

Quality Middle Schools

*Open and
Healthy*

Wayne K. Hoy
Dennis J. Sabo
in collaboration with
Kevin M. Barnes
John W. Hannum
James D. Hoffman

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For information:



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CHAPTER

4

RESEARCH FINDINGS ON SCHOOL OPENNESS, SCHOOL HEALTH, AND SCHOOL QUALITY

In general, the clarification of concepts . . . is a frequent result of empirical research. Research sensitive to its own needs cannot easily escape this pressure of conceptual clarification. For a basic requirement of research is the concepts, variables, be defined with sufficient clarity to enable the research to proceed.

Robert K. Merton, 1957,
Social Theory and Social Structure

The two instruments developed in this book, the OCDQ-RM and the OHI-M, are relatively new, yet a substantial body of empirical research supports the significance of climate as an integral part of successful schools. In this chapter we examine the extent to which health and openness of school climate are indicators of quality schools. In particular, we use the framework of quality indicators

outlined in the first chapter and test their empirical interrelationships with climate. Finally, the chapter concludes with some observations and implications for practitioners and researchers.

A Methodological Note

Before proceeding with the research findings of our study, we describe the sample of schools and the procedures that were used to collect the data. All of the findings in this chapter came from the same large and diverse sample of middle schools. All the variables that are examined are indicators of quality schools. As each element of the research unfolds, the new concepts and measures will be explained.

Sample

The unit of analysis for climate studies should be the school because the variables reflect organizational properties (Hoy, Tarter, & Kottkamp, 1991; Sirotnik, 1980). A sample of 87 middle schools, which included responses from 2,777 teachers, was used to refine and confirm the structure of the instrument and then to test several hypotheses about climate and authenticity.

The sample of middle schools was drawn from New Jersey. Although it was not possible to select a random sample of New Jersey middle schools, care was taken to select urban, suburban, and rural schools from diverse geographic areas of the state as well as from all socioeconomic levels in the state. Only schools that called themselves middle schools and had a 5-8, 6-8, or 7-8 configuration were included in the sample. Extremely small middle schools were not part of the sample; schools with fewer than 15 faculty members were not considered for the sample. Using the state's measure of socioeconomic status, 28% of the schools came from the lowest levels, 38% came from the middle levels, and 34% came from the highest levels. Fifteen of the 21 counties in New Jersey were represented in the sample.¹

Socioeconomic Status

The socioeconomic status (SES) of a school was measured by use of the state district factor groups (DFG). DFG is a composite index of SES based on a factor composed of the following variables: educa-

tional level of adults in the district, the occupations of adults in the district, the percentage of people who have lived in the district for the past 10 years, the number of people per housing unit, the percentage of urban population in the district, average family income, and rate of unemployment and poverty. Districts are arrayed along a continuum of 1 to 10; the higher the number, the greater the SES. Thus, the DFG computed by the state of New Jersey is our measure of SES.

Data Collection

Data were collected from all teachers at regularly scheduled faculty meetings. The purpose of the study was explained in general terms, anonymity was guaranteed, and the importance of candid responses was emphasized. Teachers at the meeting were divided into three random groups with one group responding to the OHI-M, another to the OCDO-RM, and the third to other measures of school properties such as faculty participation, trust, perceptions of effectiveness, and culture. This procedure was used because the unit of analysis was the school (data were aggregated at the school level), because it ensured methodological separation of the variables, and because it was an efficient method for collecting a large amount of data without overburdening teachers. Virtually everyone in attendance responded to one of the instruments. Data were collected by members of the research team (Kevin Barnes, John Hannum, James Hoffman, and Dennis Sabo) over a 3-month period.

School Climate and Student Achievement

Some empirical evidence links school climate and achievement (Armor et al., 1976; Bossert, 1988; Brookover et al., 1979). In many studies, after a small number of "effective" and "ineffective" schools are identified, researchers then catalog organizational characteristics attempting to find consistent differences between the two types of schools. Not surprisingly, the differences vary from study to study when such post hoc methods are used, and the list of effective school attributes grows as more such studies are done. In the general literature, school climate is typically a global construct that researchers use loosely to group together studies of school environment, learning environment, learning climate, sense of community, leadership, academic climate, and social climate. Therein lies both the strength

and the weakness of the climate construct; it is a useful integrating concept on one hand, but on the other, it suffers from a lack of clear definition. In this book, we consistently use the terms openness and health to refer to school climate. Thus, a guiding question of this study is, "To what extent are aspects of the openness and health of climate related to student achievement and other school quality indicators?"

Another important issue emerges in our analyses. Does school climate improve student achievement or does high student achievement produce a better school climate? We posit an interdependent and reciprocal relationship (Homans, 1950). School climate affects student achievement, but the reverse is also true: Student achievement affects school climate. The two are mutually dependent.

A caveat is also in order. We do not equate high student achievement with school effectiveness. Although achievement is one aspect of school effectiveness, it is not the whole of it. School effectiveness is much more complex and includes many other outcomes such as social-emotional growth of students, satisfaction of teachers, efficient use of resources, innovativeness, adaptability, and goal accomplishment (Cameron & Whetton, 1983, 1995; Hoy & Miskel, 1991, 1996). As we explained in Chapter 1, in assessing schools, we prefer the notion of quality over effectiveness because quality encompasses means as well as ends. We explore the quality of both important means such as climate openness and health as well as ends such as achievement and trust.

Student achievement is clearly a critical end product of schooling. The focus of our analysis of achievement is on basic skills—reading, writing, and arithmetic. Higher-order thinking and problem-solving skills are also important student outcomes, but they are not considered in this research because of their lack of consistent measures among school districts we studied. On the other hand, data using the same measures of basic achievement were available for all schools in our sample because they were collected by the state in the eighth grade at the conclusion of the middle school experience.

Student Achievement

Student achievement was measured using the state of New Jersey's Eighth-Grade Early Warning Test (EWT), which is given to all eighth-grade students in the state. The test measures achievement

in reading, mathematics, and writing using both multiple-choice and constructed-response items. The reading section of the examination had a reliability of .84, the mathematics section a reliability of .89, and the writing task a reliability of .92. All achievement data were obtained by the researchers directly from the New Jersey State Department of Education.

Climate Measures

The instruments to measure the openness and health of school climate have been described in detail in Chapters 2 and 3 and will not be repeated here except to note that both the OCDO-RM and the OHI-M are reliable and valid measures of school climate.

Empirical Findings

The relationships between climate and achievement will be examined from several vantage points. We begin our analyses with the general notions of health and openness and proceed to the more specific aspects of each construct.

Openness, Health, and Achievement. In the last two chapters, three general indexes of school climate were offered—school health, openness of the principal's behavior, and openness of the teachers' behavior. We began by simply looking at the correlations among these aspects of climate and three measures of student achievement in reading, writing, and mathematics. Given the general literature on school climate and student achievement (Armor et al., 1976; Bossert, 1988; Brookover et al., 1979), we expected positive relationships. As predicted, health and openness were related to all three measures of student achievement. Health of the school climate had significant relationships with the measures of student achievement ($r = .61, .58,$ and $.55$ for math, reading, and writing, respectively). The same is true of the openness of the principal's behavior ($r = .52, .54,$ and $.47$ for math, reading, and writing, respectively) and the openness of teachers' behavior ($r = .42, .40,$ and $.42$ for math, reading, and writing, respectively). Not surprisingly, the health and openness measures were also significantly correlated with each other. All of the correlations are summarized in Table 4.1.

TABLE 4.1 Correlations Among General Aspects of School Climate and Measures of Student Achievement

Variable	Principal Openness	Teacher Openness	School Health	Math	Reading	Writing
Principal openness	1.00	.50**	.70**	.52**	.54**	.47**
Teacher openness		1.00	.57**	.42**	.40**	.42**
School health			1.00	.61**	.58**	.55**
Math				1.00	.97**	.89**
Reading					1.00	.92**
Writing						1.00

** $p < .01$

Dimensions of Openness and Student Achievement. Next we examined how all the dimensions of the OCDDQ-RM, both collectively and individually, explain the variance in student achievement. Multiple regression analysis is well-suited in this regard because it enables the researcher to determine not only the effect of one variable independent of the others, but also the combined effect of the independent variables (climate) on the dependent (achievement).

The OCDDQ-RM has six dimensions: Supportive, Directive, and Restrictive behaviors, which describe the principal's leader behavior; and Collegial, Committed, and Disengaged, which depict teacher behaviors. Firestone and Wilson (1985) found that principal support was positively related to student outcomes, whereas close and rigid control was negatively associated with these outcomes; other researchers and theorists (Corwin & Borman, 1988; Rosenholtz, 1985) have suggested similar relationships. Likewise, there is widespread agreement that teacher collegiality and teacher commitment are important forces in improving teacher practice and getting better results (Barth, 1990; Rosenholtz, 1989; Sergiovanni, 1992). Thus, our prediction was straightforward: *Factors that promote openness in both teacher-teacher and teacher-principal relationships also promote higher levels of student achievement in reading, writing, and mathematics.*

This general hypothesis was tested several ways. First, each aspect of climate was correlated with each element of achievement

with the expectation that supportive principal behavior and collegial and committed teacher behavior would be positively related to achievement; and, directive and restrictive principal behavior and disengaged teacher behavior would be negatively related to achievement. Then, for a finer picture of the relationship, each aspect of student achievement was regressed on all six dimensions of the openness of organizational climate. Finally, because what often seems to be a strong predictor of achievement is often a proxy for socioeconomic level (SES), we did a second set of regressions in which SES is included as a predictor variable along with the climate dimensions. Thus, we control for the impact of SES, and at the same time, determine the independent influence of SES and each climate variable as well as their combined effect.

The correlation analysis strongly supported the openness-achievement hypothesis. With the exception of disengagement, each of the elements of climate openness had significant and strong-to-moderate correlations with all aspects of student achievement. Disengagement was significantly related to only writing achievement. A lack of restrictiveness in the leadership of the principal as well as collegial and committed teachers seem to be the elements of openness that most strongly are related to achievement. See Table 4.2 for a summary of the correlations.

In general, the regression analyses supported that same picture. A lack of principal restrictiveness coupled with collegial and committed teacher behavior are the best predictors of achievement (see Table 4.3). Panel A of Table 4.3 shows that the six climate dimensions have multiple R s of .69, .68, and .61 with math, reading, and writing achievement scores and explain 44%, 42%, and 33% of the variance for the respective tests. Disengagement makes virtually no independent contribution to the explanation of achievement variance. When SES is added as a variable in the regression equations, only collegial teacher behavior and a lack of restrictive principal behavior make significant independent contributions to the mathematics achievement variance. Similar patterns appear for reading and writing, but they are not as strong. Not surprisingly, SES is the single most important predictor of high student achievement. Panel B of Table 4.3 shows that the six climate dimensions combined with SES have multiple R s of .83, .81, and .75 with math, reading, and writing achievement scores and explain 66%, 62%, and 52% of the variance for the respective tests.

TABLE 4.2 Correlations of Elements of Openness and Aspects of Student Achievement (N = 87)

Elements of Openness in Organizational Climate	Measures of Student Achievement		
	Math	Reading	Writing
Supportive	.28**	.32**	.30**
Directive	-.37**	-.37**	-.31**
Restrictive	-.60**	-.61**	-.52**
Collegial	.43**	.40**	.42**
Committed	.40**	.37**	.38**
Disengaged	-.14	-.17	-.19*

* $p < .05$; ** $p < .01$ (one-tailed tests).

Dimensions of Health and Student Achievement. We now consider the extent to which the dimensions of the OHI-M, both collectively and individually, explain the variance in student achievement. As with our analysis of the dimensions of openness, we begin with simple correlational analysis and progress to multiple regression.

The OHI-M has six dimensions: Academic Emphasis and Teacher Affiliation describe the teachers' behavior; Collegial Leadership, Resource Support, and Principal Influence depict principal behavior; and Institutional Integrity portrays the relationship between the school and the community. Earlier research at the secondary level showed the significance of academic emphasis in fostering student achievement (Bryk, Lee, & Holland, 1993; Hoy et al., 1991; Murphy, Weil, Hallinger, & Mitman, 1982; Shouse & Brinson, 1995). Teacher affiliation also captures many of the features of teacher-teacher interactions (e.g., strong affiliation with colleagues and with the school, commitment to students, and cooperation) that have been associated with student achievement.

Principals can influence teaching either by administrative support or administrative control. Support clearly seems more effective than control (Corwin & Borman, 1988). Principal support includes respecting and treating teachers as colleagues as well as using influence with superiors to help teachers get the resources they need.

Previous research in high schools has unexpectedly revealed a negative relationship between Institutional Integrity and student achievement. When teachers perceive "interference" in the school from the community, students achieve at higher levels. Clearly,

TABLE 4.3 Multiple Regression Analysis of Elements of Openness With Aspects of Student Achievement (N = 87)

Measures of Elements of Openness	Panel A			Panel B		
	Math	Read	Write	Math	Read	Write
Supportive	-.18	-.11	-.08	-.11	-.05	-.02
Directive	-.11	-.08	-.02	-.10	-.07	.01
Restrictive	-.52**	-.54**	-.44**	-.24**	-.27**	-.18†
Collegial	.23*	.18	.23*	.17*	.13	.17
Committed	.21**	.16	.16	.11	.06	.07
Disengaged	.05	.00	-.03	.08	.03	.00
SES				.56**	.54**	.53**
R	.69**	.68**	.61**	.83**	.81**	.75**
Adjusted R ²	.44	.42	.33	.66	.62	.52

* $p < .05$; ** $p < .01$; † = .06.

teachers do not like such interference, but negative effects on student achievement are not the case; in fact, just the opposite seems true.

In sum, the literature and theory suggest that collegial principals who are friendly, open, egalitarian, and committed to excellence are most likely to create a school climate conducive to student achievement. Likewise, teachers who are committed to students, their colleagues, and their school, who set high but achievable academic goals for students, and who are cohesive and cooperative rather than critical and divisive, are likely to produce a climate conducive to student learning. Finally, if schools have healthy internal interpersonal relations among students, teachers, and the principal, and simultaneously, interested parents pressure school authorities to initiate new programs and are critical of existing ones, then student achievement is positively influenced. Thus, our general hypothesis is as follows: *Except for Institutional Integrity, factors that facilitate healthy interpersonal relations among principals, teachers, and students promote higher levels of student achievement in reading, writing, and mathematics.*²

The correlation analysis strongly supported the health-achievement hypothesis. With the exception of principal influence, all the elements of school health had significant and strong-to-moderate bivariate correlations with all the aspects of student achievement. As expected, and consistent with other research, Institutional Integrity was significantly and negatively related to student achievement. Academic Emphasis, Teacher Affiliation, and Resource Support were the elements of organizational health that had substantial bivariate correlations with achievement in math, reading, and writing. See Table 4.4 for a summary of the correlations.

The regression analyses support and refine the picture portrayed by the correlational analyses. Academic Emphasis, Teacher Affiliation, Resource Support, and a negative Institutional Integrity are the key elements of health that foster high student achievement in basic skills (see Table 4.5). Panel A of Table 4.5 shows that the six health elements have multiple Rs of .84, .82, and .77 with math, reading, and writing achievement scores and explain 68%, 64%, and 56% of the variance for the respective tests. Principal Influence and Collegial Leadership make virtually no independent contribution to the explanation of achievement variance. When SES is added as a variable in the regression equation, the pattern of relationships remains quite similar. Although SES is the single most important predictor of high student achievement, four other health elements provide substantial and significant independent effects on various aspects of student achievement. Panel B of Table 4.5 shows that the six health elements of organizational climate combined with SES have multiple Rs of .89, .86, and .81 with math, reading, and writing achievement scores and explain 75%, 71%, and 62% of the variance for the respective tests.

Conclusion

The results of our analyses have demonstrated a significant and positive relationship between school climate and student achievement. In general, the more open and healthy the school climate, the greater the levels of student achievement in the basic skills of reading, writing, and mathematics. Some aspects of openness and health are more important than others. For example, nonrestrictiveness of the principal and collegial teacher relations seem especially important elements of openness, and Academic Emphasis, Teacher Affiliation, and Resource Support are central elements of health that foster student achievement. Although teachers like to be buffered from outside forces, schools that feel pressure from the community are

TABLE 4.4 Correlations of Elements of Health and Aspects of Student Achievement (N = 86)

Elements of Health in Organizational Climate	Measures of Student Achievement		
	Math	Reading	Writing
Academic Emphasis	.73**	.70**	.64**
Teacher Affiliation	.53**	.51**	.51**
Collegial Leadership	.28**	.28**	.25+
Resource Support	.50**	.50**	.46**
Principal Influence	.17	.13	.15
Institutional Integrity	-.36**	-.36**	-.35**

*p < .05; **p < .01 (one-tailed tests).

more likely to have higher levels of student achievement. The relationship between Institutional Integrity and student achievement is neither simple nor clear, and it is a topic to which we will return later in this chapter. Finally, it is encouraging to find that some aspects of school climate are related to student achievement regardless of the SES of the community. Although not easy to effect, school climate is more amenable to change than the SES of a school (see Chapter 5).

School Climate and Overall School Effectiveness

Student achievement is simply one aspect of quality schools albeit an important one. We now examine some other indicators of quality that combine to represent overall school effectiveness. The measures of school effectiveness that we explore are perceptual; that is, they represent the perceptions of teachers about how effective their schools are—they are subjective assessments.

Overall School Effectiveness

Paul Mott (1972) has formulated and tested a model of organizational effectiveness that has a number of critical elements:

- Quantity and quality of the product
- Efficiency

TABLE 4.5 Multiple Regression Analysis of Elements of Health and Climate With Aspects of Student Achievement (N = 86)

Measures of Elements of Health in Organizational Climate	Panel A		Panel B			
	Math	Read	Write	Math	Read	Write
Academic Emphasis	.49**	.44**	.37**	.28**	.22*	.16
Teacher Affiliation	.24**	.21**	.27**	.20**	.17*	.23*
Collegial Leadership	.04	.07	.02	.04	.07	.03
Resource Support	.15	.20*	.18*	.14	.19*	.17
Principal Influence	-.02	-.06	-.02	-.04	-.08	-.04
Institutional Integrity	-.38**	-.39**	-.38**	-.28**	-.29**	-.29**
SES				.36**	.38**	.35**
Multiple R	.84**	.82**	.77**	.88**	.86**	.81**
Adjusted R ²	.68	.64	.56	.75	.71	.62

* $p < .05$; ** $p < .01$ (one-tailed tests).

- Adaptability
- Flexibility

Mott theorizes that these key elements of the organization define the ability of an organization to mobilize its centers of power for action to achieve goals and to adapt to external and internal constraints. Effective organizations are efficient in achieving quality outcomes and successful in coping with internal and external strains. The model seems appropriate for examining the effectiveness of different kinds of organizations including public schools.

Mott (1972) tested his formulation in the study of a variety of organizations. First, he developed an eight-item index of effectiveness based on his model, and then validated this perceptual measure of general effectiveness by demonstrating its consistent, positive relationships with other objective measures of effectiveness in

several different kinds of organizations. Mott concluded that the evidence from his research suggested, with appropriate safeguards, that subjective evaluations of employees provided a fairly valid measure of organizational effectiveness. Miskel and his colleagues (Miskel, DeFrah, & Wilcox, 1980; Miskel, Revuly, & Stewart, 1979) were the first educational researchers to adapt and use Mott's theory and measure to study the organizational effectiveness of schools. Hoy and Ferguson (1985) later provided empirical evidence to support both the validity and reliability of the measure of effectiveness for public schools.

An Index of Perceived Organizational Effectiveness

The measure of effectiveness used here is derived from Mott's work as adapted by Miskel and his colleagues. A complete copy of the index is found in Hoy and Miskel (1991, 1996). A few examples give the flavor of the index:

- How good is the quality of the products and services produced by people you know in your school? (Quality)
- How efficiently do people in your school do their work? (Efficiency)
- How good a job is done by the people in your school in anticipating problems and preventing them from occurring or minimizing their effects? (Adaptability)
- How good a job do the people in your school do in coping with emergencies and disruptions? (Flexibility)

Because the measure of Mott's concept of organizational effectiveness was based on a number of different elements, we decided to check the dimensionality of the index by factoring the eight items. The results supported one strong dimension of overall effectiveness: all the items loaded strongly on the first factor (the loadings ranged from .72 to .91) and explained 68% of the variance. An alpha coefficient of reliability for the effectiveness index in the current sample of schools was .93, a value that is consistent with earlier research (Hoy & Ferguson, 1985).

Empirical Findings

If the index is a reasonable gauge of overall effectiveness, then it should be highly correlated with such other quality measures of schools as openness, health, and student achievement. To that end, we correlated our measures of openness, health, and student achievement with the index of effectiveness. As predicted, all of our measures of quality were substantially and significantly correlated with the index of effectiveness (the range of r was .50 to .67). The results clearly support the concurrent validity of the index as an overall measure of effectiveness and quality. Overall effectiveness was not only positively correlated with principal openness ($r = .52, p < .01$), teacher openness ($r = .50, p < .01$), and health ($r = .67, p < .01$) but was strongly related to student achievement in math ($r = .61, p < .01$), reading ($r = .60, p < .01$), and writing ($r = .58, p < .01$). The openness and health variables also combine to explain 41% of the variance of effectiveness ($R = .64, p < .01$).

Conclusion

Again we find that the openness and health of school climate are strongly related to quality schools. Open and healthy school climate is positively and significantly correlated with overall school effectiveness; such schools are judged by teachers to have better products and services, to be more efficient, and to be more flexible and adaptable.

School Climate and Measures of Culture

We use the concept of culture to identify another set of quality indicators of schools. Organizational culture is a system of orientations (norms, core values, and tacit assumptions) shared by members, which hold the unit together and give it a distinctive identity. Because it is difficult to assess the culture of the school directly, we map the culture indirectly, first by conceptualizing critical dimensions of school culture, and then by developing a set of scales to measure each element.

Elements of Strong School Cultures

If there is one thing that students of organization agree on it is that culture refers to a set of shared perspectives that gives the organization a distinctive character (Anderson, 1982; Dentson, 1996; Miskel & Ogawa, 1988; Ouchi & Wilkins, 1985). We have identified five elements that seem to characterize strong school cultures:

- Shared identity
- Trust
- Authenticity
- Cooperation
- Participation

We posited that if schools are to be successful they must develop a strong shared identity, one that embraces the values of trust, authenticity, cooperation, and shared participation. Now we turn to the empirical test of this proposition.

Climate and Shared Identity

Shared identity refers to the extent to which an organization has a clear vision, a distinctive mission, a set of shared means to achieve its goals, and participants who believe that their organization stands for something different and special.³ The concept was operationalized by a scale consisting of the following eight Likert-type items:

- My school stands for something distinctive in society.
- My school has definite ideas about how things should be done.
- My school has a distinctive mission.
- My school has a clear view about how to achieve goals.
- My school has a clear vision of its role in society.
- My school produces a special kind of student.
- My school produces a special kind of teacher.
- My school's trademark is a special style of management.

The unidimensionality of the scale was supported by a principal components factor analysis that identified only one factor, which explained 72% of the variance. An alpha coefficient for the shared identity scale was .94.

Empirical Findings. If shared identity is a characteristic of quality schools, then it should be significantly related to other quality measures of schools; consequently, we correlated our measures of effectiveness, openness, health, and student achievement with the shared identity scale. An examination of the correlations in Table 4.6 reveals that, as predicted, all of our measures of quality significantly correlated with shared identity (the range of r was .29 to .69). The correlations are summarized in Table 4.6

Climate and Trust

Trust is a critical element of effective interpersonal relationships in schools (Hoffman, Sabo, Bliss, & Hoy, 1994); it is critical to effective leadership (Bennis, 1989); and in fact, Sergiovanni (1991) has claimed that it is indispensable to moral leadership. We have defined trust as general confidence and overall optimism in occurring events—believing in others in the absence of compelling reasons to disbelieve. In the context of organizations, trust is a work group's generalized expectancy that the words, actions, and promises of another individual or group can be relied on (Hoy & Kuper-Smith, 1985). Individuals trust others not only to be consistent in action but to act with good intentions.

In the current analysis, we examined faculty trust as it was expressed toward the principal and fellow teachers. In particular, two aspects of faculty trust were the foci:

- *Trust in the Principal.* The faculty has confidence that the principal will keep his or her word and act in the best interest of teachers.
- *Trust in Colleagues.* The faculty believes that teachers can depend on each other in difficult situations and that teachers can rely on the integrity of their colleagues.

TABLE 4.6 Correlations Among Measures of School Quality

<i>Variable</i>	<i>Overall Effectiveness</i>	<i>Principal Openness</i>	<i>Teacher Openness</i>	<i>School Health</i>	<i>Math</i>	<i>Reading</i>	<i>Writing</i>
Overall effectiveness	1.00	.52**	.50**	.67**	.61**	.60**	.58**
Shared identity	.69**	.50**	.45**	.64**	.32**	.29**	.31**
Trust in principal	.56**	.68**	.47**	.65**	.30**	.30**	.27**
Trust in colleagues	.72**	.35**	.55**	.42**	.40**	.39**	.38**
Leader authenticity	.46**	.72**	.37**	.72**	.36**	.37**	.29**
Teacher authenticity	.43**	.38**	.57**	.65**	.30**	.27**	.24*
Teacher cooperation	.57**	.45**	.73**	.61**	.37**	.36**	.36**
Participation	.66**	.56**	.41**	.65**	.58**	.58**	.58**

* $p < .05$; ** $p < .01$ (one-tailed tests).

These two aspects of trust were measured by the Faculty Trust Scales developed by Hoy and Kupersmith (1985). The dimensions of the scales were confirmed in the current sample through factor-analytic techniques (see Hoffman et al., 1994). Teachers were asked to describe their interpersonal relations and feelings along a 6-point Likert-type scale from *strongly disagree* to *strongly agree*. Two sample items for each scale are as follows:

Trust in the Principal

- Teachers in this school trust the principal.
- Teachers often question the motives of the principal (score reversed).

Trust in Colleagues

- Teachers in this school typically look out for each other.
- Teachers take unfair advantage of each other in this school (score reversed).

The two trust measures were each composed of seven items. Both scales are highly reliable with alpha coefficients of reliability in the current study at .86 for faculty trust in the principal and .91 for faculty trust in colleagues. The evidence suggesting construct validity of the scales is supported by two factor-analytic studies (Hoffman et al., 1994; Hoy & Kupersmith, 1985).

Empirical Findings. Like the other elements of culture, we expected both aspects of trust to be significantly related to other quality measures of schools. Our expectations were confirmed. When we correlated our measures of effectiveness, openness, health, and student achievement with the trust measures, we found that trust was significantly associated with all of the other quality indicators (the range of r was .27 to .72). The correlations are summarized in Table 4.6.

Climate and Authenticity

Authenticity is yet another important aspect of productive school cultures. We assume that long-term productivity cannot occur in an atmosphere of game playing, trickery, and phoinness. A culture of charades and masquerades inhibits quality. At one level, it is quite

easy to advocate authenticity, but it is quite a different matter to define the concept so that it can be operationalized and assessed.

Although there have been numerous attempts (Brumbaugh, 1971; Halpin, 1966; Henderson & Hoy, 1982; Seeman, 1966) to define the term, the results have produced mixed success. For purposes of this inquiry, however, the framework developed by Henderson and Hoy (1982) is useful (see Chapter 2, this volume). Authentic behavior consists of three basic aspects:

- Accountability—a willingness of organizational participants to accept responsibility, personal as well as organizational, for mistakes as well as negative outcomes.
- Nonmanipulation—colleagues or subordinates are not used for one's own purposes.
- Salience of self over role—role is subordinated to self; basic personality is a prime motivator of behavior, not some prescribed role.

In sum, authentic behavior is characterized by a willingness to accept responsibility for behavior, especially when the results are not positive; behavior that is nonmanipulative of others; and behavior in which role is subordinated to self.

Two measures of authenticity were used to tap genuine behavior in schools—perceptions of authentic teacher and principal behaviors. The authenticity scales were drawn from the work of Hoy and his colleagues (Henderson & Hoy, 1982; Hoy & Henderson, 1983; Hoy, Hoffman, Sabo, & Bliss, 1996). Items were constructed to capture the aspects of authenticity proposed by Henderson and Hoy—accountability, nonmanipulation, and salience of self over role. Examples of items include the following:

Principal Authenticity

- The principal is willing to admit mistakes when they are made.
- The principal manipulates teachers (score reversed).

Teacher Authenticity

- The teachers' beliefs and actions are consistent.
- Teachers here accept and learn from mistakes.

The authenticity scales were each composed of 16 Likert-type items. Both scales are reliable with alpha coefficients of reliability in the current study at .92 for principal authenticity and .88 for teacher authenticity. The evidence suggesting construct validity of the scales is supported by a number of factor-analytic studies (Henderson & Hoy, 1982; Hoffman, 1993; Hoy, Hoffman, et al., 1996). Factor analysis of the 32 items designed to measure teacher and principal authenticity supported the two separate aspects of authenticity.

Empirical Findings. We hypothesized that both of our measures of school authenticity would be significantly correlated with quality measures of schools, and they were. All measures of effectiveness, openness, health, and student achievement with the trust measures correlated significantly with both indexes of authenticity (the range of r was .24 to .72). The correlations are summarized in Table 4.6.

Climate and Cooperation

Cooperation is yet another aspect of strong cultures and productive organizations. Indeed, Ouchi's early analysis (1981) of American and Japanese organizations underscored the importance of cooperation as a core value of the cultures of effective organizations. In the present study, cooperation refers to schools in which teachers like each other, help each other, don't take advantage of each other, and support one another. Cooperation is the sense of teamwork and "pulling together" among teachers that imbues the school.

To measure this conception of cooperation, we asked teachers in each school to consider the extent to which eight behaviors characterized their schools. Then we created an index of school cooperation comprised of the following eight Likert-type items:

- Teachers in this school typically look out for each other.
- Teachers help and support each other.
- Teachers in this school like each other.
- Teachers exhibit friendliness to each other.
- Teachers volunteer to help each other.
- Teachers do favors for each other.

- Teachers here manipulate each other (score reversed).
- Teachers provide strong social support for colleagues.

The cooperation index had an alpha coefficient of .91, and a principal components factor analysis demonstrated the unidimensionality of the scale by identifying only one strong factor, which accounted for 66% of the variance.

Empirical Findings. As with the other elements of culture, we anticipated that cooperation would be significantly correlated with the our measures of school quality, and they were. Overall effectiveness, openness, health, and student achievement correlated significantly and substantially with our index of teacher cooperation in schools (the range of r was .36 to .73). The correlations are summarized in Table 4.6.

Climate and Participation

Participation is the final element of culture that we examined in our empirical analyses. Participation is the extent to which the teachers of a school believe that they are involved in the crucial instructional decisions of a school; that is, they are involved with administrators and colleagues in making important professional judgments in such areas as teaching, developing learning goals, selecting textbooks and instructional materials, and developing student assessment procedures. Sixteen such critical areas formed the basis for determining the degree of participation. Participation was not measured in absolute terms but rather as the degree to which teachers wanted to and were involved in crucial professional decisions. Teachers in each school were asked two questions: how much they desired to be involved in decision making in each area and how much they were actually involved. Our index of participation was the difference between their desired and actual participation. Most researchers (Alutto & Belasco, 1972; Bacharach, Bauer, & Conely, 1986; Conway, 1976) describe the difference between desired and actual participation in terms of decision deprivation. In our analyses, a high level of participation refers to a low degree of deprivation. That is, a school had high participation to the extent that

teachers were involved in the decisions in which they desired to be involved.

A set of critical decision areas was developed based on the earlier work of Lipham (1974) and the current literature on middle schools. A sample of decision areas that were used in the instrument included the following items:

- Specifying the learning objectives for each unit of instruction
- Setting and revising the goals of the school
- Determining grading procedures for examining the progress of your school
- Allocating materials and equipment to subject, department, or team
- Evaluating how well the subject, department, or team is operating

The entire set of decision areas can be found elsewhere (Barnes, 1994). The current set of 16 items has an alpha coefficient of reliability of .92 and was supported by factor-analytic procedures (Barnes, 1994).

Empirical Findings. We predicted that participation would be positively and significantly related to indicators of quality schools. And indeed, overall effectiveness, openness, health, and student achievement all correlated positively and strongly with our index of teacher participation in schools (the range of r was .41 to .66). The correlations are summarized in Table 4.6.

An Index of Strong School Culture

Remember that we posited that if schools were to be successful they must develop a strong shared identity, one that embraces the values of trust, authenticity, cooperation, and shared participation. The empirical results that linked each of these elements of culture with indicators of quality schools supported that proposition. In addition, however, it was assumed that shared identity, trust, authenticity, cooperation, and participation complemented each other, that is, were closely and positively related to each other. We tested this assumption empirically.

First, the five elements of culture were correlated with each other. As can be seen in Panel A of Table 4.7, all the intercorrelations

were positive and significant; in fact, most of the correlations were quite substantial, which supported the notion that these elements of culture were complements of each other. Next, to further test this idea, we submitted the data to a principal components factor analysis. One strong factor was identified that explained 59.65% of the variance in the culture elements. All the loadings on this primary factor were .66 or greater (see Panel B of Table 4.7). Our elements of culture come together to form a consistent pattern of culture, one that has a shared identity and is imbued with trust, authenticity, cooperation, and participation.

Because the elements of culture complemented each other and formed a single strong measure of culture, we constructed an index of strong school culture by standardizing the scores on each aspect of culture and then adding them.

Empirical Findings. Not surprisingly, this index of strong school culture also correlated significantly and substantially with teacher openness ($r = .58, p < .01$), principal openness ($r = .62, p < .01$), and health ($r = .67, p < .01$). Moreover, the index was related to student achievement in reading ($r = .42, p < .01$), writing ($r = .44, p < .01$), and mathematics ($r = .45, p < .01$), and strongly related to overall effectiveness ($r = .76, p < .01$).

Conclusion

Strong school cultures have open and healthy school climates. Our analyses also suggested that such schools are generally effective and promote high levels of student achievement in the basic skills of reading, writing, and mathematics.

School Quality

Throughout this chapter the variables that we have examined have been those that we identified in the first chapter as indicators of school quality. Our conception of school quality deals not only with the quality of outcomes but also with the quality of means to achieve those ends. We postulated a set of climate, culture, effectiveness, and student achievement variables that define quality schools. In particular, we conceptualized and measured openness and health

TABLE 4.7 Panel A: Correlations Among Measures of Culture

Variable	Shared Identity	Trust in Principal	Trust in Colleagues	Leader Authenticity	Teacher Authenticity	Cooperation	Participation
Shared identity	1.00	.58**	.39**	.48**	.37**	.36**	.47**
Trust in principal		1.00	.44**	.78**	.45**	.50**	.49**
Trust in colleagues			1.00	.31**	.51**	.76**	.42**
Leader authenticity				1.00	.64**	.49**	.40**
Teacher authenticity					1.00	.83**	.38**
Teacher cooperation						1.00	.45**

Panel B: Factor Loadings of Elements of Culture

Elements of Culture	Factor I
Shared identity	.66
Trust in principal	.80
Trust in colleagues	.75
Leader authenticity	.79
Teacher authenticity	.83
Cooperation	.85
Participation	.70

Factor	Eigenvalue	Percentage of Variance
I	4.17	59.6

** $p < .01$ (one-tailed tests).

of school climates; student achievement in terms of reading, writing, and mathematics; overall effectiveness in terms of efficiency, flexibility, and adaptability; and a strong school culture with a shared identity that values trust, authenticity, cooperation, and participation.

All the indicators of school quality should form a consistent and complementary pattern. We tested this proposition using a multivariate approach by performing a principal components analysis on our measures of climate openness, school health, school effectiveness, student achievement, and school culture. We hypothesized that all these indicators of school quality would load strongly and highly on a single factor.

Empirical Findings

As predicted, our measures of quality loaded highly on one strong primary factor. All the factor loadings on this school quality factor were greater than .64 and accounted for 56.6% of the variance (see Panel A of Table 4.8). We also did a second analysis in which we included SES as an indicator of quality. The results are quite similar, but a little less variance (55.4%) is explained by the factor (see Panel B of Table 4.8).

Conclusion

The indicators selected for study in our analyses complement each other and seem to tap an underlying characteristic, which we have labeled school quality.

A Parsimonious View of Climate

We have demonstrated that certain aspects of school climate are important contributors, both collectively and independently, to student achievement in middle schools. Features of openness and health create a climate for student success in reading, mathematics, and writing. In particular, when principals are open and nonrestrictive in their behavior (low Restrictiveness) and provide a plethora of teaching resources and materials (Resource Support), they foster a school environment in which teachers set high standards and press

TABLE 4.8 Panel A: Factor Loadings of Quality Indicators
(SES not included)

<i>Quality Indicators</i>	<i>Factor 1</i>
Shared identity	.65
Trust in principal	.73
Trust in colleagues	.71
Leader authenticity	.74
Teacher authenticity	.72
Cooperation	.77
Participation	.76
Overall effectiveness	.83
School health	.89
Principal openness	.78
Teacher openness	.71
Mathematics	.76
Reading	.74
Writing	.71

<i>Factor</i>	<i>Eigenvalue</i>	<i>Percentage of Variance</i>
1	7.92	56.6

Panel B: Factor Loadings of Quality Indicators (SES included)

<i>Quality Indicators</i>	<i>Factor 1</i>
Shared identity	.56
Trust in principal	.82
Trust in colleagues	.76
Leader authenticity	.81
Teacher authenticity	.76
Cooperation	.93
Participation	.59
Overall effectiveness	.70
School health	.82
Principal openness	.76
Teacher openness	.62
Mathematics	.94
Reading	.93
Writing	.88
SES	.70

<i>Factor</i>	<i>Eigenvalue</i>	<i>Percentage of Variance</i>
1	4.17	55.4

for achievement (Academic Emphasis), are enthusiastic and like each other (Teacher Affiliation), and treat each other as professional colleagues (Collegial). All of these aspects of climate contribute to the academic achievement of students. The impact of the community also played a role in successful schools. Schools that are confronted by parents and a community that insist on better performance (low Institutional Integrity) have higher achievement levels. Our analyses have examined the separate concepts of openness and health in school climate as they relate individually to student achievement. Now we turn to a combined analysis.

Openness and Health

Open schools tend to be healthy ones, and healthy schools tend to be open. Although the concepts of openness and health are different, there is some overlap in the way each is operationalized. Consequently we examined the intercorrelations among all the dimensions of openness and health as well as SES (see Table 4.9). Because some of the climate variables were highly correlated, we decided to simplify the data for the climate measures before regressing achievement test scores on school climate. Thus, a second-order factor analysis was performed; all 12 aspects of climate openness and health dimensions were factored using a principal components analysis.

Factor-Analytic Results

Using the two criteria of eigenvalue greater than one and simple structure, four factors were identified, which explained 71% of the variance. The rotated factor matrix is summarized in Table 4.10.

Factor I described the relationships between the principal and teachers and is defined by four variables. Supportive and collegial leadership load strongly and positively; directive and restrictive principal behavior load strongly and negatively; hence, we called the factor *Collegial Leadership*, which denotes collegial behavior that is supportive and neither directive nor restrictive.

The second factor described the relationships teachers had with each other. Again four variables load strongly on this factor; teacher commitment, teacher collegiality, and teacher affiliation load in a positive direction and teacher disengagement loads negatively.

TABLE 4.9 Correlations Among Dimensions of Openness, Health, and SES

Variable	DP	RS	CT	CmT	DT	II	CL	PI	RS	AE	TA	SES
Supportive principal	-.55**	.44**	.48**	.36**	-.27*	.15	.82**	.20	.43**	.31**	.45**	.24*
Directive principal		.42**	-.40**	-.30**	.36**	-.15	-.52**	-.27*	-.50**	-.48**	-.48**	-.27*
Restrictive principal			-.28**	-.24*	.10	.16	-.45**	-.03	-.47**	-.45**	-.28**	-.52**
Collegial teacher				.52**	-.25*	.09	.35**	.15	.37**	.25*	.65**	.30**
Committed teacher					-.42**	-.10	.18	.22*	.37**	.36**	.51**	.33**
Disengaged teacher						-.16	-.28**	-.23*	-.31**	-.24*	-.37**	-.18
Institutional integrity							.26*	.21*	.21*	-.09	.09	-.31**
Collegial leadership								.31**	-.45**	.32**	.49**	.17
Principal influence									.39**	.26*	.28**	.17
Resource support										.61**	.52**	.38**
Academic emphasis											.48**	.67**
Teacher affiliation												.38**
DFG (SES)												1.00

NOTE: DP = directive principal, RS = restrictive principal, CT = collegial teacher, CmT = committed teacher, DT = disengaged teacher, II = institutional integrity, CL = collegial leadership, PI = principal influence, RS = resource support, AE = academic emphasis, TA = teacher affiliation.

* $p < .05$; ** $p < .01$ (two-tailed tests).

TABLE 4.10 Varimax Rotated Factor Matrix: Analysis of Climate Dimensions (N = 86)

Variable	Factor Loadings			
	Factor I	Factor II	Factor III	Factor IV
Supportive principal	.84320	.31611	.06731	.10102
Directive principal	-.56522	-.28692	-.41939	-.07318
Restrictive principal	-.64022	-.02591	-.35075	.45962
Collegial teachers	.38348	.75300	-.02941	-.07318
Committed teachers	.04167	.81845	.22296	-.17213
Disengaged teachers	-.06148	-.60565	-.22271	-.26757
Institutional integrity	.19343	-.01704	.01304	.83903
Collegial leadership	.85153	.14515	.19058	.24357
Resource support	.38200	.25513	.71132	.07456
Principal influence	-.01718	.15150	.64007	.46898
Teacher affiliation	.34885	.68448	.30343	.02764
Academic emphasis	.23698	.21448	.77303	-.27214
Eigenvalue	4.87672	1.38214	1.22347	1.04532
Percentage of variance	40.6	11.5	10.2	8.7
Cumulative percentage	40.6	52.1	62.4	71.1

NOTE: Italicized numbers represent the defining factor loadings.

Teachers are committed to students, respect the competence of each other, like each other, and take their work seriously; consequently, we labelled the second factor *Teacher Professionalism*.

Factor III is defined by strong positive loadings of academic emphasis, resource support, and principal influence. This factor is a combination of teachers setting high goals, students responding to the challenge, and the principal supplying the resources and exerting influence on the teachers' behalf; hence, we labeled this factor *Academic Press*.

Finally, the fourth factor is defined by one strong positive variable, institutional integrity. We changed the direction of this scale and called it *Environmental Press*. The change in name was made because first, we wanted to use the notion of press from the inside (academic) and press from the outside (environmental), and second, results of earlier research suggested the construct might be mislabeled (Hanunn, Hoy, & Sabo, 1996; Hoy et al., 1991). Changing the name, however, does raise a question about whether this variable is an aspect of school health. Press from the outside does seem to affect

student achievement, but such pressure is not positively correlated with the other aspects of health.

Nonetheless, these dimensions of climate capture the essence of both health and openness in a parsimonious manner. Openness of teacher-principal relations is embedded in collegial leadership, and openness of teacher interactions is encapsulated in teacher professionalism. Using the Parsonian framework, all three levels of school organization are examined—the institutional (environmental press), the managerial (collegial leadership), and the technical (teacher professionalism and academic press). Moreover, the perspective calls attention to four important linkages in the school: community-school (environmental press), principal-teacher (collegial leadership), teacher-teacher (teacher professionalism), and teacher-student (academic press).

A Brief Literature Review: A Rationale

Firestone and Wilson (1985) found that principal support was positively related to student learning outcomes, whereas principal control was negatively associated with these outcomes. Similarly, Rosenholz (1985) concluded from her review of the effective school literature that the principal's supportive actions were a key to effective learning. In brief, principals can influence teaching either by administrative support or control. Support clearly seems more effective than control (Corwin & Borman, 1988); hence, we posited that if the leadership of the principal is to make a difference in terms of student achievement, then it should be collegial leadership.

There is widespread agreement that teacher collegiality is also an important ingredient of improving teacher practice and getting better results (Barth, 1990; Rosenholz, 1989; Sergiovanni, 1992). Collegial teachers help and support each other, are open to change, and are eager to learn (Johnson, 1990). Collegial teachers trust each other, and it is trust that enables them to try new ideas and take risks. It should not be surprising that a culture of trust is often a key to school effectiveness (Tarter, Sabo, & Hoy, 1995). Moreover, norms of collegiality promote teacher cooperation and collaboration (Little, 1987), attributes that enhance the learning environment and student achievement. Cohesiveness and support, not friction and faultfinding, are teacher characteristics associated with student learning (Anderson & Walberg, 1974; McDill, Meyers, & Rigby, 1967). Moos

(1979) summarized his own research on educational environments by concluding that gains on traditional achievement tests are most likely to occur when there is a combination of warm and supportive relationships, an emphasis on academics, and a well-structured educational environment. Teacher professionalism captures many of the features of teacher-teacher interactions that have been associated with student achievement, for example, strong affiliation with colleagues, commitment to students, and cooperation. Thus, we expected teacher professionalism to be a predictor of student achievement.

There has been some research that has directly examined the relationship between organizational climate and achievement for high schools, but not for middle schools. In general, school health is positively associated with both school effectiveness and student achievement (Hoy et al., 1991) in high schools. The single best organizational climate predictor of student achievement is academic emphasis. High schools with an orderly and serious learning environment, with teachers who set high but achievable goals, and with students who work hard and respect others who do well academically, have higher levels of student achievement, even when data are controlled for socioeconomic status (Hoy et al., 1991). A number of other studies also suggest strong links between academic emphasis and student achievement (Bryk et al., 1993; Murphy et al., 1982; Shouse & Brinson, 1995); consequently, we predicted a strong relationship between academic emphasis and student achievement.

One aspect of climate that is related to student achievement in a surprising way is institutional integrity; it is negatively associated with achievement. In other words, when teachers perceive "interference" in the school from the community, students achieve at higher levels (Hoy et al., 1991). Clearly teachers do not like such interference, but negative consequences in achievement do not ensue; in fact, on the contrary, it seems likely that some press from the community is functional for increased achievement in basic skills. Thus, we concluded that what is important in promoting higher student achievement in schools is an external press from the community for good results, which we label here environmental press.

In summary, supportive and collegial rather than directive and restrictive principal behaviors should be associated with positive student outcomes. Similarly, collegial and affiliative teacher relationships, which foster cooperation and collaboration, should be predic-

tors of higher student achievement. We also posited that internal and external press for achievement have a positive impact on student learning. Academic emphasis is the kind of internal press that produces an atmosphere where there is orderliness and seriousness, where teachers press students to do well academically, and where students accept the challenge for high achievement. Finally, schools with high environmental press are those that feel pressure from the community to improve schooling.

Empirical Findings

To test the hypotheses that elements of health and openness of school climate should be related to student achievement, two statistical procedures were performed. First, correlations were run between the four basic elements of school climate that emerged from the factor analysis and aspects of student achievement. As predicted, school climate was positively associated with student achievement in mathematics, in reading, and in writing; in fact, all four of the elements of health and openness of school climate are significantly correlated with all three measures of student achievement (see Table 4.11). Thus the hypothesized relationships were supported.

One of the problems with nonexperimental research is that it is often difficult to determine the effect of one variable independent of others. This is a special problem for studies that seek to explain the variance of school achievement. Frequently, what seems to be a strong predictor of achievement is merely a proxy for socioeconomic level (SES). Wealthier school districts have higher achievement levels than poorer ones. We deal with this problem in several ways. First, standardized betas and multiple regression coefficients are used to determine the separate and combined contributions of the independent variables, the climate dimensions. Second, all multiple regressions are performed using a set of independent variables that includes SES as well as climate variables. Hence, the independent influence of SES and each climate variable can be determined. Thus, each of the dependent variables was regressed on a set of five variables, which included SES (DFG), collegial leadership, teacher professionalism, academic press, and environmental press.

These multiple regression analyses further clarified the results. For mathematics achievement a multiple R of .85 ($p < .01$) explained 71% of the variance. Environmental press ($\beta = .30, p < .01$), academic

TABLE 4.11 Correlational and Multiple Regression Analysis of Climate Dimensions and SES with Aspects of Student Achievement

	Panel A		Panel B			
	Zero-Order Correlations		Measures of Student Achievement Standard Beta Weights			
Measures of Organizational Climate	Math	Read	Write	Math	Read	Write
Environmental press	.36**	.36**	.35**	.30**	.30**	.30**
Collegial leadership	.48**	.49**	.48**	.13	.19*	.15
Teacher professionalism	.49**	.47**	.49**	.13	.11	.16*
Academic press	.60**	.57**	.57**	.27**	.22**	.24**
SES	.77**	.75**	.73**	.44**	.43**	.40*
Multiple correlation				.85**	.84**	.83**
Adjusted R ²				.71	.68	.66

* $p < .05$; ** $p < .01$.

press ($\beta = .27, p < .01$), and SES ($\beta = .44, p < .01$) all had significant and independent effects on mathematics achievement. For reading achievement, 68% of the variance ($R = .84, p < .01$) was explained. Environmental press ($\beta = .30, p < .01$), academic press ($\beta = .22, p < .01$), collegial leadership ($\beta = .19, p < .05$), and SES ($\beta = .43, p < .01$) all had significant and independent effects on reading achievement. In writing, 66% of the variance for achievement was explained by the regression equation ($R = .83, p < .01$), and environmental press ($\beta = .30, p < .01$), teacher professionalism ($\beta = .16, p < .05$), academic press ($\beta = .24, p < .01$), and SES ($\beta = .40, p < .01$) each had a significant independent influence on writing achievement. All the regression analyses are summarized in Panel B of Table 4.11.

Over two thirds of the variance is explained by the independent variables for each of the measures of achievement. All the climate variables make an independent contribution to one or more of the achievement measures. Although socioeconomic status is the single best predictor of achievement, environmental press and academic press are not far behind. Collegial leadership and teacher professionalism work together to contribute to achievement; in fact, if

either is omitted from the regression equation, the other makes a significant and independent contribution to the explanation of variance.

Climate and Effectiveness: Climate and Culture

Next, we reexamined the relationship between climate and effectiveness using only the four general aspects of climate and the overall effectiveness index. Except for environmental press ($r = .08, p > .05$), all the zero-order correlations between elements of climate and effectiveness were significantly and positively correlated with overall effectiveness ($r = .53, .58$, and $.58$ for collegial leadership, teacher professionalism, and academic press, respectively). When overall effectiveness was regressed on these climate dimensions, all the variables made independent and collective contributions to overall effectiveness explaining 48% of the variance ($R = .70, p < .01$). The results are summarized in Table 4.12.

Finally, we took another look at culture using our parsimonious measures. Except for environmental press ($r = .03, p > .05$), all the zero-order correlations between elements of climate and culture were significantly and positively correlated with our index of strong school culture ($r = .64, .62$, and $.56$ for collegial leadership, teacher professionalism, and academic press, respectively). When culture was regressed on these climate elements, they made a collective contribution to culture explaining 50% of the variance ($R = .73, p < .01$), but only collegial leadership of the principal and teacher professionalism made unique independent contributions to culture. The results are summarized in Table 4.13.

Conclusion

The organizational climate of middle schools is important for student achievement, especially in the basic skills of reading, writing, and arithmetic. What is the climate profile that facilitates achievement? Environmental press, collegial leadership, teacher professionalism, and academic press are critical ingredients in fostering high academic achievement. Effective middle schools are open and healthy in their interpersonal relationships; they are places where teachers like and respect their colleagues and are committed to their work and students (high teacher professionalism). Teachers see the principal as their ally in the improvement of instruction; the prin-

TABLE 4.12 Correlational and Multiple Regression Analysis of Climate Dimensions and SES with Overall Effectiveness

Measures of Organizational Climate	Panel A		Panel B (With SES)	
	Overall Effectiveness Standard Beta Weights	Overall Effectiveness Standard Beta Weights	Zero-Order r	
Environmental press	.17*	.10	.08	
Collegial leadership	.21*	.19	.53**	
Teacher professionalism	.31**	.29**	.58**	
Academic press	.33**	.24*	.58**	
SES		.18	.52**	
Multiple R	.70**	.71**		
Adjusted R ²	.48**	.48**		

* $p < .05$, ** $p < .01$.

incipal is friendly, open, respectful, supportive, and yet establishes and is committed to high standards of teacher performance. There is no need to coerce or restrict teacher behavior; cooperation is freely given by teacher professionals who are committed to teaching and learning (strong collegial leadership). The same pattern of climate characteristics explains the overall effectiveness of schools in this sample. Strong school cultures, however, are determined mostly by the open and healthy principal behavior (strong collegial leadership) and open and healthy teacher behavior (strong teacher professionalism); academic press and environmental press are less important.

General Observations

If there is a surprise in the profile of high achieving schools, it may be the impact of the press that is generated from the outside (environmental press). Although teachers desire buffering from the outside, the data continue to show that overprotection is not functional and may in fact be dysfunctional for high student achievement (Hoy et al., 1991). Pressures from the parents and community seem

TABLE 4.13 Correlational and Multiple Regression Analysis of Climate Dimensions and SES With Culture

Measures of Organizational Climate	Panel A		Panel B (With SES)	
	Strong Culture Standard Beta Weights	Strong Culture Standard Beta Weights	Zero-Order r	
Environmental press	.03	.03	.03	
Collegial leadership	.37**	.37**	.64**	
Teacher professionalism	.33**	.33**	.62**	
Academic press	.16	.17	.56**	
SES		.00	.37**	
Multiple R	.73**	.73**		
Adjusted R ²	.51**	.50**		

** $p < .01$.

to facilitate rather than hinder. Teachers often view parents as meddling and interfering, but the consequence of such environmental press is positive. Other research (Barth, 1990) similarly suggests that parental involvement increases achievement scores. The RAND studies (Armor et al., 1976) show that simply having parents present in the school helps. Our data support these findings and suggest that, regardless of the rhetoric of the virtues of parental involvement and positive student outcomes, teachers frequently are not overly happy with such involvement because they often see it as interference.

Schools with high student achievement have a strong internal press for academic excellence. Teachers and administrators set a tone that is serious, orderly, and focused on academics. Students respond by accepting the challenge, believing in themselves, and respecting the academic accomplishments of their peers. In the press for achievement, everyone does his or her part. Principals use their influence with superiors to get the necessary resources and support for the instructional program, teachers set reasonable academic goals for their students and go the extra mile in helping them achieve, and students accept the importance of academics and work hard to be successful (high academic press).

The socioeconomic status of the community is always a strong predictor of student achievement; in fact, it typically overwhelms other variables in predicting achievement. This study demonstrates that some climate variables are independently important in explaining achievement. In addition to SES, the variables of environmental press, collegial leadership, teacher professionalism, and academic press are also important, and they are clearly more amenable to intervention and change than SES. Together these aspects of climate, with the possible exception of environmental press, promote an open and healthy school atmosphere that encourages achievement and effectiveness. Commitment (Rosenholtz, 1989), cohesiveness and support (Anderson & Walberg, 1974; McDill et al., 1967), collegial teacher behavior (Barth, 1990; Little, 1987; Rosenholtz, 1989; Sergiovanni, 1992), supportive and collegial principal behavior (Firestone & Wilson, 1985; Moos, 1979), trust (Tarter et al., 1995), and academic emphasis (Bryk et al., 1993; Edmonds, 1979; Moos, 1979) are components of healthy, open, and effective schools and support strong school cultures; in fact, the current findings provide a parsimonious explanation of school-level student achievement.

Our conceptualizations of climate using health and personality metaphors worked well. Health and openness complement each other. Although we reduced the twelve dimensions of the two perspectives to four critical ones, the notions of openness and health were retained. Openness is the general construct that undergirds collegial leadership and teacher professionalism. Health is critical to the connections in the organization—between the school and community, between the principal and teachers, and between teachers and students. This is not surprising because the construct of organizational health was built on Parsons' distinction of levels of organizations—technical, managerial, and institutional. Parsons (1967) himself makes the point that there exist "qualitative breaks" in the line-authority relations at each of the points where the three systems are linked. In service organizations such as schools, another crucial linkage exists between the professionals and clients. Healthy schools are those in which all the linkages are productive. The data of this study suggest that a school need not be completely harmonious to be productive; in fact, a press or dynamic tension that focuses and directs activities may increase productivity. If the internal and external press are directed toward the same goal, then achievement seems

to be enhanced, especially if the effort is coupled with openness and cooperation within the system.

Some Implications for Researchers

These findings pose challenges for both researchers and administrators. Although the measures of organizational climate provide a snapshot of school life, climate is a general concept that captures an enduring quality of organizational life (Hoy & Miskel, 1996; Taguri, 1968). If that is the case, one would expect climate dimensions of schools at a given point to predict achievement for 2 or 3 consecutive years. The following hypothesis should and can be tested with longitudinal achievement data:

- H1 Positive relationships between school climate and student achievement will persist over time.

The significance of press for student achievement is intriguing. First, both internal (academic) and external (environmental) press are important. Second, our data suggest that collegiality and cooperation among the professionals in the school transform the pressures from the community (environmental press) into positive actions and attitudes that expect and encourage learning (academic press); that is, collegial leadership and teacher professionalism mediate press. Without collegial relations among the principal and teachers, teachers might respond to the pressures in a much less constructive fashion. Hence, we propose the following hypothesis for testing:

- H2 Collegial leadership and teacher professionalism interact with environmental press to produce higher levels of student achievement.

This study examined organizational climate and therefore the unit of analysis was the organization. More than two thirds of the variance in student achievement was explained by the organizational variables of this study; the remaining variance is likely due to individual characteristics of teachers. If in fact teachers translate external pressure into constructive actions with their students, it is also likely that teachers vary in their effectiveness at doing so. One in-

dividual characteristic that may be important is teacher efficacy: those teachers who believe that all students can learn and that they can teach them are likely to be more successful in translating pressure (environmental) into positive press (academic). Therefore, we predict that

- H3 Teachers with a high degree of efficacy are more successful translating environmental pressure into academic emphasis than are teachers with a low sense of efficacy (success measured in terms of student achievement).

Of course, this hypothesis awaits further empirical testing, but there is an abundance of evidence that links teacher efficacy to student achievement; in fact, teachers' sense of efficacy is one of the few teacher characteristics consistently related to student achievement (Ashton & Webb, 1986; Moore & Esselman, 1992; Ross, 1992; Ross, Cousins, & Gadalla, 1996) and student affective growth (Borton, 1991; Midgeley, Feldlaufer, & Eccles, 1989; Rose & Medway, 1981). In addition, teacher efficacy is associated with other significant outcomes such as teachers' adoption of innovations and use of challenging teaching strategies (Guskey, 1988; Riggs & Enochs, 1990; Ross, 1992; Smylie, 1988; Tracs & Gibson, 1986; Wax & Dutton, 1991), superintendents' ratings of teachers' competence (Trentham, Silvern, & Brogdon, 1985), and teachers' classroom management strategies (Ashton & Webb, 1986; Hoy & Woolfolk, 1990; Woolfolk, Rosoff, & Hoy, 1990). Teacher efficacy is a personal trait, but we find the notion of collective efficacy or school efficacy intriguing. When the teachers in a school as a group believe that they can make a difference, we expect they do. In fact, the health and openness of a school should be related to developing a school sense of efficacy. Consequently, we hypothesize that

- H4 The more open and healthy the school climate, the greater the sense of collective school efficacy.

The present research was concerned with organizational climate and student achievement. Achievement is only one facet of effective schools albeit a highly visible one. Quality schools are also concerned with the social-emotional development of students. Well-adjusted students who are happy, believe in themselves, enjoy school, value education, and respect others are significant school out-

comes. The middle school is a crucial link between the self-contained classes of elementary schools and the departmentalization and specialization of most high schools. Student exploration of interests and the healthy social and personal development of adolescents are important features of the middle school. Consequently, as researchers and principals turn to what makes a good middle school, they must be concerned with such expressive outcomes as self-concept, creativity, and citizenship, as well as student achievement in basic skills and higher-level cognitive activities. We offer two hypotheses in this regard:

H5 The more healthy and open the school climate, the less student alienation in the school.

H6 The more healthy and open the school climate, the higher the level of student achievement in higher-level cognitive skills.

For researchers, another important issue is studying and refining the concepts of environmental press and institutional integrity. Some of what seems disruptive to teachers at times has positive consequences for students. We need to sort out destructive and constructive forces. Community involvement in schools does have a contribution to make in improving instructional delivery systems. But not all involvement is helpful; some is counterproductive. Institutional integrity does not differentiate positive forces from negative ones. Simply because teachers do not like interference from the outside does not mean that such efforts are harmful. The finding that environmental press can promote achievement suggests that outside interventions can promote achievement without destroying other healthy interpersonal relationships. Perhaps when the school has healthy interpersonal relationships among students, teachers, and administrators, then challenges from the outside can be made constructive. But when internal interpersonal relations are poor, the same challenges may be destructive. Two research questions are intriguing in this regard:

Q1 Under what conditions does environmental press promote achievement without destroying other healthy interpersonal relationships?

Q2 What are the mechanisms for transforming outside pressure into constructive internal forces?

The concept and measures of organizational climate raise a host of questions concerning structure, motivation, decision making, and communication in schools:

Q3 Are healthy and open school climates prerequisites for school improvement?

Q4 What are the antecedent conditions of open and healthy organizational climates?

Q5 To what extent are the scope and intensity of communications related to school climate?

Q6 Does openness in organizational communication vary with the openness in school climate?

Q7 Does openness in school climate promote openness in formal decision making?

Q8 Does the formal structure of school organizations affect the organizational climate?

Q9 Are teachers more likely to set learning goals rather than performance goals for their students in open and healthy schools?

Q10 Are teachers more likely to believe that student intelligence is improvable rather than fixed in open and healthy schools?

Q11 Are teachers and students more likely to be self-regulated learners in open and healthy schools?

Q12 Are teachers more likely to focus on intrinsic rather than extrinsic motivation in open and healthy schools?

These are only a few examples of the heuristic possibilities that are generated by the climate constructs.

Implications for Administrators

For school administrators the challenge is clear. As we have seen, healthy and open organizational dynamics are important in fostering student achievement. The leadership of the principal may be important, but it is not sufficient in promoting student achievement.

After all, the principal is one step removed from teaching. Collegial leadership that is friendly, supportive, egalitarian, and open is important in providing a sound organizational environment, but it is not enough. Ultimately, only teachers improve instruction; they have to decide they want to improve before it will happen (Hoy & Forsyth, 1986). It is not surprising that collegial leadership and teacher professionalism work together in affecting student achievement. Principals need to find ways to link their leadership efforts with the desires, needs, and efforts of teachers just as teachers must link their efforts with needs and interests of students. Principals also face the challenge of regulating outside forces in a way that produces a dynamic tension for internal operations. They must differentiate between destructive outside forces and constructive external press.

We sketch in broad strokes a few examples of how administrators can use the results of this research.

1. Use the climate framework as an informal guide for analysis and action.

The school climate frameworks allow the administrator to look at school behavior through a set of lenses that underscore important aspects of school life. The nature of the activity in terms of open and authentic relations or the academic emphasis and community press of the school are critical facets that should not go unnoticed. In other words, the climate perspectives provide an easy conceptual guide for analysis and action. One can use the concepts for analysis without engaging in a formal system of measurement.

2. Promote healthy and open school climates because they are both means to ends and ends-in-themselves in the quest for quality.

The instruments can be used in a more formal way. Profiles of climate scores are useful in promoting long-term effectiveness. There is little question that a great many unhealthy and closed school climates exist; our data suggest as much. The climate instruments help pinpoint those aspects of the school workplace that are undesirable and most in need of immediate amelioration. For example, scores on teacher affiliation vary widely from school to school. The usefulness of this empirical measure of the solidarity of the staff is twofold. It

describes teachers' perceptions of their relationship with each other in a more systematic way than personal impressions of administrators. And, it places this information within the broader framework of teacher-teacher and teacher-administrator interactions, that is, it is only one element of school climate.

Although the research evidence to date is not abundant, there is beginning to emerge a body of research that suggests strong connections between health, climate, effectiveness, student achievement, and school quality. Open and healthy school climates are an integral part of quality schools. Long-term improvements in academic achievement are connected to a school with strong academic emphasis within the context of a healthy and open environment (Hoy et al., 1991). Not only are health and openness of school climate necessary conditions for effective outcomes, they are desired ends-in-themselves. Thus, a principal might assess the condition of health or climate in a given school and attempt to improve the social context.

3. Use the instruments as the basis for inservice and professional development.

The instruments can be used for inservice and professional development activities for teachers and administrators. The profile of school climate is a picture of the school, but it does not explain causes for the current state of affairs; it simply describes what is. Teachers and administrators who find the profile of their school undesirable must undertake the difficult task of diagnosing the causes of the poor health and then develop strategies for improvement. Successful administrations of the climate instruments can yield a rough measure of the success of the strategies that are employed to improve the school.

4. Improve instructional effectiveness indirectly through the development of an open, healthy, and trusting climate.

The debate between "institutional manager" and "instructional leader" obscures both the leadership and managerial characteristics of the administrative role, that is, no principal is totally an instructional leader, nor is any completely a manager. No principal can afford to be ignorant of the instructional process, yet, ultimately, the

principal's role is to create conditions in which teachers operate as autonomous professionals.

To argue that the principal should develop an open and healthy climate is one thing; to do it is another. The interrelationships are complex. For example, the practical difference between supportiveness and directiveness may not be clear. The distinction between principal supportiveness and directiveness depends largely on the extent of teachers' freedom either to accept or to reject the principal's suggestions. This much seems clear: Simply because the principal intends to be supportive by encouraging teachers' freedom does not mean that teachers will interpret these actions as supportive. Furthermore, the principal's avoidance of directive behavior is unlikely to be sufficient to generate a sense of support.

Much of the recent discussion about restructuring schools and school-based management is predicated on the assumption that teachers are professionals, and given the appropriate working conditions and authority, they will make wise decisions in the best interest of the students. Hoy and Forsyth (1986) propose a model of supervision that captures the essence of the independent, yet cooperative nature of improving instruction in schools; the model is based on the assumption that a basic role of the principal is to establish a healthy, open climate.

5. Assess school health and climate before beginning change efforts.

The state of organizational climate will predict the probable success of most change efforts. None of our measures is a quick fix for changing schools, but they can provide a starting point. If we are to change our schools, we need to develop a long-range strategy to improve rather than struggle with a series of more or less inspired short-run change efforts as ends in themselves (Miles, 1969).

Both the OHI-M and the OCDQ-RM provide a snapshot of the state of the school, and both measures yield a diagnosis as well as a baseline from which to judge the effect of change strategies. Our experience demonstrates that a principal's perception of his or her school's climate is frequently at variance with the perceptions of the teachers. To discover such a discrepancy is not to uncover a problem but rather a symptom. The issue is not to determine in some objective sense whether the climate is open or closed, healthy or unhealthy; but to find the root causes for the discrepancy in perceptions. For

example, low scores on principal restrictiveness might indicate that the teachers felt that current administrative practice was carried out with too heavy a hand. This is useful information, but it is more useful if the principal can determine the cause of the feelings of restrictiveness. In short, the measures provide a conceptual basis for the diagnosis and solution to many organizational problems.

6. Evaluate your own administrative practice.

We recommend that working school administrators use the health and climate instruments as a continuing assessment of their own administrative practice. The application of either the OHI-M or the OCDQ-RM for formative evaluation is not an unqualified recommendation. The essence of formative evaluation is that it is a continuous guide to the improvement of practice. For a principal, the subtests of the OHI-M and the OCDQ-RM seem to be more appropriate criteria for the evaluation of principal behavior than many of the current standards that masquerade as measures of administrative effectiveness. It is, however, important that there exist a climate of collegiality and trust among administrators if the constructive use of these evaluative tools is to take place. We strongly caution against using any instrument of this kind as summative evaluation. Rather, principals should use these tools for self-evaluation.

In the next chapter, we describe in step-by-step fashion how educators can use the OCDQ-RM and OHI-M to assess and change their schools. Not only are all the instruments, directions, and norms supplied, but we give examples of principals and teachers using the models to improve their schools.

Notes

1. One school in the sample did not complete the OHI-M; hence, in those analyses that involve the health of school climate, the sample size is 86.
2. For a more extensive rationale for this hypothesis, see Hoy and Hannum (1997).
3. The definition and measure of shared identity are based on the work of Price and Mueller (1986).