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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 non-tested 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 policy-makers 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-

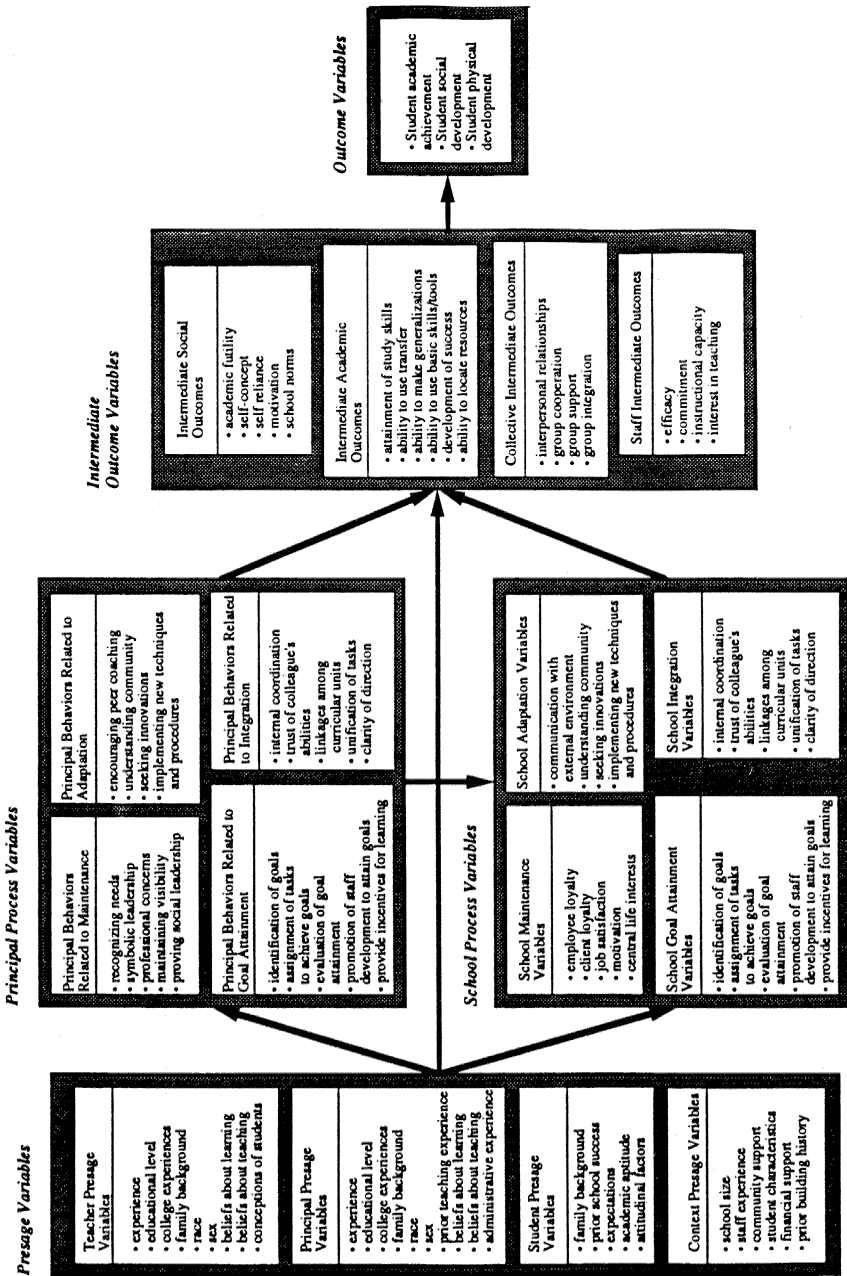


Figure 1. Proposed model of school effectiveness.

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 Wisenbaker (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).

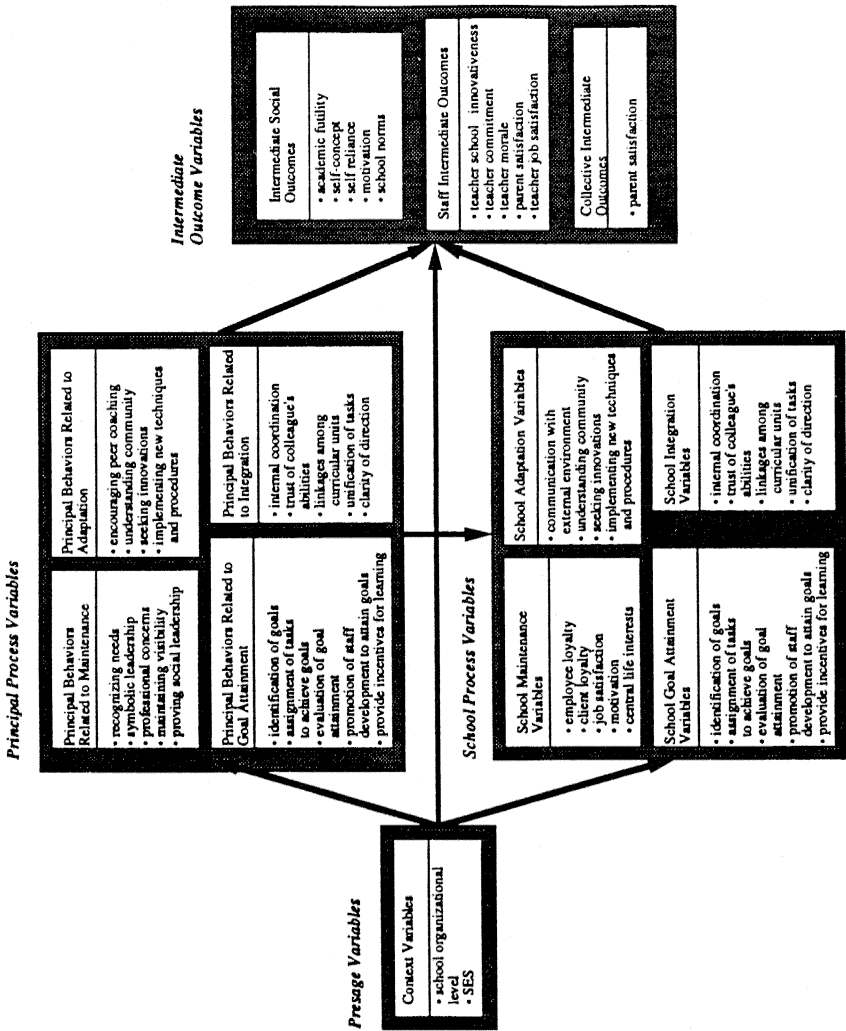


Figure 2. Effectiveness model tested.

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

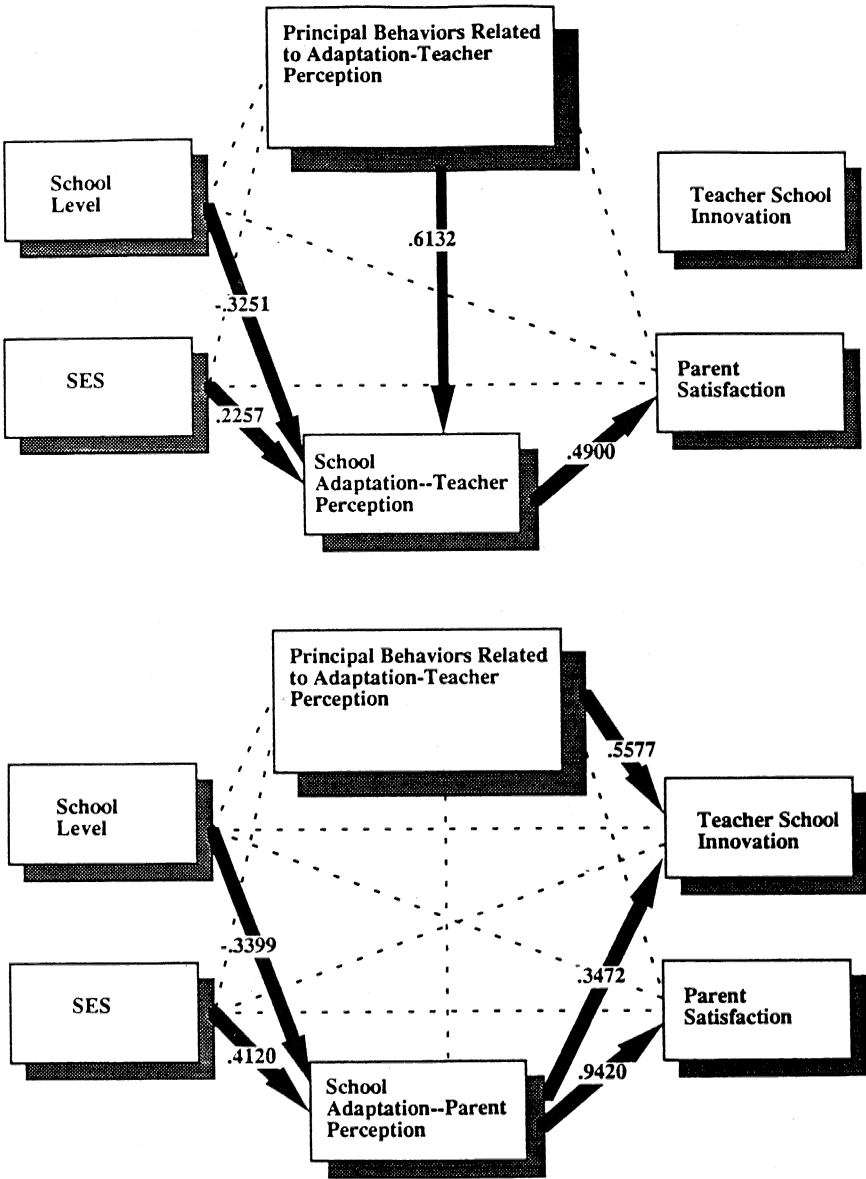


Figure 3. Adaptation models.

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

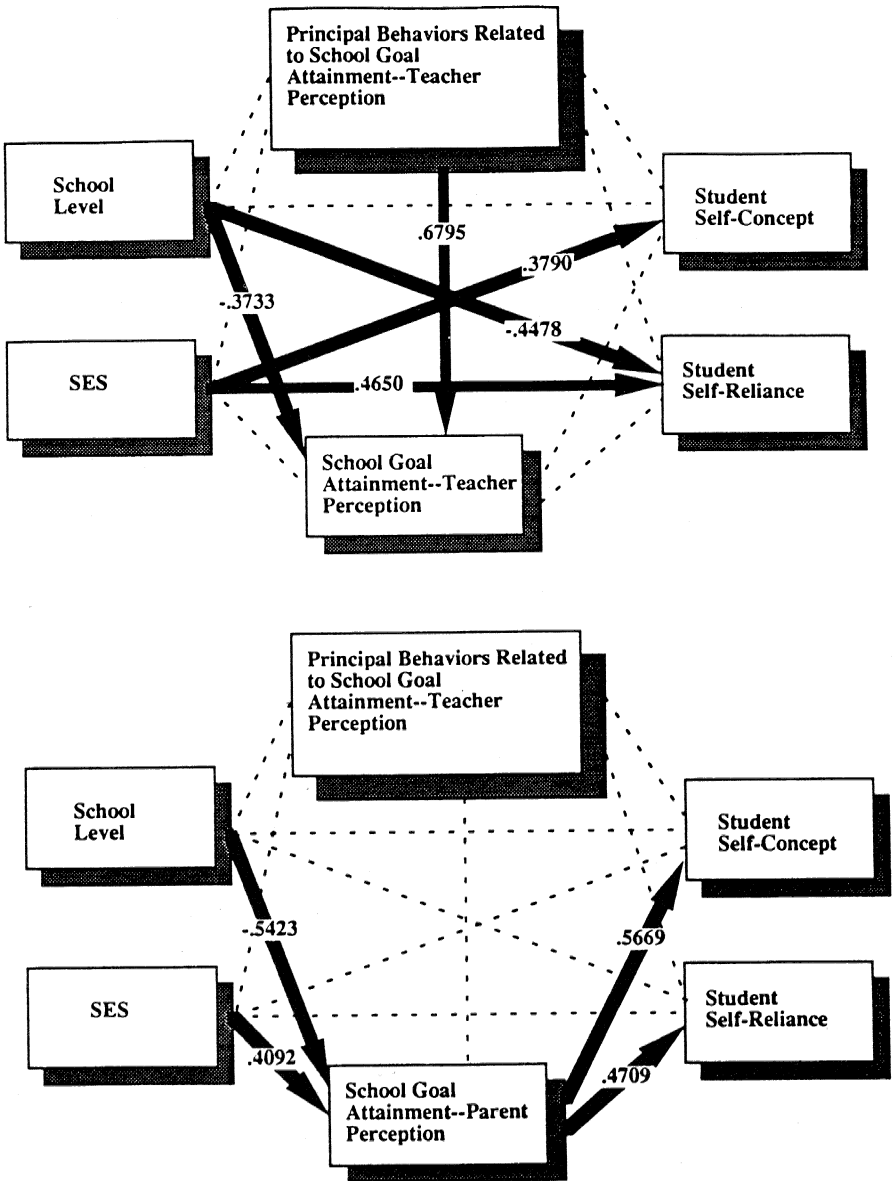


Figure 4. Goal attainment models.

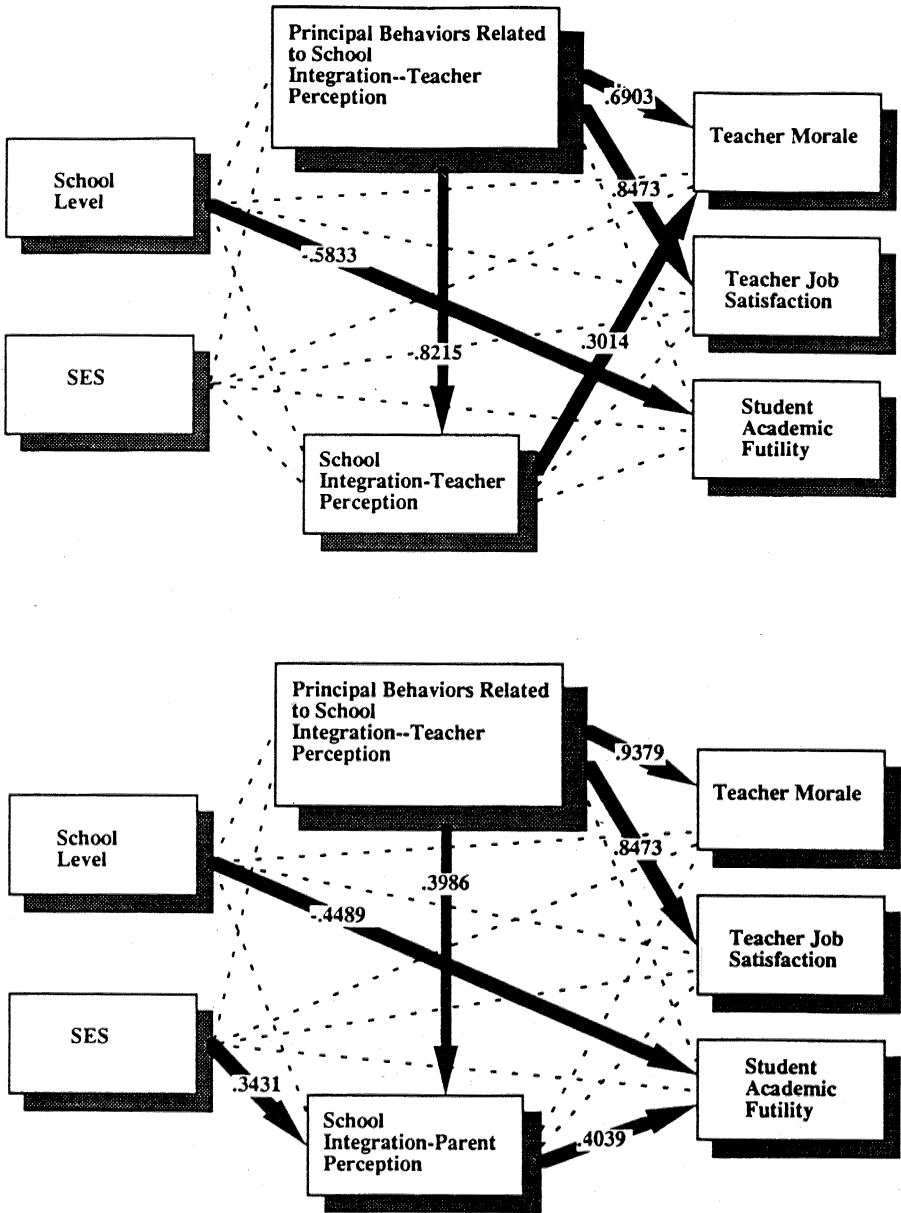


Figure 5. Integration models.

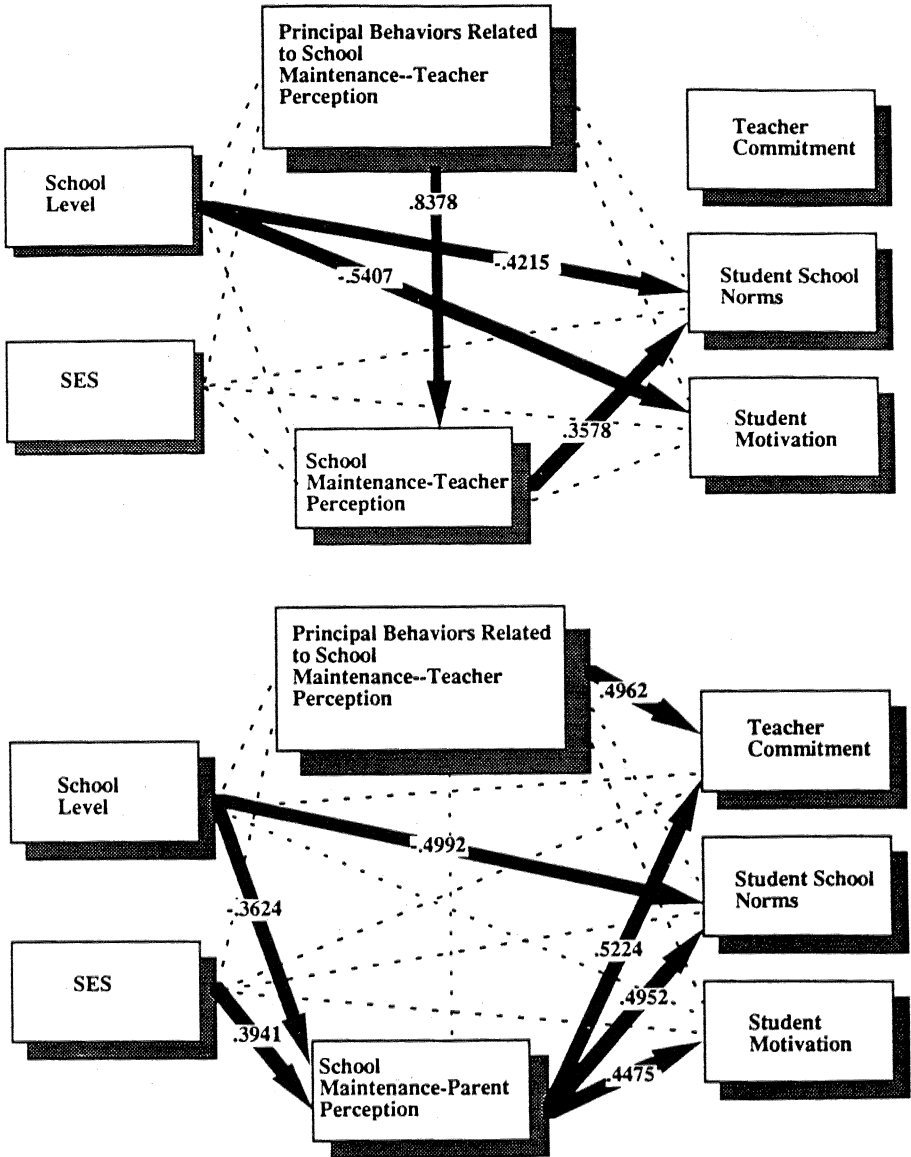


Figure 6. Maintenance models.

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

<i>Variables (Dependent Underlined)</i>	<i>Pearson r Correlation</i>	<i>Direct Effect</i>	<i>Indirect Effect</i>	<i>Total Effect</i>
<u>Parent Satisfaction</u>		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
<u>Parent Satisfaction</u>		Rsq = .8873		F = 220.4200**
School Level	-.2131	.0000	-.3202	-.3202
SES	.4036	.0000	.3881	.3881
Adaptation (Parent)	.9420	.9420	.0000	.9420
<u>Teacher School Innovation</u>		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

<i>Variables (Dependent Underlined)</i>	<i>Pearson r Correlation</i>	<i>Direct Effect</i>	<i>Indirect Effect</i>	<i>Total Effect</i>
<u>Student Self Concept</u>		Rsqr = .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
<u>Student Self Reliance</u>		Rsqr = .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
<u>Student Self Concept</u>		Rsqr = .3690		F = 13.2633**
School Level	-.2367	.0000	-.3074	-.3074
SES	.3790	.0000	.2320	.2320
Goal Attainment (Parent)	.5669	.5669	.0000	.5669
<u>Student Self Reliance</u>		Rsqr = .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

<i>Variables (Dependent Underlined)</i>	<i>Pearson r Correlation</i>	<i>Direct Effect</i>	<i>Indirect Effect</i>	<i>Total Effect</i>
<u>Teacher Morale</u>		Rsqr = .9092		F = 135.1321**
Principal Integration	.9379	.6903	.2476	.9379
Integration (Teacher)	.8684	.3014	.0000	.3014
<u>Teacher Job Satisfaction</u>		Rsqr = .7180		F = 71.2761**
Principal Integration	.8473	.8473	.0000	.8473
Integration (Teacher)	.7160	.0000	.0000	.0000
<u>Student Academic Futility</u>		Rsqr = .3403		F = 14.4428**
School Level	-.5833	-.5833	.0000	-.5833
Principal Integration	.2493	.0000	.0000	.0000
Integration (Teacher)	.3387	.0000	.0000	.0000
<u>Teacher Morale</u>		Rsqr = .8796		F = 204.6243**
SES	-.0438	.0000	.0000	.0000
Principal Integration	.9379	.9379	.0000	.9379
Integration (Parent)	.4142	.0000	.0000	.0000
<u>Teacher Job Satisfaction</u>		Rsqr = .7180		F = 71.2761**
SES	-.0540	.0000	.0000	.0000
Principal Integration	.8473	.8473	.0000	.8473
Integration (Parent)	.4225	.0000	.0000	.0000
<u>Student Academic Futility</u>		Rsqr = .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

<i>Variables (Dependent Underlined)</i>	<i>Pearson r Correlation</i>	<i>Direct Effect</i>	<i>Indirect Effect</i>	<i>Total Effect</i>
<u>Student Motivation</u>		Rsqr = .1776		F = 6.0480*
School Level	-.4215	-.4215	.0000	-.4215
Principal Maintenance	.0667	.0000	.0000	.0000
Maintenance (Teacher)	.1012	.0000	.0000	.0000
<u>Student School Norms</u>		Rsqr = .5324		F = 15.3735**
School Level	-.6443	-.5407	.0000	-.5407
Principal Maintenance	.4272	.0000	.2998	.2998
Maintenance (Teacher)	.5144	.3578	.0000	.3578
<u>Teacher Commitment</u>		Rsqr = .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
<u>Student Motivation</u>		Rsqr = .2003		F = 7.0115*
School Level	-.4215	-.4215	.0000	-.4215
SES	.0975	.0000	.1764	.1764
Maintenance (Parent)	.4475	.4475	.0000	.4475
<u>Student School Norms</u>		Rsqr = .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 substantive 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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