1981

The relationship between the school environment and student achievement in Virginia elementary schools

Craig P. Organ

College of William & Mary - School of Education

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THE RELATIONSHIP BETWEEN THE SCHOOL ENVIRONMENT AND
STUDENT ACHIEVEMENT IN VIRGINIA ELEMENTARY SCHOOLS

The College of William and Mary in Virginia

University Microfilms International 300 N. Zeeb Road, Ann Arbor, MI 48106

Ed.D. 1981
THE RELATIONSHIP BETWEEN THE SCHOOL ENVIRONMENT AND
STUDENT ACHIEVEMENT IN VIRGINIA ELEMENTARY SCHOOLS

A Dissertation
Presented to
The Faculty of the School of Education
The College of William and Mary

In Partial Fulfillment of the Requirements for
The Doctoral Degree in Educational Administration

by
Craig P. Organ
May 1981
THE RELATIONSHIP BETWEEN
THE SCHOOL ENVIRONMENT AND STUDENT ACHIEVEMENT
IN VIRGINIA ELEMENTARY SCHOOLS

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ACKNOWLEDGMENTS

This research effort could not have been concluded without the valuable assistance and cooperation of a number of people. To them I wish to express my appreciation.

I am particularly appreciative of the support and cooperation extended by the superintendents of the 25 school divisions and the principals of the 41 schools included in the study. I am indebted to the numerous classroom teachers who allowed the research teams to interrupt their instructional program to collect the data. A special word of thanks is given to the children surveyed as a part of this study. It is hoped they will be the beneficiaries of these efforts.

The direction and assistance provided by the State Department of Education, especially Dr. Richard Boyer, were extremely helpful in the development and implementation of this research project.

I am especially appreciative of the Frost Foundation's enthusiastic interest and support of this research endeavor. I owe a particular debt of gratitude to the members of my doctoral committee. Doctors Maidment, Bullock, and Wheeler gave generously of their time, assistance, and support throughout the course of this study.

Finally, a special thank you is offered to my wife who was a source of encouragement during my studies and who served faithfully and diligently as my typist.
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CHAPTER I
THE PROBLEM

In recent years no institution in America has been so routinely, if not rigorously, scrutinized as has its network of public schools.
In determining those conditions which maximize learning researchers have studied the effects of teaching approaches, organizational patterns, leadership styles, demographic characteristics, instructional programs, levels of expenditure, and numerous other factors which might affect student achievement. The published results of these studies have often been confusing and conflicting.

Many educators have joined this research effort in search of ways of improving student performance. Recently, a sense of urgency has pervaded this quest. The public, reacting to declining college board scores and a perceived lack of literacy in graduating students, has demanded a reappraisal of past and present educational practices and a re-emphasis on the so-called "basics" or fundamentals of education.

The trend of educational research has been to examine the effect of isolated variables on student performance or behavior. This approach to research fails to consider the school as a social system with a complex of elements which through their interactions ultimately determine the level of student performance. A functioning social system consists of recurrent cycles of input, transformation, and output (Figure 1). Students are the input which is transformed; and the teachers, staff, building and materials are the catalysts which bring about the
transformation. The patterned set of activities which makes up the transformation process is interdependent with respect to some common output and thus its effect cannot be adequately studied in isolation. A primary output of schooling is students who have been transformed from children into socialized, skilled young people who can move into society and function adequately.

![INPUTS: TRANSFORMATIONS: OUTPUTS:]

- a. student body composition
- b. staff composition
- c. facilities and materials

- a. teacher-student interactions
- b. student-student interactions
- c. student-materials interactions

- a. academic achievement
- b. social skills
- c. self-attitudes

FIGURE 1

SCHOOL SOCIAL SYSTEM

In contemporary America there has been a prevailing tendency to ignore the complex transformation process which occurs within the school environment and to focus solely on output as measured by standardized achievement test scores and grade point averages. As a consequence, we know much more about the results of schooling, e.g., how well or how poorly students are achieving, then we do about the process of schooling, e.g., what actually takes place in the school environment. The social-psychological processes which interact within this environment might

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have a significant impact on school academic outputs. It is this interaction process and its effects on student achievement which need to be examined.

**Statement of the Problem**

The purpose of this study was to examine the relationship between student perception of the educational environment of selected schools and the level of student achievement. To achieve this purpose the following question needed to be considered:

Does a relationship exist between the environment of a school, as perceived by its students, and student performance?

**Hypothesis**

The research tested the following hypothesis:

A positive relationship exists between a student’s level of academic achievement and his perception of the school environment.

**Rationale**

The success of the learning process is largely dependent upon the motivation of the individual to learn. Motivation theory maintains that there are levels of needs which act as motivators when they are unsatisfied. Maslow indicates that a hierarchy of needs exists and individuals tend to progress through the satisfaction of lower level needs, such as physiological and safety needs, before attempting to satisfy the higher
level needs of belonging and love, esteem needs, and self-actualization. In studying motivation to work Herzberg maintains that two levels of motivation exist—hygiene or maintenance factors and motivation factors. According to Herzberg the hygiene factors, which he identified as the working conditions, act only as dissatisfiers. If these hygiene needs are not met the worker will become dissatisfied with his job. The motivation factors, which Herzberg says come from satisfaction with the work itself, act as satisfiers and keep the individual motivated, happy and productive in his work. Herzberg's two-factor theory is applicable to the school organization. Factors such as the condition of the building, building temperature, availability of educational materials, or the quality of school lunches, are the hygiene factors which tend to act as dissatisfiers if they are inadequate. The motivation factors in the school setting are more difficult to identify because of their complex nature and the degree of variability. They encompass those things which promote in the student a sense of achievement, recognition, and responsibility. For one student this may be a report card; for another peer approval; and for a third, positive interaction with teachers. Although Herzberg's theory of motivation is applicable to the educational institution, there is at least one major difference between this environment

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and the work environment. The student is not free to choose his environ-
ment and compulsory attendance laws prohibit his resignation. Thus it
seems that while educators advocate recognizing and providing for indi-
vidual student differences, they sometimes establish institutional
characteristics and demands which all but preclude the possibility of
a student's being treated differently.\(^4\) Because the student lacks the
flexibility to change his educational environment, it is important that
educators assess school environments and the motivation of the student
within that environment so that the needs of these students might be met.

Handy discusses the importance of not only recognizing the pres-
ence of those motivation factors in the organizational environment but
also the necessity of igniting what he refers to as the "motivation
calculus" of the individual. According to Handy a "motivation calculus"
operates within each person which determines the degree of "E" that the
individual will expend. He defines "E" as the effort, energy, excite-
ment, enthusiasm, emotion and expenditure of time that the individual
will commit to the task. This motivation calculus is modified by the
psychological contract which exists between the individual and the
organization. The psychological contract is "an implied, usually unstated
contract between the individual and the organization."\(^5\) It is a set of

\(^4\) Edwin L. Herr, Richard W. Warner, Jr., and John D. Swisher,
"Perspectives on High School Environments," Peabody Journal of Education,

\(^5\) Charles Handy, Understanding Organizations (Middlesex, England: 
expectations in which some of the needs of the individual are satisfied by the organization in return for his expenditure of energy and talents. It is the composite interaction of the needs of individuals, their motivation calculus, and their psychological contract which comprises the informal organization of the school.

While values of the school are frequently enumerated by the philosophical statements and written regulations of the formal organization, it is the informal organization which transmits these values or some others through personal interaction. "It is this transmission of values and behavioral demands that makes up the psychological environment to which students are exposed and with which they must cope." The ideal school environment will exist only when the formal organization, the expressed purposes of the school; and the informal organization, the perceptions of the students, are relatively congruent. "Therefore, if we wish to explain, predict, or shape the behavior of individuals, we need to know not only what is inside them—abilities, motives, beliefs, norms—but also what is in their environments or more importantly what they perceive to be in their environments."

Just as the individual personality needs of a student may be inferred from student responses to questions referring to commonplace

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daily activities and feelings, the "personality" of a school—its environment—may be inferred from student responses to questions referring to the various characteristics of the school.9

**Definition of Terms**

School environment - The school environment is defined as the aggregate of social, cultural, and educational conditions which influence individual attitudes, behaviors, and performances in the school. It is the sum total of all the forces present in the school to which the individual responds.

Achievement - Achievement is defined as the cognitive knowledge acquisition of the student as measured by the SRA Assessment Survey Test, a nationally normed achievement test.

Ability - Student ability is defined as the intellectual potential of the student as measured by the SRA Short Test of Educational Ability.

Socio-economic status - The socio-economic status of the student is defined according to the occupation of the student's parent who is the primary source of family income.

Race - Race is defined as being the ethnic designation which the individual student ascribes to himself. The racial categories used in this research are the same as those used by the Department of Health,  

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Education and Welfare for the annual reporting of student enrollment by race.

**Limitations**

This is a co-relational study in which the researcher is attempting to determine if a relationship exists between the school environment and student achievement. While the results of the study may suggest possible bases for causality, they cannot be considered adequate for establishing causal relationships between or among the selected variables.

Although a random sampling technique was employed in the selection of the schools included in the study, two of the larger schools systems in the area of Virginia adjoining Washington, D. C. chose not to participate in the study. This could affect the generalizability of the resultant data in respect to its representation of all areas and populations of the state.

The Short Test of Educational Ability (STEA) was used as a measure of student ability because of its general availability for fourth grade students in the state of Virginia. There is cause to question the validity of this test as an instrument which discriminates student ability (Chapter III - Instrumentation).

In the analysis of the relationship between socio-economic status and race the number of subjects (N) is too small to obtain valid results for some races for certain SES categories.
CHAPTER II

REVIEW OF THE LITERATURE

Early investigations of school environments centered around the examination of the relationship between student attitudes and their intelligence and achievement in school. In the early 1940's a study was conducted by Tenenbaum in three elementary schools located in varying neighborhoods in New York City which was designed to determine student attitudes toward school, teachers, and classmates using a School Attitude Questionnaire Test.¹ The results of this study, whose subjects were 639 sixth and seventh grade children, indicated that "there is a considerable amount of dissatisfaction with the school situation. At least 20 percent of the children, one out of five, are unhappy and maladjusted at school, and are ready to quit at any or no pretext."² Of the students surveyed more than 40 percent indicated they would "make school different." Student attitudes toward school varied according to their sex. The researcher reported that "the girls appear to be more favorably disposed toward school and their teachers than the boys."³ Intelligence and achievement were not found to be highly correlated with student attitude toward school. According to Tenenbaum, children do not view school


²Ibid.

³Ibid., p. 135.
"as a place of joy or pleasure. There is no exuberant enthusiasm displayed. There is no zestful approach to the school situation. The children attend school with consciousness that it will help them out in later life. School is not pleasurable for itself. It is important for its future promise."

The results of Tenenbaum's study, although interesting, can be questioned because of the uncontrolled nature of the study. A follow-up study using the questionnaire developed by Tenenbaum was conducted by Sister Josephina almost twenty years after the original study. In this study the questionnaire was administered to 900 students in grades five through eight drawn from nine parochial schools. The results of Sister Josephina's study supported those of Tenenbaum in that again a significant percentage of students indicated that they disliked school (as high as 33 percent for eighth grade boys).

A study of ninth grade students in a Minnesota high school confirms the findings of the earlier studies. More than 18 percent of the 273 students included in the study indicated that they disliked school. Again the number of boys expressing dissatisfaction with school exceeded the number of girls.

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A study utilizing an attitude questionnaire (the Student Opinion Poll) was conducted by Jackson with sixth grade students in a suburb of Chicago. As in the previous studies, dissatisfaction with school was expressed by more than 20 percent of the boys surveyed, with girls being somewhat less critical of the school environment.\(^7\)

An examination of the attitudes of gifted students toward school was conducted by Dye. The study, involving 314 fifth grade students in Tennessee, compared the opinions of gifted students with those of average students on a 60-item questionnaire dealing with the school environment. The results of the study demonstrated that gifted students appeared to have a less favorable attitude toward school than the average students. Ninety-seven percent of the average boys were "happy" in school while 79 percent of the gifted boys were "happy" in school. Corresponding figures for the girls were 94 percent of the average girls and 87 percent of the gifted girls.\(^8\)

The relationship of students' perceptions of school to their achievement was addressed in a study conducted by Malpass in 1953 in New York. The attitude toward school of 92 eighth grade students was measured through the use of projective tests and the results were compared with the students' achievement level as measured by achievement test performance and school grades. Although a significant correlation


was not found to exist between attitude and achievement test performance, the relationship between student attitude and grades was significant (Correlations ranged from .31 to .57).9

Whereas most of these earlier studies fail to demonstrate the existence of a positive relationship between student attitude and achievement level, more recent studies seem to indicate that such a relationship does exist. In a study conducted in Minnesota in the late 1950's the Student Opinion Poll was administered to 505 high school juniors and selected extreme scores were designated as "highly satisfied" and "highly dissatisfied" students. A comparison of their level of satisfaction with their performance on nine subtests of the Iowa Test of Educational Development was made. The results indicated that the satisfied and dissatisfied students differed significantly (.05 level) on seven of the nine subtests, with the satisfied group attaining the higher achievement levels.10

The "Equality of Educational Opportunity Report" published in 1967 by Coleman was the first large-scale attempt to analyze a multiplicity of factors affecting student performance in schools. Coleman claimed that "family background has great importance for school


achievement. Similar findings were obtained from the Fleischmann Report in 1973. The author reports that "the most striking fact that emerged from our studies of school performance in New York State is the high correlation shown between school success and the socio-economic origin of pupils." Fleischmann's research also indicated that although variations in facilities and curriculum have little effect on school-to-school variations in achievement, "attitudes such as a sense of control of the environment, or a belief in the responsiveness of the environment, are strongly associated with achievement, and appear to be little influenced by variations in school characteristics." Whereas the preponderance of elementary school educational research conducted prior to the Coleman report had concentrated on the "mechanics of teaching"—i.e., teaching style, curricular approaches—the Coleman and Fleischmann Reports sparked an interest in the examination of personal variables which affect student achievement.

In the late 1960's the emphasis in studying school environments shifted from one of simply measuring student attitudes in terms of "like" or dislike" and "happy" or "unhappy" to a closer examination of the total


13Mosteller, op. cit., p. 231.
Impact of the school environment on student performance. The more researchers studied student attitudes the greater was their realization that attitudes toward school were neither "black" nor "white" or "like" nor "dislike"; but rather that perceptions of the school environment were complex in nature and were influenced by other factors. Jackson discusses the complexity of student attitudes toward school life:

Students tend to like some aspects of that life and dislike others. . . . even the most satisfied students have their complaints, and the least satisfied their pleasures. These combinations of feeling, which, when summed yield a general attitude of ambivalence, arise in part from the inevitable mismatch between individual desires and institutional goals. The needs and interests of the child as he experiences them subjectively are often not consonant with his needs as perceived by the institution, or with the needs of others who are also served by the institution. This means, in short, that sometimes he will want to do the tasks assigned him and other times he will not. Under the one condition he should experience a certain amount of pleasure, and under the other a certain amount of pain.\(^{14}\)

As researchers recognized the complex nature of student perceptions of the school environment, they began to develop measures which would better assess this environment. Using Murray's taxonomy for classifying environmental pressures and the ways in which the individual strives to structure the environment for himself, Pace and Stern applied Murray's personality theory to educational climates. They conceptualized the climate of the school as consisting of the personality characteristics and values (needs) of its members and the organizational pressures on the students and staff (press).\(^{15}\) Using this conceptualization of school

\(^{14}\)Jackson, *op. cit.*, pp. 60-61.

climate as a basis, Stern developed the High School Characteristics Index (HSCI) as a measure of a student's perception of the school environment by asking him to respond to a series of questions about his school. This index consists of 300 items describing daily activities, procedures, policies, attitudes and impressions that might be characteristic of various high schools. These items are subdivided into "30 independent press scales of 10 items each, yielding an 11 point range of scores 0 to 10," which are designed to assess the different aspects of "press" or the psychological environment which exists in the school.16

Herr cites "a tendency in human relations generally, and in education specifically, to expect young people to conform to preconceived and idealized images which are often less than realistic" and an often required "conformity of personality, ability, output." Herr further states that what is needed in schools is "a method of facilitating compatibility, not conformity, among individuals and groups different one from the other."17 In a study involving 725 high school students, Herr used the High School Characteristics Index in an attempt to measure the degree of compatibility which exists in schools. The findings of this study revealed that:

Students categorized as high or middle achievers perceive more press for affiliation and dependence on others for love, assistance and protection; for intense, open, emotional display; for detached, unprejudiced impersonal thinking; for problem-solving analysis,

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theorizing; for introspective preoccupation with private, psychological, spiritual, esthetic or metaphysical experience than did students categorized as low achievers.18

The results of Herr's study also indicated that:

The low-achieving students perceived more press for self-depreciation and in devaluation; for indifference or disregard for the feelings of others as manifested in overt, covert, direct or indirect aggression; for disassociation from others, withholding friendship and support; for restrained response; for compulsive organization of the immediate physical environment, manifested in a preoccupation with neatness, orderliness, and meticulous attention to details; and, for superstitious, irrational, paranoid or otherwise egocentric perceptions and beliefs than did students classified as middle or high achievers.19

In a study conducted by Choo Piang Fong, the High School Characteristics Index was administered to a sample of 335 fourth year students in four government senior high schools in a metropolitan area. The results of Choo's study suggest that:

Students with higher verbal intelligence tend to perceive the environment as showing more press for Objectivity-Projectivity and Counteraction, while students with lower intelligence perceive more press for Defence-Restiveness and Dominance-Tolerance. When quantitative intelligence (AQ) scores tend to perceive more press for Change-Sameness, while students with lower scores perceive more press for Dominance-Tolerance and Nurturance.20

In studying the influence of intelligence on student perceptions of the school environment, Herr found that those students classified as having a high IQ (110+) perceived more intellectual press for objectivity,

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19 Ibid., pp. 680-681.
energy, and scientism than did low or average IQ students. Students identified as having a low IQ perceived more press for humanism than did high or medium IQ students. According to Herr these findings "gave rise to speculations that students of high IQ were more generally found in courses technically or scientifically oriented than were students of lower IQ."21

In comparing student perceptions of the school environment by sex, Herr found that "girls tended to perceive more intellectual and dependency press than did boys. Girls also tended to perceive more emotional expression press for dominance, emotionality, narcissism and sexuality than did boys. Boys on the other hand perceived a greater amount of press for play and aggression . . ."22

Choo also concluded from his results that a significant relationship existed between sex and student perceptions of the school environment. Like Herr he too concluded that boys "tend to perceive more press for Affiliation and Aggression-Blame Avoidance in the school environment than female students." Girls "perceive more press for Counteraction, Humanities, Narcissism, Objectivity-Projectivity, Order-Disorder, Releasiveness, and Supplication-Autonomy." According to Choo "these results indicate that male students tend to emphasize the more social and interpersonal aspects of the school environment while the female students emphasize the more academic aspects."23

22Ibid., p. 684.
23Choo, op. cit., p. 204.
A study conducted by Mitchell, in which the High School Characteristics Index was administered to the senior classes of eleven high schools in a large metropolitan area, examines the effect of socioeconomic status on student perceptions of school environment. Mitchell concluded that "student aggression appears to be the single most important variable serving to differentiate among the school environments in this study, and the influence of these vast differences on pupil learning and security seems potent indeed." Specifically, aggression was found to be highest in those schools with a higher percentage of students of lower socioeconomic status and lowest in the Catholic high school. In comparing the socioeconomic status of the students with the press for achievement a correlation of .54 (rank-difference correlation) was found, but Mitchell noted some interesting departures from this general finding. For example, the school that ranked tenth out of eleven schools in terms of socioeconomic status was fifth in terms of press for achievement. The lowest ranking school in terms of socioeconomic status was four ranks higher on the press for achievement. These results caused Mitchell to conclude that:

... although there may be a relationship between these achievement factors and socioeconomic status, high status is certainly no guarantee of an achievement orientation, nor is a weak achievement orientation an inevitable concomitant of low socioeconomic status. There are certainly departures from the general trend that suggest that there are manipulable variables that are responsible for much variance within socioeconomic groups.25


25 Ibid., pp. 523-524.
The results of this study emphasize the importance of press for achievement as a predictor of future action. When the mean score for each of the eleven schools was correlated with the proportion of students in the school who indicated a desire to go to college, the resulting correlation was .82, significant at the .01 level. When the influence of scholastic aptitude and socio-economic status was partialed out, the resulting correlation was .70, significant at the .05 level. Choo's results support the importance of a student's desire for achievement as a predictor. He states that:

Students desiring a higher level of academic performance tend to perceive more press for achievement, Conjunctivity-Disjunctivity, and Supplication-Autonomy in the school environment than students desiring a lower level of academic performance. This same group of students also tends to perceive less environmental press for Abasement-Assurance and Objectivity-Projectivity than do students who desire a lower level of academic performance. Choo also found that "students who desire a higher level of academic performance perceive more group life and social activities in the school environment."

In studying the effect of the parent's occupation on student perceptions of the school environment, Herr found that the father's occupation was associated with student perceptions of press for abasement. The higher the father's occupation the less abasement press perceived by the student. The higher the education level of the parents the greater the press for

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26 Ibid., p. 519.

27 Choo, op. cit., p. 203.

28 Ibid.
sexuality and the lower the level of education the greater the press for prudishness. A significant perception of press for achievement did not occur as a result of either the father's education or occupation, but differential perceptions of achievement press did occur when the mother's educational level was examined. When the mother's educational level was high or average, "students perceived significantly more press for achievement than did students where mother's educational level was in the low category." Choo's results suggest that "students with non-working mothers appear to have more 'favourable' perceptions of the school environment than students with working mothers."30

While Herr, Mitchell and Choo were examining high school environments with the High School Characteristics Index, other researchers were beginning to evaluate elementary and junior high school environments using a variety of newly developed instruments.

In 1972 Marjoribanks conducted a study in which a battery of cognitive and attitude measures was administered to 450 twelve-year-old English students. The students were assigned to their schools on a random basis and followed a common curriculum. At the beginning of the school year, assessments were made of the students' intelligence from the National Foundation for Educational Research's verbal reasoning test and nonverbal reasoning test and their creativity from the Minnesota Test of Creative Thinking. Student attitudes were measured using a

30 Choo, op. cit., p. 203.
questionnaire developed originally by the National Foundation for Educational Research. An attitude schedule containing the following ten subscales was constructed: (1) attitude to school (2) attitude to class (3) "other image" of class (4) interest in schoolwork (5) conforming versus nonconforming scale (6) importance of doing well at school (7) academic self-image (8) social adjustment scale (9) relationship with teacher (10) anxiety scale. The scores on the attitude subscales were factor analyzed using principal-component analyses and they loaded strongly on the general factor (theta reliability of .80).

A school-related attitude score was determined by summing the scores on the subscales that made up the general factor. At the end of the school year standardized achievement tests, devised by the National Foundation for Educational Research, were used to determine math knowledge and English comprehension. Also, three teacher-devised tests were used to assess student achievement in French, physical science, and biology. The Kuder-Richardson 20 reliability estimates for these three tests were: French (.94), physical science (.94), biology (.93).

The study used multiple regression analyses to investigate the relationship between school-related attitudes and student achievement in English, mathematics, French, physical science, and biology at different levels of verbal and nonverbal reasoning abilities and creativity. The results suggest that "at each attitude level, increases in cognitive

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ability are related to increases in academic achievement" and "at each
level of ability, increases in attitude scores, in general, are related
to increases in achievement."\textsuperscript{32} The findings also indicate that "for
each academic subject, the nature and strength of the relations between
achievement, ability, and attitudes differ for boys and girls and depend
on the cognitive ability being investigated."\textsuperscript{33} For example, the school-
related attitudes of girls are not related to mathematics achievement at
the different ability levels, while for boys a curvilinear relationship
does exist. Likewise at different ability levels the English and physi­
cal science achievement of boys is not related to their attitude, while
for the girls there is a significant linear relationship.\textsuperscript{34}

These results cause the researcher to conclude that:

What is required now is a set of studies which investigate
relationships between attitudes and achievement at different
levels of variables such as family, classroom and neighbor­
hood environments, personality measures, and other affective
characteristics. Only when such research has been completed
will there be any real understanding of the complex nature of
the relations between school-related attitudes and academic
achievement.\textsuperscript{35}

The climate of 20 junior high schools of a midwestern metropolitan
area was assessed using a questionnaire developed from a factor analysis
of the School Climate Profile, developed in 1973 by CFK Ltd., a philan­
thropic foundation dedicated to improving administrative leadership and

\textsuperscript{32}Ibid., p. 659.
\textsuperscript{33}Ibid.
\textsuperscript{34}Ibid., p. 656.
\textsuperscript{35}Ibid., p. 659.
the learning climate of elementary and secondary schools. The factor analysis revealed that the 50 questions clustered into seven general factors which were identified as (1) Humane Teachers (2) Opportunity for Input (3) Caring (4) Individualization (5) Supportiveness (6) Innovativeness (7) Suitability of School Plant. To study the effects of school size on student perceptions of climate, the 20 junior high schools were ranked according to their enrollments. The schools were also ranked according to their overall socio-economic level as determined by the 1970 U.S. Census data and free and reduced price lunch data. An analysis of variance was performed to test for significant interactions between each group of respondents (students, teachers, and administrators).36

The data revealed that students from smaller schools had a more positive perception of their environment than did those from larger schools. A significant difference did not exist between the perceptions of students from high socio-economic level schools when compared with those of students from low socio-economic schools. The results also indicated that "the further removed a group is from the administration the less positive are their perceptions of the school climate. That is, administrators view school climate more positively than teachers, and teachers perceive school climate more positively than students." The authors recommend that "a similar study be conducted at the elementary

level to confirm or disconfirm the trends noted in this study."\textsuperscript{37}

The research of Epstein and McPartland (1976) emphasized the development of an instrument to analyze the dimensions of the school environment for the purpose of determining environmental modifications which could promote student achievement. Citing the "increased interest in student satisfaction as an outcome that is responsive to environmental modifications" and a lack of a "short, validated instrument" which could be used "across educational levels to measure and compare student reactions to school life in general, to school work and to teachers," Epstein and McPartland developed The Quality of School Life Scale (QSL). This 27-item scale is a multi-dimensional instrument with three subscales: Satisfaction subscale (SAT), which measures general reactions to school; Commitment to Classwork subscale (COM), which measures the level of student interest in school work; and Reactions to Teachers subscale (TCH), which measures the nature of the student-teacher relationship.\textsuperscript{38}

Sample surveys were conducted one year apart on students in Grades 4 through 12 to determine the reliability of the scale. Tests of scale reliability were also conducted for the different subgroups of students (SES, sex, achievement, report card grades). K - $R_{20}$ coefficients ranged from .80 - .89 for elementary students and from .81 - .89 for secondary students. Evidence for concurrent and discriminative validity

\textsuperscript{37}Ibid., p. 23

of the QSL was obtained for Grades 6 through 12 from questionnaire items, open-ended written comments, peer and teacher nominations and achievement tests administered at the time of the student survey.\textsuperscript{39}

The results of the study indicated that "older students are generally less satisfied with their school experience than younger students (F = 21.29, p. < .001). More than half the students in the secondary grades gave negative reactions to more than half the items about school life."\textsuperscript{40}

The authors concluded that this trend for the scores to decrease as the grade level increases . . . may mean that the objective quality of school goes down each year and/or that with maturity students more critically evaluate their environments. Using available data, it appears that the trend may be due primarily to real differences in the quality of school experiences . . . the trend is not uniformly developmental across Grades 6 - 12 for the three QSL subscales. There is a significant negative relationship with grade level only for the Commitment (COM) subscale. It may be argued that with age, students' abilities become more varied. Schools may be less able to meet the more diverse academic interests and needs of older students although they are able to maintain the general and social quality of school life for most students.\textsuperscript{41}

Epstein and McPartland's research indicated that student attitude was more strongly related to report card grades ($r = .217$) than to achievement ($r = .141$). The findings also indicated that a significant relationship does not exist between the QSL and socio-economic status (.095), race (.024), and sex (-.034). These results appear to be contrary

\textsuperscript{39}Ibid.
\textsuperscript{40}Ibid., p. 26.
\textsuperscript{41}Ibid.
to those of earlier studies which demonstrated that a significant relationship existed between the variables of sex and socio-economic status and the school environment (Herr, 1965; Choo, 1976; Mitchell, 1968). The researchers state that further investigations using multi-dimensional measures are necessary in order to understand fully the interactions between these variables and the school environment.\textsuperscript{42}

The researchers concluded that the "study suggests that QSL is a short, reliable measure useful across grade and educational levels for research and evaluation." They feel that a primary advantage of this instrument is the three separate subscales which, according to statistical analysis, are responsive to different dimensions of school life. According to the results of the study,

Feelings of general well-being may be most strongly influenced by the social structure of the school, commitment may be most related to the task structure, and reactions to teachers most related to the authority structure of the school. Marked change in any of these three structural dimensions, designed to improve the quality of schooling, may affect students' reactions to school.\textsuperscript{44}

Research conducted by Brookover lends support to the contention that "school social-cultural variables may significantly affect the learning outcomes of students."\textsuperscript{45} In a study conducted under the auspices

\textsuperscript{42}Ibid., p. 22.
\textsuperscript{43}Ibid., pp. 25-26.
\textsuperscript{44}Ibid.
of the National Institute of Education, Brookover identified specific characteristics of the school social structure. Whereas earlier studies emphasized analysis of high school environments, Brookover's research focused on elementary schools "where it might be expected that schools could have the greatest incremental impact on outcomes, but one about which we know relatively little." The study examined the school environment not only from the perspective of the student but also from that of the teaching and administrative staff. This study "hypothesized that the nature of the student body and the adult members of the school social system may affect the schools' social structure and academic climate as well as the level of student achievement, self-concepts and self-reliance in a school." It was further hypothesized that the social structure has an impact on the social-psychological climate.

The student questionnaire was developed and pretested by administering it to students in elementary schools of a middlesized midwestern city. "Various clusters of items were subjected to scalogram analysis to identify scales measuring students' perceived expectations and evaluations, school norms, students' sense of control and perception of teachers' academic norms." These revised questionnaires were used in a preliminary study designed to determine those variables which might distinguish between high and low achieving schools with similar composition. The

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46 Ibid., p. 8.
47 Ibid., p. 11
48 Ibid., p. 32.
school climate variables did distinguish between high and low achieving schools, thus establishing a foundation for the predictive validity of the instrument.\textsuperscript{49}

The researchers randomly selected a representative sample of public elementary schools in Michigan. This initial sample yielded 61 schools with a student population of more than 50 percent white and 7 schools with a student population which was more than 50 percent black. For some analyses this white school sample was divided at the median of the mean SES distribution in order to compare high SES white schools with low SES white schools. Since only 7 schools in the random sample had a majority black student population an additional 23 majority black schools were randomly selected from the population of majority black Michigan public schools to augment the original sample.\textsuperscript{50}

Questionnaires were administered to fourth and fifth grade students, the teachers of the fourth and fifth grade students, and the school principal. The data obtained from these questionnaires were factor analyzed. The results of the factor analysis were utilized in determining the placement of individual questions within the scales. Items with a loading of less than .30 were eliminated. Scale values were determined by calculating the total item score based on the particular answers to a five-point scale response.\textsuperscript{51}

\textsuperscript{49}Ibid.
\textsuperscript{50}Ibid., pp. 15-16.
\textsuperscript{51}Ibid., pp. 32-33.
Three dependent variables were selected by the researchers as a measure of student outcomes. These dependent variables—mean student achievement, mean student self-concept of academic ability and mean student self-reliance—were regressed against the independent climate variables. The Michigan school assessment test was used as a means of determining mean student achievement. The Michigan State University Self-Concept of Academic Ability Scale was used to measure mean student self-concept and a modification of a self-reliance scale developed by the Center for Study of School Organization at Johns Hopkins University was used to measure mean student self-reliance. In his analysis Brookover covaried for student race and socio-economic status and certain school personnel inputs, including teacher experience, salary, and race.52

The comparison of the student climate variables with mean student achievement revealed that the Students' Sense of Academic Futility was highly correlated with mean student achievement (.769). This climate variable was also highly correlated with the combined index of socio-economic and racial composition of the student (.86). Student population data regarding race, socio-economic status, and achievement were compiled by the researchers on a school unit basis and therefore it was not possible to determine if the high correlation between student achievement and the Students' Sense of Academic Futility expressed a truly significant relationship or one which is confounded by the variables of race and socio-economic status. The researchers hypothesized "that if it

52Ibid., pp. 36-41.
were possible to separate the contribution of composition and the contribution of sense of futility that the latter would be more directly relevant as an explanation of the differences in achievement."

This inability to isolate the effects of climate variables from those of the racial and socio-economic composition variables was dealt with by conducting two multiple regression analyses on each sample (representative state sample, majority white sample, majority black sample). In the first regression analysis the composition variables (race and SES) were entered prior to the school climate variables in the regression order. In the second analysis the climate variables were entered first followed by the composition variables. The results of these two sets of multiple regression analyses are shown in Table I.

The results in Table I show that about four fifths of the variance in achievement between schools in the representative state sample and the majority black schools and more than one half of the achievement in the white sample is explained by the combination of socio-economic status, racial composition and the climate variables. When the climate variables are added to the multiple regression analysis after the composition variables there is a significant increase in the $R^2$ especially in the black sample (.362). The researchers therefore concluded that the climate variables do "make some contribution toward the prediction of mean school achievement over and above that made by the two school composition variables."  

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53 Ibid., pp. 50-54.
54 Ibid., p. 58.
TABLE I

SUMMARY OF MULTIPLE REGRESSION ANALYSIS SHOWING COMPARATIVE CONTRIBUTION OF COMPOSITION VARIABLES, MEAN SOCIO-ECONOMIC STATUS AND PERCENT WHITE, AND MEAN SCHOOL CLIMATE VARIABLES TO VARIANCE IN MEAN SCHOOL ACHIEVEMENT IN SAMPLES OF MICHIGAN ELEMENTARY SCHOOLS55

<table>
<thead>
<tr>
<th>Variance in Mean School Achievement Attributed to:</th>
<th>State Sample (68)</th>
<th>Black Sample (39)</th>
<th>White Sample (61)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R²</td>
<td>R² added</td>
<td>R²</td>
</tr>
<tr>
<td>SES entered first</td>
<td>.456</td>
<td>.361</td>
<td>.309</td>
</tr>
<tr>
<td>Percent white</td>
<td>.785</td>
<td>.416</td>
<td>.433</td>
</tr>
<tr>
<td>Climate variables</td>
<td>.826*</td>
<td>.778</td>
<td>.553*</td>
</tr>
<tr>
<td>Climate entered first</td>
<td>.725</td>
<td>.728</td>
<td>.445</td>
</tr>
<tr>
<td>SES</td>
<td>.746</td>
<td>.777</td>
<td>.494</td>
</tr>
<tr>
<td>Percent white</td>
<td>.827</td>
<td>.778</td>
<td>.553</td>
</tr>
</tbody>
</table>

*One climate variable, Teacher Climate 2, was omitted because the F-level was insufficient for computation.
#One climate variable, Principal Climate 1, was omitted because the F-level was insufficient for computation.

55Ibid., p. 57.
When the climate variables were entered prior to the composition variables most of the explained variance in mean achievement between schools was attributable to the climate variables. These results caused the researchers to conclude that "80 percent or more of the unexplained variance in mean achievement that may be attributed to composition variables may actually be the result of differences in climate associated with composition." In summary, the researchers stated that "although it is not sufficient proof, these analyses suggest that school climate rather than family background as reflected in student body composition has the more direct impact on achievement."57

Summary

The study of school environments has been an evolving process which began with efforts to examine student attitudes toward school. Early studies by Tenenbaum, Sister Josephina, Leipold, Dye, Malpass and Brodie assessed the school environment by attempting to measure the degree of satisfaction or dissatisfaction with school as reported by the students. The effects of attitude on achievement were inconclusive. The results of Malpass' study indicated that there was a significant relationship between student attitude and grades but not between attitude and performance on an achievement test. However, Brodie's results indicated that satisfied and dissatisfied students differed

56 Ibid., p. 59.
57 Ibid., p. 231.
significantly on seven of nine subtests of the Iowa Test of Educational Development, with the satisfied group attaining higher achievement levels.

In the early 1960's the emphasis in the study of school environments changed from simple "like" or "dislike" measures to those designed to measure the complexity of student attitudes toward school life. A series of studies which used the High School Characteristics Index was conducted by Herr, Mitchell and Choo to determine student perceptions of the school environment by asking him to respond to questions about school life. This index enabled the researchers to examine the personality characteristics and values of high school students. The researchers analyzed the data in terms of student sex, grade level, grade-point average, mental ability, and educational level of the students' parents; and a Chi-Square Test of dependence was used to determine if student perceptions of the environment differed significantly by category. The results of these studies revealed that a significant difference did exist between students of different achievement levels with respect to their emotional expression, dependency pressures and intellectual climate.

The "Equality of Educational Opportunity Report" published by Coleman in 1967, with its emphasis on the importance of family background and attitudes, sparked a renewed interest in research on school environments. During the 1970's research on school environments expanded and researchers began to examine closely the relationship between student attitudes toward school and student achievement. Marjoribanks, using a questionnaire containing subscales designed to measure different aspects
of student attitude, studied this relationship for twelve-year-old English students. His results, which were based on the use of multivariate analysis techniques not available to earlier researchers, suggested that increases in attitude were related to increases in achievement and that the strength of this relationship for boys and girls depended upon the cognitive ability being investigated.

Recognizing the need to study elementary school environments, Epstein and McPartland developed a short validated instrument which could be used at varying grade levels to analyze the dimensions of the school environment for the purpose of making modifications in the environment which would promote student achievement. Their findings indicated that student attitude was more strongly related to report card grades ($r = .217$) than to achievement ($r = .141$). The results of the study also indicated that a significant relationship did not exist between student attitude and the socio-economic status, race and sex of the student. This finding appears to be contrary to those of earlier studies.

A comprehensive effort to analyze elementary school environments was conducted by Brookover. School climate questionnaires were completed by fourth and fifth grade students, their teachers and the school principal. By factor analyzing the data, Brookover developed climate subscales which were compared with the mean achievement level for the school. Student population data regarding socio-economic status and race were compiled on a school unit basis. Multiple regression analyses of the data indicated that the composite of the student perceptions of the school environment was highly correlated with the mean achievement
level for the school. When the climate variables were entered into the regression prior to the composition variables (SES, race) they accounted for 72.5 percent of the variance in achievement between the schools included in the state sample. When the climate variables were entered after the composition variables they added 4 percent to the explained variance in achievement. This high correlation between perception of the environment and achievement when the climate variables were entered into the regression first and the high correlation between the climate variables and the composition variables (0.44 for all climate variables) caused the researchers to speculate that if the contribution of composition and the contribution of climate could be separated, the school climate variables would be more directly related to achievement.

It is appropriate to analyze the climate of the school as a totality for it allows for the comparison of different learning environments. The lack of control over the variables of race, socio-economic status, and achievement is a delimiting factor in establishing the credibility of school climate as a significant factor in student achievement. Wherever a racial majority exists in a school, a racial minority also exists. Rather than comparing the climate of a school of a certain racial majority or socio-economic status with the mean level of student achievement for that school, a comparison should be made of individual student perception of the climate with his level of achievement while controlling for his race and socio-economic status. Data controlled in this manner will provide significant support for establishing the effects of school climate on student achievement. This individual data can be
combined to determine the relationship between the school climate and student achievement for the school unit. The relationship between the sex of the elementary student and his perceptions of the school climate also needs to be examined.
CHAPTER III

METHODOLOGY

Population and Selection of the Sample

The intent of this study was to examine school environments which are representative of the diverse populations that constitute public elementary schools. To achieve this objective optimally it was determined that the population for study should include a representative sample of schools to be selected from the universe of public elementary schools in the Commonwealth of Virginia. Virginia was selected as the site for this research because of its convenience to the research teams and, more importantly, because of the diversity of its population patterns. The southern and western portions of the state are typified by rural agricultural areas and small towns. Northern Virginia is the suburban bedroom community which adjoins the Washington, D.C. area. The central and eastern sections of the state contain the larger urban industrial centers and several military installations. This diversity supports the representativeness of the research data.

Public elementary schools in the state of Virginia were identified and subsequently subdivided into two categories: county elementary schools and city elementary schools. The schools included in each category were listed in alphabetical order, and a 5 percent random sample was selected from each category using a table of random numbers. Thirty seven county schools (representing 23 school divisions) and 15 city schools (representing 9 school divisions) were selected for inclusion in
The division superintendents for the school systems were contacted to solicit their support in the research project and to secure permission to conduct the study. Seventeen county school divisions, representing 27 schools or 73 percent of the total county schools selected, agreed to participate in the study. Eight city school divisions, representing 14 schools or 93 percent of the total city schools selected, consented to participate in the study. The 7 school divisions which chose not to participate were dispersed throughout the state. The northern Virginia area appeared to be the only area adversely affected by non-participation in the study. Two school systems adjoining Washington, D.C. declined to participate in the study. The participation of two other nearby systems tended to ameliorate this condition.

All fourth grade students (N = 2883) in the selected schools were chosen for inclusion in the study because fourth grade students were old enough to provide a written response to the student questionnaire; they had been in the elementary school environment long enough to establish definite perceptions of that environment; and achievement and ability data were available for all fourth grade students through a statewide testing program administered at the fourth grade level.

The demographic data for the students included in the sample are presented in Table II. The subjects were almost evenly divided between males and females, with the percentage of males being slightly higher. This reflects the overall percentages of 51.57 percent male and 48.43 percent female as reported by the State Department of Education for elementary students (Kindergarten through Grade 7) during the 1978-79 school year. Although a breakdown of elementary students by race is not
| TABLE II |
| DEMOGRAPHIC DATA FOR 2883 STUDENTS INCLUDED IN STUDY |

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1451</td>
<td>50.3</td>
</tr>
<tr>
<td>Female</td>
<td>1417</td>
<td>49.2</td>
</tr>
<tr>
<td>Not reported</td>
<td>15</td>
<td>.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2883</td>
<td>100.0</td>
</tr>
</tbody>
</table>

| **Race** |        |                   |
| White    | 2006   | 69.6              |
| Black    | 753    | 26.1              |
| American Indian | 67 | 2.3               |
| Oriental | 33     | 1.2               |
| Hispanic | 14     | .5                |
| Not reported | 10 | .3                |
| **Total** | 2883 | 100.0             |

| **Occupation of Parent (Primary Provider)** |        |                   |
| Laborers, Service Workers | 1099   | 38.1              |
| Craftsmen, Operatives, Clerical Workers | 434 | 15.1              |
| Professional, Semi-Professional | 444 | 15.4              |
| Professional | 181  | 6.3               |
| Not reported | 725 | 25.1              |
| **Total** | 2883 | 100.0             |
available from the State Department of Education, the racial composition of the sample does approximate that of the general population of the state of Virginia. According to the 1976 census figures, about 80 percent of the population of the state of Virginia is white compared with approximately 70 percent of the school sample; and 16 percent is black compared with 26 percent of the school sample. The remaining 4 to 5 percent of the sample is distributed between the American Indian, Oriental, and Hispanic races. Almost 40 percent (38.1%) of the subjects in the sample had parents whose occupations placed them in the laboring class. The parents of approximately 15 percent of the subjects had craft, operative or clerical occupations. Nearly 22 percent of the subjects were from families where the primary provider was employed as a semi-professional (15.4%) or a professional (6.3%). The occupation of the parent was not reported or could not be coded for 25 percent of the subjects. This was due in part to the absence of occupational codings for military personnel on the Duncan Occupational Scale and in part to the inability of the researcher to code parental occupations for those subjects who were unable to provide sufficient data for classification.

A crosstabs procedure was conducted to determine if a disproportionate amount of the missing data came from any particular sex, race, or occupational category. In the summary of missing data by occupation (Table III) a substantial number of category No. 1 occupations, laborers

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### TABLE III
MISSING DATA FOR SRA, STEA, RACE, SEX BY OCCUPATION

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Laborers and Service Workers</th>
<th>Craftsmen, Operatives, Clerical Workers</th>
<th>Semi-Professional, Professional</th>
<th>Professional</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing Data</td>
<td>N</td>
<td>N%</td>
<td>N</td>
<td>N%</td>
<td>N</td>
</tr>
<tr>
<td>SRA</td>
<td>131 18.1</td>
<td>133 12.1</td>
<td>69 15.9</td>
<td>55 12.4</td>
<td>12 6.6</td>
</tr>
<tr>
<td>STEA</td>
<td>153 21.1</td>
<td>232 21.1</td>
<td>85 19.5</td>
<td>56 12.6</td>
<td>11 6.1</td>
</tr>
<tr>
<td>Race</td>
<td>5 .7</td>
<td>1 .6</td>
<td>2 .5</td>
<td>2 .5</td>
<td>0 0</td>
</tr>
<tr>
<td>Sex</td>
<td>1 .1</td>
<td>0 0</td>
<td>1 .2</td>
<td>1 .2</td>
<td>1 .1</td>
</tr>
</tbody>
</table>

*Percent of total number in that category with missing data
and service workers, are missing STEA scores; however, the percentage
of this category with missing data (21.1%) is not disparate when compared
with the percentage of missing STEA data for all occupations (18.6%).
Subjects whose parents are classified as professionals have the smallest
percentage of missing data for both the SRA and the STEA. This may be
the result of the less transient nature of professional workers and less
absenteeism on the part of students of professional parents. An exami­
nation of missing data by race and sex indicates that the amount of
missing data in these areas was negligible and was evenly distributed
throughout the occupation levels.

The missing data for SRA are almost evenly divided between black
and white subjects and male and female subjects (Table IV). A higher
percentage of black subjects (28.6%) than white subjects (14.9%) had
missing data for the STEA. This disparity was the result of STEA scores
being expressed as a percent in the schools of one predominantly black
school district rather than as a quotient. Because of the range of
scores which could fall in a percentile it was not possible for the
researcher to convert the STEA percentiles for these schools to raw
scores for statistical treatment. Although these schools were eliminated
from statistical analyses involving student ability (STEA) they are
included in all other analyses. An analysis of the missing data for
occupation by the race and sex of the subjects indicates that the missing
data are equally distributed between white and black subjects and male
and female subjects.

The researcher concluded that because of the number of cases in
TABLE IV
MISSING DATA FOR SRA, STEA,
OCCUPATION BY RACE, SEX

<table>
<thead>
<tr>
<th>Missing Data</th>
<th>Race</th>
<th></th>
<th></th>
<th>Row</th>
<th></th>
<th></th>
<th>Row</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>White</td>
<td>Other</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>SRA</td>
<td>94</td>
<td>284</td>
<td>19</td>
<td>397</td>
<td>221</td>
<td>172</td>
<td>393</td>
<td>13.7</td>
</tr>
<tr>
<td>STEA</td>
<td>215</td>
<td>298</td>
<td>20</td>
<td>533</td>
<td>292</td>
<td>237</td>
<td>529</td>
<td>18.4</td>
</tr>
<tr>
<td>Occupation</td>
<td>213</td>
<td>465</td>
<td>42</td>
<td>720</td>
<td>385</td>
<td>335</td>
<td>720</td>
<td>25.1</td>
</tr>
</tbody>
</table>

*Percent of total number in that category with missing data
the data set and the fairly even distribution of missing data between groups, the data available to statistical treatment and analysis are representative of fourth grade students in Virginia public elementary schools.

Procedures

The data for this study were obtained by administering a questionnaire designed to measure perceptions of the school environment to students in the fourth grade of the identified schools. These questionnaires were administered in the selected schools during the spring of 1979 by a trained staff of research personnel from the College of William and Mary or Virginia Polytechnic Institute and State University. The administration of the questionnaires was done in the absence of the classroom teacher to eliminate any potential influence. During the administration of the student environment questionnaire, the research teams were instructed to have the students identify their parents' occupations. Members of the research teams who administered the questionnaire provided assistance, when needed, in identifying occupations. The results of the SRA Assessment Survey-Composite Score and the SRA Short Test of Educational Ability (STEA), which were administered by the schools to all fourth grade students in the fall of 1978, were obtained from the individual schools and were codified by individual student to correspond with his school environment questionnaire for purposes of statistical treatment. All data obtained were held in strictest confidence. The identity of participants in the study was used for statistical
comparisons only, after which all instrumentation was destroyed. No individual school or school system is identified in the results of the study.

**Instrumentation**

The school environment questionnaire was developed by Wilbur B. Brookover and his associates at Michigan State University. After initial development, the questionnaire was pretested in elementary schools of a middlesized midwestern city. The items were then modified to eliminate problems found in communication, meaning and readability. The modified instruments were readministered to students in other schools. Various clusters of items were subjected to scalogram analysis to identify scales measuring students' perceived expectations and evaluations, school norms, students' sense of control and perception of teachers' academic norms. Items of low utility were eliminated. The student questionnaire developed in the pretest process was used in a preliminary study designed to identify variables that might distinguish between high and low achieving schools with similar composition. The climate variables did distinguish between high and low achieving schools with similar composition. Thus, the predictive validity of climate variables was demonstrated. The data obtained from the random sample of Michigan elementary schools were factor analyzed using all the school climate items contained in the student questionnaire. The results of the factor analyses and the content of the items were taken into consideration when placing the items in scales. No item was included that did not have a loading of at least .30 on that factor. Scale values were determined by calculating the total
item score based on the particular response chosen on a five-point scale.\textsuperscript{2}

The Short Test of Educational Ability (STEA) is a single score ability test which is designed to provide a reliable estimate of general educational ability. The STEA quotient is a standardized score having an arbitrary mean and standard deviation, with an assumed normal distribution within each grade. Because students are compared with other students at their grade level, rather than at their age level as is the practice with most measures of ability, factors such as retentions, dropouts, and special education classes result in an increasing average quotient score at each grade level. The mean STEA quotient was set at 100.0 in kindergarten and increased by 0.5 with each grade level to 106 by the end of Grade 12.\textsuperscript{3} Reliability coefficients are acceptable, ranging from .82 to .93. The validity of this test is based on the validity of the parent tests (Primary Mental Abilities and Tests of Educational Abilities) from which questions for the STEA were drawn. According to Dooley these parent tests "have had a weak validity history themselves, and the reported correlations are unimpressive when one considers the loss of content from the longer to the shorter form."\textsuperscript{4}

\textsuperscript{2} Wilbur Brookover et al., \textit{Schools Can Make a Difference} (East Lansing, Michigan: College of Urban Development, Michigan State University, August 1977), pp. 31-33.


Occupational data collected during the administration of the student questionnaire provided the basis for determining the socio-economic status of the student subjects. The occupational data were scored using the Duncan Occupational Scale. The Duncan Scale ranks occupations on a scale from 1 to 96 according to the socio-economic status of the occupation. For the purposes of data management the researchers combined the 96 variables into four categories each containing 24 occupational levels: Level 1 - Professional; Level 2 - Professional, Semi-Professional; Level 3 - Craftsmen, Operatives, Clerical Workers; Level 4 - Operatives, Service Workers, Laborers (Appendix B - Socio-Economic Status Levels).

The standardized SRA Achievement Series is designed to survey general academic progress. The multilevel edition, which consists of three separate but overlapping levels of graduated difficulty, is used in Grades 4 through 9. Subtests in Language Arts, Reading and Mathematics constitute the core of the test. Scores for these three subtests are weighted to provide a composite achievement score. This composite achievement score for each student provided the data used in the study.

The test content for the SRA Achievement series was determined through a four-step process. Basic curriculum outlines and basal textbooks used in an estimated 75 percent of the United States classrooms were reviewed in order to develop specifications for the test item

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writers. More than one hundred item writers made up of teachers and professional writers prepared test questions. These items were then reviewed, edited, and pretested in school districts across the United States. Statistical and content criteria were used to select those items which would be valid for each subtest.

The SRA Achievement Series was standardized through the random selection and testing of nearly 156,000 students in Grades 1 through 12. Percentiles and grade equivalents were obtained during this national standardization process.

Reliability correlation coefficients were determined using the Kuder-Richardson -20 formula. The reliability coefficient for the composite achievement score was .98.6

Data Analysis

This study examined the relationship between the criterion variable of student academic achievement and the predictor variable of student perceptions of the school environment. The correlational design of the study will test the following statistical hypothesis:

Hypothesis: There is no relationship between the level of student achievement and the student's perception of the school climate after controlling for the effects of race, sex, socio-economic status, and ability.

The data obtained from the administration of the student climate questionnaire were factor analyzed using a varimax orthogonal rotation,  

and the results of the factor analysis determined the placement of the
textual content...
### TABLE V

NAME, EIGENVALUE, AND ALPHA OF
10 SCHOOL CLIMATE FACTORS

<table>
<thead>
<tr>
<th>Factor</th>
<th>Label</th>
<th>Eigenvalue</th>
<th>Alpha If Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>Student Perception of His Ability Vs. Peers' Ability</td>
<td>5.45</td>
<td>.50</td>
</tr>
<tr>
<td>Factor 2</td>
<td>Student Perception of Future Educational Attainment</td>
<td>3.24</td>
<td>.53</td>
</tr>
<tr>
<td>Factor 3</td>
<td>Student Perception of Success in College</td>
<td>2.82</td>
<td>.47</td>
</tr>
<tr>
<td>Factor 4</td>
<td>Student Perception of Teacher Attitude Toward Learning</td>
<td>2.69</td>
<td>.56</td>
</tr>
<tr>
<td>Factor 5</td>
<td>Student Academic Values</td>
<td>2.40</td>
<td>.54</td>
</tr>
<tr>
<td>Factor 6</td>
<td>Student Perception of Academic Futility</td>
<td>2.16</td>
<td>.61</td>
</tr>
<tr>
<td>Factor 7</td>
<td>Student Perception of Prospects for Academic Success</td>
<td>1.78</td>
<td>.52</td>
</tr>
<tr>
<td>Factor 8</td>
<td>Student Perception of Self-Reliance</td>
<td>1.77</td>
<td>.55</td>
</tr>
<tr>
<td>Factor 9</td>
<td>Student Perception of Instructional Setting</td>
<td>1.60</td>
<td>.63</td>
</tr>
<tr>
<td>Factor 10</td>
<td>Student Perception of Classroom Freedom</td>
<td>1.58</td>
<td>.61</td>
</tr>
</tbody>
</table>

Reliability Coefficient for 10 Climate Factors: Alpha = .58
relationship between the predictor variables of sex, race, occupation, ability, climate and the criterion variable of achievement was initially examined through a breakdown procedure which provided the researcher with the F-ratio and the level of significance of the variance. This information was used to determine which variables would be included in the regression equation. The primary analysis of the data was accomplished through the use of stepwise multiple regression. Regressions were conducted with the climate factors being entered both prior to and after entry of the other independent variables.

**Summary**

In order to obtain a sample which was representative of the diverse populations which constitute public elementary schools, a 5 percent random sample of Virginia elementary schools was selected for inclusion in the study. Seventy three percent of the county schools selected and 93 percent of the city schools selected agreed to participate in the study. Fourth grade students in each of the schools completed a school environment questionnaire and provided the research teams with certain demographic data. Ability and achievement data for each student were obtained from the SRA Short Test of Educational Ability (STEA) and the SRA Assessment Survey Test which were administered by the schools to all fourth grade students.

The researcher hypothesized that there is no relationship between the level of student achievement and the student's perception of the school climate after controlling for the effects of race, sex, socio-economic
status, and ability.

A factor analysis of the school environment questionnaire resulted in ten factors which measured student perceptions of the school environment. The combined climate factors received a reliability coefficient of .58 and the results indicated that each of the individual climate factors contributed significantly to the reliability of the questionnaire. To test the hypothesis, analyses of variance and stepwise multiple regression analyses were conducted comparing student perceptions of the school environment with their level of achievement.
CHAPTER IV

THE RESULTS

The intent of this research was to test the hypothesis that there is no relationship between the level of student achievement and student perception of the school climate when the effects of race, sex, socio-economic status and ability are controlled. To examine this relationship a series of multiple regression analyses was conducted in which the regression order was varied to analyze the relative contributions of the independent variables. To determine which variables should be included in the regression equation, the means, standard deviations, and variances of student achievement were calculated for each of the predictor variables which could possibly be entered into the regression equation.

The variance between student achievement and the sex, race, and socio-economic status of the student is reported in Table VI. All three of these independent variables were highly correlated with student achievement. The F-ratio between the sex of the student and his level of achievement was 28.889 and was significant at the .01 level. Females, with a mean SRA raw score of 41.9, performed better on the SRA Achievement Test than did males, whose mean SRA raw score was 40.9. A definite difference existed in student performance on the SRA Achievement Test when the variable of race was considered. The mean SRA raw score for white subjects (45.5) was about ten points higher than the mean SRA raw score for black subjects (34.7). The lower number of cases for the other racial groups would cause one to question the validity of their
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>N</th>
<th>Mean SRA Score</th>
<th>Standard Deviation</th>
<th>Degrees of Freedom Between Groups</th>
<th>F-Ratio</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex - Male</td>
<td>1230</td>
<td>40.9358</td>
<td>14.1050</td>
<td>1/2473</td>
<td>28.889</td>
<td>p&lt;.0001</td>
</tr>
<tr>
<td>- Female</td>
<td>1245</td>
<td>44.0096</td>
<td>14.3434</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Groups Total</td>
<td>2475</td>
<td>42.4820</td>
<td>14.2254</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Race - Black</td>
<td>659</td>
<td>34.7390</td>
<td>10.4893</td>
<td>4/2471</td>
<td>78.788</td>
<td>p&lt;.0001</td>
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<td>- White</td>
<td>1722</td>
<td>45.4582</td>
<td>14.4660</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hispanic</td>
<td>12</td>
<td>43.6667</td>
<td>12.7588</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Oriental</td>
<td>28</td>
<td>48.1071</td>
<td>15.6379</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- American Indian</td>
<td>55</td>
<td>37.0545</td>
<td>12.3144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Groups Total</td>
<td>2476</td>
<td>42.4398</td>
<td>13.4817</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Level - Laborers &amp; Service Workers, Craftsmen, Operatives</td>
<td>966</td>
<td>37.8323</td>
<td>11.7676</td>
<td>3/1885</td>
<td>146.743</td>
<td>p&lt;.0001</td>
</tr>
<tr>
<td>Clerical Workers</td>
<td>365</td>
<td>43.1151</td>
<td>12.7129</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-Professional &amp; Professional</td>
<td>389</td>
<td>49.8715</td>
<td>14.7400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>169</td>
<td>56.4615</td>
<td>16.0913</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Groups Total</td>
<td>1889</td>
<td>42.9989</td>
<td>13.0345</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
means; therefore, in subsequent analyses, only black and white subjects were included. The F-ratio between student achievement and race was 78.788 and was significant at the .01 level. The highest correlation between student demographic variables and the criterion variable was the correlation which existed between the socio-economic status of the student and his level of achievement. This F-ratio of 146.743 was significant at the .01 level. When student performance on the SRA Achievement Test was analyzed by the socio-economic status of the student, the mean SRA raw score increased as the level of socio-economic status increased. A differential of almost 19 points existed between the mean raw score for students whose parents were laborers or service workers (37.8) and the mean raw score for students whose parents were professionals (56.5).

A comparison of mean student achievement by race and sex of the student is given in Table VII. Male and female white students outperformed their black counterparts by about ten points on mean SRA raw score. When socio-economic status was added to the breakdown of mean achievement (Table VIII, page 57), the mean achievement level increased for both races as the level of socio-economic status increased. The achievement scores for white students are greater than that of black students on all socio-economic levels. White females scored highest in all socio-economic levels except level 2 (craftsmen, operatives and clerical workers) where the mean SRA Achievement score was slightly higher for white males. Black males scored lowest in all socio-economic levels except level 4 (professional) where the small N would invalidate the mean.
<table>
<thead>
<tr>
<th>Race</th>
<th>Sex</th>
<th>N</th>
<th>Mean SRA Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Female</td>
<td>662</td>
<td>47.68</td>
</tr>
<tr>
<td>White</td>
<td>Male</td>
<td>633</td>
<td>44.56</td>
</tr>
<tr>
<td>Black</td>
<td>Female</td>
<td>194</td>
<td>36.70</td>
</tr>
<tr>
<td>Black</td>
<td>Male</td>
<td>167</td>
<td>33.93</td>
</tr>
</tbody>
</table>
TABLE VIII
A COMPARISON OF MEAN STUDENT ACHIEVEMENT BY SOCIO-ECONOMIC
STATUS LEVEL, RACE AND SEX OF STUDENT

<table>
<thead>
<tr>
<th>Socio-Economic Level</th>
<th>Race</th>
<th>Sex</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborers and Service Workers</td>
<td>White</td>
<td>Female</td>
<td>271</td>
<td>42.55</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Male</td>
<td>267</td>
<td>38.57</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Female</td>
<td>148</td>
<td>35.70</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Male</td>
<td>126</td>
<td>32.59</td>
</tr>
<tr>
<td>Craftsmen, Operatives and Clerical Workers</td>
<td>White</td>
<td>Female</td>
<td>140</td>
<td>44.99</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Male</td>
<td>128</td>
<td>45.09</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Female</td>
<td>33</td>
<td>37.91</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Male</td>
<td>25</td>
<td>34.48</td>
</tr>
<tr>
<td>Semi-Professional and Professional</td>
<td>White</td>
<td>Female</td>
<td>168</td>
<td>52.99</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Male</td>
<td>164</td>
<td>48.62</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Female</td>
<td>11</td>
<td>48.00</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Male</td>
<td>14</td>
<td>43.36</td>
</tr>
<tr>
<td>Professional</td>
<td>White</td>
<td>Female</td>
<td>83</td>
<td>58.18</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>Male</td>
<td>74</td>
<td>56.23</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Female</td>
<td>1*</td>
<td>29.00</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Male</td>
<td>2*</td>
<td>46.00</td>
</tr>
</tbody>
</table>

Achievement Mean for All Subjects = 43.72
Standard Deviation for All Subjects = 14.60
*N too small for valid mean
An analysis of the variance between student achievement and student ability is found in Table IX. The high correlation between these two variables \((r = 95.133), p < .01\) was evidenced by the fact that increases in Mean SRA raw score were generally accompanied by increases in the STEA score.

Based on the strength of their correlation with the criterion variable, the predictor variables of school climate and student race, sex, socio-economic status, and ability were included in the regression equation. The intercorrelations between the variables entered into the regression equation are shown in the correlation matrix (Table X, page 61). The correlation matrix illustrates the independence of the predictor variables. A review of the intercorrelations between the demographic variables revealed that the strongest intercorrelation existed between student ability and student socio-economic status \((r = .40)\). STEA was negatively correlated with black subjects \((r = -.28)\) and positively correlated with white subjects \((r = .27)\). This same relationship existed between student socio-economic status and student race (black subjects \(r = -.29\), white subjects \(r = .27\)).

When the climate factor correlation coefficients were examined by race, a marked difference in the data was evident. The directionality of the correlation coefficient was opposite for all of the climate factors, except for Climate Factor 4, Perception of Teacher Attitude Toward Learning, when the response of black students was compared with the response of white students. This difference was most evident in Climate Factor 6, Perception of Academic Futility, where the correlation coefficient for
### TABLE IX

**AN ANALYSIS OF THE VARIANCE BETWEEN STUDENT ACHIEVEMENT AND STUDENT ABILITY**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>N</th>
<th>Mean SRA Score</th>
<th>Standard Deviation</th>
<th>Degrees of Freedom</th>
<th>F-Ratio</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEA Raw Score</td>
<td>4</td>
<td>22</td>
<td>28.3636</td>
<td>6.6943</td>
<td>44/2237</td>
<td>95.133</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>40</td>
<td>31.1750</td>
<td>6.6521</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>55</td>
<td>30.1091</td>
<td>6.3265</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>9</td>
<td>92</td>
<td>30.8696</td>
<td>6.7632</td>
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<tr>
<td></td>
<td>10</td>
<td>105</td>
<td>31.2952</td>
<td>6.8303</td>
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</tr>
<tr>
<td></td>
<td>11</td>
<td>99</td>
<td>31.1313</td>
<td>7.4623</td>
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<tr>
<td></td>
<td>12</td>
<td>108</td>
<td>32.4815</td>
<td>7.4752</td>
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<td></td>
<td>13</td>
<td>139</td>
<td>33.5612</td>
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<td>98</td>
<td>40.7143</td>
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<td>42.9886</td>
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<td>20</td>
<td>84</td>
<td>43.0476</td>
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<td>21</td>
<td>99</td>
<td>45.5657</td>
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<td>57.7727</td>
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<td>31</td>
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<td>59.2069</td>
<td>9.1939</td>
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**Table X**

Correlation Coefficients for Variables Entered in Regression
black students was -.20, while the correlation coefficient for white students was .20.

The independence of the climate factors as predictors was demonstrated by the low intercorrelations between these variables. The highest correlation for the climate factors (r = .51) was between Climate Factor 1, Perception of Academic Ability; and Climate Factor 3, Perception of Success in College. Climate Factor 3 also was correlated with Climate Factor 2, Perception of Future Educational Attainment (r = .40); Climate Factor 7, Perception of Prospects for Academic Success (r = .32); and Climate Factor 8, Perception of Self-Reliance (r = .31). All other intercorrelations between climate factors were less than .30.

When the relationship between the predictor variables and the criterion variable was examined a high correlation (r = .81) was found between student achievement (SRA) and student ability (STEA). A significant correlation (r = .43) also existed between student achievement and the socio-economic status of the student. The correlation between student achievement and the climate factors was highest for Climate Factor 6, Perception of Academic Futility (r = .38); Climate Factor 2, Perception of Future Educational Attainment (r = .32); and Climate Factor 7, Perception of Prospects for Academic Success (r = .29). The intercorrelations between these three factors were: Climate Factor 2 with Climate Factor 6 (r = .19), Climate Factor 2 with Climate Factor 7 (r = .24), Climate Factor 6 with Climate Factor 7 (r = .17). The correlations with student achievement for the remaining seven climate factors were considerably lower. Although the correlations for Climate Factor 4, Perceptions of Teacher Attitude Toward Learning, were not significant, it is interesting
to note their negative direction in regard to the criterion variable and several of the demographic variables and climate variables.

In the first regression analysis the predictor variables were included in a hierarchical manner with the variables of student ability, sex, socio-economic status, and race being brought into the regression equation in step one and the ten student climate factors in step two. This procedure allowed the researcher to examine the contribution of the student climate factors as predictors of student achievement after the variance for all the other predictor variables had been removed. Those cases containing missing data were not included in the analysis. A parameter of 3.9 was established for an F-ratio that was acceptable for inclusion in the analysis. The results of this regression analysis are found in Table XI. Of the variables entered in the first step of the regression equation, the major portion of the variance in student achievement was explained by student ability ($F = 2000.780, R^2 = .649$). The sex, socio-economic status, and race of the student contributed an additional 3 percent to the explained variance in student achievement (sex - $F = 68.743, r^2_{ad} = .017$; SES - $F = 36.082, r^2_{ad} = .014$; race - $F = 15.034, r^2_{ad} = .003$). The student climate factors which were entered into the regression equation in the second step contributed an additional 2 percent to the amount of explained variance in student achievement. Four of the ten student climate factors had a sufficient F-ratio to permit their entry into the regression equation. The student climate factor which made the greatest contribution to the explanation of student achievement was Climate Factor 6, Student Perception of Academic Futility.
TABLE XI
A SUMMARY OF MULTIPLE REGRESSION ANALYSIS SHOWING THE CONTRIBUTION OF THE PREDICTOR VARIABLES OF STUDENT ABILITY, SEX, SOCIO-ECONOMIC STATUS, RACE AND SCHOOL CLIMATE TO THE VARIANCE IN STUDENT ACHIEVEMENT IN A STATEWIDE SAMPLE OF VIRGINIA PUBLIC ELEMENTARY SCHOOLS

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<th>Predictor Variables In Order Entered In Regression</th>
<th>Variable Name</th>
<th>Beta</th>
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<th>R</th>
<th>R²</th>
<th>R² add</th>
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*DF 8/1712
(F = 63.983, $r^2_{\text{adj}} = .013$). Climate Factor 7, Student Perception of Prospects for Academic Success (F = 20.918, $r^2_{\text{adj}} = .006$); Climate Factor 2, Student Perception of Future Educational Attainment (F = 15.986, $r^2_{\text{adj}} = .003$); and Climate Factor 1, Student Perception of His Ability Vs. Peers' Ability (F = 4.590, $r^2_{\text{adj}} = .001$), also contributed to the explained variance in student achievement. All of the predictor variables which were entered into the equation accounted for a total of 70.7 percent of the variance in student achievement.

When the effects of the predictor variables were analyzed in standard-score form, the variable of student ability received the highest beta weight (B = .689) followed by Climate Factor 6, Student Perception of Academic Futility (B = .114); student sex-male (B = -.110); socio-economic status (B = .089); Climate Factor 7, Student Perception of Prospects for Academic Success (B = .065); Climate Factor 2, Student Perception of Future Educational Attainment (B = .057); student race-black (B = -.055); Climate Factor 1, Student Perception of His Ability Vs. Peers' Ability (B = .031).

The second regression analysis was conducted in the same hierarchical manner as the first analysis, with the exception that the predictor variable of student ability was not included in the regression equation. The results of the second regression analysis are found in Table XII. Of the predictor variables entered in the first step of the regression, the major portion of the variance (19 percent) in student achievement was explained by his socio-economic status (F = 171.281, $r^2 = .189$). Student race (F = 79.641, $r^2_{\text{adj}} = .037$) and student sex (F = 16.812, ...
<table>
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<th>Predictor Variables In Order Entered In Regression</th>
<th>Variable Name</th>
<th>Beta</th>
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<th>R²</th>
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*DF 10/1878
\( r_{add}^2 = .010 \) contributed an additional 4.6 percent to the explained variance in student achievement. Of the ten student climate factors, seven had sufficient F-ratios to permit their entry in the second step of the regression equation. These seven student climate factors added an additional 14 percent to the explained variance in student achievement.

As was the case in the previous regression analysis, Climate Factor 6, Student Perception of Academic Futility (\( F = 150.576, r_{add}^2 = .070 \)), was the climate factor which explained the greatest percentage of variance in student achievement (7 percent). Climate Factor 2, Student Perception of Future Educational Attainment (\( F = 53.377, r_{add}^2 = .029 \)); and Climate Factor 7, Student Perception of Prospects for Academic Success (\( F = 51.018, r_{add}^2 = .020 \)), contributed an additional 5 percent. The remaining 2 percent of the variance in student achievement was explained by Climate Factor 1, Student Perception of His Ability Vs. Peers' Ability (\( F = 38.597, r_{add}^2 = .009 \)); Climate Factor 4, Student Perception of Teacher Attitude Toward Learning (\( F = 14.788, r_{add}^2 = .008 \)); Climate Factor 5, Student Academic Values (\( F = 7.376, r_{add}^2 = .002 \)); and Climate Factor 9, Student Perception of Instructional Setting (\( F = 5.063, r_{add}^2 = .002 \)). All of the predictor variables entered into this equation accounted for 37.6 percent of the variance in student achievement.

In the analysis of the effects of the predictor variables in standard-score form, socio-economic status received the highest beta weight (\( B = .262 \)) followed by Climate Factor 6, Student Perception of Academic Futility (\( B = .238 \)); student race-black (\( B = -.175 \)); Climate Factor 7, Student Perception of Prospects for Academic Success (\( B = .146 \));
Climate Factor 2, Student Perception of Future Educational Attainment
(B = .114); Climate Factor 1, Student Perception of His Ability Vs. Peers' Ability (B = .125); student sex-male (B = -.076); Climate Factor 4, Student Perception of Teacher Attitude Toward Learning (B = -.075); Climate Factor 5, Student Academic Values (B = .055); and Climate Factor 9, Student Perception of Instructional Setting (B = .042).

In the final regression analysis the ten student climate variables were stepped in first followed by student socio-economic status, race, and sex in the second step. The results of this regression analysis are found in Table XIII. Seven of the ten student climate factors had sufficient F-ratios to permit their entry into the regression analysis. These seven factors accounted for almost 26 percent of the variance in student achievement. Climate Factor 6, Student Perception of Academic Futility (F = 150.576, $r_{add}^2 = .145$), explained the greatest amount of the variance (14.5 percent). Climate Factor 2, Student Perception of Future Educational Attainment (F = 53.377, $r_{add}^2 = .056$); and Climate Factor 7, Student Perception of Prospects for Academic Success (F = 51.018, $r_{add}^2 = .035$), contributed an additional 9 percent to the explained variance in student achievement. Climate Factor 4, Student Perception of Teacher Attitude Toward Learning (F = 14.788, $r_{add}^2 = .009$); Climate Factor 1, Student Perception of His Ability Vs. Peers' Ability (F = 38.597, $r_{add}^2 = .008$); Climate Factor 5, Student Academic Values (F = 7.376, $r_{add}^2 = .004$); and Climate Factor 9, Student Perception of Instructional Setting (F = 5.063, $r_{add}^2 = .002$), added over 2 percent to the explained variance. Of the demographic variables entered in the second step,
TABLE XIII
A SUMMARY OF MULTIPLE REGRESSION ANALYSIS SHOWING THE CONTRIBUTION
OF THE PREDICTOR VARIABLES OF SCHOOL CLIMATE AND STUDENT RACE,
SEX, SOCIO-ECONOMIC STATUS TO THE VARIANCE IN
STUDENT ACHIEVEMENT IN A STATEWIDE SAMPLE
OF VIRGINIA PUBLIC ELEMENTARY SCHOOLS

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<th>Predictor Variables In Order Entered In Regression</th>
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<th>R</th>
<th>R²</th>
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<td>Climate Factor 1</td>
<td>Student Perception of His Ability Vs. Peers' Ability</td>
<td>.12494</td>
<td>38.597</td>
<td>.50298</td>
<td>.25299</td>
<td>.00835</td>
</tr>
<tr>
<td>Climate Factor 5</td>
<td>Student Academic Values</td>
<td>.05453</td>
<td>7.376</td>
<td>.50666</td>
<td>.25670</td>
<td>.00372</td>
</tr>
<tr>
<td>Climate Factor 9</td>
<td>Student Perception of Instructional Setting</td>
<td>.04169</td>
<td>5.063</td>
<td>.50867</td>
<td>.25874</td>
<td>.00204</td>
</tr>
<tr>
<td>Occupation of Parent</td>
<td>Socio-Economic Status</td>
<td>.26157</td>
<td>171.281</td>
<td>.58610</td>
<td>.34351</td>
<td>.08477</td>
</tr>
<tr>
<td>Race - Black</td>
<td></td>
<td>-.17520</td>
<td>79.641</td>
<td>.60785</td>
<td>.36949</td>
<td>.02598</td>
</tr>
<tr>
<td>Sex - Male</td>
<td></td>
<td>-.07582</td>
<td>16.812</td>
<td>.61244</td>
<td>.37508</td>
<td>.00559</td>
</tr>
</tbody>
</table>

*DF 10/1878
student socio-economic status ($F = 171.281$, $r^2_{\text{add}} = .085$) again contributed significantly (8.5 percent) to the explanation of the variance in student achievement. Student race ($F = 79.641$, $r^2_{\text{add}} = .026$) and sex ($F = 16.812$, $r^2_{\text{add}} = .006$) explained an additional 2 percent of the variance. All of the predictor variables which were entered into the regression equation accounted for a total of 37.5 percent of the variance in student achievement.

Table XIV shows a comparison of the standard partial regression coefficients for the multiple regression analyses conducted both with and without the predictor variable of student ability. It should be noted that the addition of student ability as a predictor variable significantly diminished the beta weights of the other variables in the equation, with the exception of student sex-male which increased. When student ability was included in the regression equation, the standard partial regression coefficients were significantly lower for student socio-economic status and student race-black. Although the beta weights of the climate factors diminished with the inclusion of student ability in the regression equation, their position in the hierarchy of the predictors was maintained. In both regression analyses Student Perception of Academic Futility was the second highest standard partial regression coefficient in the regression equation.

**Summary**

The relationship between a student's level of achievement and his perception of the school climate was examined using analysis of variance...
TABLE XIV

A COMPARISON OF THE STANDARD PARTIAL REGRESSION COEFFICIENTS OF THE MULTIPLE REGRESSION ANALYSES

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Beta Weight With Student Ability Not In Regression Equation</th>
<th>Beta Weight With Student Ability In Regression Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Ability</td>
<td>.68968</td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Status</td>
<td>.26157</td>
<td>.08841</td>
</tr>
<tr>
<td>Race - Black</td>
<td>-.17520</td>
<td>-.05554</td>
</tr>
<tr>
<td>Sex - Male</td>
<td>-.07582</td>
<td>-.11029</td>
</tr>
<tr>
<td>Student Perception of Academic Futility</td>
<td>.23832</td>
<td>.11311</td>
</tr>
<tr>
<td>Student Perception of Future Educational Attainment</td>
<td>.14422</td>
<td>.06223</td>
</tr>
<tr>
<td>Student Perception of Prospects for Academic Success</td>
<td>.14557</td>
<td>.07060</td>
</tr>
<tr>
<td>Student Perception of Teacher Attitude Toward Learning</td>
<td>-.07515</td>
<td>-.01564</td>
</tr>
<tr>
<td>Student Perception of His Ability Vs. Peers' Ability</td>
<td>.12494</td>
<td>.03644</td>
</tr>
<tr>
<td>Student Academic Values</td>
<td>.05453</td>
<td>.02948</td>
</tr>
<tr>
<td>Student Perception of Instructional Setting</td>
<td>.04169</td>
<td></td>
</tr>
<tr>
<td>Student Perception of Self-Reliance</td>
<td>.01979</td>
<td></td>
</tr>
</tbody>
</table>
and multiple regression analysis in which the effects of student race, sex, socio-economic status, and ability were accounted for. The data indicated that the demographic variables were highly correlated with student achievement. Female students were achieving at a significantly higher level \((p<.01)\) than their male counterparts, and white students outperformed black students \((p<.01)\). The highest correlation between student demographic variables and the criterion variable was the correlation which existed between the socio-economic status of the student and his level of achievement \((p<.01)\). The higher the student's socio-economic status level the greater his level of achievement. A comparison of the effects of all three of these demographic variables on student achievement revealed that the highest achieving students on each socio-economic level were white females, while the lowest achieving students were black males. The relationship between student achievement and student ability was found to be highly significant \((p<.01)\).

The correlation matrix demonstrated the relative independence of the predictor variables with the exception of student ability and student socio-economic status which were correlated at the .40 level; Climate Factors 1 and 3 which were correlated at the .51 level; and Climate Factors 3 and 2, 7 and 8 which had correlations ranging from .31 to .40. All other intercorrelations were less than .30. The matrix also showed the existence of a strong correlation between certain predictor variables and the criterion variable. A correlation of .81 was found between student achievement and student ability and .43 between achievement and socio-economic status. Climate Factor 6, Student Perception of Academic
Futility, was correlated with student achievement at the .38 level; Climate Factor 2, Perception of Future Educational Attainment, at the .32 level and Climate Factor 7, Perception of Prospects for Academic Success, at the .29 level.

In the first regression analysis the predictor variables were entered in a hierarchical manner with the variables of student ability, sex, socio-economic status, and race being brought into the regression equation in step one followed by the ten student climate factors in step two. This procedure allowed the researcher to examine the contribution of the student climate factors as predictors of student achievement after the variance for all other predictor variables had been removed. The four climate factors which had a sufficient F-ratio to permit entry into the regression equation contributed an additional 2 percent to the amount of explained variance in student achievement. The student climate factor which made the greatest contribution was Climate Factor 6, Student Perception of Academic Futility ($F = 63.983, r_{\text{add}}^2 = .013, B = .114$).

Climate Factor 7, Student Perception of Prospects for Academic Success ($F = 20.918, r_{\text{add}}^2 = .066, B = .065$); Climate Factor 2, Student Perception of Future Educational Attainment ($F = 15.986, r_{\text{add}}^2 = .003, B = .057$); and Climate Factor 1, Student Perception of His Ability Vs. Peers' Ability ($F = 4.590, r_{\text{add}}^2 = .001, B = .031$), also contributed to the explained variance in student achievement.

The second regression analysis was conducted in the same hierarchical manner as the first analysis with the exception that the predictor variable of student ability was not included in the regression equation.
The elimination of student ability as a predictor variable resulted in an increase in the strength of the climate factors as predictors of student achievement. The seven climate factors which entered into the regression accounted for 14 percent of the explained variance in student achievement. As was the case in the first regression analysis, Climate Factor 6, Student Perception of Academic Futility ($F = 150.576, \hat{r}^2_{\text{add}} = .070, B = .238$), was the climate factor which explained the greatest percentage of the variance. Climate Factor 2, Student Perception of Future Educational Attainment ($F = 53.377, \hat{r}^2_{\text{add}} = .029, B = .144$); Climate Factor 7, Student Perception of Prospects for Academic Success ($F = 51.018, \hat{r}^2_{\text{add}} = .020, B = .146$); and to a lesser extent Climate Factors 1, 4, 5, and 9, contributed to the explained variance in achievement.

In the last regression analysis the ten student climate variables were stepped in first followed by student socio-economic status, race, and sex in the second step. The seven climate factors which entered into the regression accounted for almost 26 percent of the variance in student achievement. Climate Factor 6, Student Perception of Academic Futility ($F = 150.576, \hat{r}^2_{\text{add}} = .145, B = .238$), again explained the greatest amount of the variance. Climate Factor 2, Student Perception of Future Educational Attainment ($F = 53.377, \hat{r}^2_{\text{add}} = .056, B = .144$); Climate Factor 7, Student Perception of Prospects for Academic Success ($F = 51.018, \hat{r}^2_{\text{add}} = .035, B = .146$); and to a lesser extent Climate Factors 4, 1, 5, and 9, contributed to the explained variance in achievement.

In each of the three regression analyses, Student Perception of
Academic Futility was the strongest of the climate factors in predicting student achievement. When the effects of this climate factor were compared with those of the other predictor variables, Student Perception of Academic Futility had the second highest standard partial regression coefficient in each of the regression analyses. Only the variables of student ability and student socio-economic status had higher standard partial regression coefficients. Student Perception of Prospects for Academic Success and Student Perception of Future Educational Attainment also appeared to be good predictors of student achievement.
In recent years, many changes have been initiated which have strengthened the American school system. New and architecturally attractive buildings have been constructed, innovative teaching and learning strategies have been employed in the classroom, a variety of interesting and exciting new curriculum materials has been developed, numerous multi-media equipment and materials have been made available, and new procedures for grouping learners have emerged. Despite these substantial efforts, many feel that the kinds of learning environments which are desired have not been realized.¹

As educators we have recognized the differences which existed between schools and we have always expressed "A deep concern for the wholesomeness of the school's environment in which learning takes place."² We are acutely aware that a positive "learning climate is what our publics expressly want us to provide. It is their way of saying humane, communicative, compassionate, individually responsive, and all the other terms that mean 'treat my kid like he counts for


While researchers have been concentrating on educational innovations, a significant body of research on the effects of the learning climate on the individual has been neglected. "Often, however, there has not been sufficient descriptive information available to describe the numerous dimensions of a school's climate together with processes and activities an administrator and faculty might use to assess their school's climate and organize climate improvement endeavors." Early studies of the school environment attempted to measure the degree of student satisfaction or dissatisfaction with school by having students report whether they "liked" or "disliked" certain aspects of the school environment. A series of studies using the High School Characteristics Index expanded on this approach by having the student respond to questions about school life. It was during the 1970's that research on school environments began to examine systematically the relationship between student attitudes toward school and student achievement. The use of multivariate analysis techniques not available to earlier researchers facilitated this process. The results of these studies were inconclusive, with some suggesting that increases in attitude were related to increases in achievement and others indicating that student attitude was more strongly related to report card grades than to achievement on standardized tests.

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4Brainard and Fox, op. cit., p. 3.
The research model used in this examination of school environments called for an assessment of how the transformation process or the process of schooling related to the outputs of the process as measured by standardized testing. It was the intent of this research to identify and measure those institutional characteristics which motivate students to achieve.

A 5 percent randomly selected sample of Virginia public elementary schools was chosen for inclusion in the study. Fourth grade students in each of the schools completed a school environment questionnaire and provided the research teams with certain demographic data. Ability and achievement data for each student were obtained from standardized testing administered by the schools to all fourth grade students as a part of the state testing program.

The researcher hypothesized that there is no relationship between the level of student achievement and the student's perception of the school climate after controlling for the effects of race, sex, socio-economic status, and ability. A factor analysis of the school environment questionnaire resulted in ten factors which measured student perceptions of the school environment. The relationship between these perceptions and student achievement was examined using analysis of variance and multiple regression analysis in which the effects of student race, sex, socio-economic status, and ability were accounted for. The data indicated that the variables of race, sex, socio-economic status, and ability of the student were significantly correlated with his achievement level as were certain climate factors. Although significantly
correlated with the criterion variable, these predictor variables were relatively independent of each other. The only significant intercorrelations between predictor variables were between student ability and student socio-economic status (r = .40); and Climate Factor 1 (Student Perception of His Ability Vs. Peers' Ability) and Climate Factor 3 (Student Perception of Success in College) (r = .51). Climate Factor 3 also correlated with Climate Factors 2, 7, and 8 (correlations ranged from .31 to .40). The intercorrelations for all other predictor variables were less than .30.

The relationship between the student climate variables and student achievement was analyzed through a series of multiple regressions. In the first regression analysis the demographic variables of race, sex, socio-economic status, and ability were entered into the regression in step one, followed by the ten student climate factors in step two. This procedure allowed the researcher to examine the contribution of the student climate factors as predictors of student achievement after the variance for all other predictor variables had been removed. Four of the ten climate factors contributed an additional 2 percent to the amount of explained variance in student achievement. The climate factor making the greatest contribution was Student Perception of Academic Futility. Also contributing to the variance in achievement were the climate factors Student Perception of Prospects for Academic Success, Student Perception of Future Educational Attainment, and Student Perception of His Ability Vs. Peers' Ability.

The second regression analysis was conducted in the same hierarchical manner as the first analysis with the exception that the predictor variable
of student ability was not included in the regression equation. The elimination of student ability as a predictor variable resulted in an increase in the strength of the climate factors as predictors of student achievement. Seven of the climate factors accounted for an additional 14 percent increase in the variance in student achievement. As was the case in the first regression analysis, the climate factor Student Perception of Academic Futility explained the greatest percentage of the variance. Also contributing significantly to the explanation of the variance were the climate factors Student Perception of Future Educational Attainment and Student Perception of Prospects for Academic Success.

In the last regression analysis the ten student climate variables were stepped in first followed by the variables of student race, sex, and socio-economic status in the second step. The seven climate factors which had a sufficient F-ratio to enter into the regression accounted for almost 26 percent of the variance in student achievement. Student Perception of Academic Futility again accounted for the major portion of this increase in the explained variance. Student Perception of Future Educational Attainment and Student Perception of Prospects for Academic Success also contributed significantly to the variance in student achievement.

In each of the three regression analyses, Student Perception of Academic Futility was the strongest of the climate factors in predicting student achievement. When the effects of this climate factor were compared with those of the other predictor variables, Student Perception of Academic Futility had the second highest standard partial regression coefficient in each of the regression analyses. Student Perception of
Prospects for Academic Success and Student Perception of Future Educational Attainment also had significant partial regression coefficients and appeared to be good predictors of student achievement.

Discussion

In many respects this study parallels the earlier research of Brookover, who conducted a comprehensive research effort to examine the relationship between the school environment and student achievement on an elementary school level. Multiple regression analysis of school climate data secured by Brookover from fourth and fifth grade students, their teachers, and the school principal indicated that the composite of the student perceptions of the school environment was highly correlated with the mean student achievement level for the school. The results of Brookover's analysis also revealed a high correlation between student perception of the environment and the composition variables of socio-economic status and race. These findings caused Brookover to speculate that if the contribution of composition and the contribution of climate could be separated, the school climate variables would be more directly related to achievement.

The lack of control in Brookover's study over the variables of race, socio-economic status, and achievement was a delimiting factor in establishing the credibility of school climate as a significant factor in student achievement. Whereas Brookover attempted to compare the climate of a school of a certain racial majority or socio-economic status level with the mean level of student achievement for that school, this
researcher attempted to compare the individual student's perception of
the climate with his level of achievement while controlling for his
race, sex, socio-economic status, and ability.

The student climate questionnaire used in the collection of data
for this study is the same as the one developed by Brookover for use with
a representative sample of Michigan public elementary schools. Brookover
submitted the data obtained from the questionnaire to a factor analysis,
with the school being the unit of analysis for the student climate data.
This researcher submitted the data obtained from a representative sample
of Virginia public elementary schools to a factor analysis, with the
student being the unit of analysis for the student climate data. The
intent of Brookover's study was to examine the relationship between the
mean perceptions of the climate of a school and the mean level of student
achievement. The intent of this study was to examine the relationship
between the individual student's perception of the climate of his school
and his level of achievement.

Brookover's factor analysis resulted in five student climate factors.
The factor analysis for this study resulted in ten climate factors. This
difference in the number of student climate factors can be accounted for
by the fact that all but two of the questions submitted to factor analysis
in this study had sufficient factor loadings (.300 or greater) to be
included in a factor. Brookover excluded several items which did not
have a loading of .300 and he reported that "A small number of items
with reasonably high loadings were not included in any climate variable
in the final analysis because they did not have appropriate content
validity." An analysis of the items which loaded together in the factor analysis for this study revealed that all of them had appropriate content validity for inclusion in the particular factor. In his study Brookover designated certain items of the climate questionnaire—those which pertained to student self-concept and student self-reliance—as comprising a criterion or outcome variable; and he treated them accordingly in his data analysis. This researcher felt that student self-concept and self-reliance were more appropriately included as predictors of achievement and components of the school climate and therefore included them in the factor analysis.

A comparison of the student climate factors for this study with Brookover's student climate factors demonstrated the similarity of the results of the factor analyses for both studies (Appendix E). If one examines those climate factors which the results suggest have the greatest relationship with student achievement, this similarity becomes apparent. Of the eight items which comprised Climate Factor 6, Student Perception of Academic Futility, six were the same as those included in Brookover's factor, Student Sense of Academic Futility. The remaining two items were ones which Brookover did not include in any factor. Climate Factor 7, Student Perception of Prospects for Academic Success, consisted of five items, three of which were the remaining questions from Brookover's climate factor, Student Sense of Academic Futility, and two of which

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did not have significant loadings for inclusion in Brookover's factors. This comparison illustrated that Brookover's factor, Student Sense of Academic Futility, had been further subdivided in this study into two distinct factors: Student Perception of Academic Futility and Student Perception of Prospects for Academic Success. An analysis of the content of the items included in these factors supported the appropriateness of this subdivision (Appendix D). Brookover's factor, Student Future Evaluations and Expectations, was also subdivided in this study into two distinct factors: Student Perception of Future Educational Attainment and Student Perception of Success in College. Climate Factor 2, Student Perception of Future Educational Attainment, is concerned with the student's perception of the level of educational attainment he thinks he will achieve. Of the six items which loaded in the factor, five were the same as those included in Brookover's factor, Student Future Evaluations and Expectations. The remaining item was one which was not included in any of Brookover's factors. The remaining items in Brookover's factor, Student Future Evaluations and Expectations, loaded on Factor 3, Student Perception of Success in College, in this study. This factor is concerned with the student's perception of the likelihood for his success in college. An analysis of the items contained in Climate Factors 2 and 3 supported the appropriateness of this subdivision. This subdivision is also important because the data suggest that it is the Student's Perception of Future Educational Attainment that is significantly related to student achievement, not Student Perception of Success in College. The questions which comprised the factor, Student Perception of Future
Educational Attainment, were of a more immediate nature, while the ques-
tions which comprised Student Perception of Success in College were more remote. This may account for the difference in the strength of the rela-
tionship between these two factors and student achievement.

The similarity between Brookover's factor analysis and the factor analysis for this study was in evidence in each of the remaining factors, even though the data suggested that these factors were not as highly correlated with student achievement.

It is when one examines the intercorrelations between predictor variables entered into the regression analysis that the differences between the Brookover study and this study are evident. Brookover's analysis suggested that "some measures of school climate are highly correlated with the composition of the student body."

The results of this study do not reveal a high correlation between these variables (Table X, page 61). Table XV gives a comparison of certain of the correlation coefficients for this study and Brookover's study. In Brookover's analysis Student Sense of Futility was highly correlated with the mean school socio-economic status level \( r = .79 \), while the intercorrelation between Student Perception of Academic Futility and student socio-economic status was only .20 for this study. Brookover's results indicated that a high correlation existed between Student Sense of Futility and race \( r = .76 \) where the variable of race was the percent of the school which was white.

\[6\text{Ibid.}, \ p. \ 50.\]
TABLE XV
COMPARISON OF CORRELATION COEFFICIENTS OF CERTAIN VARIABLES ENTERED IN REGRESSION EQUATIONS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable</th>
<th>Current Study</th>
<th>Brookover's Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Perception of Academic Futility</td>
<td>Student Socio-Economic Status/Mean School</td>
<td>.20</td>
<td>.79</td>
</tr>
<tr>
<td>Student Sense of Futility</td>
<td>Socio-Economic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race - Black Students - White Students/Race -</td>
<td>.20 Black Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of School White</td>
<td>.20 White Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Perception of Future Educational Attainment/Perceived Future Evaluations and Expectations</td>
<td>Student Socio-Economic Status/Mean School</td>
<td>.26</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td>Socio-Economic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race - Black Students - White Students/Race -</td>
<td>-.05 Black Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of School White</td>
<td>.06 White Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Perception of Academic Futility</td>
<td>Student Perception of Academic Futility</td>
<td>.21</td>
<td>.44</td>
</tr>
<tr>
<td>Student Sense of Futility</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
While the intercorrelations between Student Perception of Academic Futility and the race of the student were relatively low in this study, it is interesting to note the opposite directionality of the coefficients. The results indicated a positive correlation ($r = .20$) between white subjects and their perception of academic futility and a negative correlation ($r = -.20$) between black students and their perception of academic futility. These results suggest that black students included in the study perceived more academic futility in the school environment than their white counterparts. A similar finding resulted from an earlier research study on fate control by Coleman and his associates. The results of this study indicated that black and other minority students felt "a sense of powerlessness against a neutral, if not hostile, environment . . . which constitutes a handicap for both the individual student and for the school in its attempt to socialize minority-group students into its formal goals and values."\(^7\)

Further examination of student perceptions of the school climate by race revealed that the correlation between student perception of academic ability and race was positive for black students ($r = .13$) and negative for white students ($r = -.13$). Although these correlations are not significant, the difference in their directionality suggests differences in student perceptions of their environment based on their race. These results could be interpreted as indicating that black students have a

higher perception of their academic ability and thus sense more academic futility when they fail to reach their expectations. White students, however, do not have as high a perception of their academic ability and therefore do not sense as much academic futility in the school environment. These findings emphasize the importance of examining school environments not only as a totality, but also from the perspectives of the sub-populations which are contained within the total population.

The intercorrelations between Brookover's climate variable, Perceived Future Evaluations and Expectations, and mean school socio-economic status was .59 while the correlation between Student Perception of Future Educational Attainment and student socio-economic status was .26 for this study. The intercorrelation between this climate variable and race was similar for both studies.

When the intercorrelations between these two climate variables were compared, Brookover's analysis resulted in a correlation coefficient of .44, while the analysis of the data for this study revealed a correlation coefficient of .21. Brookover's analysis revealed that significantly high intercorrelations (as high as .60) existed between certain climate variables (Appendix F). The results of this study demonstrated the independence of the climate factors as predictors of student achievement. Other than Climate Factor 3, which had an intercorrelation of .51 with Climate Factor 1 and .40 with Climate Factor 2, all other intercorrelations between climate factors were low (Table X, page 61). The three climate factors (Factors 2, 6, and 7) which had the most significant relationship with student achievement were relatively independent of
each other, with the highest intercorrelation being between Factor 2, Student Perception of Future Educational Attainment; and Factor 7, Student Perception of Prospects for Academic Success ($r = .24$).

The high intercorrelations between certain predictor variables, particularly some of the climate variables and the socio-economic and racial composition variables of the student bodies, made it difficult for Brookover to separate out the effects of these predictor variables. Brookover hypothesized that if it were possible to separate the contribution of these student composition variables from the contribution of the climate variables, "the latter would be more directly relevant as an explanation of the differences in achievement." Because he was not able to separate out these differences, Brookover's analysis was limited to varying the regression order in an attempt to assess the strength of the contribution of both composition and climate variables to the prediction of school mean achievement. The use of mean student data by Brookover imposed limitations on Brookover's ability to control the data and contributed to the high intercorrelations between predictor variables.

To improve control over the variables being entered into the regression and eliminate the weaknesses inherent in Brookover's analysis, individual data were collected for each subject who participated in this study, rather than mean data for each school. The individual student's perception of the school climate was regressed against his achievement scores while the effects of the other predictor variables of student

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Brookover, op. cit., p. 52.
socio-economic status, race, sex, and ability were controlled. The insignificant intercorrelations between predictor variables which resulted from this method of data analysis enabled this researcher to determine the contribution of the various predictor variables and to examine closely and accurately the relationship between student perceptions of the school climate and student achievement.

It was hypothesized that the relationship between the level of student achievement and the student's perception of the school climate is not significant when the effects of race, sex, socio-economic status, and ability are controlled. The analysis of the data did not support this null hypothesis. Each of the multiple regressions demonstrated the existence of a significant positive relationship between student achievement and student perception of the school climate. Although influenced by the variables included in the regression equation and by the regression order, the strength of this relationship was evident in each regression analysis.

To examine the relationship between the climate variables and student achievement it was first necessary to account for that portion of the variance explained by other predictor variables. For this reason in the first regression equation (Table XI, page 64) the variables of student ability, race, sex, and socio-economic status were entered into the regression equation prior to consideration of the climate variables. These variables accounted for a total of 68 percent of the variance in student achievement, with student ability contributing 65 percent. When the climate factors were included in the second step of the regression
analysis, the four climate factors which had a sufficient F-ratio for inclusion in the regression contributed an additional 2.4 percent to the explained variance in student achievement. This analysis indicated that a significant relationship existed between student ability and student achievement. The strength of this relationship causes one to question whether a causal relationship exists between ability, as measured by the STEA, and achievement level, as determined by the SRA Achievement Test; or whether both tests are highly intercorrelated because they are both measures of student achievement. In his analysis of the STEA test Dooley stated that the parent tests and, consequently, "the STEA scores are therefore estimates on ability derived from and predictive of formal educational encounters." If Dooley's assessment was correct, the inclusion of STEA as a predictor variable for achievement could be likened to explaining variance in the criterion variable by using a different form of the same variable.

This uncertainty as to the role of ability as a predictor variable led the researcher to conduct a second regression analysis (Table XII, page 66) in which student ability was excluded from the list of predictor variables. In this analysis the variables of student socio-economic status, race, and sex were entered in the first step of the equation. These variables accounted for a total of 23.5 percent of the variance, with student socio-economic status contributing about 19 percent of this variance.

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amount. When the climate factors were included in the second step of the regression analysis, the seven climate factors which had a sufficient F-ratio for entry in the regression contributed an additional 1.4 percent to the explained variance in student achievement.

In both of these analyses the addition of the climate variables to the multiple regression analysis after the inclusion of the demographic variables resulted in a significant increase in the $R^2$. The elimination of student ability as a predictor variable increased the strength of the climate factors as predictors. In Brookover's study (Table I, page 31) student ability was not included as a predictor of achievement. In his regression analysis mean student socio-economic composition and race (percent white in the school) were entered prior to the climate variables. The climate variables accounted for an increase in the $R^2$ of 4 percent in the state sample. Whereas Brookover's climate variables accounted for only a 4 percent increase in $R^2$ when socio-economic status and race were entered in the first step, the analysis of the climate variables in this study indicated a 1.4 percent increase in $R^2$ when socio-economic status, race, and sex of the student are entered in the first step. The other predictor variables demonstrated similar differences. In the Brookover analysis socio-economic status accounted for 45.6 percent of the variance and race contributed an additional 32.9 percent, whereas in this study socio-economic status accounted for 18.9 percent of the variance while race added 3.7 percent and sex about 1 percent. The total percent of the variance in student achievement accounted for by Brookover's regression equation was 82.6 percent.
while the total percent accounted for by this regression equation was 37.6 percent. This difference in the amount of explained variance may be the result of data analysis procedures. While the Brookover study confined its data analysis to mean school data, this researcher used individual student data when recording and analyzing student achievement, ability, socio-economic status, sex, race, and climate. This procedure increased the internal validity of the study and consequently reflected more accurately the relationship between the predictor variables and the criterion variable.

In an effort to demonstrate the strength of the relationship between school climate and achievement, Brookover conducted a second regression analysis in which the climate factors were entered first followed by student socio-economic status and race. In this analysis the climate variables accounted for 72.5 percent of the variance in the achievement between schools, while student socio-economic status and race contributed an additional 10 percent to the explained variance (Table I, page 31). In the third regression analysis conducted for this study the student climate factors were entered into the regression in step one followed by socio-economic status, race, and sex. In this analysis the climate factors explained almost 26 percent of the variance, while socio-economic status, race, and sex contributed an additional 11.6 percent (Table XIII, page 69). In both of these regression analyses the entry of the climate factors prior to that of the other predictor variables resulted in a significant increase in the portion of the variance in student achievement explained by school climate. However, in
Brookover's analysis the climate factors explained almost three times as much of the variance as did the climate variables in this study's analysis. By entering the climate factors first in the regression analysis rather than last, the explained variance increased from 4 percent to 72.5 percent, causing Brookover to state that he believed "that climate along with other school environment variables is more directly relevant to achievement" than are the variables of socio-economic status and racial composition.\textsuperscript{10} In the analysis conducted for this study the percent of the explained variance in student achievement increased from 14 percent to 26 percent when the climate factors were entered into the regression equation in the first step. This moderate increase in the percent of the explained variance in student achievement, when compared with the substantial increase found by Brookover, can be attributed to the greater degree of control exercised over the data used in this study.

Conclusions

This research was designed to examine the nature of the relationship between a student's perception of the school climate and his level of academic achievement. The results demonstrated that when the effects of student ability, socio-economic status, race, and sex were controlled, student perception of the school climate was significantly related to student achievement. The relative independence of school climate from the other predictor variables lends credence to its importance as a

\textsuperscript{10}Brookover, op. cit., pp. 64-65.
factor which influences student performance. The prevalent attitude in educational research that the student enters the educational environment with a predetermined set of characteristics and attitudes and there is little the educational system can do to enhance student progress beyond the limitations imposed by these characteristics and attitudes is contradicted by the results of this study.

In can be concluded that educators have within their province one variable which can be manipulated to improve the level of student achievement. The data indicated that this variable, student perception of the school climate, primarily consists of three factors: Student Perception of Academic Futility, Student Perception of Future Educational Attainment, and Student Perception of the Prospects for Academic Success.

Before attempts can be made to modify school environments for the purpose of having a positive effect on student achievement, the factors which comprise school climate need to be analyzed to determine the strength of their relationship with student achievement. The analysis which provided the most accurate description of this relationship was the regression analysis in which the climate factors were entered into the regression equation after the effects of the predictor variables of socio-economic status, race, and sex were controlled. Even with the variance accounted for by these demographic variables removed, several of the student climate factors added significantly to the explained variance in student achievement.

The school climate factor which was most significantly related to student achievement was Student Perception of Academic Futility which
had an F-ratio of 150.576 and a $R^2_{add}$ of .070, which was significant at the .01 level (Table XII, page 66). This indicated that a student's perception of academic futility in the school environment accounted for 7 percent of the variance in his level of achievement. When all other independent variables were held constant, Student Perception of Academic Futility received a standard partial regression coefficient of .238. The only variable receiving a higher beta weight was socio-economic status ($B = .262$) (Table XII, page 66).

The items which comprise Student Perception of Academic Futility are concerned with the student's perception of his relationship to "significant others" within the school environment (Appendix D). These questions assessed student perception of the pressure of the school environment for academic success. Those students who displayed high futility perceived more teacher and peer pressure not to succeed. They viewed schooling as a negative process. This feeling of academic futility, although significant for all students, was higher for black students. The strength of the relationship between this climate factor and student achievement emphasized the importance of continual efforts by educators to assess how students of all races and backgrounds view the educational environment. If educators are aware of those students or groups of students who are experiencing futility in the academic setting, they can establish procedures for modifying that environment to ameliorate these negative perceptions.

Student Perception of Future Educational Attainment, when entered into the regression equation after socio-economic status, race, and sex, had an F-ratio of 53.377 and a $R^2_{add}$ of .029 which was significant at the
The student's perception of his level of future educational attainment accounted for approximately 3 percent of the variance in his level of achievement. When the other independent variables were held constant this factor received a beta weight of .144.

It can be concluded from these data that a student's perception of the level of education he thinks he will achieve and his perception of the level of education he feels "significant others" (peers, teachers, parents) think he will achieve is significantly related to his level of achievement. A persistent aim of education has been to help students achieve their academic potential. Standardized testing indicates that schools, despite numerous educational innovations, have been unable to make substantial progress toward this goal. In attempting to help the individual student achieve his potential we have looked everywhere for assistance, except to the individual himself. Students at all levels of the educational spectrum need assistance in academic goal setting. The educational process needs to include opportunities for school personnel to counsel with students as they establish their educational goals. This assistance will enable students to establish goals which challenge their ability and at the same time are realistic.

Student Perception of Prospects for Academic Success accounted for 2 percent of the variance in student achievement when the effects of socio-economic status, race, and sex were removed first. This climate factor had an F-ratio of 51.018 and a $R^2_{add}$ of .020 which was significant at the .01 level (Table XII, page 66). When the other variables were held constant, Student Perception of Prospects for Academic Success
received a beta weight of .146.

Responses to this climate factor required the student to indicate what he perceived to be his chances for academic success by answering questions on how well he feels he is doing in school, how well he can do if he really tries, if he feels he has luck in school, and whether he feels he will be successful in life. Whereas Student Perception of Academic Futility is concerned with the student's perception of how "significant others" within the school environment view his chances for academic success, and Student Perception of Future Educational Attainment is concerned with the student's perception of the academic level he thinks he will achieve, Student Perception of Prospects for Academic Success is concerned with the student's perception of the current educational setting and the opportunities for his success within that setting. The data emphasized the importance of not only developing an awareness of the student's perception of his prospects for success, but also the need to measure systematically these perceptions so that the success needs of individual students and groups of students can be identified and the school environment modified to provide for these needs.

The climate factor, Student Perception of His Ability Vs. Peers' Ability, contributed almost 1 percent to the amount of explained variance in student achievement. This factor had an F-ratio of 38.597 and a $R^2$ of .009 which was significant at the .01 level. When the other independent variables were held constant this factor had a beta weight of .125 (Table XII, page 66).

In this climate factor students were asked to evaluate their
perceptions of their current or anticipated academic performance with that of their peers. They also had to assess how they thought "significant others" (parents, teachers, friends) would evaluate their academic performance relative to that of their peers. This factor again illustrated the importance of a student's perception of his academic performance and his perception of the attitude of "significant others" toward his academic performance. The analysis of the data indicated that those students who feel they are academically more capable than their peers or who perceive "significant others" as feeling that they are academically more capable than their peers are likely to achieve at a higher level. These results stressed the importance of the relationship between a student's concept of his ability and his level of achievement. It is interesting to note that even when the level of student ability was controlled in the regression analysis, this climate factor was still significant at the .01 level (Table XI, page 64).

Three other climate factors, Student Perception of Teacher Attitude Toward Learning, Student Academic Values, and Student Perception of Instructional Setting, were significantly related to student achievement at the .01 level (Table XII, page 66). The combined contribution of these three climate variables to the explained variance in student achievement was only about 1 percent. Student Perception of Teacher Attitude Toward Learning is the one climate factor which had a negative standard partial regression coefficient. This climate factor is concerned with the student's perception of the extent of caring and helpfulness that the classroom teacher displays. The results indicated that there is a
negative correlation between a student's perception of the teacher as a caring and helpful person and his level of achievement. Students who view teachers as not helpful and uncaring tended to have higher achievement levels than those who perceived teachers as being helpful and caring. These results could be interpreted as indicating that demanding, unresponsive teachers promote student achievement. It could also be interpreted that students of higher achievement levels tend to be more critical in their evaluation of the teachers, while students at lower achievement levels are more appreciative of the help which they receive. This latter interpretation is supported by an analysis of the regression which included student ability as an independent variable (Table XI, page 64). When student ability was controlled in this regression analysis, Student Perception of Teacher Attitude Toward Learning was not a significant predictor of student achievement. In Brookover's analysis of the data for his state sample, a similar negative correlation was found to exist between student achievement and Brookover's climate factor, Student Perception of Teacher Push and Teacher Norms. This relationship between a student's perception of the classroom teacher and his level of achievement warrants further investigation in future studies.

Student Academic Values, which assessed the level of importance which the student attributes to school work and the amount of effort the student feels he makes in doing school work; and Student Perception of Instructional Setting, which is concerned with student perception of the degree of flexibility in the instructional setting, made minimal contributions to the explained variance in student achievement.
The significant relationship between these climate factors and student achievement appears to indicate that if students are going to achieve their potential schools must be satisfying places. The academic growth of students is dependent upon our success at meeting their needs for belonging and love, their esteem needs and their needs for self-actualization. All students must have the opportunity within the educational setting to be successful, motivated, happy, and productive. The responsibility of educational leaders is to examine systematically this complex school environment to determine how it can be modified to enhance these opportunities.

Implications for Future Research

It is not sufficient for educators to be content with the knowledge that environment is related to achievement. Educators must begin to take steps to enhance the quality of life within the school environment for all students. The analysis of the school environment needs to be expanded to include consideration of how teachers and administrators perceive the environment. The relationship between student perceptions of the environment and the perceptions of teachers and administrators needs to be analyzed to determine where differences exist and to establish priorities for dealing with inconsistencies in perceptions of the school environment which may prove harmful to student progress.

An in-depth analysis of the relationship between student achievement and student perception of school climate in specific situations needs to be conducted. Future studies should combine individual climate,
achievement, and demographic data on a school unit basis for the purpose of investigating differences between schools of contrasting climate and dissimilar student body compositions. Those schools which display a high correlation between student perception of the environment and student achievement should be analyzed through the use of unobtrusive measures to determine what elements in the school environment contribute to a student's perception of academic futility, his perception of the level of educational attainment he thinks he will achieve, his perception of his chances for academic success, and his perception of his ability level. It is this in-depth analysis which can provide the specific information needed for future attempts at modifying school environments to enhance the quality of life for students.

Future research on school environments should examine the differences between schools of differing racial compositions. Although the correlation between student race and the climate factors is not highly significant, the opposite directionality of the correlation coefficients for black and white students suggests that students of different races view the school environment differently. These differences need to be evaluated so that modifications of the school environment can be made which will enhance the quality of life for students of all races.

In an effort to obtain measurable results of the relationship between student perception of the environment and student achievement, this research has taken a somewhat narrow view of the potential effects of school environment. This research has concentrated on cognitive skill acquisition as measured by standardized tests. Future research on school
environments should not be confined to academic outcomes but should include an analysis of the non-cognitive outcomes such as student values and attitudes.
APPENDIXES
APPENDIX A

STUDENT CLIMATE QUESTIONNAIRE AND ANSWER SHEET
STUDENT QUESTIONNAIRE*

*Based upon a questionnaire developed by Brookover, Wilbur B. et al., Michigan State University
STUDENT QUESTIONNAIRE

We are trying to learn more about students and their work in school. We would, therefore, like for you to answer the following questions. This is not a test of any sort and will not affect your work in school. Your teacher and your principal will not see your answers. There are no right or wrong answers; we simply want you to tell us your answer to each question.

DIRECTIONS: ALTHOUGH THIS IS NOT A TEST, YOU ARE NOT TO TALK WHILE ANSWERING THE QUESTIONS. WE ARE INTERESTED IN KNOWING ONLY WHAT YOU THINK IS THE BEST ANSWER TO THE QUESTION. I WILL READ EACH QUESTION AND THE POSSIBLE ANSWERS TO YOU. AFTER I HAVE READ THE QUESTION AND THE ANSWERS, YOU ARE TO CHOOSE THE ANSWER WHICH YOU THINK IS BEST FOR YOU AND CIRCLE THE LETTER OF YOUR ANSWER SHEET THAT MATCHES THE LETTER OF THE ANSWER YOU CHOOSE. PICK ONLY ONE ANSWER FOR EACH QUESTION.

1. How old are you?
   Eight years old ........ a.
   Nine years old ......... b.
   Ten years old .......... c.
   Eleven years old ....... d.
   Twelve years old ...... e.

2. Are you a boy or a girl?
   Boy ......................... a.
   Girl ........................ b.

3. What is your race or ethnic group?
   Black ........................ a.
   White ........................ b.
   Hispanic .................... c.
   Oriental .................... d.
   American Indian ........... e.

4. How many years have you been at this school?
   One year .................... a.
   Two years ................... b.
   Three years ................. c.
   Four years .................. d.
   Five years .................. e.
5. If you could go as far as you wanted in school, how far would you like to go?

- Finish grade school .......... a.
- Go to high school for a while ... b.
- Finish high school ............ c.
- Go to college for a while ...... d.
- Finish college ............... e.

6. Sometimes what you want to happen is not what you think will happen. How far do you think you will go in school?

- Finish grade school .......... a.
- Go to high school for a while ... b.
- Finish high school ............ c.
- Go to college for a while ...... d.
- Finish college ............... e.

7. Do you try hard to get good grades on your work?

- Yes ......... a.
- No ............... b.

8. How many students in this school will work hard to get a better grade on the weekly tests?

- Almost all of the students ...... a.
- Most of the students ........... b.
- Half of the students ........... c.
- Some of the students ........... d.
- Almost none of the students .... e.

9. Do you care if you get bad grades?

- Yes ......... a.
- No ............... b.

10. Do you study harder than you really have to?

- Yes ......... a.
- No ............... b.

11. How far do you want to go in school?

- Finish grade school .......... a.
- Go to high school for a while ... b.
- Finish high school ............ c.
- Go to college for a while ...... d.
- Finish college ............... e.
12. How important is it to you to be a good student?

Very important ............... a.
Important ...................... b.
Somewhat important ........... c.
Not very important ........... d.
Not important at all .......... e.

13. How important do you feel it is to do good school work?

You feel it is very important .... a.
You feel it is important ........ b.
You feel it is somewhat important ... c.
You feel it is not very important ... d.
You feel it is not important at all ... e.

14. How important do you think most of the students in this school feel it is to do well in school work?

They feel it is very important .... a.
They feel it is important ........ b.
They feel it is somewhat important ... c.
They feel it is not very important ... d.
They feel it is not important at all ... e.

15. Do you think reading is a fun thing to do?

Yes .................................. a.
No .................................. b.

16. Do you read every day for fun?

Yes .................................. a.
No .................................. b.

17. Do students like you when you do well in school?

Almost all of the students .... a.
Most of the students ........... b.
About half of the students .... c.
Some of the students ........... d.
None of the students ........... e.

18. How many students don't do as well as they could do in school because they are afraid other students won't like them as much?

Almost all of the students .... a.
Most of the students ........... b.
About half of the students .... c.
Some of the students ........... d.
None of the students ........... e.
student questionnaire

remember, please answer the following questions by circling the letter on the answer sheet that matches the letter of the answer you choose. pick only one answer for each question.

19. How many students don't do as well as they could do on school because they are afraid their friends won't like them as much?

Almost all of the students . . . a.
Most of the students . . . . b.
About half of the students . . . c.
Some of the students . . . . d.
None of the students . . . . e.

20. Would you study hard if your work wasn't graded by teachers?

Yes . . . . . . . . . . . . . . . . . a.
No . . . . . . . . . . . . . . . . . b.

21. Will you be able to do what you want to be in life?

Yes . . . . . . . . . . . . . . . . . a.
No . . . . . . . . . . . . . . . . . b.

22. Do you do well in school?

Yes . . . . . . . . . . . . . . . . . a.
No . . . . . . . . . . . . . . . . . b.

23. Can you do well in school if you work hard?

Yes . . . . . . . . . . . . . . . . . a.
No . . . . . . . . . . . . . . . . . b.

24. Do you have luck in this school?

Yes . . . . . . . . . . . . . . . . . a.
No . . . . . . . . . . . . . . . . . b.

25. Do you have to be lucky to get good grades in this school?

Yes . . . . . . . . . . . . . . . . . a.
No . . . . . . . . . . . . . . . . . b.

26. Think of your friends. Do you think you can do school work better, the same or poorer than your friends?

Better than all of them . . . a.
Better than most of them . . . b.
About the same . . . . . . . c.
Poorer than most of them . . . d.
Poorer than all of them . . . e.
27. Think of the students in your class. Do you think you can do school work better, the same or poorer than the students in your class?

- Better than all of them ............ a.
- Better than most of them ........... b.
- About the same ....................... c.
- Poorer than most of them .......... d.
- Poorer than all of them ............. e.

28. When you finish high school, do you think you will be one of the best students, about the same as most or below most of the students?

- One of the best ...................... a.
- Better than most of the students ... b.
- Same as most of the students ........ c.
- Below most of the students .......... d.
- One of the worst ..................... e.

29. Do you think you could finish college?

- Yes, for sure ........................ a.
- Yes, probably ........................ b.
- Maybe ................................. c.
- No, probably not ........................ d.
- No, for sure ........................... e.

30. If you went to college, do you think you would be one of the best students, same as most or below most of the students?

- One of the best ...................... a.
- Better than most of the students ... b.
- Same as most of the students ........ c.
- Below most of the students .......... d.
- One of the worst ..................... e.

31. If you want to be a doctor or a lawyer, you need more than four years of college. Do you think you could do that?

- Yes, for sure ........................ a.
- Yes, probably ........................ b.
- Maybe ................................. c.
- No, probably not ........................ d.
- No, for sure ........................... e.

32. Forget how your teachers mark your work. How good do you think your own work is?

- Excellent ............................ a.
- Good ................................. b.
- Same as most of the students ....... c.
- Below most of the students .......... d.
- Poor ................................. e.
33. What kind of grades do you think you really can get if you try?
   Mostly A's ................................ a.
   Mostly B's ................................ b.
   Mostly C's ................................ c.
   Mostly D's ................................ d.
   Mostly F's ................................ e.

34. How good of a student do you think you can be in this school?
   One of the best ............................ a.
   Better than most of the students .... b.
   Same as most of the students .......... c.
   Below most of the students ........... d.
   One of the worst ........................... e.

35. How far do you think your best friend believes you will go in school?
   Finish high school ....................... a.
   Go to high school for a while .......... b.
   Finish high school ....................... c.
   Go to college for a while ............ d.
   Finish college ............................ e.

NOW WE WOULD LIKE TO ASK SOME QUESTIONS ABOUT THE TEACHERS IN THIS SCHOOL. ANSWER THESE QUESTIONS AS YOU ANSWERED THE OTHER ONES BY CIRCLING THE LETTER ON THE ANSWER SHEET THAT MATCHES THE LETTER OF THE ANSWER YOU CHOOSE. REMEMBER, NO TEACHER WILL SEE YOUR ANSWERS, SO BE AS HONEST AS YOU CAN.

36. Of the teachers that you know in this school, how many tell students to try hard to do better on tests?
   Almost all of the teachers ............. a.
   Most of the teachers ..................... b.
   Half of the teachers ..................... c.
   Some of the teachers .................... d.
   Almost none of the teachers ........... e.

37. How many teachers in this school tell students to try and get better grades than their classmates?
   Almost all of the teachers ............. a.
   Most of the teachers ..................... b.
   Half of the teachers ..................... c.
   Some of the teachers .................... d.
   Almost none of the teachers ........... e.
33. What kind of grades do you think you really can get if you try?
   Most A's ................................ a.
   Mostly B's ................................ b.
   Mostly C's ................................ c.
   Mostly D's ................................ d.
   Mostly F's ................................ e.

34. How good of a student do you think you can be in this school?
   One of the best ............................ a.
   Better than most of the students .... b.
   Same as most of the students .......... c.
   Below most of the students ........... d.
   One of the worst ........................... e.

35. How far do you think your best friend believes you will go in school?
   Finish high school ....................... a.
   Go to high school for a while .......... b.
   Finish high school ....................... c.
   Go to college for a while ............. d.
   Finish college ............................. e.

NOW WE WOULD LIKE TO ASK SOME QUESTIONS ABOUT THE TEACHERS IN THIS SCHOOL.
ANSWER THESE QUESTIONS AS YOU ANSWERED THE OTHER ONES BY CIRCLING THE
LETTER ON THE ANSWER SHEET THAT MATCHES THE LETTER OF THE ANSWER YOU
CHOOSE. REMEMBER, NO TEACHER WILL SEE YOUR ANSWERS, SO BE AS HONEST AS
YOU CAN.

36. Of the teachers that you know in this school, how many tell students
to try hard to do better on tests?
   Almost all of the teachers ............. a.
   Most of the teachers ................... b.
   Half of the teachers ................... c.
   Some of the teachers ................... d.
   Almost none of the teachers ........... e.

37. How many teachers in this school tell students to try and get better
grades than their classmates?
   Almost all of the teachers ............. a.
   Most of the teachers ................... b.
   Half of the teachers ................... c.
   Some of the teachers ................... d.
   Almost none of the teachers ........... e.
38. Of the teachers that you know in this school, how many don't care if the students get bad grades?

- Almost all of the teachers........... a.
- Most of the teachers................. b.
- Half of the teachers................. c.
- Some of the teachers................. d.
- Almost none of the teachers......... e.

39. Of the teachers that you know in this school, how many tell students to do extra work so that they can get better grades?

- Almost all of the teachers........... a.
- Most of the teachers................. b.
- Half of the teachers................. c.
- Some of the teachers................. d.
- Almost none of the teachers......... e.

40. Of the teachers that you know in this school, how many make the students work too hard?

- Almost all of the teachers........... a.
- Most of the teachers................. b.
- Half of the teachers................. c.
- Some of the teachers................. d.
- Almost none of the teachers......... e.

41. Of the teachers that you know in this school, how many don't care how hard the student works, as long as he passes?

- Almost all of the teachers........... a.
- Most of the teachers................. b.
- Half of the teachers................. c.
- Some of the teachers................. d.
- Almost none of the teachers......... e.

42. How far do you think the teacher you like the best believes you will go in school?

- Finish grade school.................. a.
- Go to high school for a while........ b.
- Finish high school................... c.
- Go to college for a while........... d.
- Finish college.......................... e.

43. How good of a student does the teacher you like the best expect you to be in school?

- One of the best....................... a.
- Better than most of the students.... b.
- Same as most of the students........ c.
- Not as good as most of the students.. d.
- One of the worst...................... e.
44. Think of your teacher. Would your teacher say you can do school work better, the same or poorer than other people your age?

Better than all of them ................ a.
Better than most of them ............... b.
Same as most of them ................. c.
Poorer than most of them ............. d.
Poorer than all of them .............. e.

45. Would your teacher say that your grades would be with the best, same as most or below most of the students when you graduate from high school?

One of the best ....................... a.
Better than most of the students ...... b.
Same as most of the students .......... c.
Below most of the students ........... d.
One of the worst ...................... e.

46. How often do teachers in this school try to help you when you do badly on your school work?

They always try to help ................ a.
They usually try to help ............. b.
They sometimes try to help .......... c.
They seldom try to help ............ d.
They never try to help .............. e.

47. Compared to students in other schools, how much do you learn in this school?

I learn a lot more in this school ...... a.
I learn a little more in this school ... b.
About the same as in other schools ... c.
I learn a little bit less in this school .. d.
I learn a lot less in this school ..... e.

48. Compared to students from other schools, how well will you do in high school?

I will be among the best ............... a.
I will do better than most ............ b.
I will do about the same as most ...... c.
I will do poorer than most ........... d.
I will be among the worst ........... e.
49. How important is it to teachers in this school that you learn your school work?

It is the most important thing to the teachers . . . a.
It is very important to the teachers ........ b.
It is somewhat important to the teachers .......... c.
It is not very important to the teachers ........ d.
It is not important at all to the teachers .......... e.

50. Think about the teachers you know in this school. Do you think the teachers in this school care more, or less, than teachers in other schools about whether or not you learn your school work?

Teachers in this school care a lot more ........ a.
Teachers in this school care a little more .... b.
There is no difference ........................ c.
Teachers in this school care a little less .... d.
Teachers in this school care a lot less .......... e.

51. Does your teacher think you could finish college?

Yes, for sure ........................................ a.
Yes, probably ................................. b.
Maybe .............................................. c.
Probably not ................................. d.
No, for sure ........................................ e.

52. Remember, you need more than four years of college to be a lawyer or doctor. Does your teacher think you could do that?

Yes, for sure ........................................ a.
Yes, probably ................................. b.
Maybe .............................................. c.
Probably not ................................. d.
No, for sure ........................................ e.

NOW WE WOULD LIKE YOU TO ANSWER SOME QUESTIONS ABOUT YOUR PARENTS. ANSWER THEM THE SAME WAY YOU ANSWERED THE OTHER ONES.

53. How far do you think your parents believe you will go in school?

Finish grade school ............................. a.
Go to high school for a while ........................ b.
Finish high school .............................. c.
Go to college for a while ........................ d.
Finish college .................................... e.
54. How good of a student do your parents expect you to be in school?
   One of the best ................. a.
   Better than most of the students ... b.
   Same as most of the students ....... c.
   Not as good as most of the students . . d.
   One of the worst ................... e.

55. Think of your parents. Do your parents say you can do school work better, the same, or poorer than your friends?
   Better than all of them ............ a.
   Better than most of them ........... b.
   Same as most of them ............... c.
   Poorer than most of them ........... d.
   Poorer than all of them ............. e.

56. Would your parents say that your grades would be with the best, same as most or below most of the students when you finish high school?
   One of the best .................... a.
   Better than most of the students ... b.
   Same as most of the students ...... c.
   Not as good as most of the students . d.
   One of the worst .................... e.

57. Do your parents think you could finish college?
   Yes, for sure ........................ a.
   Yes, probably ........................ b.
   Maybe .............................. c.
   No, probably not ........................ d.
   No, for sure .......................... e.

58. Remember, you need more than four years of college to be a lawyer or doctor. Do your parents think you could do that?
   Yes, for sure ........................ a.
   Yes, probably ........................ b.
   Maybe .............................. c.
   No, probably not ........................ d.
   No, for sure .......................... e.
Student Questionnaire

Page 11

READ EACH STATEMENT BELOW. CIRCLE THE LETTER ON THE ANSWER SHEET THAT TELLS HOW OFTEN THE STATEMENT IS TRUE FOR YOU.

59. I can talk to other students while I work.

Always ............ a.
Often .............. b.
Sometimes .......... c.
Seldom ............ d.
Never ............. e.

60. In class, I can move about the room without asking the teacher.

Always ............ a.
Often .............. b.
Sometimes .......... c.
Seldom ............ d.
Never ............. e.

61. In class, I have the same seat and I must sit next to the same students.

Always ............ a.
Often .............. b.
Sometimes .......... c.
Seldom ............ d.
Never ............. e.

62. When I am working on a lesson, all the other students in my class are working on the same lesson.

Always ............ a.
Often .............. b.
Sometimes .......... c.
Seldom ............ d.
Never ............. e.

63. In most of my classes, the teacher tells me what I must work on; I have no choice.

Always ............ a.
Often .............. b.
Sometimes .......... c.
Seldom ............ d.
Never ............. e.

64. In class, the teacher stands in front of the room and works with the class as a whole.

Always ............ a.
Often .............. b.
Sometimes .......... c.
Seldom ............ d.
Never ............. e.
65. If your teacher gave you a hard assignment, would you rather figure out how to do it by yourself or would you want your teacher to tell you how to do it?

I almost always prefer figuring it out for myself . . . a.
I usually prefer figuring it out for myself . . . . b.
Sometimes I prefer figuring it out for myself . . . c.
I usually like the teacher to tell me how to do it . . d.
I always like the teacher to tell me how to do it . . e.

66. When your teachers give you difficult assignments, do they usually give you too much help or not enough?

They almost always give too much help . . . . . . . . . . . . a.
They usually give too much help . . . . . . . . . . . . b.
They give just enough help . . . . . . . . . . . . . . . . . c.
They usually don't give enough help . . . . . . . . d.
They almost never give enough help . . . . . . . . e.

67. Suppose you had some free time and wanted to do something fun but all your friends were busy and couldn't play with you. Do you think you could find something fun to do all by yourself?

Yes, it would be easy . . . . . . . . . . . . . . . . . . . . . a.
Yes, if I tried hard . . . . . . . . . . . . . . . . . . b.
Maybe . . . . . . . . . . . . . . . . . . . . . . . . . . . c.
No, probably not . . . . . . . . . . . . . . . . . . . . d.
No, it is never fun to be alone . . . . . . . . . . e.

68. Sometimes we are faced with a problem that at first seems too difficult for us to handle. When this happens, how often do you try to solve the problem all by yourself instead of asking someone for help?

Always . . . . . . . . . . . . . . . . . . . . . . . . . . . a.
Most of the time . . . . . . . . . . . . . . . . . . . . b.
Sometimes . . . . . . . . . . . . . . . . . . . . . . c.
Not very often . . . . . . . . . . . . . . . . . . . . d.
Never . . . . . . . . . . . . . . . . . . . . . . . . . . . e.

69. Some people enjoy solving problems or making decisions all by themselves, other people don't enjoy it. Do you like to solve problems all by yourself?

I almost always like to . . . . . . . . . . . . . . . . . . a.
I usually like to . . . . . . . . . . . . . . . . . . . . b.
I usually don't like to . . . . . . . . . . . . . . . . . . c.
I almost never like to . . . . . . . . . . . . . . . . . e.
STUDENT QUESTIONNAIRE ANSWER SHEET

STUDENT'S NAME _______________________________________________________
l

t
m

TEACHER'S NAME _______________________________________________________

What type of work does your father do? (Give a short description of his job).

What type of work does your mother do? (Give a short description of her job).

CIRCLE THE LETTER WHICH MATCHES THE LETTER OF THE ANSWER YOU THINK BEST ANSWERS THE QUESTION

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APPENDIX B

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SOCIO-ECONOMIC STATUS LEVELS

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APPENDIX C

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1 Starred* loadings indicate items included in the factor for statistical analysis; starred** question numbers indicate questions which did not have a loading significant for inclusion in a factor.
APPENDIX D

FACTOR ANALYSIS - STUDENT QUESTIONNAIRE
FACTOR ANALYSIS - STUDENT QUESTIONNAIRE

FACTOR 1 - STUDENT PERCEPTION OF HIS ABILITY VS. PEERS' ABILITY

QUESTIONS

48. Compared to students from other schools, how well will you do in high school?

I will be among the best . . . . . . . . . . a.
I will do better than most . . . . . . . . . . b.
I will do about the same as most . . . . . . . c.
I will do poorer than most . . . . . . . . . d.
I will be among the worst . . . . . . . . . . e.

Factor loadings: .667

28. When you finish high school, do you think you will be one of the best students, about the same as most or below most of the students?

One of the best . . . . . . . . . . . . . . . . . a.
Better than most of the students . . . . . . . b.
Same as most of the students . . . . . . . . . c.
Below most of the students . . . . . . . . . . d.
One of the worst . . . . . . . . . . . . . . . . . e.

Factor loadings: .663

30. If you went to college, do you think you would be one of the best students, same as most or below most of the students?

One of the best . . . . . . . . . . . . . . . . . a.
Better than most of the students . . . . . . . b.
Same as most of the students . . . . . . . . . c.
Below most of the students . . . . . . . . . . d.
One of the worst . . . . . . . . . . . . . . . . . e.

Factor loadings: .654

45. Would your teacher say that your grades would be with the best, same as most or below most of the students when you graduate from high school?

One of the best . . . . . . . . . . . . . . . . . a.
Better than most of the students . . . . . . . b.
Same as most of the students . . . . . . . . . c.
Below most of the students . . . . . . . . . . d.
One of the worst . . . . . . . . . . . . . . . . . e.

Factor loadings: .647
FACTOR 1 (Continued)

34. How good of a student do you think you can be in this school?
   
   One of the best ...................... a.
   Better than most of the students .... b.
   Same as most of the students ........ c.
   Below most of the students .......... d.
   One of the worst .................... e.

56. Would your parents say that your grades would be with the best, same as most or below most of the students when you finish high school?
   
   One of the best ...................... a.
   Better than most of the students .... b.
   Same as most of the students ........ c.
   Not as good as most of the students ... d.
   One of the worst .................... e.

44. Think of your teacher. Would your teacher say you can do school work better, the same or poorer than other people your age?
   
   Better than all of them .............. a.
   Better than most of them ............ b.
   Same as most of them ............... c.
   Poorer than most of them ........... d.
   Poorer than all of them ............ e.

55. Think of your parents. Do your parents say you can do school work better, the same, or poorer than your friends?
   
   Better than all of them .............. a.
   Better than most of them ............ b.
   Same as most of them ............... c.
   Poorer than most of them ........... d.
   Poorer than all of them ............ e.

27. Think of the students in your class. Do you think you can do school work better, the same or poorer than the students in your class?
   
   Better than all of them .............. a.
   Better than most of them ............ b.
   About the same ..................... c.
   Poorer than most of them ........... d.
   Poorer than all of them ............ e.
FACTOR 1 (Continued)

26. Think of your friends. Do you think you can do school work better, the same or poorer than your friends?

   Better than all of them ............... a.
   Better than most of them ............. b.
   About the same ....................... c.
   Poorer than most of them ............ d.
   Poorer than all of them .............. e.

43. How good of a student does the teacher you like the best expect you to be in school?

   One of the best ...................... a.
   Better than most of the students ... b.
   Same as most of the students ....... c.
   Not as good as most of the students .. d.
   One of the worst .................... e.

54. How good of a student do your parents expect you to be in school?

   One of the best ...................... a.
   Better than most of the students ... b.
   Same as most of the students ....... c.
   Not as good as most of the students .. d.
   One of the worst .................... e.

32. Forget how your teachers mark your work. How good do you think your own work is?

   Excellent ........................... a.
   Good ................................ b.
   Same as most of the students ...... c.
   Below most of the students ........ d.
   Poor ................................. e.
FACTOR 2 - STUDENT PERCEPTION OF FUTURE EDUCATIONAL ATTAINMENT

QUESTIONS

11. How far do you want to go in school?

Finish grade school .................... a.
Go to high school for a while ........... b.
Finish high school ...................... c.
Go to college for a while ................ d.
Finish college ........................ e.

FACTOR LOADINGS

.760

6. Sometimes what you want to happen is not what you think will happen. How far do you think you will go in school?

Finish grade school .................... a.
Go to high school for a while ........... b.
Finish high school ...................... c.
Go to college for a while ................ d.
Finish college ........................ e.

.723

5. If you could go as far as you want in school, how far would you like to go?

Finish grade school .................... a.
Go to high school for a while ........... b.
Finish high school ...................... c.
Go to college for a while ................ d.
Finish college ........................ e.

.721

35. How far do you think your best friend believes you will go in school?

Finish grade school .................... a.
Go to high school for a while ........... b.
Finish high school ...................... c.
Go to college for a while ................ d.
Finish college ........................ e.

.662

42. How far do you think the teacher you like the best believes you will go in school?

Finish grade school .................... a.
Go to high school for a while ........... b.
Finish high school ...................... c.
Go to college for a while ................ d.
Finish college ........................ e.

.601
FACTOR 2 (Continued)

53. How far do you think your parents believe you will go in school?

    Finish grade school .............. a.
    Go to high school for a while .... b.
    Finish high school .............. c.
    Go to college for a while .......... d.
    Finish college .................. e.
FACTOR 3 - STUDENT PERCEPTION OF SUCCESS IN COLLEGE

QUESTIONS

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<td>58. Remember, you need more than four years of college to be a lawyer or doctor. Do your parents think you could do that?</td>
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<td>No, for sure . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . e.</td>
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<td>31. If you want to be a doctor or a lawyer, you need more than four years of college. Do you think you could do that?</td>
<td>.634</td>
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<td>57. Do your parents think you could finish college?</td>
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<td>Yes, probably . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . b.</td>
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<td>52. Remember, you need more than four years of college to be a lawyer or doctor. Does your teacher think you could do that?</td>
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<td>51. Does your teacher think you could finish college?</td>
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FACTOR 3 (Continued)

29. Do you think you could finish college?

   Yes, for sure ......................... a.
   Yes, probably ........................ b.
   Maybe .................................. c.
   No, probably not ........................ d.
   No, for sure ............................ e.
FACTOR 4 - STUDENT PERCEPTION OF TEACHER ATTITUDE TOWARD LEARNING

QUESTIONS

46. How often do teachers in this school try to help you when you do badly on your school work?  
   a. They always try to help  
   b. They usually try to help  
   c. They sometimes try to help  
   d. They seldom try to help  
   e. They never try to help

49. How important is it to teachers in this school that you learn your school work?  
   a. It is the most important thing to the teachers  
   b. It is very important to the teachers  
   c. It is somewhat important to the teachers  
   d. It is not very important to the teachers  
   e. It is not important at all to the teachers

50. Think about the teachers you know in this school. Do you think the teachers in this school care more, or less, than teachers in other schools about whether or not you learn your school work?  
   a. Teachers in this school care a lot more  
   b. Teachers in this school care a little more  
   c. There is no difference  
   d. Teachers in this school care a little less  
   e. Teachers in this school care a lot less

47. Compared to students in other schools, how much do you learn in this school?  
   a. I learn a lot more in this school  
   b. I learn a little more in this school  
   c. About the same as in other schools  
   d. I learn a little bit less in this school  
   e. I learn a lot less in this school

36. Of the teachers that you know in this school, how many tell students to try hard to do better on tests?  
   a. Almost all of the teachers  
   b. Most of the teachers  
   c. Half of the teachers  
   d. Some of the teachers  
   e. Almost none of the teachers
FACTOR 5 - STUDENT ACADEMIC VALUES

QUESTIONS

13. How important do you feel it is to do good school work?
   - You feel it is very important .......... a.
   - You feel it is important ............ b.
   - You feel it is somewhat important ... c.
   - You feel it is not very important .... d.
   - You feel it is not important at all ... e.

12. How important is it to you to be a good student?
   - Very important ....................... a.
   - Important ........................... b.
   - Somewhat important .................. c.
   - Not very important ................... d.
   - Not important at all .................. e.

15. Do you think reading is a fun thing to do?
   - Yes ................................ a.
   - No .................................. b.

20. Would you study hard if your work wasn't graded by teachers?
   - Yes ................................ a.
   - No .................................. b.

10. Do you study harder than you really have to?
   - Yes ................................ a.
   - No .................................. b.

16. Do you read every day for fun?
   - Yes ................................ a.
   - No .................................. b.

7. Do you try hard to get good grades on your work?
   - Yes ................................ a.
   - No .................................. b.

FACTOR LOADINGS

.641
.596
.486
.401
.370
.368
.348
FACTOR 5 (Continued)

14. How important do you think most of the students in this school feel it is to do well in school work?  

They feel it is very important ......... a.  
They feel it is important .......... b.  
They feel it is somewhat important ... c.  
They feel it is not very important ... d.  
They feel it is not important at all ... e.  

9. Do you care if you get bad grades?  

Yes .................................. a.  
No .................................. b.
FACTOR 6 - STUDENT PERCEPTION OF ACADEMIC FUTILITY

QUESTIONS

18. How many students don't do as well as they could do in school because they are afraid other students won't like them as much?

- Almost all of the students a.
- Most of the students b.
- About half of the students c.
- Some of the students d.
- None of the students e.

19. How many students don't do as well as they could do in school because they are afraid their friends won't like them as much?

- Almost all of the students a.
- Most of the students b.
- About half of the students c.
- Some of the students d.
- None of the students e.

37. How many teachers in this school tell students to try and get better grades than their classmates?

- Almost all of the teachers a.
- Most of the teachers b.
- Half of the teachers c.
- Some of the teachers d.
- Almost none of the teachers e.

39. Of the teachers that you know in this school, how many tell students to do extra work so that they can get better grades?

- Almost all of the teachers a.
- Most of the teachers b.
- Half of the teachers c.
- Some of the teachers d.
- Almost none of the teachers e.
FACTOR 6 (Continued)

40. Of the teachers that you know in this school, how many make the students work too hard?
   Almost all of the teachers . . . . . . . . . . a.
   Most of the teachers . . . . . . . . . . . . . . b.
   Half of the teachers . . . . . . . . . . . . . c.
   Some of the teachers . . . . . . . . . . . . . . d.
   Almost none of the teachers . . . . . . . . . . e.

41. Of the teachers that you know in this school, how many don't care how hard the student works, as long as he passes?
   Almost all of the teachers . . . . . . . . . . a.
   Most of the teachers . . . . . . . . . . . . . . b.
   Half of the teachers . . . . . . . . . . . . . c.
   Some of the teachers . . . . . . . . . . . . . . d.
   Almost none of the teachers . . . . . . . . . . e.

25. Do you have to be lucky to get good grades in this school?
   Yes . . . . . . . . . . . . . . . . . . . . . . . . . a.
   No . . . . . . . . . . . . . . . . . . . . . . . . . b.

38. Of the teachers that you know in this school, how many don't care if the students get bad grades?
   Almost all of the teachers . . . . . . . . . . a.
   Most of the teachers . . . . . . . . . . . . . . b.
   Half of the teachers . . . . . . . . . . . . . c.
   Some of the teachers . . . . . . . . . . . . . . d.
   Almost none of the teachers . . . . . . . . . . e.
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<tr>
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<td>b.</td>
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<td>22. Do you do well in school?</td>
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<td>b.</td>
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<td>33. What kind of grades do you think you really can get if you try?</td>
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<tr>
<td>21. Will you be able to do what you want to be in life?</td>
<td>.305</td>
</tr>
<tr>
<td>Yes</td>
<td>a.</td>
</tr>
<tr>
<td>No</td>
<td>b.</td>
</tr>
<tr>
<td>24. Do you have luck in this school?</td>
<td>.301</td>
</tr>
<tr>
<td>Yes</td>
<td>a.</td>
</tr>
<tr>
<td>No</td>
<td>b.</td>
</tr>
</tbody>
</table>
FACTOR 8 - STUDENT PERCEPTION OF SELF-RELIANCE

QUESTIONS

69. Some people enjoy solving problems or making decisions all by themselves, other people don't enjoy it. Do you like to solve problems all by yourself?

I almost always like to . . . . . . . a.
I usually like to . . . . . . . . . . . . . . b.
I usually don't like to . . . . . . . . . . . . c.
I almost never like to . . . . . . . . . . . . . . d.

65. If your teacher gave you a hard assignment, would you rather figure out how to do it by yourself or would you want your teacher to tell you how to do it?

I almost always prefer figuring it out for myself. . . . . . . . . . a.
I usually prefer figuring it out for myself. . . . . . . . . . . . . . . b.
Sometimes I prefer figuring it out for myself. . . . . . . . . . . . c.
I usually like the teacher to tell me how to do it. . . . . . . . . . d.
I always like the teacher to tell me how to do it. . . . . . . . . . . . e.

68. Sometimes we are faced with a problem that at first seems too difficult for us to handle. When this happens, how often do you try to solve the problem all by yourself instead of asking someone for help?

Always . . . . . . . . . . . . . . . . . . . a.
Most of the time . . . . . . . . . . . . . b.
Sometimes . . . . . . . . . . . . . . . . c.
Not very often . . . . . . . . . . . . . . . . d.
Never . . . . . . . . . . . . . . . . . . . . e.

67. Suppose you had some free time and wanted to do something fun but all your friends were busy and couldn't play with you. Do you think you could find something fun to do all by yourself?

Yes, it would be easy . . . . . . . . . . . a.
Yes, if I tried hard . . . . . . . . . . . . b.
Maybe . . . . . . . . . . . . . . . . . . . c.
No, probably not . . . . . . . . . . . . . . . d.
No, it is never fun to be alone . . . . . . . e.
FACTOR 8 (Continued)

66. When your teachers give you difficult assignments, do they usually give you too much help or not enough?

They almost always give too much help . . . a.
They usually give too much help . . . . . . b.
They give just enough help . . . . . . . . . c.
They usually don't give enough help . . . d.
They almost never give enough help . . . e.
<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>FACTOR LOADINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>62. When I am working on a lesson, all the other students in my class are working on the same lesson.</td>
<td>0.558</td>
</tr>
<tr>
<td>Always........................................................................................................................................................................................................a.</td>
<td></td>
</tr>
<tr>
<td>Often ........................................................................................................................................................................................................b.</td>
<td></td>
</tr>
<tr>
<td>Sometimes....................................................................................................................................................................................................c.</td>
<td></td>
</tr>
<tr>
<td>Seldom.......................................................................................................................................................................................................d.</td>
<td></td>
</tr>
<tr>
<td>Never..........................................................................................................................................................................................................e.</td>
<td></td>
</tr>
<tr>
<td>63. In most of my classes, the teacher tells me what I must work on; I have no choice.</td>
<td>0.500</td>
</tr>
<tr>
<td>Always........................................................................................................................................................................................................a.</td>
<td></td>
</tr>
<tr>
<td>Often ........................................................................................................................................................................................................b.</td>
<td></td>
</tr>
<tr>
<td>Sometimes....................................................................................................................................................................................................c.</td>
<td></td>
</tr>
<tr>
<td>Seldom.......................................................................................................................................................................................................d.</td>
<td></td>
</tr>
<tr>
<td>Never..........................................................................................................................................................................................................e.</td>
<td></td>
</tr>
<tr>
<td>64. In class, the teacher stands in front of the room and works with the class as a whole.</td>
<td>0.482</td>
</tr>
<tr>
<td>Always........................................................................................................................................................................................................a.</td>
<td></td>
</tr>
<tr>
<td>Often ........................................................................................................................................................................................................b.</td>
<td></td>
</tr>
<tr>
<td>Sometimes....................................................................................................................................................................................................c.</td>
<td></td>
</tr>
<tr>
<td>Seldom.......................................................................................................................................................................................................d.</td>
<td></td>
</tr>
<tr>
<td>Never..........................................................................................................................................................................................................e.</td>
<td></td>
</tr>
<tr>
<td>61. In class, I have the same seat and I must sit next to the same students.</td>
<td>0.327</td>
</tr>
<tr>
<td>Always........................................................................................................................................................................................................a.</td>
<td></td>
</tr>
<tr>
<td>Often ........................................................................................................................................................................................................b.</td>
<td></td>
</tr>
<tr>
<td>Sometimes....................................................................................................................................................................................................c.</td>
<td></td>
</tr>
<tr>
<td>Seldom.......................................................................................................................................................................................................d.</td>
<td></td>
</tr>
<tr>
<td>Never..........................................................................................................................................................................................................e.</td>
<td></td>
</tr>
</tbody>
</table>
FACTOR 10 - STUDENT PERCEPTION OF CLASSROOM FREEDOM

QUESTIONS

60. In class, I can move about the room without asking the teacher.

Always ........................................ a.
Often ........................................ b.
Sometimes ................................... c.
Seldom ......................................... d.
Never .......................................... e.

59. I can talk to other students while I work.

Always ........................................ a.
Often ........................................ b.
Sometimes ................................... c.
Seldom ......................................... d.
Never .......................................... e.

FACTOR LOADINGS

60. In class, I can move about the room without asking the teacher. .589
59. I can talk to other students while I work. .575
APPENDIX E

A BREAKDOWN OF THE STUDENT CLIMATE FACTORS FOR THIS STUDY

BY BROOKOVER'S STUDENT CLIMATE FACTORS
A BREAKDOWN OF THE STUDENT CLIMATE FACTORS FOR THIS STUDY

BY BROOKOVER'S STUDENT CLIMATE FACTORS*

FACTOR 1 - Student Perception of Academic Ability as Compared to That of Peers

13 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
6 - Student Perceived Present Evaluations and Expectations
6 - Student Self-Concept
1 - Student Academic Norms

FACTOR 2 - Student Perception of Future Educational Attainment

6 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
5 - Student Future Evaluations and Expectations
1 - Did not load significantly

FACTOR 3 - Student Perception of Success in College

6 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
4 - Student Future Evaluations and Expectations
2 - Student Self-Concept

FACTOR 4 - Student Perception of Teacher Attitude Toward Learning

5 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
4 - Student Perception of Teacher Push and Teacher Norms
1 - Student Academic Norms

FACTOR 5 - Student Academic Values

9 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
1 - Student Sense of Academic Futility
1 - Student Academic Norms
7 - Did not load significantly
A BREAKDOWN OF THE STUDENT CLIMATE FACTORS FOR THIS STUDY

BY BROOKOVER'S STUDENT CLIMATE FACTORS* (Continued)

FACTOR 6 - Student Perception of Academic Futility

8 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
6 - Student Sense of Academic Futility
2 - Did not load significantly

FACTOR 7 - Student Perception of Prospects for Academic Success

5 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
3 - Student Sense of Academic Futility
2 - Did not load significantly

FACTOR 8 - Student Perception of Self-Reliance

5 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
5 - Student Self-Reliance

FACTOR 9 - Student Perception of Instructional Setting

4 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
4 - Student Perception of Teacher Push and Teacher Norms

FACTOR 10 - Student Perception of Classroom Freedom

2 - Number of items loading on this factor

Factors on which items loaded in Brookover's study:
2 - Student Perception of Teacher Push and Teacher Norms

*For actual questions see Appendix D
APPENDIX F

BROOKOVER'S CORRELATION COEFFICIENTS FOR VARIABLES ENTERED IN REGRESSION
## Brookover's Correlation Coefficients for Variables Entered in Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Achievement</th>
<th>Mean SES</th>
<th>Race - % White</th>
<th>Futility</th>
<th>Future Expectations</th>
<th>Present Expectations</th>
<th>Teacher Push</th>
<th>Student Academic Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean School Achievement</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Student SES</td>
<td>.68</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race - % White</td>
<td>.87</td>
<td>.58</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Sense of Futility</td>
<td>.77</td>
<td>.79</td>
<td>.76</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Future Evaluations and Expectations</td>
<td>.22</td>
<td>.59</td>
<td>.05</td>
<td>.44</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Present Evaluations and Expectations</td>
<td>-.57</td>
<td>-.31</td>
<td>-.65</td>
<td>-.49</td>
<td>.20</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception of Teacher Push and Norms</td>
<td>-.09</td>
<td>.08</td>
<td>-.10</td>
<td>.06</td>
<td>.31</td>
<td>.40</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Student Academic Values</td>
<td>-.08</td>
<td>.06</td>
<td>-.06</td>
<td>.11</td>
<td>.20</td>
<td>.36</td>
<td>.60</td>
<td>1.00</td>
</tr>
</tbody>
</table>
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Vita

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1973-1981 The College of William and Mary in Virginia
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Chesterfield, Virginia

1964-1967 Teacher
Chesterfield County Public Schools
Chesterfield, Virginia
Abstract

THE SCHOOL ENVIRONMENT AND STUDENT ACHIEVEMENT IN VIRGINIA ELEMENTARY SCHOOLS

Craig Paul Organ

The College of William and Mary, May 1981

Chairman: Professor Robert Maidment

The purpose of this study was to examine the relationship between student perceptions of the educational environment of selected schools and the level of student achievement.

The Commonwealth of Virginia was selected as the site for this research because of its convenience to the research teams and because of the diversity of its population patterns.

A 5 percent random sample of Virginia public elementary schools was chosen for inclusion in the study. Fourth grade students in each school completed a school environment questionnaire. Demographic data and standardized test scores were obtained for each student participating in the study.

It was hypothesized that there is no relationship between the level of student achievement and student perception of school climate after controlling for the effects of student ability, socio-economic status, race, and sex.

It was concluded that student perception of school climate was significantly related to student achievement. The climate factors Student Perception of Academic Futility, Student Perception of Future Educational Attainment, and Student Perception of Prospects for Academic Success were highly correlated with student achievement.

Future studies should combine individual climate, achievement, and demographic data on a school unit basis for the purpose of investigating differences between schools of contrasting climates and dissimilar student body composition.