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School climate and state standards: A study of the relationships between middle school organizational climate and student achievement on the Virginia Standards of Learning Tests

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**SCHOOL CLIMATE AND STATE STANDARDS:
A STUDY OF THE RELATIONSHIPS BETWEEN MIDDLE SCHOOL
ORGANIZATIONAL CLIMATE AND STUDENT ACHIEVEMENT ON THE
VIRGINIA STANDARDS OF LEARNING TESTS**

A Dissertation

Presented to

**The Faculty of The School of Education
The College of William and Mary in Virginia**

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

by

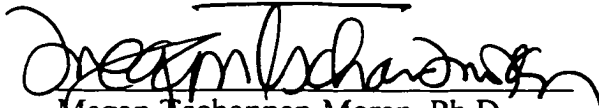
Jennifer Bishop Parish

April 2002

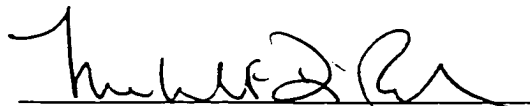
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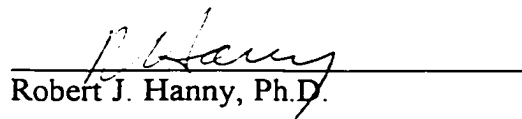
Approved April 2002



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Robert J. Hanny, Ph.D.

DEDICATION

This work is dedicated to my family. My gratitude towards my parents, John and Judy Bishop, is unwavering. Many years ago they received an overseas phone call asking for support to continue my studies so that I could become an educator. Their willingness to support me then, and always, is what made it possible for me to begin and end this long journey. They instilled in me the importance of education and perseverance and that has made all the difference. To my brother, David Bishop, who has encouraged me from afar and whose love and support has also helped me to continue my passage.

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ABSTRACT

Educators are looking at various aspects of schools as they help students and schools meet state benchmarks being set nation-wide. This study addressed this issue by investigating organizational school climate and middle school student achievement on state assessments and by determining that a relationship between the two exists. The study explored middle school teachers' perceptions regarding organizational school climate in terms of collegial leadership, teacher professionalism, academic press, and community engagement. The School Climate Index (SCI) was used to survey 696 teachers' perceptions of these factors in 49 middle schools in Virginia. The eighth grade Virginia Standards of Learning (SOL) Tests in the areas of math and English were the measurement tools for student achievement in the study. This study examined the relative effects of organizational climate and the socio-economic status (SES) of participating schools on student achievement.

There was a significant relationship between organizational climate and student achievement for both English and math. When the sub-scales of school climate (collegial leadership, teacher professionalism, academic press and community engagement) were analyzed separately, multiple regression indicated that only community engagement had a significant independent effect on student achievement on the math SOL test. Both academic press and community engagement had independent effects on student

achievement on the English SOL test. Further analysis indicated that SES had a significant independent effect on student achievement in English, while both school climate and SES had independent effects on student achievement on the math SOL test. School climate and SES explained much of the variance in student achievement.

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Chapter 1: The Problem

Introduction

Close scrutiny by the public and politicians have placed public schools throughout the country under enormous pressure. There has been a nationwide outcry for schools to be held accountable for their students' achievement. Educational leaders and teachers are carefully examining their practices as they strive to meet the benchmarks being set for them by the states in which they work.

Educational leaders are currently looking at every aspect of schools as they work to ensure that students and schools meet the state standards being set throughout the country. Forty-nine states adopted rigorous standards during the past decade (Fair Test, 1997). Most states have also developed assessments to measure student success on state standards. In the midst of the current standards movement, educators across the country are investigating schools to see which practices may help students and schools meet state standards and requirements.

One aspect of schools that leaders should examine is organizational climate. Positive school climate has been linked with student achievement on standardized tests in the past (Brookover, Sweitzer, Schneider, Beady, Flood, & Wisenbaker, 1978; Hannum, 1998; Hirase, 2000, Hoy & Hannum, 1997; Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, Barnes, Hannum, & Hoffman, 1998; Hoy & Tarter, 1997; Johnson, 1989; Stewart, 1978). School organizational climate has been examined extensively as researchers attempt to better understand it. Researchers and writers have also struggled

over how to define organizational climate. The definition used for the purpose of this study defines organizational climate as

the set of internal characteristics that distinguish one school from another and influences the behavior of its members. In more specific terms it is the relatively stable property of the school environment that is experienced by the participants and affects their behavior and is based on their collective perceptions of behavior in schools (Hoy & Hannum, 1997, p. 291).

Need for Study

With current demands for school accountability, it is important that researchers examine the relationships between school organizational climate and student achievement. This work may help determine if there is a relationship between the organizational climates of schools and student achievement. These studies will provide educational leaders with research that could enable them to better understand their schools, and in turn, make improvements within their schools.

Specifically, this study suggests a way for educational leaders to see how organizational climate is related to student achievement on assessments of state standards while accounting for the socio-economic status of schools. This study should help educational leaders to better understand the role organizational climate could play in improving schools and student performance. It could also help schools of education better train educational leaders and provide information that could be used for professional development of teachers and administrators. Clearly, with the pressures placed on educators to improve student achievement, it is imperative that every aspect of a school is examined to ensure that educators are operating schools in which all students can

succeed. This study attempts to examine a particular aspect of schools, organizational climate, and determine its relationship to student achievement on state standards in hopes of helping educators better serve their students while at the same time meeting the demands of the public.

Statement of the Problem

Educators across the country face the problem of finding new ways to improve their schools and to ensure their students meet state standards. This study addresses this problem by investigating organizational school climate and middle school student achievement on assessments of state standards and by determining if a relationship between the two exists. The study explores the perceptions of middle school faculty members regarding organizational school climate in terms of collegial leadership, teacher professionalism, academic press and community engagement. The eighth grade Virginia Standards of Learning (SOL) Tests in the areas of Math and English were the measurement tools for student achievement in the study. In the end, this study answered the following question: What is the relationship between organizational school climate and student achievement on assessments of state standards in Virginia?

Research Questions

In order to answer the more general question, the following more specific questions were addressed:

1. What is the relationship between middle school organizational climate, as measured by the school climate index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?
2. What is the relationship between middle school organizational climate, as measured

by the school climate index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning Math Test?

3. What is the relative weight of each of the factors of school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?
4. What is the relative weight of each of the factors of school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning Math Test?
5. What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?
6. What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning Math Test?

Conceptual Framework

Schools are organizations or systems consisting of many parts. Students enter these organizations and interact with the many parts before leaving, with the expectation that they will become productive citizens. In this current era of accountability, schools are measured in a variety of ways as people attempt to determine if exiting students meet the needs of employers and institutions of higher learning. School success is measured in

many states by student achievement on standardized tests that assess student knowledge of specific state standards.

The increased emphasis on student achievement is causing educators to carefully examine schools to see what changes can be made to improve student performance on state assessments. Analyses of various aspects of schools may provide important information that could assist educators in school improvement and increased student achievement. Organizational climate is one aspect of the organization or school that has been shown to relate positively to student achievement (Brookover, Sweitzer, Schneider, Beady, Flood, & Wisenbaker, 1978; Hannum, 1998; Hoy & Hannum, 1997; Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, Barnes, Hannum, & Hoffman, 1998; Hoy & Tarter, 1997; Stewart, 1978).

Researchers have studied organizational climate in business, psychology and education (Halpin & Croft, 1963; Hoy & Hannum, 1997; Litwin & Stringer, 1968; Tagiuri, 1968). Over the years, researchers have identified a variety of definitions and components of organizational climate. Researchers have also worked diligently to create instruments to measure organizational climate. The measurement of organizational climate has helped to further define and identify dimensions of the construct.

A consolidated framework, which enables educators to scrutinize school organizational climate, has emerged from educational research. This consolidated framework is primarily the result of the work of Hoy and his colleagues. The framework that has emerged and provides the basis for this study incorporates four factors of organizational climate: collegial leadership, teacher professionalism, academic press and

community engagement. By measuring these four factors, educators are able to closely examine and better understand the organizational climates of schools

This study examined the concepts of organizational climate and student achievement to determine if a relationship exists between them. The study was designed to determine if there are specific relationships between the four factors of school climate and student achievement. In this study, student achievement was measured by the state of Virginia's assessments of its standards. Finally, this study also sought to identify the relative effects of organizational climate and socio-economic status of the schools on student achievement. Studies have shown that socio-economic status can predict student achievement (Hoy, Sabo, et al., 1998; Hoy, Hannum, & Tschannen-Moran, 1998). The possible relationship between socio-economic status and achievement must be taken into consideration if the framework for this study is to be of significant use to educators and researchers in the future. The study of the interrelationship between the components of this conceptual framework provides important information for researchers and educators.

Limitations of the Study

This study was limited by the fact that participating schools were self-selected. The study involved schools in school districts in the state of Virginia that were willing to participate in the study. The fact that the schools were self-selected means that the findings of the study cannot be generalized to every middle school in Virginia, affecting the external validity of the study.

The study was also limited by the Virginia Standards of Learning tests because the tests themselves have a certain level of accuracy and validity and are designed to test only Virginia standards. Another limitation stems from the fact that organizational

climate data were collected October 2001 through March 2002. The Standards of Learning test data were collected in the fall of 2001 but the results were from the spring of 2001. This timeline results in the climate data being collected at a different time from the actual testing period. Organizational climate has been found to endure over time (Hoy, Hannum, & Tschannen-Moran, 1998) which should lessen the impact of this limitation. Schools where there was a change in leadership between the time the SOL tests and the climate instrument were administered were excluded from the study.

Finally, this study relied on the perceptions of teachers as measured by self-report instruments. The manner in which teachers and principals responded could have been affected by the events of the day on which they completed the survey. The responses were based on the perceptions and thoughts of the teachers and not on data collected through observation of the schools' climates.

Definitions of Terms

The following terms are used in this study and are defined as follows:

Organizational climate: The set of internal characteristics that distinguish one school from another and influences the behavior of its members. In more specific terms, it is the relatively stable property of the school environment that is experienced by the participants and affects their behavior and is based on their collective perceptions of behavior in schools (Hoy & Hannum, 1997, p. 291).

- **Organizational climate factors:**
 - **Collegial leadership-** Behavior of the principal that is supportive and egalitarian while being neither directive nor restrictive (Hoy, Hannum, & Tschannen-Moran, 1998, p. 341).

- **Teacher professionalism-** Teacher behavior characterized by commitment to students, respect for the competence of colleagues, warmth and friendliness, and engagement in the teaching task (Hoy, Hannum, & Tschannen-Moran, 1998, p. 342).
- **Academic press-** A combination of teachers setting high, but reasonable goals, and students responding positively to the challenge of these goals (DiPaola & Tschannen-Moran, 2002).
- **Community engagement-** The extent to which the school is actively engaged with its community and is able to count on community interest, involvement, and support (Tschannen-Moran & DiPaola, 2002).
- **Socio-economic status:** Represented by the percentage of students who participate in the federal free and reduced lunch program.
- **Standards of Learning (SOL):** Statements of knowledge and skills that every child is expected to learn (Virginia Department of Education, 2001, p.3).
- **Standards of Learning (SOL) Tests:** Assessments that have been developed in Virginia to measure the content knowledge and mathematical processing of students. This study used the English: Reading, Research and Literature Test and the Math Test. Both are given in the eighth grade.

Chapter 2: Review of Literature

Organizational Climate

Organizational climate is a term that is used in a variety of settings. Psychologists, sociologists, educators and people in the business world apply this term to organizations. An examination of how non-educators and educators have come to interpret and define organizational climate enables researchers to understand the construct as it applies to schools.

Theory and Research in Psychology and Business

In order for educational researchers to fully understand what is meant by organizational climate, it is important to review the early literature and research that was done outside the field of education. Much of this research laid the foundation for work done by researchers who sought an understanding of school organizational climate. A chronological examination of the theory and development of the definitions and frameworks of organizational climate provides insight into the organizational climate of schools.

In 1964, Forehand and Gilmer wrote that organizational climate “is the set of characteristics that describe an organization and that (a) distinguish the organization from other organizations, (b) are relatively enduring over time and (c) influence the behavior of people in the organization” (p. 362). This early definition of organizational climate

provided a foundation for later definitions that were developed by other researchers and writers.

Tagiuri (1968) began the discussion of organizational climate by comparing it to the use of “climate” as it relates to meteorology. Tagiuri wrote, “the metaphysical usage of climate seems by and large, to be in line with the history and spirit of the term: a synthetic concept summarizing important enduring characteristics of the environment” (1968, p. 20). Like meteorological climate, organizational climate describes attributes of the environment that have an impact on the inhabitants of that environment.

Tagiuri also broke organizational climate into four categories: ecology, milieu, social system and culture. Ecology was the physical and material part of the climate. Milieu represented the people or groups while social systems are the relationships between people and groups. Finally, culture represented social aspects such as belief and values. In the end Tagiuri tied all of the categories together and defined organizational climate as “a relatively enduring quality of the internal environment of an organization that (a) is experienced by its members, (b) influences their behavior, and (c) can be described in terms of values of a particular set of characteristics (or attributes) of the organization” (Tagiuri, 1968, p. 27).

Evan (1968), a professor of sociology and industry, asserted that “organizational climate is a multidimensional perception of the essential attributes or character of an organizational system” (p. 110). His definition differed from Tagiuri (1968) because he contended that the perceptions of people who are non-members of the organization, such as trade unions, customers and suppliers, should be included in an assessment of

organizational climate. Tagiuri was only concerned with the perceptions of members within the organization and not the perceptions of others outside the organization.

By 1968 ample literature on organizational behavior and more specifically, organizational climate existed. Litwin and Stringer (1968) looked at numerous research studies and many current theories as they developed a theory about human motivation. As part of this process, Litwin and Stringer closely examined organizational climate studies and formed an integrated theory of organizational climate that consisted of eight dimensions of climate. They stated that climate “induces (or is made up of) expectancies and incentives which interact with a variety of psychological needs to induce aroused motivation and behavior directed towards need satisfaction” (Litwin & Stringer, 1968, p. 111). They also believed that climate describes the “subjective nature or quality of the organizational environment” (p. 187). Litwin and Stringer concurred with Tagiuri in the belief that climate is perceived by members of the organization.

Litwin and Stringer’s (1968) eight dimensions could be classified into Tagiuri’s climate categories of social system and the culture. The first dimension Litwin and Stringer (1968) identified was the dimension of structure. Structure was “defined in terms of the perceived limitation of the task situation, the amount of detailed information available and the constraints placed on behaviors” (Litwin & Stringer, p.47). Litwin and Stringer believed that business research studies showed that this dimension affected individual and group behavior. The second dimension of climate for Litwin and Stringer (1968) was individual responsibility. This dimension referred to the amount of personal responsibility individuals had for their behavior and its consequences.

Litwin and Stringer's (1968) dimensions described and categorized facets of the interpersonal environment which were similar to the components of Tagiuri's notion of culture. Litwin and Stringer's third dimension referred to the amount of warmth and support that is present in situations in which individuals in an organization find themselves. The next dimension they outlined was that of the perceived emphasis on reward versus punishment. Litwin and Stringer wrote, "a climate oriented toward giving reward rather than dealing out punishment, is more likely to arouse expectancies of achievement and affiliation and to reduce the expectancies of fear of failure"(Litwin & Stringer, 1968, p.54). Litwin and Stinger also felt that part of this dimension incorporated the manner in which approval and disapproval was handled within an organization.

The dimensions of Litwin and Stringer's (1968) model also incorporated the manner in which employees interact with one another. For example, the next dimension that Litwin and Stringer outlined was conflict and tolerance for conflict. This dimension addressed the manner in which members of an organization contend with conflict. Performance standards and member expectations, the manner in which the group identified with an organization, and the amount of group loyalty found in an organization were dimensions outlined by Litwin and Stringer. The final dimension was the attitude that members of the organization had toward risk and risk taking. Within Tagiuri's social system and culture climate categories, Litwin and Stringer provided a more in-depth look at the many dimensions of the two categories.

Campbell, Dunnette, Cawler and Weick (1970) defined climate as "a set of attributes specific to an organization that may be induced from the way that organization deals with its members and its environment" (p. 390). Following a review of previous

literature, they narrowed down the many factors that contribute to climate to just three factors. They identified individual autonomy as a factor. Individual autonomy consisted of the freedom employees have to be their own bosses and the amount of structure that is in place in organizations. They also tied an organization's communication of objectives into this factor. Clearly these two categories were much like Litwin and Stringer's (1968) dimensions of individual responsibility and structure. The next factor that they outlined was that of reward orientation. This factor encompassed the reward system that an organization has for its workers. Again, this factor was similar to Litwin and Stringer's idea that organizations handle reward and punishment differently. Finally, they included consideration, warmth and support as a factor in organizational climate just as Litwin and Stringer did in 1968. This factor relates to the human relations aspect of organizations.

Tagiuri's (1968) categories and Litwin and Stringer's (1968) dimensions were further categorized into the three factors created by Campbell et al. (1970). Several of Litwin and Stringer's dimensions, such as the issues of loyalty and conflict in an organization, were ignored as Campbell et al. developed their factors. Campbell et al. further delineated Tagiuri's categories of social systems and culture as they worked to clarify a complicated construct.

In examining the concept of organizational climate, James and Jones (1974) were particularly interested in the methods of measuring organizational climate. They asserted that "organizational climate research occupies a popular position in current industrial and organizational psychology. However, conceptual and operational definitions, measurement techniques and ensuing results are highly diverse and even contradictory" (p. 1096). James and Jones outlined three approaches to defining and measuring

organizational climate. The first of these approaches was the multiple measurement-organizational attribute approach. They included Forehand and Gilmer's (1964) definition in this approach. They saw that organizational size, structure, system complexity, leadership style and goal directions were included in this approach. Any items that focused on organizational or group characteristics were considered as part of this approach.

The second approach that James and Jones (1974) identified was the perceptual measurement-organizational attribute approach. James and Jones included Campbell et al. (1970) and Tagiuri's (1968) definitions in this approach. James and Jones identified this approach as contending with "perceived organizational climate as a psychological process intervening between organizational processes and dependent variables and operating at a level of explanation different from organizational processes such as task specialization" (p. 1104). The third identified approach was perceptual measurement-individual attribute approach. This approach considers individual member's perception of the climate and not the shared perspectives of members of the organization. James and Jones differentiated between this approach and the previous approach by stating that this approach focuses "on organizational climate as an individual rather than an organizational attribute" (p. 1106). James and Jones postulated that this approach to climate should not be called organizational climate but rather psychological climate. The work of James and Jones served to provide another method of further constructing the concept of organizational climate.

Hellriegel and Slocum (1974) defined climate as "a set of attributes which can be perceived about a particular organization and for its subsystems, and that may be induced

from the way that organization and/or its subsystems deal with their members and environment” (p. 256). These two researchers categorized organizational measures into two categories. They identified objective and perceptual measures as the two categories of climate measures that were used by climate researchers. These two categories coincided with James and Jones’ (1974) categories with the exception that they did not break the perceptual category into measures dealing with individual versus organizational attributes.

Hellreigel and Slocum’s (1974) ideas were similar to Guion’s (1973) and Johanneson’s (1973) ideas concerning organizational climate. Guion also broke climate into two categories. Climate was either identified by the perceptions of individuals or by the attributes of the organization. The perceptions of individuals would be more subjective in nature while the attributes of the organization more objective. Johanneson used the same two categories to describe organizational climate definitions only he called them the objective and perceptual. Johanneson identified the perceptual definition as being related to job satisfaction.

Clearly, the work of these researchers working in various fields led to a more cohesive understanding of organizational climate. Through the years researchers were able to incorporate the various definitions, theories and frameworks so people could begin to measure organizational climate and find ways to apply this knowledge to the work of organizational change. This early work was important for educators as they looked at the issue of organizational climate.

Table 1

Summary of Selected Psychology and Business Research

Researcher(s)	Organizational Climate Definition	Climate Framework
Forehand and Gilmer (1964)	the set of characteristics that describe an organization and that (a) distinguish the organization from other organizations, (b) are relatively enduring over time and (c) influence the behavior of people in the organization (p. 362)	
Taguiri (1968)	relatively enduring quality of the internal environment of an organization that (a) is experienced by its members, (b) influences their behavior, and (c) can be described in terms of values of a particular set of characteristics (or attributes) of the organization (p. 27)	<ul style="list-style-type: none"> • Ecology • Milieu • Social system • Culture
Evan (1968)	the multidimensional perception of the essential attributes of character of an organizational system (p. 110)	
Litwin and Stringer (1968)	induces (or is made of) expectancies and incentives which interact with a variety of psychological needs to induce aroused motivation and behavior directed towards needs satisfaction (p. 111)	<ul style="list-style-type: none"> • Structure • Individual responsibility • Warmth and support • Emphasis on reward and punishment • Conflict and tolerance for conflict • Performance standards • Member expectations • Attitude towards risk
Campbell, Dunnette, Cawler and Weick (1970)	a set of attributes specific to an organization that may be induced from the way that organization deals with its members and its environment (p. 390)	<ul style="list-style-type: none"> • Individual autonomy • Reward orientation • Consideration, warmth and support

James and Jones (1974)		<ul style="list-style-type: none"> • Multiple measurement-organizational attribute approach • Perceptual measurement-organizational attribute approach • Perceptual measurement-individual attribute approach
Hellreigel and Slocom (1974)	a set of attributes which can be perceived about a particular organization and for its subsystems, and that may be induced from the way that organization and/or its subsystems deal with their members and environment (p. 256)	<ul style="list-style-type: none"> • Objective measures • Perceptual measures
Guion (1973)		<ul style="list-style-type: none"> • Perceptions of individual • Attributes of organization
Johanneson (1973)		<ul style="list-style-type: none"> • Objective • Perceptual

Theory and Research in Education

The work done by people in psychology, sociology and business during the 1960s and 1970s laid a foundation for educational researchers as they investigated the concept of organizational climate in schools. Prominent educational researchers worked simultaneously with other researchers of organizational climate. Educational researchers have themselves defined organizational climate and have investigated its effects on everything from teacher performance to student achievement. Before looking at the specific research related to school organizational climate, it is first necessary to identify the definitions and frameworks of organizational climate commonly used by educators.

Educational Definitions

Two pioneers in educational research in the area of organizational climate were Halpin and Croft. Halpin and Croft (1963) identified the organizational climate as the “organizational personality; figuratively, personality is to the individual what climate is to the organization” (p. 1). In doing their research, Halpin and Croft recognized that they were examining the perceptions of teachers. They believed that it was these perceptions that would define the organizational climate.

In 1981, Owens described school organizational climate in broad terms. He identified it as “referring to the psychological context in which organizational behavior is prevalent” (p. 191). In 1987, Arter described school climate as a “shared perception” (p. 7). Clearly Arter fell in line with Halpin and Croft’s (1963) beliefs about school organizational climate. Hoy and Hannum (1997) later defined the organizational climate of a school as

the set of internal characteristics that distinguishes one school from another and influences the behavior of its members. In more specific terms, school climate is the relatively stable property of the school environment that is experienced by the participants, affects their behavior and is based on their collective perceptions of behavior in schools (1997, p. 291).

Besides aligning with Halpin and Croft (1963), Hoy and Hannum (1997) clearly related their definition of school organizational climate to the definitions of organizational climate put forth by writers such as Forehand and Gilmer (1964), Tagiuri (1968), and Litwin and Stringer (1968). Their definition falls into the perceptual categories outlined by Guion (1973) and Johanneson (1973).

Assorted Frameworks of the Organizational Climate of School.

A variety of educational researchers have proposed different frameworks for school organizational climate. There are similarities and differences in these frameworks. Research efforts have enabled researchers to consolidate some of these frameworks so that educators can more easily measure their school climates. Research in this area has allowed educators to understand the significance of a school's organizational climate.

Fox (1973) developed a framework in which he listed eight factors or characteristics of schools' organizational climates. His eight factors were respect, trust, high morale, opportunities for input, continuous academic and social growth, cohesiveness, school renewal, and caring. He believed that these factors would determine the quality of a school's climate.

Anderson (1982) drew upon Tagiuri's (1968) four variables for school climate. She equated the ecology variable to school facility characteristics. Her second variable was that of milieu. The milieu was associated with teacher morale and student-body characteristics. Social systems variables contended with administrative organizations, instructional programs, and administrative and teacher rapport. The final variable was culture, and it dealt with factors such as teacher commitment, cooperation, emphasis, expectations of administrators, and the defined goals of the schools. Anderson's variables, or characteristics of a school's organizational climate, included objective components such as facility information and student-body demographics. Anderson's climate framework differed from other educational frameworks because it was not solely tied to the perceptions of organizations' members. This framework, which stems from

Tagiuri's work, does demonstrate clearly the connection between the work of non-educators and educators in the area of organizational climate.

The Open Versus Closed Framework of Organizational Climate

As early as 1963, Halpin and Croft developed an important framework for organizational climate that is cited by educators and non-educators alike. Their work laid the foundation for much of the work to come in the research related to organizational climate in schools. They initially identified eight dimensions of school climate. Four dimensions were identified as teachers' behaviors. Disengagement was the first dimension, and it referred to teachers' behavior in relation to completing tasks. Hindrance included teachers' beliefs that principals burden them rather than facilitate their work. Esprit was the third dimension, and it encompassed the feeling that teachers have about their social needs being met while at the same time allowing them to enjoy their jobs. The final teacher behavior was intimacy, and it referred to their enjoyment of social relations with one another.

Principals' behaviors, according to Halpin and Croft (1963), were also divided into four dimensions. They identified aloofness as the first dimension; that is, principals who are very formal and impersonal in their work. Production emphasis referred to principals who closely supervise their staff. Thrust represented behavior by principals who try to move the organization forward. Finally, the fourth dimension was consideration. Consideration included the behavior of principals who have strong interpersonal skills. Halpin and Croft (1963) were able to identify six types of organizational climates in schools based on these dimensions. The six labels were open

climate, autonomous climate, controlled climate, familiar climate, paternal climate and closed climate.

In the open climate, which is at one end of the scale, Halpin and Croft found that there was high esprit, low disengagement, low hindrance and a high degree of intimacy. There was also high thrust and consideration and low aloofness and production emphasis. The closed climate, which was at the other end of the scale, indicated that there was high disengagement and hindrance. There was also low esprit and average intimacy. In the principal dimensions, there was high aloofness and production emphasis. There was low thrust and consideration in this type of climate. Halpin and Croft (1963) laid the foundation for future work in school organizational climate by identifying its characteristics.

The framework of the open and closed school climates has been further investigated and defined by educational researchers (Hoy, Hannum, & Tschannen-Moran, 1998; Hoy & Miskel, 1987; Hoy, Sabo, et al., 1998; Hoy & Tarter, 1997; Hoy, Tarter, & Bliss, 1990). Hoy, Tarter, and Bliss have defined open climates as being ones in which there are sincere relationships between teachers, students and administrators. In these environments, principals encourage teachers to make professional decisions. The open climate is one in which teachers are supported and teachers and principals are straightforward in their interactions. The climate is authentic because teachers and principals are straightforward with one another (Hoy & Tarter). Principals balance structure and direction with support and consideration (Hoy, Hannum, & Tschannen-Moran). Closed climates are seen as insincere and involve manipulation and game playing (Hoy & Tarter; Hoy, Sabo, et al.). Teacher morale is also low in these climates

(Hoy & Tarter). Observers of closed climates see teachers and principals involved in trivial actions and doing unnecessary work (Hoy, Hannum, et al.).

Hoy and his colleagues have further delineated the open and closed climate framework, first presented by Halpin and Croft (1963). Hoy's work has led to an even better understanding of schools' organizational climates. His work has also formed the basis of additional frameworks for organizational climate.

Organizational Health

Another framework for the organizational climate of schools is the idea of organizational health (Hoy, Hannum, & Tschannen-Moran, 1998; Hoy & Hannum, 1997; Hoy & Miskel, 1987; Hoy & Tarter, 1997; Hoy, Tarter, & Kottkamp, 1991; Hoy, Tarter & Bliss, 1990). During the 1960s, Miles used the term organizational health when examining schools. Miles (1969) identified a healthy organization as one that "not only survives in its environment, but also continues to cope adequately over the long haul, and continuously develops and extends its surviving and coping abilities" (p. 378). Miles outlined ten dimensions of organizational health. Goal focus and communication adequacy were the first two of his ten dimensions. The third dimension was optimal power equalization, and it referred to the distribution of influence for the subordinates and supervisor. Resource utilization, the effective use of the system's inputs, was the fourth dimension. Cohesiveness of the organization and the morale of the organization were identified as the next two dimensions. Innovativeness was the seventh dimension, while autonomy of the organization from the environment was the next dimension. An organization's ability to adapt and problem solve were the final two dimensions.

Miles' early work on organizational health is related to the more recent work in this framework of organizational climate. In fact, Hoy, Tarter and Kottkamp (1991) have examined Miles' ten dimensions of organizational health in broader terms. They discussed the fact that the first three dimensions fell into a task-needs category. The next four dimensions fell into the maintenance-needs category while the final three dimensions were categorized by growth and development needs.

Organizational health has also been related to Parsons' ideas of organizations as systems (Hoy & Feldman, 1987; Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, et al., 1998; Hoy Tarter, & Kottkamp, 1991). Parsons (1958) specified that there were three levels in organizations that have been applied to education. One level he identified was the technical level, which in education encompasses the actual process of teaching. Teachers and other staff members are part of this level. The next level was the managerial level, which is the level in education that decides what is taught and who will teach the students. This level mediates between the technical and the institutional parts of the organization. The managerial part of the system is also responsible for acquiring necessary resources. Principals and other administrators are part of the managerial level. Finally, Parsons identified the institutional part of the organization as representing the organization's connection with the environment. In the realm of education, school boards are included in this part of the system (Parsons).

Parsons' view of the social systems of schools has been used to develop the framework for organizational health. Researchers posit that in order for a school to be healthy, all three levels or parts of the social system must work together effectively (Hoy

& Feldman, 1987; Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Tarter, & Kottkamp, 1991). More specifically,

a healthy school is one in which the technical, managerial and institutional levels are in harmony and the school is meeting both its instrumental and expressive needs as it successfully copes with disruptive external forces and directs its energies towards its mission (Hoy, Tarter, & Kottkamp, 1991, p. 68).

In 1987, Hoy and Feldman outlined seven dimensions of organizational health as they developed an instrument, the Organizational Health Inventory (OHI), to measure organizational health. The seven dimensions used by Hoy and Feldman clearly relate to Miles' (1969) dimensions of health. These dimensions were also classified by their placement in Parsons' (1958) levels of an organizational system (Hoy & Feldman, 1987; Hoy & Hannum, 1997; Hoy, Hannum & Tschannen-Moran, 1998; Hoy, Tarter, & Kottkamp, 1991). The first of Hoy and Feldman's dimensions was that of institutional integrity. This outlined schools' abilities to contend with the environment while at the same time maintaining their integrity. This dimension related to Parsons' institutional level (Hoy & Feldman, 1987; Hoy & Hannum, 1997; Hoy, Hannum & Tschannen-Moran, 1998; Hoy, Tarter, & Kottkamp, 1991) and to Miles' idea of adaptation.

The next dimension was principal influence. This dimension, related to Miles' (1969) power equalization dimension, incorporated a principal's ability to influence their superiors. Another dimension was consideration, and it incorporated the behavior of the principal in the area of interpersonal relations with the staff. Initiating structure was the next dimension, and it encompassed a principal's behavior in terms of their balance between task and achievement orientation. Resource support was the fifth dimension, and

it included the support that is given in terms of materials to teachers and staff members. Principal influence, consideration, initiating structure and resource support were related to Parsons' managerial structure (Hoy & Feldman, 1987; Hoy & Hannum, 1997; Hoy, Tarter, & Kottkamp, 1991).

Morale was a dimension presented by Miles (1969) and reiterated by Hoy and Feldman (1987). Morale in this instance referred to the feelings of warmth, trust and friendliness that exist among the faculty members. Academic emphasis was the final dimension, and it incorporated the "extent which the school is driven by a quest for academic excellence" (p. 31). The last two dimensions were tied into Parsons' technical level (Hoy & Feldman, 1987; Hoy & Hannum, 1997; Hoy, Tarter, & Kottkamp, 1991).

More recently, healthy schools have been identified as schools that consist of positive student, teacher and administrative interactions. Teachers like their coworkers, schools, jobs and students. An unhealthy school is tumultuous with conflict. Teachers do not like their colleagues, students or administrators (Hoy, Hannum & Tschannen-Moran, 1998). An organization that is healthy is one in which growth and development occur, while in an unhealthy organization growth is stagnant (Hoy & Miskel, 1987). The concept of school health has become integrated with the concept of school climate (Hoy, Hannum & Tschannen-Moran; Hoy, Sabo, et al., 1998). Hoy and his colleagues' framework of school health, like their framework of open and closed climates, provided the basis for a new framework that merges ideas from both and allows researchers to more closely scrutinize the organizational climate of schools.

A Consolidated Framework.

Educational researchers have identified a number of factors and characteristics that make up frameworks for school organizational climates. Many of these factors are closely aligned with Halpin and Crofts' (1963) original work in this area. More recently, Hoy and his colleagues (Hoy, Sabo, et al., 1998; Hoy, Hannum & Tschannen-Moran, 1998) have consolidated these frameworks, thus enabling educators to measure school climates more easily.

The consolidated framework relies on looking at individual perceptions, one of the dimensions of James and Jones' (1974) work related to climate measurement, and, because it is perceptual and not objective in nature, it is in line with the work of Guion (1973), Johanneson (1973), and Hellreigel and Slocum (1974). The framework places climate in Tagiuri (1968) and Anderson's (1982) category of social systems.

The researchers combined some of the factors related to organizational health and climate to create four characteristics of a school's organizational climate (Hoy, Sabo, et al., 1998; Hoy, Hannum & Tschannen-Moran, 1998). Specifically, the framework outlining open and closed organizations and healthy and unhealthy organizations were combined. Hoy, Hannum and Tschannen-Moran wrote "although the openness and health are different, nevertheless there is some overlap in the frameworks and their measures. Hence we turn to a more parsimonious perspective of the school workplace" (1998, p. 341).

The first of these factors is that of collegial leadership which characterizes the relationships that exist between principals and teachers. This refers to the behavior of the principal that is seen as supportive and collegial in an open climate. The principal seeks

to meet the needs of the faculty and the goals of the school (Hoy, Sabo, et al., 1998; Hoy, Hannum, & Tschannen-Moran, 1998). The second factor is that of teacher professionalism, and it outlines the connections that teachers have with one another. Teacher professionalism refers to behavior that shows commitment by teachers and demonstrates cooperation. Teachers in an open climate respect other teachers and are warm and friendly. Teachers are engaged in the teaching process (Hoy, Sabo, et al., 1998; Hoy, Hannum, & Tschannen-Moran, 1998).

Academic press is the third factor. Academic press in an open climate refers to teachers setting high goals and the principal supplying resources and assisting in achieving the goals. Principals are able to wield influence in helping to meet goals (Hoy, Sabo, et al., 1998; Hoy, Hannum, & Tschannen-Moran, 1998). The final factor is environmental press. This factor demonstrates the desire the school community and parents have to influence the school and continually improve it. (Hoy, Sabo, et al.; Hoy, Hannum, & Tschannen-Moran). In order to capture the more positive dimensions of a school's relationship with its community, Tschannen-Moran and DiPaola (2002) have recently reconceptualized this factor and labeled it community engagement.

The four factors outlined in the framework are in line with the framework for organizational health generated by Parsons' (1958) theories. Community engagement represents the institutional level. Collegial leadership represents the managerial level, while the technical level is represented by academic press and teacher professionalism (Hoy, Sabo, et al., 1998; Hoy, Hannum, & Tschannen-Moran, 1998). A healthy school will demonstrate that all three levels are well-integrated and able to work in harmony toward common goals.

Educational scholars have created a consolidated framework that incorporates much of the research and writing concerning organizational climate both in and out of education. This framework incorporates numerous components of previous frameworks, thus allowing educational researchers to examine school organizational climates as they relate to a variety of important outcomes and practices. For the purpose of this study, it is this framework that will be used in examining middle school organizational climates.

Table 2

Summary of Selected Educational Research

Researcher(s)	Organizational Climate Definition	Climate Framework (Measurement Tool)
Halpin and Croft (1963)	organizational personailty; figuratively, personality is to the individual what climate is to the organization (p. 1)	<ul style="list-style-type: none"> • Open • Autonomous • Controlled • Familiar • Paternal • Closed
Owens (1981)	referring to the psychological context in which organizational behavior is prevalent (p. 191)	
Arter (1987)	shared perception (p. 7)	
Hoy and Hannum (1997)	the set of internal characteristics that distinguishes one school from another and influences the behavior of its members. In more specific terms, school climate is the relatively stable property of the school environment that is experienced by its participants, affects their behavior and is based on their collective perceptions of behaviors in schools (p. 291)	<ul style="list-style-type: none"> • Open • Closed (OCDQ)

Fox (1973)		<ul style="list-style-type: none"> • Respect • Trust • Morale • Opportunities for input • Continuous academic and social growth • Cohesiveness • School renewal • Caring
Anderson (1982)		<ul style="list-style-type: none"> • Ecology • Milieu • Social systems • Culture
Miles (1969)	survives in its environment , but also continues to cope adequately over the long haul, and continuously develops and extends it surviving and coping abilities (p. 378)	<ul style="list-style-type: none"> • Goal focus • Communication • Power equalization • Resource utilization • Cohesiveness • Morale • Innovativeness • Autonomy from environment • Adaptability • Problem solving
Hoy, Tarter, and Kottkamp (1991)	the technical, managerial, and institutional levels are in harmony and the school is meeting both its instrumental and expressive needs as it successfully copes with disruptive external forces and directs its energies towards its mission (p. 68)	
Hoy and Feldman (1987)		<ul style="list-style-type: none"> • Institutional integrity • Principal influence • Consideration • Initiating structure • Resource support • Morale • Academic Emphasis (OHI)

Hoy, Hannum and
Tschannen-Moran
(1998)

- Collegial leadership
- Teacher professionalism
- Academic press
- Environmental press
(OCI)

Tschannen-Moran
and DiPaola
(2002)

- Collegial leadership
- Teacher professionalism
- Academic press
- Community engagement
(SCI)

Organizational Climate and Student Achievement

Numerous studies have been done in education to determine the relationship that exists between school organizational climates and other aspects of schools such as faculty trust and principal leadership style (Jensen, 1995; Tarter, Sabo, & Hoy, 1995). An area of great importance that has also been examined in relation to organizational climate is student achievement. Researchers have studied the relationship between these two areas in hopes of providing information that could lead to school improvement.

Brookover, et al. (1978) completed a study of school climate and student achievement. They looked at student achievement in terms of the mean achievement scores of fourth graders in 68 schools on Michigan assessments in the areas of reading and mathematics. The researchers were concerned with the schools' overall averages of students passing the objectives assessed by the tests. Socio-economic status (SES) and racial composition of the schools were also accounted for in the study. Students, teachers and principals were given climate surveys that were developed by the researchers.

The researchers looked at the specific climate variables as part of their study. Three variables were significantly related to student achievement: student sense of

academic futility ($r = .77, p < .01$), perceived present evaluations and expectations ($r = .56, p < .01$), and present evaluations and expectations for high school completion ($r = .66, p < .01$). Before racial composition was taken into consideration, the researchers found that 72 percent of the variance was explained by climate variables. Once the effect of SES was removed from samples, approximately one-fifth of the total variance was explained by climate. The researchers found that school racial composition does not determine the school climate. Only a small amount of the variance in achievement was explained by school composition once the effect of the climate variables was removed. The researchers also ascertained that changes of school composition without a change in climate would not guarantee changes in student achievement.

Stewart (1978) also studied school climate and student achievement. Stewart included 85 elementary and junior high schools in his study. Student achievement in reading and math were measured by the Iowa Test of Basic Skills (ITBS). School climate was measured using the Profile of a School (POS) form that was completed by teachers. Stewart found that there was a relationship between staff climate ($\beta = .71, p < .01$), principal leadership ($\beta = -.48, p < .05$) and student achievement at the fifth grade level. Schools with a more participative climate and with less structure scored higher on the ITBS achievement test (Stewart, 1978).

Johnson (1989) studied the relationship between organizational climate and school achievement in middle schools. He used the Organizational Climate Description Questionnaire-Rutgers Secondary (OCDQ-RS) to measure climate and the Iowa Test of Basic Skills to measure student achievement. Johnson found a significant relationship between organizational climate and student achievement in reading at both seventh ($r =$

.58, $p < .05$) and eighth grades ($r = .58$, $p < .05$). He did not find a significant relationship between student achievement in math and organizational climate. More recently, Hirase (2000) studied the relationship between school climate and student achievement using the Organizational Health Inventory (OHI) and Stanford Achievement test scores. After gathering data from 35 elementary schools in Utah, Hirase was able to conclude that there was a significant relationship between overall student achievement and school climate ($r = .53$, $p < .001$).

Hoy and his colleagues have done extensive research in the area of school climate and student achievement. In 1990, Hoy, Tarter and Bliss studied the relationship between organizational health, climate and student achievement as they attempted to determine which of two measurement tools would better predict achievement. The study involved 58 secondary schools in an eastern industrial state. Student achievement was measured by the High School Proficiency Test (HSPT) which tests verbal and quantitative skills. The Organizational Climate Description Questionnaire-Rutgers Secondary (OCDQ-RS) was used to measure climate. This questionnaire incorporated five factors: supportive principal behavior, directive principal behavior, engaged teacher behavior, frustrated teacher behavior and intimate behavior. The OCDQ-RS represented a refinement of the original OCDQ created by Halpin and Croft (1963). Organizational health was measured using the Organizational Health Inventory (OHI). This inventory contained the seven factors outlined in Hoy and Feldman's (1987) research concerning organizational health.

The findings of the study supported the notion that the OHI was a better instrument for predicting student achievement. More importantly, for the purpose of this study, the combined variables included in the health component of the study explained 59

percent of the variance for student achievement ($R = .77, p < .01$). Once SES was added in as a variable, all of the variables explained 75 percent of the variance in achievement ($R = .87, p < .01$). Academic emphasis ($\beta = .31, p < .01$) and SES ($\beta = .57, p < .01$) were the only two variables that made separate and significant contributions to the variance. Nothing was found to be statistically significant when achievement was regressed on the climate variables.

In another study, Hoy and Hannum (1997) looked at organizational health and student achievement in 86 middle schools in New Jersey. The Organizational Health Inventory-Rutgers Middle (OHI-RM), a revision of the original OHI containing Hoy and Feldman's dimensions of organizational health, was used to measure school health. This instrument measured six factors. These factors included: collegial leadership, resource support, academic emphasis, institutional integrity, principal influence and teacher affiliation. The Eighth Grade Early Warning Test (EWT) was used to measure student achievement. This test measured student achievement in math, writing and reading.

Hoy and Hannum (1997) found that dimensions of the OHI were related to student achievement in the areas of math ($r = .61, p < .01$), reading ($r = .58, p < .01$), and writing ($r = .58, p < .01$). Specifically, the area of academic emphasis was significantly related to high student achievement in math ($r = .73, p < .01$), reading ($r = .70, p < .01$), and writing ($r = .64, p < .01$). In addition, SES correlated with achievement in the areas of math, reading and writing ($r = .70$ to $.77, p < .01$). This study found that none of the aspects of the leadership of the principal in the OHI were related to student achievement. A primary purpose of the study was to evaluate the usage of specific measurements but it also provided a look at the relationship between organizational health and achievement.

Hoy, Sabo, et al. (1998) used data from the previously mentioned study to determine to what degree school health and openness related to student achievement. In addition to the OHI, the Organizational Climate Description Questionnaire-Rutgers Middle (OCDQ-RM) was used to measure school climate in the middle schools. This instrument, another revised version of Halpin and Croft's (1968) original OCDQ, included six factors: directive principal behavior, restrictive principal behavior, supportive principal behavior, collegial teacher behavior, disengaged teacher behavior and commitment to teachers' behavior. Both of these measurements were given to teachers and principals in the schools.

Hoy, Sabo, et al. (1998) found that schools with open principals had significant levels of student achievement in the areas of math ($r = .52, p < .01$), reading ($r = .54, p < .01$), and writing ($r = .47, p < .01$). Schools with open teacher behaviors also had significant levels of student achievement in math ($r = .42, p < .01$) reading ($r = .40, p < .01$) and writing ($r = .42, p < .01$). Socio-economic status appeared to be the most important predictor of student achievement in the study. The six climate dimensions combined with SES had $R = 0.83$ in math, $R = 0.81$ in reading, and $R = 0.75$ in writing with the variance explained by 66 percent, 62 percent and 52 percent for the tests.

Hoy, Sabo, et al. (1998) also recognized that schools with healthy school climates had higher levels of student achievement in math ($r = .61, p < .01$), reading ($r = .58, p < .01$), and writing ($r = .55, p < .01$). All the factors of school health except principal behavior had moderate to strong correlations with all aspects of student achievement (correlations ranged from $r = .46, p < .01$ to $r = .73, p < .01$). Institutional integrity was negatively correlated with student achievement ($r = -.35$ to $-.36, p < .01$). The study

showed that when teachers perceived that the community is interfering with the school then students were achieving at higher levels. When socio-economic status was added as a variable it was again the most important predictor of student achievement. The health elements combined with SES had multiple R's of 0.88, 0.86, and 0.81 in math, reading and writing. Even with socio-economic status in play, academic emphasis, teacher affiliation and resource support still provided substantial effects on student achievement.

Hoy, Hannum, and Tschannen-Moran (1998) used the data from Hoy, Sabo et al.'s (1998) study, as well as data that was acquired two years later, to determine if their findings would persist over time. They sampled 86 middle schools and used the OCDQ-RM and OHI-RM to measure climate. New Jersey's Eighth Grade EWT was used again to measure achievement. The researchers used the consolidated framework to determine the relationship between organizational climate and student achievement. From the 12 dimensions of two climate frameworks, openness and health, four strong factors emerged: collegial leadership, teacher professionalism, academic press and environmental press.

Hoy, Hannum, and Tschannen-Moran (1998) found that all the climate variables made a strong contribution to one or more of the achievement measures. Socio-economic status was examined in relationship to student achievement and was identified as a predictor for math ($\beta = .41, p < .01$), reading ($\beta = .35, p < .01$), and writing ($\beta = .31, p < .01$). Environmental press for math ($\beta = .33, p < .01$), reading, ($\beta = .35, p < .01$), and writing ($\beta = .30, p < .01$), and academic press for math ($\beta = .28, p < .01$) reading ($\beta = .26, p < .01$), and writing ($\beta = .31, p < .01$) were close to SES in their ability to predict achievement. Collegial leadership and teacher professionalism worked together to

contribute to achievement. The researchers asserted that “this study showed that climate variables are important in explaining achievement independent of SES” (Hoy, Hannum, & Tschannen-Moran, p. 353).

Over a two-year period the relationship between climate and achievement was very similar, demonstrating that climate is relatively stable over time. For example, the first time the statistics were calculated, socio-economic status was examined in relationship to student achievement and was also identified as a predictor for math ($\beta = .44, p < .01$), reading ($\beta = .43, p < .01$), and writing ($\beta = .40, p < .01$). Environmental press was calculated for math ($\beta = .30, p < .01$), reading, ($\beta = .30, p < .01$), and writing ($\beta = .30, p < .01$). Academic press predicted math ($\beta = .27, p < .01$), reading ($\beta = .22, p < .01$), and writing ($\beta = .24, p < .01$). These statistics did not vary much from the statistics, presented in the previous paragraph, that were calculated two years later with more recent achievement data. This study demonstrated a relationship between achievement and climate as well as the fact that this relationship endures over several years.

There have been a number of studies done which sought to determine the relationship between organizational climate and student achievement. Researchers found a positive relationship between organizational climate and student achievement in many of these studies. Researchers also found that specific factors of school climate can have independent effects on student achievement. The significance of SES was also examined in this body of research and was found to influence student achievement. Researchers continued to refined the instruments used to measure organizational climate as they examined its relationship with student achievement. The previous research done in this area helped to lay the groundwork for this study.

Virginia Standards of Learning

The Commonwealth of Virginia has been very active in the standards movement that is currently sweeping the field of education in the United States. In 1995 the Virginia Standards of Learning (SOL) were adopted by the state. The standards were put in place for English, math, science, and history and social sciences in grades kindergarten through 12. Many policy makers across the country have modeled their state standards after the Virginia SOL. More than 20 states have used Virginia's Standards of Learning to model their standards and the American Federation of Teachers gave its highest ratings to the standards in all four basic areas (Thayer, 2000).

Shortly after adopting the standards, Virginia educators and policy makers began to develop assessments that were designed to test student knowledge of the standards. In 1998, students took the first SOL tests. These assessments tested students in grades three, five and eight in English, history, science and math. High school students also took the tests at the end of specific courses for which the standards were written. Since the initial tests were given to all students in the state, testing has continued to occur at the end of the same grades and high school courses each year.

The SOL tests are high-stakes tests. Students who graduate in 2004 will be required to pass a specific number of tests in high school to receive a diploma. Elementary, middle and high schools must also have specific percentages of students pass the tests if they wish to be state accredited in the 2006-2007 school year.

The issue of student achievement and accountability is clearly an important one in Virginia. Students, teachers, administrators and parents realize the importance of students achieving on the SOL tests at all grade levels. As states across the country continue to

raise the bar for their schools, the issue of improving student achievement becomes increasingly important to everyone.

Organizational Climate and the Virginia Standards of Learning

Clearly, there has been important research done in the area of school organizational climate and student achievement. Researchers have used different frameworks when doing research in this area. Recently research has been done, using the consolidated framework that combines openness of the school climate as well as health in middle schools in the state of New Jersey and Ohio. It is important that similar research is done in other states using new data as educators attempt to clarify the relationship between climate and achievement.

It is also important to note that despite the role that socio-economic status can play in student achievement, school climate is particularly meaningful because “school climate is more amenable to change than the SES of a school” (Hoy, Sabo, et al., 1998, p. 89). Clearly, school leaders can be proactive in making changes that will effect their school climate as they examine their climates in terms of the consolidated framework. On the other hand, they cannot make changes to the socio-economic status of their students as they strive to change their levels of student achievement.

More and more states are beginning to do standards-based assessments. For this reason, it is important that research be done to see if there is a relationship between organizational climate and student achievement on standards-based assessments. As educators across the country look for ways to help students succeed with state standards, research in this area may help educators better understand how they can effect change in student performance by improving school climate.

This study provides important new data about the relationship of organizational climate to the English and math achievement of eighth graders on standards-based assessments in Virginia. The study also attempts to show the relative importance of the dimensions of climate, collegial behavior, teacher professionalism, academic press and community engagement, as they relate to student achievement. The data from this study may lead educators to identify ways to change their organizations as they attempt to improve student achievement and meet state standards.

Chapter 3: Methodology

Introduction

The issue of school and student accountability is prevalent throughout the country. The issue of accountability has led many researchers and educators to look at a variety of educational issues. School organizational climate is one issue being discussed in educational research literature and has been shown to correlate with student achievement. Due to the push for school accountability, researchers seek to determine if specific dimensions of school organizational climates can make a difference in student achievement. This study focused on tying the two concepts together by examining the relationship between school organizational climate and student achievement on the Virginia Standards of Learning tests in middle schools.

Research Questions

The following questions were addressed in this study:

1. What is the relationship between middle school organizational climate, as measured by the school climate index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?
2. What is the relationship between middle school organizational climate, as measured by the school climate index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning Math Test?
3. What is the relative weight of each of the factors of school organizational climate

- (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?
4. What is the relative weight of each of the factors of school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning Math Test?
 5. What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?
 6. What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning Math Test?

Research Design

This study was a correlational study. Correlational research enables the researcher to discover relationships between variables, and it also enables researchers to examine numerous variables in one study (Gall, Borg, & Gall, 1996). This study sought to discover if relationships exist between the organizational climate of schools and student achievement on state assessments in English and math. There are four factors within school climate: collegial behavior, teacher professionalism, academic press and community engagement. Correlational research enabled the researcher to look at each of these factors as they related to student achievement. In addition, multiple regression

allowed an assessment of relative effects each of the four factors and of the socio-economic status and organizational climate on student achievement.

Participants and Setting

This study took place in 49 middle schools in Virginia. The study involved 696 teachers. The SCI was one of three different indexes completed by teachers at the faculty meetings. One-third of all the teachers surveyed took the SCI which resulted in 696 teachers completing the index. The 49 middle schools were self-selected based on a willingness to participate in the study. A diverse sample of schools was asked to participate in the study so that urban, rural and suburban schools were represented in the study. The schools were located throughout the state of Virginia. Schools were also diverse in their racial and socio-economic make-up. In some cases, all middle schools within a school division were part of the study. With the permission of the principal, researchers administered surveys during regularly scheduled faculty meetings at the selected schools.

Instrumentation

School Climate

The School Climate Index (SCI) was used to survey the teachers. The survey measures the four dimensions of collegial leadership, teacher professionalism, academic press and community engagement. The SCI contains scaled questions with five choices ranging from never to continuously. The instrument was tested in a pilot study of 90 high schools (Tschannen-Moran & DiPaola, 2002). Table 1 outlines the range of factor loadings and the reliability for each factor.

Table 3

School Climate Index

Climate Factor	Sample SCI Item	Range of Factor Loadings	Reliability
Collegial Leadership	The principal is friendly and approachable	0.47-0.85	0.86
Teacher Professionalism	Teachers respect the professional competence of their colleagues.	0.68-0.83	0.92
Academic Press	Academic achievement is recognized by the school.	0.52-0.78	0.85
Community Engagement	Our school is able to marshal community support when needed.	0.55-0.82	0.87

Student Achievement

Data for student achievement were drawn from two eighth-grade Virginia Standards of Learning (SOL) Tests, English: Reading, Research and Literature, and

Math. These tests are given to eighth grade students in May each year and they evaluate student knowledge of the Virginia Standards of Learning. Construct validity for the SOL tests was established by correlations between the SOL tests and the Stanford 9 Achievement Test ninth edition and the Virginia Literacy Passport Test. The eighth grade English test had a correlation of 0.72 while the math test had a correlation of 0.70 (Hambleton et al., 2000).

A committee of researchers did a review of the technical characteristics of the SOL tests. The committee found that broad procedures were used to ensure that test questions assessed the content of the Standards of Learning. A Content Review Committee, made up of educators with expertise in the tested content areas, thoroughly reviewed all of the test items. Measurement experts were also involved in the test development process. The test developers used Item Response Theory (IRT) in order to estimate the item-response difficulty of the test items. The Mantel-Haensel Alpha and Rash tests were also used to determine item difficulty as applied to the demographics of students in Virginia. These procedures indicated to the committee that “there was ample evidence in the Technical Manual that procedures used to investigate the content validity were adequate (Hambleton et al., 2000, p. 3).

Reliability for the SOL tests was determined using the Kuder-Richardson Formula 20 (KR-20). The eighth-grade English: Reading, Research and Literature test was found to have a reliability of 0.88 and the eighth-grade Math test had a reliability of 0.92. These reliability scores are for the Core 1 test, which is the principal test taken by the vast majority of students in Virginia (Hambleton et al., 2000) .

Table 4

Instrumentation

Variable	Instrumentation
Organizational Climate (Factors: Collegial Leadership, Teacher Professionalism, Academic Press, Community Engagement)	School Climate Index (SCI)
Student Achievement in English	Mean scores on Virginia eighth-grade English: Reading, Research and Literature SOL Test
Student Achievement in math	Mean scores on Virginia eighth-grade Math SOL Test
Socio-Economic Status	Percentage of students in the school who receive free or reduced-price lunch

Data Collection

Organizational Climate

This study was part of a larger study of middle schools conducted by the College of William and Mary, so numerous researchers were involved in data collection. Three separate instruments were used to collect three different sets of data related to social processes in schools. One-third of each faculty completed the SCI at each school while

the other two-thirds filled out the remaining two instruments. In other words, one-third of the teachers at each school provided data for this study. Halpin (1959) demonstrated that the average scores on descriptive questionnaire items that are computed on the basis of five to seven respondents yield relatively stable scores. For this reason, faculties surveyed consisted of at least 15 members.

From October 2001 through February 2002, researchers contacted school divisions and, in some instances, individual schools to obtain approval for the study. Once approval was given, the researchers contacted middle school principals within the school divisions to determine if they were willing to include their schools in the study. The researchers arranged with principals to attend a faculty meeting so the forms could be administered to teachers. The average completion time for the SCI was approximately 10 minutes. The forms were administered from October 2001 to March 2002.

Student Achievement

The data for student achievement from the May 2001 SOL tests were collected from the Virginia Department of Education in November 2001. The researcher collected the mean scores of all the participating schools for eighth grade students on the English: Reading, Research and Literature and Math tests.

Socio-Economic Status

The data for the socio-economic status of the participating schools were collected from the Virginia Department of Education in November 2001. The socio-economic status of the schools was based on the percentage of students who receive free or reduced lunch. The Virginia Department of Education provided this information in terms of the percentage of students who participate in the program.

Data Analysis

The researcher used statistical analysis to answer the research questions. The data were analyzed using a statistical computer program, SPSS. Because the school was the unit of analysis, aggregated scores for the schools were calculated. Mean scores, standard deviations, and range were calculated for collegial leadership, teacher professionalism, academic press, community engagement, student achievement on the English: Reading Research and Literature Test, and student achievement on the Math Test. Correlations for the variables were computed. Multiple regressions were used to analyze the data.

Table 5

Data Analysis

Research Question	Data Analysis Tools
What is the relationship between middle school organizational climate, as measured by the school climate index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?	Correlations
What is the relationship between middle school organizational climate, as measured by the school climate index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning Math Test?	Correlations
What is the relative weight of each of the factors of	Correlations

school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?

Multiple Regressions

What is the relative weight of each of the factors of school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning Math Test?

Correlations

Multiple Regressions

What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test?

Multiple Regression

What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning Math Test?

Multiple Regression

Ethical Safeguards

The researcher gained permission from the College of William and Mary's Education School's Human Subjects Review Committee to conduct the study. Teachers and principals were informed that their schools and their names would not be identified in the study. Principals were provided the opportunity to receive the results of the school climate index, but principals were not able to identify specific teachers' responses. The results are being published collectively, so individual schools are not identified in the study.

Chapter 4: Analysis of Results

Introduction

This study investigated the relationship between the concepts of organizational climate and student achievement. The study was also designed to determine if the four factors of organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) had significant effects on student achievement. In this study, student achievement was measured by the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test and the eighth-grade Virginia Standards of Learning Math Test. This study also examined the relative effects of organizational climate and socio-economic status of surveyed schools on student achievement.

The School Climate Index (SCI) measured organizational climate. The SCI was administered by researchers during faculty meetings. The SCI was one of three different indexes completed by teachers at the faculty meetings. One-third of all the teachers surveyed took the SCI and resulted in 696 teachers from 49 Virginia middle schools completing the index between October 2001 and March 2002. The data for student achievement from the May 2001 SOL tests were collected from the Virginia Department of Education in November 2001. The socio-economic status of participating schools was obtained from the Virginia Department of Education and was based on the percentage of students who participate for free or reduced-price lunch.

Findings

The six research questions were answered by analyzing data using the SPSS statistical computer program. Descriptive statistics, identified in Table 4, were computed for organizational climate and student achievement in English and math on the SOL tests. The means described in Table 4 represent the mean scores for each factor. These scores were determined by averaging the scores for all of the items within each factor. The mean score for the SCI was a result of an average of all of the responses for all of the items. The teachers responded to the items by using a five point scale with one representing never and five representing continuously.

The mean scores for the English and math SOL tests represent the mean of all the mean scores for the schools in the study. The SOL scores were calculated by converting raw scores into standard scores that range from 100 to 600. A score of 400 is considered passing and a score of 500 is considered pass advanced on the SOL tests. SPSS generated reliabilities using the Cronbach's alpha method of evaluating internal consistency. Reliabilities, found in Table 5, were determined for each of the four factors specified in the SCI and for the SCI itself. Correlations and multiple regressions were used to answer the research questions.

Table 6

Descriptive Data

Variables	Mean	Standard Deviation	Minimum	Maximum
SCI	3.75	.29	3.01	4.37
Collegial Leadership	3.88	.38	3.17	4.58
Teacher Professionalism	3.94	.25	3.51	4.44
Academic Press	3.58	.32	2.76	4.41
Community Engagement	3.59	.43	2.41	4.40
English SOL Test	431.54	30.73	364.3	493.9
Math SOL Test	423.77	28.12	366.9	494.3

Table 7

School Climate Index Reliabilites

Climate Factor	Number of Items	Reliability
Collegial Leadership	7	0.94
Teacher Professionalism	8	0.96
Academic Press	6	0.94
Community Engagement	7	0.94
SCI	28	0.96

First Research Question

The first question asked: What is the relationship between middle school organizational climate, as measured by the School Climate Index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test? Table 6 provides data that answer the first research question. The data show that there was a moderately strong and positive relationship between middle school organizational climate and student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test. There was a significant correlation between organizational climate and student achievement in English ($r = .54$, $p < .01$) with organizational climate explaining 29 percent of the variance in student achievement in English.

Second Research Question

The second question asked: What is the relationship between middle school organizational climate, as measured by the School Climate Index (SCI), and student achievement on the eighth-grade Virginia Standards of Learning Math Test? The data depict a moderate and positive relationship between middle school organizational climate and student achievement on the eighth-grade Virginia Standards of Learning Math Test. There was a significant correlation between organizational climate and student achievement in math ($r = .57$, $p < .01$) with organizational climate explaining 32 percent of the variance in student achievement in math. Table 6 provides the data that answer the second research question.

Table 8

Correlation Analysis of School Climate

	2.	3.	4.	5.	6.	7.	8.
1. School Climate Index (SCI)	.74**	.82**	.92**	.88**	.54**	.57**	-.43**
2. Collegial Leadership		.52**	.54**	.43**	.16	.21	-.04
3. Teacher Professionalism			.72**	.63**	.32*	.37**	-.29*
4. Academic Press				.84**	.62**	.63**	-.49**
5. Community Engagement					.64**	.67**	-.58**
6. English SOL						.94**	-.86**
7. Math SOL							-.81**
8. SES							

** p < .01

* p < .05

Third Research Question

The third question asked: What is the relative weight of each of the factors of school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test? Table 7 provides data from the multiple regression that answer the third question. In examining the data it is evident that only academic press ($\beta = .53$, $p < .05$) and community engagement ($\beta = .42$, $p < .05$) had significant independent effects on student achievement on the English test. The data also indicate that 45 percent of the variance in student achievement in English can be explained by the four factors of organizational climate.

Table 9

Regression Analysis for Question 3

Dependent Variable and Predictors	Beta	R ²	Standard Error
English SOL Test		.45	22.79
Collegial Leadership	-.18		
Teacher Professionalism	-.23		
Academic Press	.53*		
Community Engagement	.42*		

* p < .05

Fourth Research Question

The fourth question asked: What is the relative weight of each of the factors of school organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) in relation to student achievement on the eighth-grade Virginia Standards of Learning Math Test? Table 8 provides data from the multiple regression that answer this question. It is evidenced by this data that only community engagement ($\beta = .47$, $p < .05$) had a significant independent effect on student achievement on the math test. The data also indicated that 45 percent of the variance in student achievement in math can be explained by the four factors of organizational climate.

Table 10

Regression Analysis for Question 4

Dependent Variable and Predictors	Beta	R ²	Standard Error
Math SOL Test		.45	20.86
Collegial Leadership	-.13		
Teacher Professionalism	-.17		
Academic Press	.43		
Community Engagement	.47*		

* $p < .05$

Fifth Research Question

The fifth question asked: What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test? The measurement tool for SES in this study, the proportion of students receiving free or reduced-price lunch, was inversely related to actual SES. In other words, if more students received free or reduced-price lunch, a school had lower SES. The data indicate that SES ($\beta = -.79, p < .01$) had a significant independent effect on student achievement on the English test. This means that schools in this study with a higher proportion of students receiving free or reduced-price lunches had a lower level of student achievement in English. It can be noted that organizational climate came close to reaching statistical significance in its influence on English achievement ($\beta = .16, p < .051$). The data also

indicate that SES and organizational climate can explain 75% of the variance in student achievement in English. Table 9 provides data from the multiple regression that answer this question.

Table 11

Regression Analysis for Question 5

Dependent Variable and Predictors	Beta	R ²	Standard Error
English SOL Test		.75	14.84
School Climate Index (SCI)	.16		
SES	-.79**		

** p < .01

Sixth Research Question

The sixth question asked: What are the relative effects of the socio-economic status and organizational climate of middle schools on student achievement on the eighth-grade Virginia Standards of Learning Math Test? Table 10 provides data from the multiple regression that answer this question. It is evidenced by this data that SES ($\beta = -.71, p < .01$) had a significant independent effect on student achievement on the math test. This means that schools in this study with a higher proportion of students receiving free or reduced-price lunches had a lower level of student achievement in math. Organizational climate also has a significant independent effect in math achievement ($\beta = .23, p < .05$). The data indicate that SES and organizational climate can explain 69% of the variance in student achievement in math.

Table 12

Regression Analysis for Question 6

Dependent Variable and Predictors	Beta	R ²	Standard Error
Math SOL		.69	14.91
School Climate Index (SCI)	.23*		
SES	-.71**		

** p < .01

* p < .05

Additional Results

Correlations were calculated for all of the factors of school climate. The research questions did not directly address these correlations but it is important to note these findings. Table 6 presents the findings in numerical form. Teacher professionalism, academic press and community engagement were all significantly and positively related to student achievement in English and math. Only collegial leadership did not show significant relationships to student achievement. Of the three factors showing significant relationships, community engagement showed the strongest significant relationship with student achievement in English ($r = .64, p < .01$) and math ($r = .67, p < .01$) while teacher professionalism showed the weakest significant relationship in English ($r = .32, p < .05$) and math ($r = .37, p < .01$).

Finally, SES was significantly related to the SCI ($r = -.43, p < .01$), teacher professionalism ($r = -.29, p < .05$), academic press, ($r = -.49, p < .01$) and community engagement ($r = -.58, p < .01$). SES was also related to student achievement on the

English ($r = -.86$ $p < .01$) and math ($r = -.81$, $p < .01$) SOL tests. In all the case, the relationship was negative because there was an inverse relationship between SES, students who participate in free and reduced-price lunch, and the other variables.

Conclusion

Overall, significant relationships were found between the variables in this study. The SCI and three of its factors were significantly correlated with student achievement in math and English. Certain variables such as community engagement and academic press were also found to have independent effects on student achievement. SES clearly had strong independent effects on student achievement in both English and math. These findings will provide the basis for further discussion of this study and recommendations for possible future studies.

Chapter 5: Discussion, Implications and Conclusions

Summary

Introduction

Educators throughout the country are examining practices in their schools as they seek ways to ensure student success during this nation-wide era of accountability. More specifically, educators are focused on meeting state benchmarks that have been set throughout the country. These benchmarks, like the ones in Virginia, typically are in the form of assessments that measure student knowledge of state standards. One aspect of schools that can be examined is organizational climate. This examination is important because positive school climate has been linked with student achievement on standardized tests in the past (Brookover, et al., 1978; Hannum, 1998; Hirase, 2000; Hoy & Hannum, 1997; Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, et al., 1998; Hoy & Tarter, 1997; Johnson, 1989; Stewart, 1978).

This study investigated the concepts of organizational climate and student achievement using a new measure of school climate. The concept of organizational climate utilized in this study was based upon the four factors developed by Hoy and his colleagues. The study sought to determine if there is a relationship between organizational climate and student achievement on state standards. The study was also designed to determine if the four factors of organizational climate (collegial leadership, teacher professionalism, academic press and community engagement) had independent

effects on student achievement. In this study, student achievement was measured by the eighth-grade Virginia Standards of Learning English: Reading, Research and Literature Test and the eighth-grade Virginia Standards of Learning Math Test. This study also examined the relative effects of organizational climate and socio-economic status on student achievement.

Limitations

This study was limited by the fact that participating schools were self-selected. The study involved schools in school districts in the state of Virginia that were willing to participate in the study. The fact that the schools were self-selected means that the findings of the study cannot be generalized to every middle school in Virginia, affecting the external validity of the study.

The study was also limited by the Virginia Standards of Learning tests because the tests themselves have a certain level of accuracy and validity and are designed to test only Virginia standards. Another limitation stems from the fact that organizational climate data were collected October 2001 through March 2002. The Standards of Learning test data were collected in the fall of 2001 but the results were from the spring of 2001. This timeline results in the climate data being collected at a different time from the actual testing period. Organizational climate has been found to endure over time (Hoy, Hannum, & Tschannen-Moran, 1998) which should lessen the impact of this limitation. Schools where there was a change in leadership between the time the SOL tests and the climate instrument were administered were excluded from the study.

Finally, this study relied on the perceptions of teachers as measured by self-report instruments. The manner in which teachers and principals responded could have been

affected by the events of the day on which they completed the survey. The responses were based on the perceptions and thoughts of the teachers and not on data collected through observation of the schools' climates. All of the limitations presented above must be considered throughout the discussion of the findings and the implications for researchers and educators.

Discussion of Findings

The study yielded several important findings and significant results. The findings of this study have similarities and differences from previous studies done in this area. These findings provide a springboard for further discussion on school climate and student achievement.

School climate was positively correlated with middle school student achievement on Virginia's assessments in English and math. The relationship between the concepts was positive and moderate in nature. These findings are similar to those found in other studies related to school climate and student achievement (Brookover, et al., 1978; Hannum, 1998; Hirase, 2000; Hoy & Hannum, 1997; Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, et al., 1998; Hoy & Tarter, 1997; Johnson, 1989; Stewart, 1978). This finding indicates there is a relationship between a positive organizational climate and middle school student achievement on Virginia assessments of standards in English and math.

Further statistical analysis determined if individual factors had independent effects on student achievement. This portion of the study yielded interesting results. Only academic press and community engagement were found to have independent effects on student achievement on the English test when all four factors were entered together.

Schools in which high goals are set and understood and are supported by teachers and students are more likely to have students with higher English achievement scores.

Schools that engage their communities or enable parents and other community members to assist in school improvement will also be more likely to have higher student achievement in English.

These results differ from other studies, using a similar framework, which examined school climate and student achievement. Hoy, Hannum, and Tschannen-Moran (1998) found that in addition to academic press and environmental press, the term previously used to describe the factor similar to community engagement, collegial leadership also had an effect on student achievement in reading on New Jersey state assessments. This was true of two studies that were done during two different years and involving state assessments in the same New Jersey schools. In this study, as well as the other two, teacher professionalism was found not to independently influence student achievement in English or reading.

The findings of this study were also unique for student achievement in math. Only community engagement was found to have an independent effect on student achievement on the Virginia math test. These results demonstrate that middle school students may be more successful on state math assessments if parents and community members are working with their schools to ensure student success. Again, these results were different from previous studies. In the two New Jersey studies, academic and environmental press influenced student achievement on state math tests (Hoy, Hannum, & Tschannen-Moran, 1998). Teacher professionalism and collegial leadership were found not to independently influence math achievement in either Virginia or New Jersey.

It should be noted that when simple correlations were run for the factors in this study, the only factor that was not significantly related to student achievement in English and math was collegial leadership. This result was also different because in the studies completed in New Jersey all four factors were significantly related to student achievement in math and reading (Hoy, Hannum, & Tschannen-Moran, 1998). This study demonstrated that because no relationship was found between collegial leadership and student achievement, it would appear that principals do not have an independent effect on student achievement. In other words, when looking at the climate factors, the one which specifically addresses the role of the principal is not directly related to student achievement on state assessments, although this is not to say that principals cannot indirectly affect student achievement.

The final part of this study examined the effects of both school climate and socio-economic status (SES) on student achievement. Only SES was found to have an independent effect on student achievement on the English test. Schools with lower proportions of students receiving free or reduced-price lunches had higher achievement in English. In the area of math, both school climate and SES were found to independently effect student achievement. Schools with lower proportions of students receiving free or reduced-price lunches and a more positive climate had higher math achievement. These results are similar to the results of numerous other studies in which SES was found to be a strong predictor in student achievement (Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, et al., 1998; Hoy, Tarter, & Bliss, 1990).

Implications

The results of this study have implications for educational researchers and practitioners as they look at ways to continue to improve student achievement. Clearly, the fact that there is a relationship between school organizational climate and middle school student achievement is reason enough for educators and researchers to continue to examine the concept of school climate as outlined by the consolidated framework. This study, unlike previous studies, indicated that two of the factors, teacher professionalism and collegial leadership, had no independent effect on student achievement. However, two of the factors, presented in the consolidated framework for organizational climate that was used for this study, were found to have an effect on student achievement and must be examined. Further examination of these factors may assist educators currently working in schools. In addition, it is important to discuss implications of the findings related to the relative effects of school climate and SES.

Collegial Leadership and Teacher Professionalism

Collegial leadership and teacher professionalism, two factors in the consolidated framework, did not have a direct influence on student achievement in this study. Both factors have played an important role in the development of the concept of organizational climate over the years. Both factors are similar to dimensions identified in Litwin and Stringer (1968) and Campbell et al.'s (1970) work. The two factors are also present in Anderson's (1980) social systems variable in her educational framework. Finally, the two factors stem directly from the work of Halpin and Croft (1963) as well as Hoy and Feldman's (1987) work with organizational health. The factors have evolved over time as the concept of organizational climate has been researched and adapted.

As research has demonstrated in the past, these two concepts are important pieces of any framework of organizational climate. Teacher professionalism and collegial leadership did not have independent effects on student achievement, but as shown in Table 6, the correlational data indicate that they were moderately to strongly related to academic press and community engagement. This finding indicates that both factors help create a positive school climate but may not directly affect the instruction that occurs in the classroom. The two factors could still have indirect effects on student achievement. Academic press may be enhanced indirectly if teachers feel supported by their peers and by administrators. Teachers may press their students harder if they feel they have the ability to influence decision making in the school. As for community engagement, teachers and community members may be more willing to work together to assist students if there is a high degree of teacher professionalism and collegial leadership. Certainly, parents are more apt to work in the school if the environment is warm and friendly and if they feel a sense of commitment by their students' teachers.

School climate is positively related to student achievement and collegial leadership and teacher professionalism are strongly related to school climate. For this reason, these two factors remain an important part of the consolidated framework. As researchers continue to refine the concept of organizational climate they need to continue to incorporate these two factors in the framework. Further research may provide a more complete understanding of the role collegial leadership and teacher professionalism play in student achievement on state assessments.

Academic Press

The roots of the factor, academic press, are evidenced in work done by educators

and non-educators. It is related to Litwin and Stringer's (1968) work in which they identify the dimension of individual responsibility as well as the dimension of structure. Academic press can be related to this early work because it includes teachers' perceptions of teacher and student support for schools' academic goals and the responsibility they take in meeting them. Campbell et al. (1970) also tied the communication of an organization's objectives into a similar dimension. In this instance, the objectives would be the academic goals that are communicated in the schools. Clearly, through the work of Halpin and Croft (1963) and Hoy and his colleagues, the concept of academic press has evolved and become clearly identifiable in schools.

Academic press is an important piece of the consolidated framework. Its direct ties to early work in organizational climate demonstrates its relevance to current theory. In this study, academic press had an independent effect on middle school student achievement in English. It, however, did not have an effect on student achievement in math. Math, and therefore math classes, are typically more structured and more skill-based than English classes which may mean that the amount of academic press needed is insignificant. In Virginia, the Standards of Learning for math are much more detailed and prescribed than those for English. Again, this may mean that the amount of academic press will not play as great a role since teachers and students may understand exactly what needs to be done to succeed on the test. It should be noted, however, that since previous studies yielded different results when it was found that academic press had independent effects on math achievement, educators might want to consider its impact in both areas until further research can be conducted.

The results of this study imply that schools, where the learning environment is

serious and teachers and students set high standards for academic performance, may have students achieve at a higher rate on assessments in English. Teachers and administrators will need to work together to establish an environment in which academic press can thrive so that goals and objectives can be met. Educators need to find ways to ensure that students take responsibility for their learning. This may mean that educators will need additional training as well as time to implement changes that will enable teachers and students to understand and support a challenging and successful academic environment.

Community Engagement

The concept of community engagement first surfaced in Parsons' work with social systems theory. Parsons outlined a social systems theory in which there were three levels to an organization. Specifically, the institutional level was described as the part of the organization that was meant to make the connection with the environment. In 1969 Miles presented the idea of organizational health and included innovativeness as one of its dimensions of organizational health. He described this dimension as an organization's ability to be autonomous from its environment. Clearly, Miles did not identify environmental influence as a positive part of an organization's health, but it was one of the first instances of a researcher addressing an organization's interactions with its environment or community.

Hoy and Feldman (1987) further developed the concept of organizational health and applied it to schools. They combined the theories of Parsons (1958) and Miles (1969) and listed one of the dimensions as institutional integrity or a school's ability to work with the environment while at the same time maintaining its integrity. Clearly, Hoy and Feldman moved closer to this concept of community engagement but at the same time

their concept was one in which schools take a buffering rather than a bridging stance toward their environments. Their concept implied that schools are more defensive and less open towards their communities. When the framework, which consolidated factors of organizational climate and health, used for this study was first developed it included environmental press as a factor. Environmental press was meant to describe the pressure put in schools by parents and community to influence school policy (Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, et al., 1998). It was not until very recently that this factor was changed to community engagement (Tschannen-Moran & DiPaola, 2002).

Table 13 clarifies the difference between the two factors by presenting sample items from organizational climate indexes.

Table 13

Environmental Press and Community Engagement

Sample Environmental Press Items	Sample Community Engagement Items
<ul style="list-style-type: none"> • Teachers feel pressure from the community. • The school is vulnerable to outside pressures. • A few vocal people can change school policy. 	<ul style="list-style-type: none"> • School people are responsive to the needs and concerns expressed by community members. • Parents and other community members are included on planning committees. • Our school is able to marshal community support when needed.

This results of this study clearly demonstrates the importance of this change for researchers and practitioners. In this study, community engagement was seen to have independent effects on middle school student achievement in English and math. Schools in which parents and community members actively participate in school programs and respond to the needs of schools are more likely to produce higher achieving students. In this study, teachers saw this involvement as a positive part of school climate.

Past studies have shown that the more negative term, environmental press, also had independent effects on student achievement (Hoy, Hannum, & Tschannen-Moran, 1998). This study demonstrates that labeling and defining the factor in a more positive manner has not changed its effect on achievement. In fact, it provides evidence that schools that seek to engage their parents and community members may increase their student achievement levels. Clearly, the move to include community engagement as a factor of organizational climate represents a change from earlier definitions of organizational climate. The use of community engagement as a factor may help educators as they look for ways to improve student achievement as well as assist researchers as they further define the theory and concept of organizational climate. In the end, it may help the research and school communities as they strive to find new ways to help students.

School leaders will need to find new ways to include or engage their communities in their school improvement efforts. No longer can school boards, previously identified as the institutional level in Parsons (1958) social system, act solely as the connection to the environment. Schools themselves now need to make those connections with their environments and communities. By engaging their communities in positive ways, educational administrators and teachers may find favorable results for their students. One final implication of this study with regard to community engagement is the fact that educational leaders may need additional training as they work toward engaging their communities in their schools. This training may come from colleges and universities as well as non-educators who live and work in school communities.

School Climate and Socio-economic Status

School climate was positively related to student achievement in this study. This

relationship is important and was found in numerous previous studies. The acknowledgment of this relationship leads to other questions for researchers. One such question is always what the role of SES is in school climate and student achievement. This study once again demonstrated that SES has a strong independent effect on student achievement in both English and math. The fact that SES is a strong predictor of student achievement cannot be ignored. However, educators do not have the opportunity to change the SES of their student body. Unlike the SES of students, educators and researchers can find ways to change the organizational climate of schools (Hoy, Hannum, & Tschannen-Moran, 1998; Hoy, Sabo, et al., 1998).

It is important to note that in the area of math, school climate also influences achievement. The reason that school climate effects achievement in math and not English is unclear. It may be a result of the fact that English is affected by the reading ability of students which in turn may be related to the support they received at home as small children. Math achievement at the middle school level may not be as affected by a student's life experiences due to its structure. This could mean that school climate can more easily influence overall math achievement. No matter the reason, as Hoy, Hannum and Tschannen-Moran (1998) indicated, it is easier to intervene in a school's climate than it is in its SES.

This study indicates that researchers' work with school climate is still relevant and important for practitioners. Researchers may come closer to determining specific ways that educators can affect positive change in schools by continuing to refine the concept and determine the significance of each factor. The consolidated framework currently allows educators to look for ways to change the climate of their schools,

whether it is by making changes in the way principals lead, in teacher and student perceptions of academics, in the level of professionalism of the teachers, or in the level of community engagement. Research supports the fact that in this era of accountability, schools may find that positive school climates could lead to a positive change in student achievement.

Recommendations for Further Research

Further research with regard to school organizational climate and student achievement should be done in order to further the understanding of the two concepts and their relationships. This study was limited by the fact that only 49 middle schools in Virginia were included in the study and these schools were not randomly selected. For that reason, the results from this study cannot be generalized to all middle schools in Virginia, nor to middle schools outside of Virginia. It would be beneficial to replicate this study in other states where students are required to take state assessments that are meant to assess student knowledge of state standards. The studies could include elementary, middle or high school students. It may also be beneficial to collect climate data just prior to the administration of the tests that will provide the achievement data.

The fact that collegial leadership and teacher professionalism did not have independent effects on student achievement could also lead to further research. Studies of the relationships between the direct and indirect effects of principal and collegial leadership on student achievement may help to lead to a better understanding of the role collegial leadership plays in school organizational climate. A study that closely examines the relationships between teacher professionalism and other factors of school climate may assist in identifying why it does not always directly influence student achievement.

Finally, the concept of community engagement and its relationship to school climate and student achievement should be further studied. Community engagement represents a recent adaptation of the consolidated framework. A more in-depth understanding of exactly what schools with high community engagement do to involve parents and community members could assist both researchers and practitioners. In addition, research involving the factor of community engagement and its role in school climate will enhance the usefulness of the consolidated framework.

Final Thoughts

Organizational climate has been thoroughly researched and written about both in and out of education. Student achievement has also been the subject of countless research studies. This study sought to bring the two concepts together as the standards movement and mandated testing sweeps across the country. This study's findings provide data that support the notion that school climate overall and that specific factors of school climate in fact do relate to and can effect student achievement. As additional school climate research is done and training related to the concept is provided to educators, it is the hope of this researcher that positive change will take place in schools. This change should lead to the creation of more dynamic school climates, and in the end, to more successful students.

Appendix A
School Climate Index

School Climate Index

Five point scale (Never, Rarely, Sometimes, Often, Continuously)

Collegial Leadership

1. The principal explores all sides of topics and admits that other opinions exist. (C 16)
2. The principal treats all faculty members as his or her equal. (C 17)
3. The principal is friendly and approachable. (C 7)
4. The principal puts suggestions made by the faculty into operation. (C 8)
5. The principal is willing to make changes. (C 23)
6. The principal lets faculty know what is expected of them. (C 24)
7. The principal maintains definite standards of performance. (C 25)

Teacher Professionalism

1. The interactions between faculty members are cooperative. (C 3)
2. Teachers help and support each other. (C 11)
3. Teachers respect the professional competence of their colleagues. (C 4)
4. Teachers in this school exercise professional judgment. (C12)
5. Teachers accomplish their jobs with enthusiasm. (C 18)
6. Teachers “go the extra mile” with their students. (C19)
7. Teachers are committed to helping students. (C 13)
8. Teachers provide strong social support for colleagues. (C 20)

Academic Press

1. Students respect others who get good grades. (C 6)
2. Students try hard to improve on previous work. (C 15)
3. The school sets high standards for academic performance. (C 5)
4. Students seek extra work so they can get good grades. (C 22).
5. Academic achievement is recognized and acknowledged by the school. (C 14)
6. The learning environment is orderly and serious. (C 21)

Community Engagement

1. Community members attend meetings to stay informed about our school. (C 26)
2. Parents and other community members are included on planning committees. (C 9)
3. Organized community groups (e.g. PTA, PTO) met regularly to discuss school issues. (C 27)
4. Community members are responsive to requests for participation. (C 10)
5. School people are responsive to the needs and concerns expressed by community members. (C 28).
6. Our school is able to marshal community support when needed (C 2)
7. Our school makes an effort to inform the community about our goals and achievements. (C 1)

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