpose of schools. This frequently translates into vague principals' job descriptions and ambiguous definitions of effectiveness (often situationally determined). For example, Duke (1992) suggests that effectiveness might be defined in terms of personal traits, the quantitative number of administrative tasks demonstrated, the qualitative demonstration of competence, or the achievement of more school outcomes than comparative groups of principals. As a result, defining principal effectiveness upon which an evaluation instrument can be constructed has been difficult—constituent groups value different outcomes.

Not only is there some degree of goal conflict inherent in all school systems, but the proper methods of achieving these goals (when defined) and the expected roles the principal is to play are often in dispute. For example, suppose that achievement on standardized tests is an officially sanctioned goal. Higher performance could be attained through extending the amount of time devoted to the tested subjects or reducing classroom interruptions due to extracurricular activities. However, agreement might be hard to obtain among many competing alternatives possible to achieve this goal. In the former case it would mean less time for nontested subject content, which would upset teachers of those subjects, while in the latter case it might cause a hardship for teams that have regional and state competitions during the school day—a decision sure to anger the coaches and the sports community. Selection of every school goal and supporting principal action involves a compromise and inevitably reduces options in other areas. (See Bolman & Deal, 1991, for an extended discussion of the symbolic, structural, political, and human resources leadership roles of principals.) These choices among competing goals and principal actions will invariably cause some groups to raise or lower their opinions concerning the principal's effectiveness.

In addition, even if goal consensus could be achieved and the principal behaviors that lead to these goals isolated, the mechanisms that

link differing principal and staff actions with the contextual variables to produce results are poorly understood and more complex than originally thought (Bossert, Dwyer, Rowan, & Lee, 1982; Hallinger & Murphy, 1987; Marcoulides & Heck, 1992). As Marcoulides and Heck (1992) point out, one of the major reasons for this dearth of knowledge, even in areas where there is reasonable consensus about the goals of the school, is a lack of theoretically-driven empirical research to establish and validate the appropriate domains of the principal behaviors and their collective effects on school outcomes.

The purpose of this study is threefold. First, a general definition of effectiveness is proposed based on the work of Parsons (1960), Hoy and Miskel (1987), and others that serves as a framework for the investigation of principal behaviors and their effects on organizational outcomes. Second, this model is tested and tentative pathways are proposed using data collected from 30 schools. Third, the findings from the path analytic work are discussed within a framework of principal evaluation and accountability.

Definition of Effectiveness

The extent to which a school is achieving its intended outcome goals has traditionally been accepted as the yardstick for measuring school effectiveness. Typically, these outcomes have been defined by policymakers and the press as the various scales on standardized tests or college entrance examinations, such as the SAT or ACT. Parents often use other criteria to evaluate schools such as their child's interest in school, the extent to which he or she has friends in school, the feeling of trust in the school's teachers, the feeling of community that the school engenders, or the success of the athletic teams. Teachers, community patrons, the classified staff, the mayor, the taxpayers' league, and so on, use still other measures to evaluate the school's effectiveness and, indirectly, the quality of its leadership. Indeed, not only do individuals differentially value common organizational processes, but as Bolman and Deal (1991) point out, they may view the school through entirely different frames of reference (symbolic, political, human resources, and structural). For example, teachers may value high building morale as viewed through a human resource frame of reference, while the business community may focus on student academic achievement assuming the school works much like a factory (structural frame of reference).

From a review of the extant literature and the above discussion, it is reasonably clear that school or principal effectiveness is bound to the defining criteria. For example, the "effective schools" literature charac-

terizes effectiveness as residual gain on standardized test scores, while others may favor schools known for their positive socializing effect on children (Cuban, 1983; Glickman, 1987). Equally clear is that effectiveness is not unidimensional but rather a complex construct that is dependent on the criteria used, which may be independent of one another and, indeed, may be mutually exclusive. The importance of a guiding theoretical model or framework is, therefore, paramount to understanding and developing criteria around which principal evaluation instruments can be constructed. To resolve this dilemma, major models that characterize organizational effectiveness were examined (Bossert et al., 1982; Duckworth, 1983; Ellett & Walberg, 1979; Hoy & Miskel, 1987; Parsons, 1960; Pitner, 1988; Yukl, 1982), and a revised version of the Hoy and Miskel framework with major input from the Pitner and Parsons model was constructed. Figure 1 presents an overview of this model to help visualize the multiple contributors to school and principal effectiveness.

Presage Contextual Variables

The presage factors on the left side of Figure 1 represent characteristics and predispositions of members of the school's community. Although they are mostly beyond the control of the school, they do heavily influence the school's operations, and the degree to which the school understands and accommodates these contextual variables strongly influences its probability of attaining its stated goals. They are descriptive of teachers', principals', and students' entering characteristics (experience, age, education, family background, gender, beliefs, etc.), plus contextual factors descriptive of the school itself.

School and Principal Process Variables

The two blocks of variables in the middle of Figure 1 are modifications of Parsons' (1960, 1961) original conceptions of organizational processes (maintenance, integration, goal attainment, and adaptation). The top block represents principal behaviors that influence these four processes while the lower block represents these processes within the school. The school processes are influenced by both presage variables and principal process behaviors; they are linked to the intermediate outcome variables and ultimately to the social and academic development of students as illustrated in Figure 1. In essence, these two blocks of variables are descriptive of how well the school (or principal) interfaces with the external community, maintains a sense of school culture and expecta-

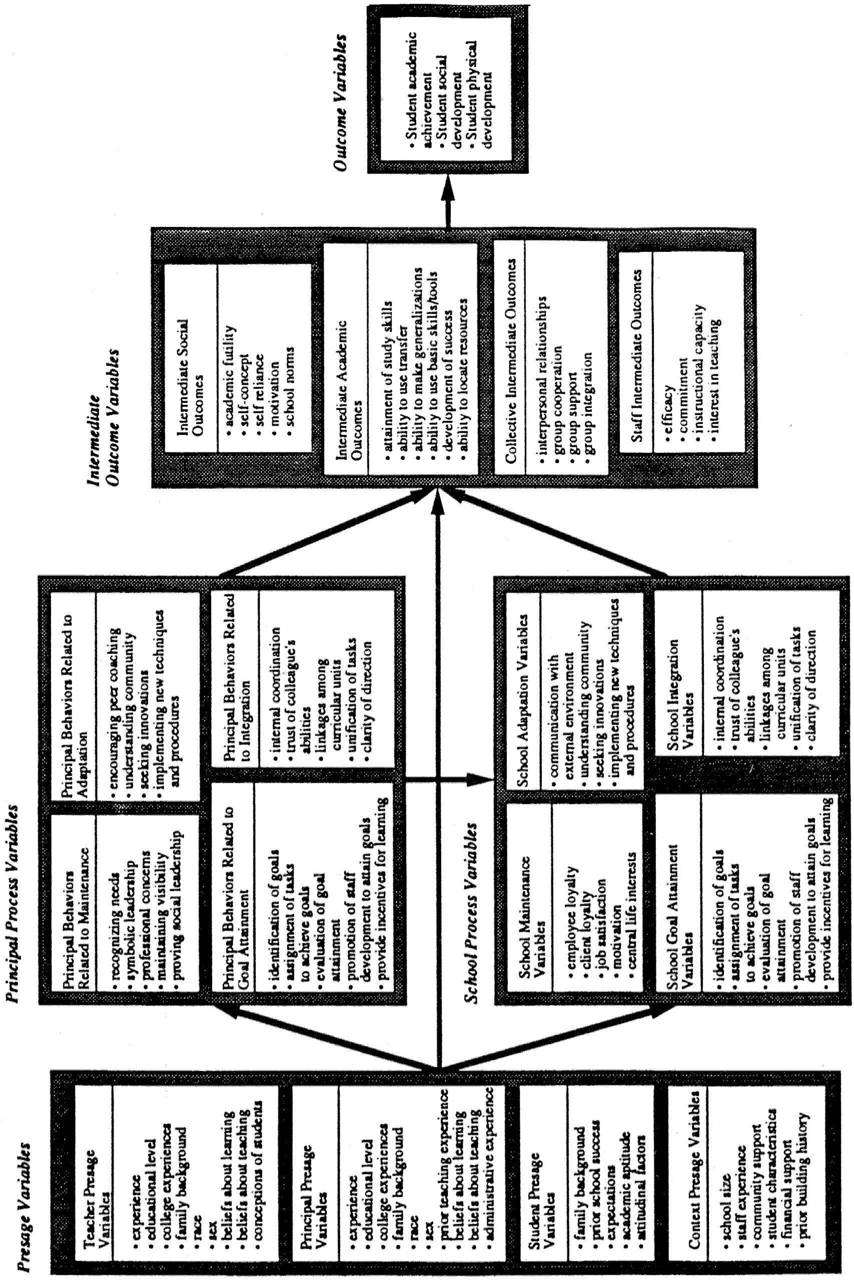

Figure 1. Proposed model of school effectiveness.

tions, works as a coordinated and well-organized unit, is able to set and attain stated goals, and to what extent the principal promotes or facilitates these activities. Specific definitions of these constructs follow.

Adaptation. This construct is defined as the school's ability to understand and accommodate successfully to the external environment. The extent to which the school does or does not offer programs that are consistent with community norms and expectations is often directly related to difficulty or success in sustaining interest in and support of the school. The recent troubles in the auto industry are a classic case of the failure of an organization to demonstrate good adaptation capacity. Where once the United States was the dominate producer, because of our lack of sensitivity to consumer desires for smaller, more fuel-efficient cars, American auto makers lost a substantial share of the market and now represent only one of many sources of automobiles. In a similar fashion, schools and school districts can lose the support and respect of the community if they are not cognizant of the expectations and desires of their community clients. To adapt successfully to changing environments and compete with others for community interest and resources, effective schools must fuse bureaucratic expectations and sublimate individual needs and wishes in a way that produces a more powerful influence than the simple additive power of each entity. Schools must maintain a certain amount of harmony to deal effectively with environmental pressures and possess sensitive monitoring mechanisms that provide reliable and timely information concerning the external environment. Adaptation is also defined in terms of the school's ability to keep abreast of new instructional methods and to constantly survey available resources for new curricular material. Planned and meaningful staff development activities that focus on keeping the staff abreast would also be a good indication of a school posed to take advantage of any potential opportunity.

Goal attainment. The definition of this construct includes the ability of the school to define objectives, mobilize resources, and achieve desired ends. Unlike the adaptation dimension, goal attainment is widely recognized as an important measure of effectiveness as is evidenced by the millions of dollars spent every year on standardized achievement tests. Indeed, four of the five "effective school" correlates (goal consensus, strong instructional leadership, close monitoring of the instructional program, and high expectations of student achievement) proposed by Edmonds and associates (1979) are subcomponents of the goal attainment dimension. Typically, goal attainment is defined through productivity, resource acquisition, efficiency, quantity, and quality standards. Hallinger and Murphy's (1985) instrument, which is designed to mea-

sure principal instructional management in 10 areas (frame the school goals, communicate the school goals, supervise and evaluate instruction, coordinate the curriculum, monitor student progress, protect instructional time, maintain high visibility, provide incentives for teachers, promote professional development, and provide incentives for learning) is a measurement device typical of those designed to assess the goal attainment dimension. In addition to processes that might lead to goal attainment, such as establishment of quality control or resource allocation systems, actual outcomes typically defined in student terms are also important dimensions of school effectiveness as operationalized through goal attainment. The most common is academic achievement. However, student affective outcomes such as student self-concept also play critical roles. For example, Brookover, Beady, Flood, Schweitzer, and Wisenbacker (1979) found that student measures such as academic norms, academic futility, future expectations, present expectations, and teacher expectations were intertwined with overall school climate and accounted for a significant amount of variance in student academic achievement.

Integration. Integration as a construct is defined as the ability of the school to organize, coordinate, and unify the various school tasks necessary for achievement. This attribute of effective schools is the extent to which the component subsystems and/or people trust the competence of each other and work together in a coordinated fashion. From a larger perspective, this includes both an integration within and between the various school component groups. In many respects the integration component is related to the conception of "coupling" that has gained considerable attention within the study of informal organizations during the past 20 years (Bidwell, 1965; Meyer & Rowan, 1978; Weich, 1976). In this sense, the integration (or coupling) construct as it applies to schools typically refers to a pattern of organizational and interpersonal mechanisms that serves to link the various human subcomponents of the school. When coupling is "loose" or trust and respect are absent, the result is often that the staff and students are exposed to repetition (because the staff doesn't believe the material was adequately taught in the previous courses or the principal generates an excessive number of rules to insure compliance), significant gaps or overlaps occur in the curriculum (because few people are aware of what is taught at the other levels), and a developmental sequence that capitalizes on prior learning is absent. Other indirect measures of integration are the extent of cohesion-conflict among and between different school groups. As conflict arises, coordination of the educational program and social development is curtailed and inefficiency is promulgated. Integration is also a measure of the degree to which the school has a common sense of

purpose or vision and the degree to which the students, staff, and community share that vision of themselves; can describe their individual role in the larger plan; and feel that they play an important role in the organization. Conversely, schools that evidence and exhibit excessive repetition and duplication, conflict, and lack of intraorganizational communication, would be considered low in integration.

Maintenance. This construct is defined as the school's ability to create and maintain the school's motivational and value structure. For an organization to function effectively over an extended period, there must be a certain sense of client and employee loyalty to the organization, its goals, and culture. Often these values are defined as job satisfaction, staff motivation, job commitment, and central life interest, and are sometimes included under the generic label "climate." They are typically examined through expectancy theory comparing reward value, reward probability, and level of effort (Vroom, 1964); job-characteristics models comparing skill variety, task identity, and task significance (Hackman & Oldham, 1980); discrepancy hypotheses comparing individual motivation with organizational incentives (Smith, Kendall, & Hulin, 1969); inducements-contributions theory which examines what is offered versus contributed (March & Simon, 1958); and, dissonance theory comparing employees' expectations with actual experience (Festinger, 1957). Schools characterized as high on this dimension could be described as having committed, dedicated staffs who (a) are interested in their work (as defined by the school's value system), (b) are protective of their school, and (c) identify with its norms. It does not necessarily follow that these individuals are good employees (see Locke, 1976), only that they hold values similar to those of the school and often see their role then as being an integral part of who they are as individuals. This latter concept is often referenced as a central life interest and simply means that an employee invests a large share of time, commitment, and energy toward the school in relation to the competing life activities.

Intermediate Outcomes

The third set of variables included in Figure 1 represents intermediate outcomes that provide the foundation for lasting student and staff changes in behavior. These constructs are often recognized by educators and the public as important, but are rarely explicitly taught, included in curriculum guides, or measured in school assessment efforts. As can be observed from Figure 1, this set of variables is divided into four divisions—individual student social outcomes, individual student academic outcomes, individual teacher outcomes, and collective group

outcomes. Individual student social outcomes represent a student's beliefs and feelings toward the education process and, indirectly, toward themselves. These have developed as a result of the interaction of the schooling processes (maintenance, goal attainment, integration, and adaptation) and the presage background variables. Typical examples would be student self-concept, student sense of academic futility or the connection between hard work and personal gain, student motivation for school, and student self-reliance to solve academic problems. Importantly, many of these variables have been found to have a profound influence on subsequent performance on academic tests (Brookover et al., 1979).

Student intermediate academic outcome variables are also representative of important dimensions of school effectiveness. Typical examples might be the attainment of study skills; the ability to use the concepts of transfer and generalizations when learning new academic content; the acquisition of basic skills necessary for proficiency in all subject areas such as reading, computation, reference location, logic, and organization; and the development of prior successes on academic tasks that are important for student motivation. Although these intermediate outcomes are important for future academic success, they are rarely taught in a direct manner but rather assumed to have been included in the curriculum of all courses. Interest in student attainment of these intermediate outcomes waned in the 1970-1980s with the heavy emphasis on basic skill development in reading, mathematics, science, social studies, and writing. Recently however, testing companies and some national curriculum projects, such as the new National Council of Teachers of Mathematics math standards (1989), have begun to recognize the importance of conceptual understanding and generic learning strategies applicable to all content fields. As a result, they have begun to reemphasize the importance of these intermediate academic outcomes in their curriculum guides, and the content of many standardized tests now includes subscales focusing on reference, problem solving, and higher level abstraction skills. Much work in this area still needs to be done, but the recognition of the essential nature these variables play in student mastery of academic content seems to be gaining importance.

The third set of intermediate outcomes focuses on the professional staff of the school and the influences which the schooling processes and presage characteristics have on their behavior and beliefs. One of the most essential is the extent to which the variables influence the instructional strategies and curriculum selected for use in the actual classroom. Clearly, an important predictor of student learning is the quality of the instruction they receive and the content studied. This category also is

concerned with the effect the schooling process is having on the belief system of the staff. Teachers' belief systems (efficacy, commitment, morale, instructional openness, etc.) can influence their willingness to try new ideas, be open to improvement suggestions, work with colleagues, be reflective about their teaching, stay in the education profession and a host of other factors important for the organizational health of the school (McNeil, 1988a, 1988b, 1988c; Rosenholtz, 1989). The principal is also affected in ways similar to the teachers. Indeed, there is some evidence that the school process variables work in such a way that the longer the principal remains in a given building, the less independent leadership is exhibited, and the more the principal becomes a building manager (Bridges, 1965).

The last set of intermediate outcome variables focuses on the collaborative group outcomes. These would include group interpersonal relationships, group cooperation efforts, group support of individual teachers or students, the extent of student and teacher integration into the social system of the school, and the cooperative efforts fostered between the home and school. Schools rarely make specific efforts to build these interpersonal skills, yet society depends upon cooperation and mutual respect among its citizens for its existence. Schools often assume that structural arrangements—such as putting children who belong to different racial groups in the same classroom—will automatically result in greater racial appreciation, understanding, and cooperation. Often, however, the same sets of racially segregated groups that were present before the integration attempts remain in effect and little true integration occurs.

Outcome Variables

The variables on the far right hand side of Figure 1 represent outcome variables that are typically associated with school effectiveness: student academic, social, and physical development. As shown in Figure 1, a school's effectiveness can be conceived in terms of organizational achievement of desired outcomes and the degree to which the organization can maintain itself through effectively managing the organizational processes. The degrees of change in organizational processes of adaptation, goal attainment, integration, and maintenance within the context of the presage or entering variables are the primary indicators that can be used in assessing the effectiveness of the school. Within the context of this model, principal effectiveness might be thought of as the extent to which the principal can lead or facilitate this process.

Testing the Proposed Model

Although it is interesting to analyze possible linkages among the variables suggested from an integration of numerous theoretical models, before principal evaluation instruments can be constructed based on the hypothesized models, it is important to establish some empirical linkages among the various concepts. If linkages among the variables in the models cannot be confirmed, then the use of these models and variables to measure and define principal effectiveness is problematic. This section of the article describes the results of the investigation of the linkages inherent in this model.

Variables Included in the Study

To pare the model down to a manageable size, variables were selected for inclusion on the basis of prior evidence of connectivity and ease of data collection. The presage, principal organizational behaviors, school organizational functions, and outcome variables provided the framework as illustrated in Figure 1. There were a total of 24 variables (see Figure 2) included in the study that were defined and measured through teachers, parents, and students, who responded to various survey instruments. (See Snyder, 1991, for a detailed description of the model paring process, the data collection strategies, and the instruments.)

The context variables in this study were narrowed to two—school level and socioeconomic status (SES)—primarily due to prior reviews that indicated the importance of school level (elementary, middle or junior high, and high school) on principal behaviors, school operations, and outcomes (Farrar, Neufeld, & Miles, 1984; Firestone & Herriott, 1982; Hallinger & Murphy, 1987; Purkey & Smith, 1983; Rowan, Bossert, & Dwyer, 1983). In addition, since the Coleman Report (Coleman et al., 1966) determined that SES explained significant variance in student outcomes, and has regularly been included in studies of effective schools (Brookover et al., 1979; Glasman & Biniaminov, 1981; Hoy, Tarter, & Bliss, 1990; Rosenholtz, 1989; Rutter, Maughan, Mortimore, Ouston, & Smith, 1979), it was also selected for inclusion in the study.

As previously discussed, the study of organizations as social systems provided the theoretical basis for the formulation of the school process variables. Four constructs, formulated by Talcott Parsons (1960, 1961), as applied to schools (Derczo, 1987; Horner, 1984; Hoy & Ferguson, 1985; Hoy & Miskel, 1987) formed the core variables for this second block—adaptation, goal attainment, integration, and maintenance (Hill, 1982; Hoy & Miskel, 1987).

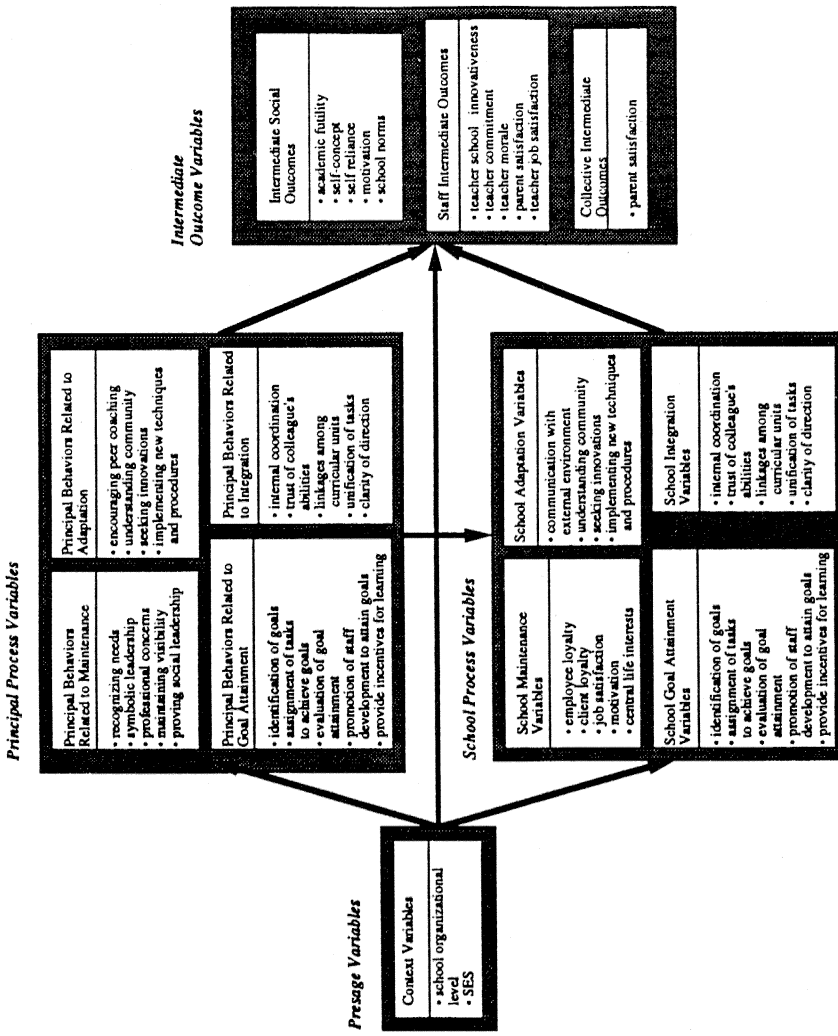

Figure 2. Effectiveness model tested.

Principal behaviors, which formed the third block of variables examined, were isolated from a literature search undertaken to identify traits, characteristics, behaviors, and attitudes that were thought to be important for effective leadership of a building. A procedure identified by Karis and Watters (1983) was employed to search over 32 data bases using 36 descriptors for articles that might be of relevance. In addition, through personal contact across the United States, several hundred additional nonreferenced articles were obtained; thus, the total set of documents examined for this study exceeded 1,500. After the documents were obtained, eight graduate students, college professors, and practicing administrators were employed to read subsets of the total material to isolate attitudes, behaviors, and skills that were identified in the published work. Each article was read by two reviewers and by a third person if agreement concerning the desirable characteristics could not be reached. A matrix-type analysis system was then employed to identify commonalties and differences across recommendations, and the list was condensed based on a commonality analysis. The remaining competencies (N = 150) were then reviewed, modified, and validated by state and national experts who were representative of teachers, principals, superintendents, and college faculty teaching the "principalship" course. Finally, a sample of practicing administrators in the state were asked, through a structured questionnaire, to identify skills, behaviors, and attitudes which they thought were essential and those that were desirable but not critical. From an analysis of those data plus information compiled from prior consensus groups, a list of 60 basic competencies and subdescriptors was developed (see Wilson, Branch, & Rush, 1988a, 1988b). The identified competencies were then classified in terms of the effectiveness goal(s) they might best achieve (adaptation, goal attainment, integration, and maintenance).

Staff and student intermediate outcome measures were isolated from the literature in a similar fashion primarily based on previous work by Brookover et al. (1979), Ebmeier (1979, 1991), and Snyder (1991) and are defined as follows:

- Academic Futility—a student's perception of the relationships among effort in school, subsequent rewards, and future success in school.
- Self Concept—a student's perception of his/her ability to master school work, establish social friendships, and gain acceptance.
- Self Reliance—a student's perception of his/her ability and desire to function independently.
- Motivation—a student's motivation to attend school and the importance he/she attaches to school.

- School Norms—the student's perception of the school's achievement and work standards.
- Morale—the degree to which staff view work conditions as adequate, reasonable, and harmonious.
- Commitment—the degree to which the staff accept the organization's values and are willing to exert effort on behalf of the school.
- Job satisfaction—the degree to which the staff like their jobs.
- Parent Satisfaction—the degree to which parents are satisfied that the school is a good and respected institution.
- School Innovation—the staff's perception of the school's desire and ability to adopt new and innovative instructional materials and curriculum.

Model Development

Each of the four organizational processes (maintenance, adaptation, goal attainment, and integration) served as the basis for one causal model with the contextual measures constant across all models. Ten intermediate outcome measures were linked to specific models depending on the theoretical constructs being tested (see Figures 3-6.) Since earlier studies (Horner, 1984; Hoy & Ferguson, 1985) indicated that both patrons of and participants in schools should provide data to determine school effectiveness and effects, the four models each have two distinct paths, based on whether the data examined represented teacher or parent perceptions of the four school functions. This resulted in a total of eight path models to be analyzed.

Of the eight path models, two tested the adaptation construct (Figure 3), where the outcome variables were parent satisfaction with the school and teacher perception of school innovation. These models focused on the ability of school participants to meet the changing demands for effective schools through innovation responsiveness and to the community environment (Booth, 1990; Derczo, 1987; Horner, 1984; Joyce, 1990; Joyce, Showers, & Rolheiser-Bennett, 1987; Lindle, 1989; Rosenholtz, 1989).

Two models were developed for the goal attainment construct (Figure 4) where student academic self-concept and student self-reliance for academic tasks were designated as outcome measures. These models were included because previous studies have indicated a strong link among students' attitudes and affective responses toward their school and school effectiveness (Bossert, 1988; Ebmeier, 1990a, 1990b; Rutter et al., 1979). For example, Brookover et al. (1979) employed these two variables to demonstrate that increased academic scores in effective

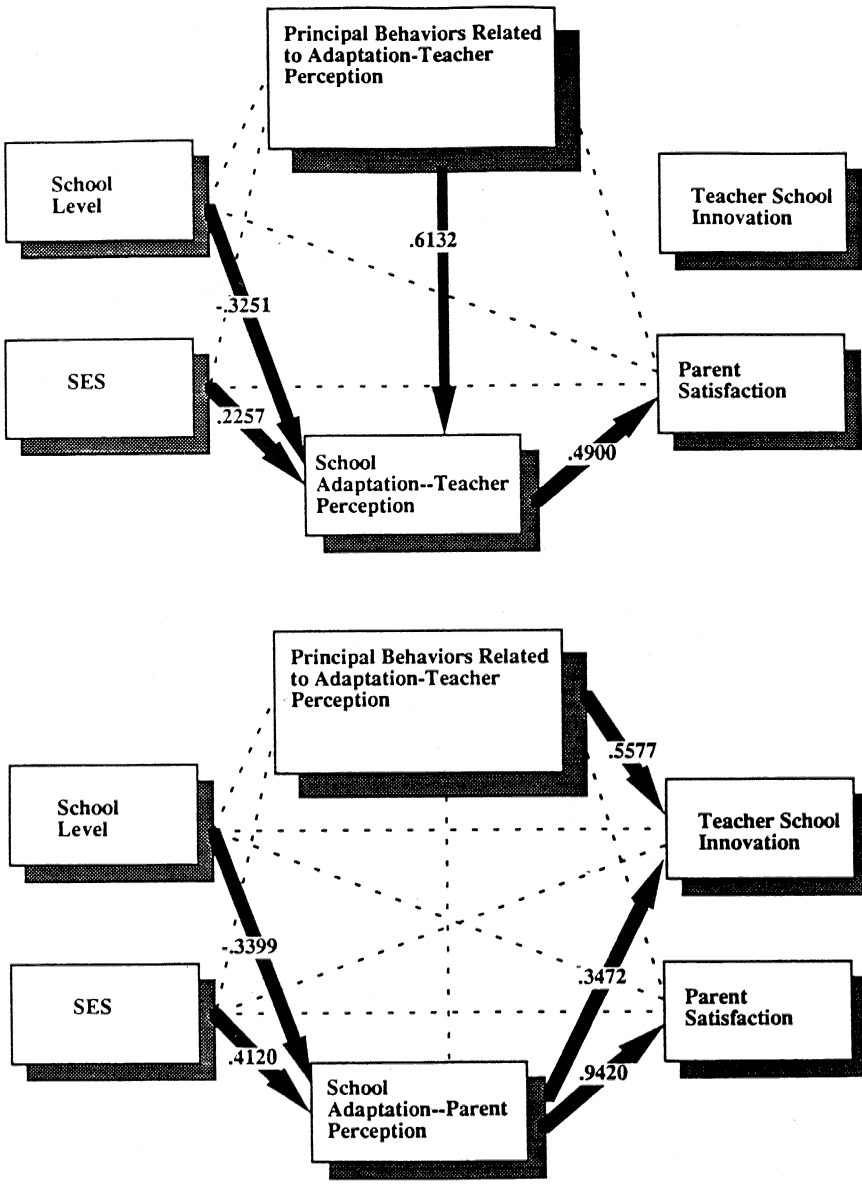

Figure 3. Adaptation models.

Note. Teacher School Innovation was not included in the path testing since it was derived from the same questions as the School Adaptation-teacher perception scale.

schools are not dependent only on socioeconomic status but also on what students think and believe about themselves in the school context.

The models that explored the integration construct (Figure 5) included three intermediate outcome measures—teacher morale, teacher job satisfaction, and student sense of academic futility. They were employed as attitudinal indicators of the solidarity in the school organization. Teacher morale and job satisfaction have shown strong relationships to school effectiveness (Block, 1983; Derczo, 1987; Horner, 1984; Hoy et al., 1990; Miskel & Ogawa, 1988; Rosenholtz, 1989), because teacher attitudes and beliefs about a school reflect the cohesive climate of the organization. Similarly, student sense of academic futility reflects their beliefs about how they fulfill the academic and role expectations of the school (Brookover et al., 1979).

The outcomes for the maintenance models (Figure 6) were teacher commitment, student motivation, and student adherence to school norms. Teacher commitment to the school organization has received special attention in effective schools research (Derczo, 1987; Horner, 1984; Rosenholtz, 1989), because of the dedication and motivation needed to be an effective teacher and the linkage between job motivation and remaining in the education profession. Student motivation likewise has reflected the need to maintain student interest, participation, and effort in the school, so that student growth is achieved (Block, 1983; Brophy, 1987). Finally, student acceptance of the normative culture of a school (student school norms) correlates significantly to work standards and academic achievement (Brookover et al., 1979).

Previous research and reviews of the literature (Anderson, 1982; Derczo, 1987; Glasman & Biniaminov, 1981; Heck, Larsen, & Marcoulides, 1990; Pitner, 1988) suggested the use of path analysis for this study. Because the school functions variables were defined in terms of parent and teacher perceptions and parent and teacher outcomes were derived from the school functions variables, there were a total of 18 paths analyzed. There are 8 paths analyzed using the teacher perceptions of the school functions and 10 paths using the parent perceptions of the same school functions.

Method

Description of Sample

To test the viability of the path models, 30 schools were selected to participate in the study from volunteer school districts in Kansas and

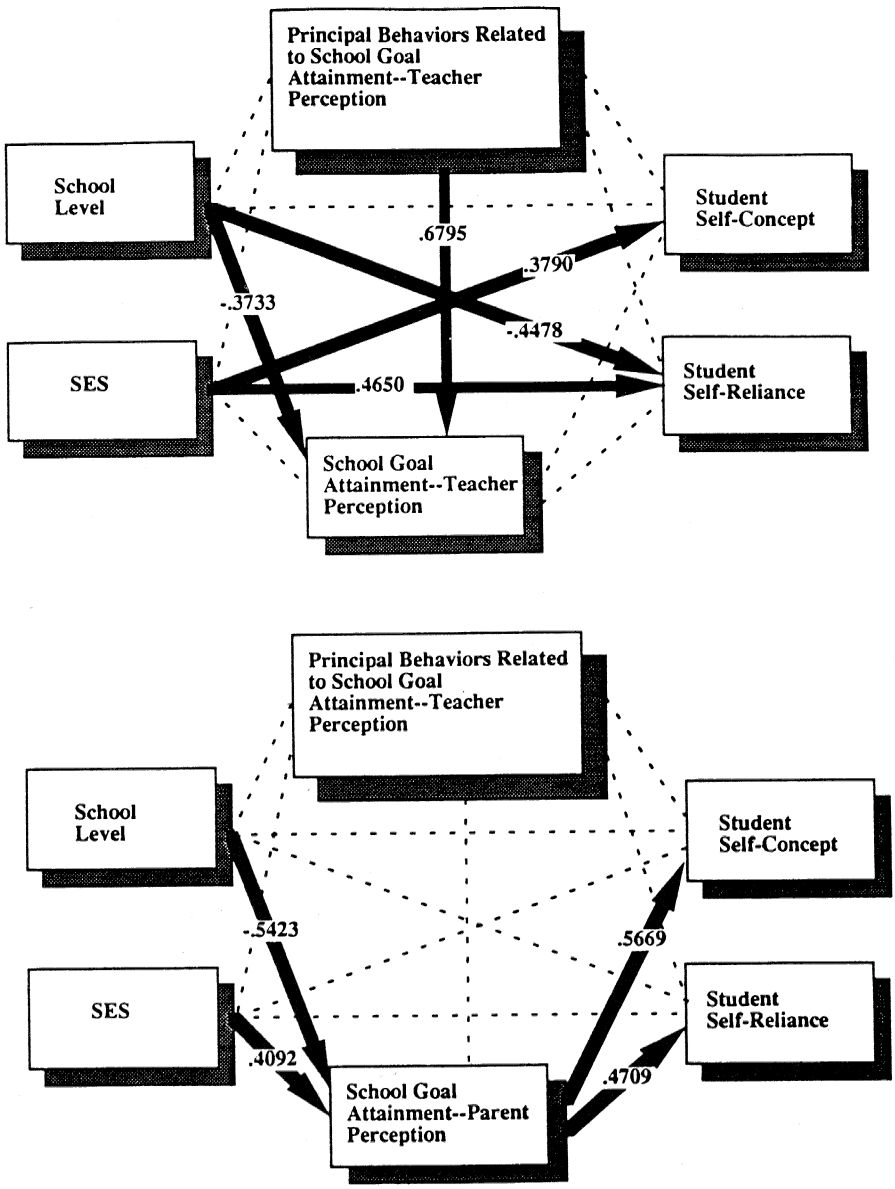

Figure 4. Goal attainment models.

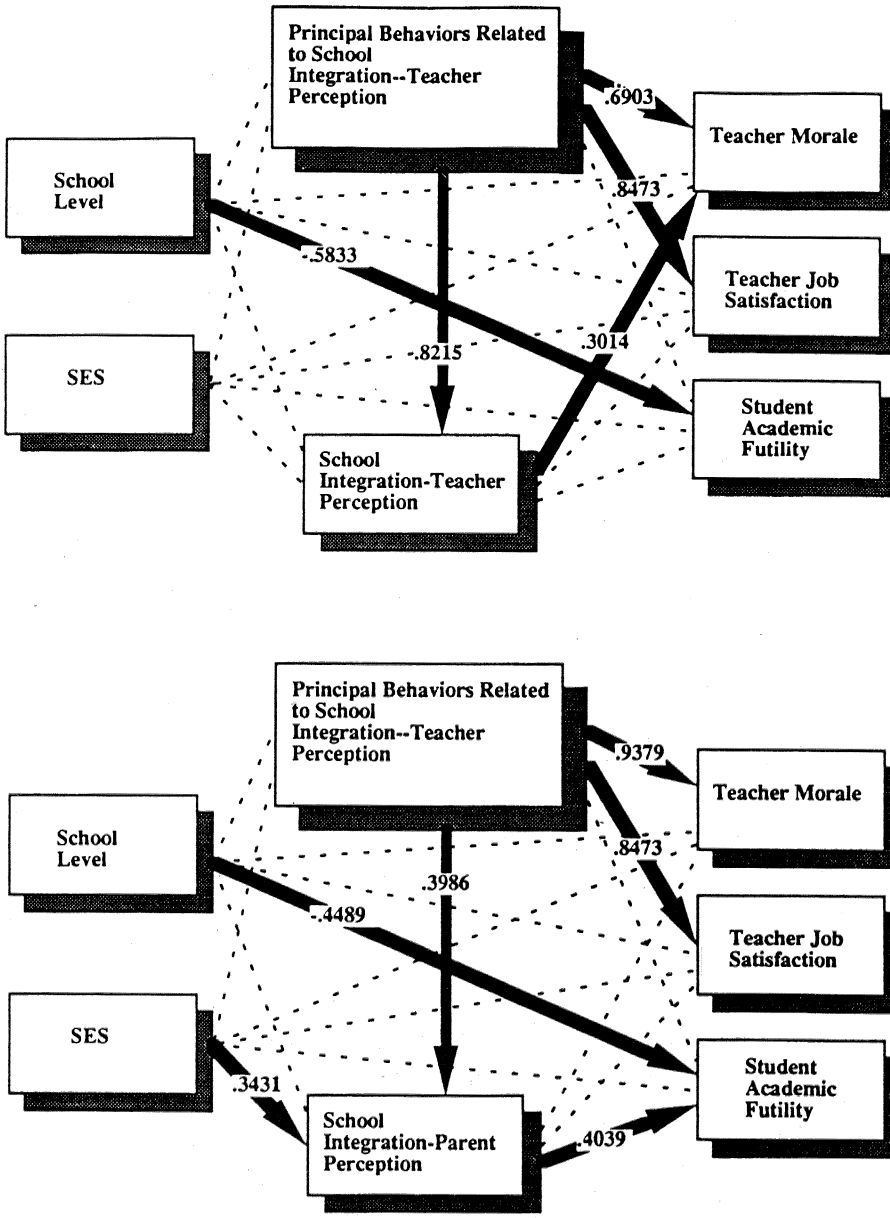

Figure 5. Integration models.

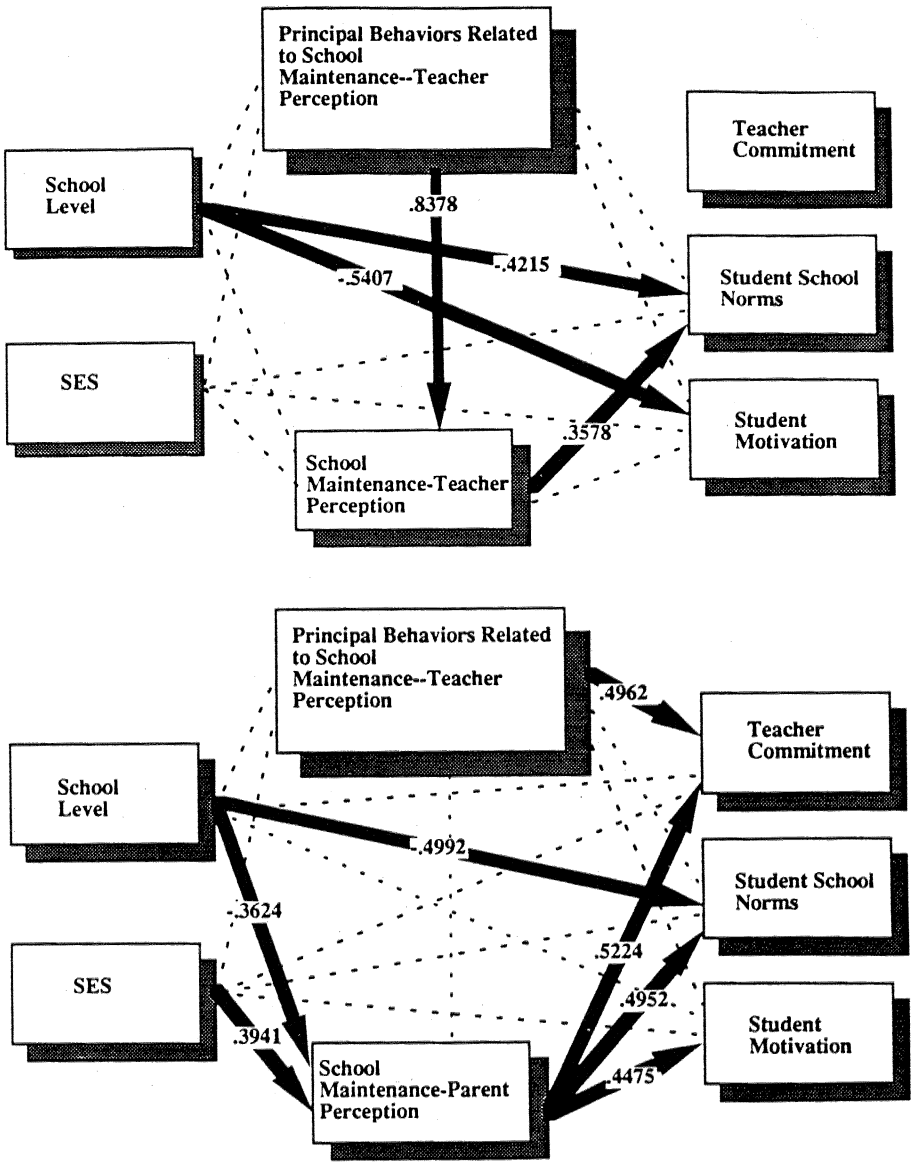

Figure 6. Maintenance models.

Note. Teacher Commitment was not included in the path testing since it was derived from the same questions as the School Maintenance-teacher perception scale.

western Missouri (15 elementary, 6 middle, and 9 senior high schools). These schools were reasonably representative of all schools in the Midwest, but not nationally, since the sample did not include any urban inner-city school. (Rural schools from poor SES areas were, however, included.) Questionnaires (Ebmeier, 1989) were developed to measure each of the 24 constructs included in models. These questionnaires were administered to all teachers, and a random sample (approximately one-fourth) of the school's students and parents.

Analysis

Although construct, content, and predictive validity for the instruments had previously been established (Ebmeier, 1991), reliabilities for the sample used in this particular study were recalculated to insure generalizability and stability. Results of these calculations were similar to the original reliability estimates with Cronbach alpha reliabilities ranging from .78 to .97 (Snyder, 1991). The ordinary least squares method for path analysis was employed in this study using the school as the unit of analysis. The steps called for by this path analysis procedure included (a) formulation of a causal model with specified variables, (b) correlational analysis, (c) multiple regression analysis, and (d) the calculation of direct and indirect effects. Once the regressions were completed, the statistical analysis included a check to determine if assumptions for a path analysis were fulfilled. Theory trimming was applied to the path models excluding those paths that were not statistically significant or in line with theory. Finally, the direct and indirect effects were calculated and compared to the Pearson *r* correlations. (See Asher, 1976; Duncan, 1975; James, Mulaik, & Brett, 1982; Pedhazur, 1982 for discussions of causal modeling and path analysis.) Part of the analytic procedures attempted to deal with possible problems of interaction and multicollinearity among variables. (For further information and analysis, see Snyder, 1991.)

Path Analysis Results

Once the regression results were analyzed, the path models were trimmed. These trimmed models and path coefficients for the adaptation, goal attainment, integration, and maintenance models are presented in Figures 3-6. The lack of significant direct effects is indicated by dashed lines from one variable to another in the diagram while significant effects are signified by solid lines. Each of the direct effects is measured by path coefficients which indicate the fraction of the standard

dependent variable for which the independent variable is directly responsible. For example, the path coefficient from principal behaviors oriented to adaptation on teacher school innovation was .5577 (Figure 3b) and, consequently, seemed to have a moderately strong effect on that teacher outcome. Tables 1 to 4 provide summaries of the correlations, the regressions, and the direct and indirect effect parameters for each of the trimmed path models.

While it is not possible to report all the descriptive, correlation, and regression analysis results from this study, the path analysis results provided rich information about the causal relationships among the variables. From examination of the diagrams and tables, it is evident that teacher and parent perceptions of school functions yield different significant paths. Teacher perceptions of the four school functions provided three significant paths to 8 outcomes, whereas parents perceptions of the functions provided eight significant paths to 10 outcomes. Parent perceptions of school functions had significant direct effects on all five student outcomes, while teacher perceptions only provided direct links to student academic futility and student school norms.

In this study principal behaviors had significant direct effects on all teacher outcomes and on all teacher perceptions of school functions. On the other hand, principal behaviors did not have significant direct effects on any student outcomes, on parent satisfaction, or on three of the

Table 1
Adaptation Models: Correlations, Direct Effects, Indirect Effects, and Total Effect

Variables (Dependent Underlined)	*Pearson r Correlation*	*Direct Effect*	*Indirect Effect*	*Total Effect*
Parent Satisfaction		Rsq = .2401		F = 8.8467**
School Level	−.2131	.0000	−.1593	−.1593
SES	.4036	.0000	.1394	.1394
Principal Adaptation	.1966	.0000	.3005	.3005
Adaptation (Teacher)	.4900	.4900	.0000	.4900
Parent Satisfaction		Rsq = .8873		F = 220.4200**
School Level	−.2131	.0000	−.3202	−.3202
SES	.4036	.0000	.3881	.3881
Adaptation (Parent)	.9420	.9420	.0000	.9420
Teacher School Innovation		Rsq = .5116		F = 14.1438**
School Level	−.4113	.0000	−.1180	−.1180
SES	.2014	.0000	.1430	.1430
Principal Adaptation	.6295	.5577	.0000	.5577
Adaptation (Parent)	.4625	.3472	.0000	.3472

**p < .01

Table 2
Goal Attainment Models: Correlations, Direct Effects, Indirect Effects, and Total Effect

Variables (Dependent Underlined)	*Pearson r Correlation*	*Direct Effect*	*Indirect Effect*	*Total Effect*
Student Self Concept		Rsq = .1436		F = 3.6021*
School Level	−.2367	.0000	.0000	.0000
SES	.3790	.3790	.0000	.3790
Principal Goal Attainment	.2127	.0000	.0000	.0000
Goal Attainment (Teacher)	.4900	.0000	.0000	.0000
Student Self Reliance		Rsq = .3434		F = 7.0599**
School Level	−.3658	−.4478	.0000	−.4478
SES	.3861	.4650	.0000	.4650
Principal Goal Attainment	.0361	.0000	.0000	.0000
Goal Attainment (Teacher)	.1870	.0000	.0000	.0000
Student Self Concept		Rsq = .3690		F = 13.2633**
School Level	−.2367	.0000	−.3074	−.3074
SES	.3790	.0000	.2320	.2320
Goal Attainment (Parent)	.5669	.5669	.0000	.5669
Student Self Reliance		Rsq = .2218		F = 7.9798**
School Level	−.3658	.0000	−.2554	−.2554
SES	.3861	.0000	.1927	.1927
Goal Attainment (Parent)	.4709	.4709	.0000	.4709

**p < .01 and *p < .05

four parent perceptions of school functions. Principal behaviors had indirect effects on student academic futility, student school norms, and parent satisfaction. (Refer to Tables 1 to 4 for indirect effects.) Overall, in 9 of 18 path models principal behaviors had direct or indirect effects on outcomes.

The presage context variables, school level, and SES had significant direct or indirect effects on mediating and outcome variables but no effects on principal behaviors. For this study, school level had significant negative direct or indirect effects on all student and parent outcomes but no direct effects on principal behaviors or teacher outcomes. SES had 9 indirect and 2 direct effects on outcomes in 18 models. SES was mediated more by the school functions (eight for parent perceptions variables and one for teacher perceptions) than was school level (four for parent and one for teacher).

In comparing the total effect parameters with the Pearson *r* correlations, some statistical difficulties surfaced. The total effect parameter was

Table 3
Integration Models: Correlations, Direct Effects, Indirect Effects, and Total Effect

Variables (Dependent Underlined)	*Pearson r Correlation*	*Direct Effect*	*Indirect Effect*	*Total Effect*
Teacher Morale		Rsq = .9092		F = 135.1321**
Principal Integration	.9379	.6903	.2476	.9379
Integration (Teacher)	.8684	.3014	.0000	.3014
Teacher Job Satisfaction		Rsq = .7180		F = 71.2761**
Principal Integration	.8473	.8473	.0000	.8473
Integration (Teacher)	.7160	.0000	.0000	.0000
Student Academic Futility		Rsq = .3403		F = 14.4428**
School Level	−.5833	−.5833	.0000	−.5833
Principal Integration	.2493	.0000	.0000	.0000
Integration (Teacher)	.3387	.0000	.0000	.0000
Teacher Morale		Rsq = .8796		F = 204.6243**
SES	−.0438	.0000	.0000	.0000
Principal Integration	.9379	.9379	.0000	.9379
Integration (Parent)	.4142	.0000	.0000	.0000
Teacher Job Satisfaction		Rsq = .7180		F = 71.2761**
SES	−.0540	.0000	.0000	.0000
Principal Integration	.8473	.8473	.0000	.8473
Integration (Parent)	.4225	.0000	.0000	.0000
Student Academic Futility		Rsq = .4854		F = 12.7326**
School Level	−.5833	−.4489	.0000	−.4489
SES	.1738	.0000	.1386	.1386
Principal Integration	.2493	.0000	.1610	.1610
Integration (Parent)	.4039	.4039	.0000	.4039

**$p < .01$

greater than the Pearson *r* correlation in 8 of 58 comparisons. According to path analysis techniques the Pearson *r* should be greater than or equal to the total effect given the proper decomposition. There were some unanalyzed effects among the exogenous, context variables that accounted for larger total effects. In addition, the context variables probably served as proxies for other variables not included or analyzed in this study (e.g., school size, student age). Among variable measures obtained from the same sources (e.g., principal behaviors and teacher perceptions of school functions), multicollinearity probably occurred because of the autocorrelation among variables that were measured by the same parties. Results then can be biased upwards. Interpretation of

Table 4
Maintenance Models: Correlations, Direct Effects, Indirect Effects, and Total Effect

Variables (Dependent Underlined)	*Pearson r Correlation*	*Direct Effect*	*Indirect Effect*	*Total Effect*
Student Motivation		Rsq = .1776		F = 6.0480*
School Level	−.4215	−.4215	.0000	−.4215
Principal Maintenance	.0667	.0000	.0000	.0000
Maintenance (Teacher)	.1012	.0000	.0000	.0000
Student School Norms		Rsq = .5324		F = 15.3735**
School Level	−.6443	−.5407	.0000	−.5407
Principal Maintenance	.4272	.0000	.2998	.2998
Maintenance (Teacher)	.5144	.3578	.0000	.3578
Teacher Commitment		Rsq = .6352		F = 23.5031**
School Level	−.2706	.0000	−.1893	−.1893
SES	.0925	.0000	.2059	.2095
Principal Integration	.6131	.4962	.0000	.4962
Integration (Parent)	.6335	.5224	.0000	.5224
Student Motivation		Rsq = .2003		F = 7.0115*
School Level	−.4215	−.4215	.0000	−.4215
SES	.0975	.0000	.1764	.1764
Maintenance (Parent)	.4475	.4475	.0000	.4475
Student School Norms		Rsq = .5324		F = 14.4428**
School Level	−.6443	−.4992	−.1638	−.6630
SES	.0483	.0000	.1952	.1952
Maintenance (Parent)	.6415	.4952	.0000	.4952

**p < .01 and *p < .05

these eight total effects was done cautiously because of the statistical difficulties. Finally, the sample size of 30 schools was not as large as desirable to detect significance among weaker linkages represented in the path models.

Discussion and Implications

The existence of significant paths from either the four principal behavior variables or the two sets of four school functions variables to outcomes reconfirm the use of Parsons' four organizational functions model (Derczo, 1987; Horner, 1984; Hoy & Ferguson, 1985). The path models investigated in this study indicate that the generalized model provides a way to investigate the causal links in school processes. These results also

support, in concept, the work of Heck et al. (1990), who reported causal linkages among principal instructional leadership variables and student academic achievement. Although the two studies varied in the choice of process and outcome measures and the sample selection procedure (extreme groups vs. a continuum), the overall efficacy of using structural modeling to better understand principal behavior within its contextual environment is supported.

The path analysis of the generalized causal model indicated that principals have strong, direct effects on mediating variables such as teacher perceptions of school functions and on teacher outcomes. However, principals did not have direct effects on student intermediate outcomes—only a few indirect effects. This evidence supports similar findings (Heck, 1992; Heck et al., 1990; Heck, Marcoulides, & Lang, 1991; Kmetz & Willower, 1982; Martin & Willower, 1981) and suggests that when principals do influence student outcomes such as academic achievement, they do so primarily indirectly working through the teaching staff. For example, Heck (1992) found that principal instructional leadership behaviors that involved direct principal intervention in the instructional lives of teachers (making classroom visitations, promoting staff discussions about instructional issues, protecting faculty instructional time, etc.) were predictive of school academic achievement in both elementary and secondary schools. Unfortunately, as Heck (1992) points out, principals are often seen as more effective in dealing with issues external to the classroom. They receive low marks from teachers for their ability to be of any help in dealing with classroom problems other than discipline. Indeed, previous research indicates that typical principals allocate very little of their time toward activities that require them to interact with teachers in substantiative ways concerning the educational program that affects the individual teacher's students (Ebmeier, 1991).

In comparing parent and teacher perceptions of the school functions, there were some clear differences in the causal connections between school functions and student outcomes offered by these two groups. Parent perceptions provided causal links from the school functions to all 5 student outcomes, whereas teacher perceptions provided causal links to only 2 student outcomes that were tied closely to school matters. If student growth is a school concern, this study indicates that parent as well as teacher input about school functions should be sought, because parents provided strong, direct causal connections between school functions and student outcomes. This finding implies that evaluation of school effectiveness requires the use of parent input to understand the effect schooling has on students (Barth, 1990). Clearly, parents are better judges of certain intermediate students' outcomes (and presumably

more distant outcomes) than are teachers or principals. Furthermore, principals may need to gather and heed information from parents to determine the actual effects of their schools on their students. Internal evaluations by their teachers or superiors may not provide sufficient and reliable information.

These results do not support the practice of basing a principal's summative evaluation on student affective outcomes such as self-concept, self-reliance, and motivation. There simply were no significant causal relationships among principal behaviors and these variables. There also seems to be little conceptual reason to think such linkages exist given present school structures. The outcome results appear to be too removed from the sphere of the principal's influence. Indeed, a principal's work often is decoupled from the instructional process, and the principal apparently exerts little direct control over learning or attitude formation—at least at the individual student level. As Hart (1992) points out, "principals lack the absolute power or even direct influence that allow causal linkages to be drawn with confidence . . . thus, indirect interaction links become more important" (p. 2).

From a principal practice perspective, the effects of school context were reconfirmed (Wimpelberg, Teddlie, & Stringfield, 1989). In particular, SES had causal links to student outcomes, but had relatively little effect on reported principal behavior. This finding is consistent with the literature on leader succession and socialization that suggests that the organization itself tends to shape the principal's behavior rather than the reverse (Hart, 1991, 1992; Heck, 1992; Ogawa, 1991). Even more importantly, the negative effects of school level on student outcomes seemed to reconfirm the reported deadening experience students have with schooling (McNeil, 1988a, 1988b, 1988c). Clearly this finding points to the contextual nature of leadership across organizational levels. It therefore seems inappropriate to hold principals accountable for the school's contextual environment—SES, organizational level, teacher background, principal predispositions, student background characteristics, and so forth—even though these variables had significant direct or indirect effects on all student intermediate outcomes. Principal behaviors and school processes as seen by teachers do not appear to be linked in a significant way to the school's context. Although principals do have influence over some contextual factors (teacher selection, orientation, school organizational characteristics, etc.), the actual amount of variance they control is minimal. For example, principals typically have discretionary control over less than 10% of their school's budget, can only employ teachers recommended from a pool preselected by the central personnel office, have district-adopted curriculum and instructional

standards and expectations, are bound by historical customs such as grouping students chronologically for instruction, can only employ personnel that graduate from teachers' colleges and who are state certified, and so forth. If principals were afforded more control over the input variables such as staff selection and budget authority, and if school outcomes were clearly defined, then principals might have more control over achievement and affective attitude variance and could more reasonably be held accountable for student outputs.

Evidence from this study indicates that principals can and should, however, be evaluated in terms of teacher outcomes and teacher perceptions of school functioning. The strengths of the path coefficients indicate that principals strongly and directly affect teacher innovation, morale, job satisfaction, and commitment. Clearly they have an important influence on all four Parsonian school processes—maintenance, goal attainment, integration, and adaptation (see Hart, 1992, for a discussion of possible mechanisms for an evaluation based on theories of social interaction that lead to heightened social influence by principals). To a lesser degree, the principal can also be held accountable for students' sense of academic futility and their acceptance of normative behavior in the school. However, these school-related student outcomes are mediated by other variables and are indirect. The path coefficients of .1610 and .2998, respectively, do not indicate a strong linkage. Hence, these student outcomes should be used and interpreted knowing that the linkage is not strong.

From examination of the results of this study, there are a number of variables whose role is unclear in terms of principal evaluation. For example, although principals are perceived by teachers as strongly and directly affecting the four school functions (path coefficients range from .6132 to .8378 with the external functions of adaptation and goal attainment being smaller and the internal functions of integration and maintenance being larger), it is unclear if the principal affects the processes or rather if the processes affect the principal. Experimental intervention studies will be needed to resolve the nature of this recursive relationship. Similarly, parents provide only one link from principal behaviors to the school functions (integration). The path coefficient was .3986, which is low compared to teacher perceptions. Until the theoretical model about the relationships between teacher and parent perceptions of the school functions is better clarified, it is uncertain whether or how parent perceptions of the four school process variables should be used to evaluate principals. It is also uncertain whether parent satisfaction should be used as a means to evaluate principals. While the indirect effect is .3005, the correlation is .1966. These statistical anomalies and the lack of a clear relationship among these variables call for caution.

The research implications of this study are two-fold. First, the use of the proposed model needs further investigation using additional school sites. The instruments used in this study provided information that led to causal connections among variables defined from the survey items. However, those causal connections need to be investigated further with special attention devoted to avoiding the autocorrelations and, hence, multicollinearity between variables measured by the same group of people (e.g., teachers). In addition, the research methodology calls for clearer specifications and relationships of the context variables among themselves and to the other blocks of variables in the causal model.

Second, the relationship between the teacher and parent perceptions of the four school functions is unclear. The teachers provided rich data for the internal operations of the school while parents provided strong causal connections from school functions to student outcomes. To capitalize on the differences between the parent and teacher perception variables and the statistical relationships that surfaced in this study, one research avenue might investigate a different set of relationships among the blocks of variables (see Snyder, 1991, for a presentation of this model).

Previous research has formulated correlates that indicated effective schools. Principal behaviors and school processes correlated to teacher and student climate outcomes, and, in this study, were related through causal relationships among blocks of variables. Further research along these lines can continue to shed light on principal behaviors, the functions and processes in schools, and their relationships to outcomes of significance for schools.

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