

THE RELATIONSHIP BETWEEN ELEMENTARY SCHOOL CLIMATE AND  
STUDENT ACHIEVEMENT IN A SCHOOL DIVISION IN THE  
COMMONWEALTH OF VIRGINIA

by

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Abstract

Studies suggest a relationship exists between school climate and student achievement (Hoy & Woolfolk, 1993; Smith, 2005; Warren, 2007). This study investigated the relationship between school climate and student achievement in elementary schools located in a school division in Virginia. School climate is defined operationally as the perceptions of stakeholders, students, parents and educators in regard to instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment.

The factors that shape school climate and the perceptions of students, parents, and educators in regard to school climate were also investigated. The population for this study was 55 elementary schools in the selected school division. The study used hierarchical clustering to cluster the schools into four clusters. The clusters were analyzed to determine if a relationship existed between school climate and student achievement.

Regression analysis was completed on school climate and student achievement data from each school. The purpose of this analysis was to investigate the relationship between the factors of school climate and student

achievement. Of additional interest was the relationship between student achievement and the perspective of stakeholders in regard to school climate.

This study used data from the 2007-2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math to measure student achievement. Data collected from the school division's 2008 Annual School Climate Survey was used to measure school climate.

In the content areas of reading and math lower *pass* percentages on the Virginia SOL tests related to lower *agree* percentages in response to the School Climate Survey. Conversely, in the content areas of reading and math higher *pass* percentages on the Virginia SOL tests related to higher *agree* percentages in response to the School Climate Survey. Based on these findings schools that have a negative school climate as perceived by its stakeholders can expect to have lower student achievement scores, whereas, schools with a positive school climate as perceived by its stakeholders can expect to have higher student achievement scores. The analysis of data representative of school climate and student achievement found a relationship exists between *school climate* and *student achievement*.

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## TABLE OF CONTENTS

Abstract.....	ii
Acknowledgements.....	iv
Dedication.....	vi
List of Tables.....	x
List of Figures.....	xii
CHAPTER 1 INTRODUCTION.....	1
Introduction.....	1
Statement of Problem.....	5
Purpose of Study.....	8
Significance of Study.....	9
Definition of Terms.....	15
Research Questions.....	15
Limitations/Delimitations.....	16
Overview of the Study.....	17
CHAPTER 2 REVIEW OF RELATED LITERATURE.....	19
Introduction.....	19
School Climate Studies.....	21
Studies on Stakeholder Perceptions.....	27
Summary of Research.....	32
CHAPTER 3 METHODOLOGY.....	35

Introduction.....	35
Overarching Research Question.....	35
Population for the Study.....	37
Data Collection Process.....	39
Research Design.....	42
Summary of Methodology.....	46
CHAPTER 4 PRESENTATION OF DATA.....	48
Introduction.....	48
Presentation of Data.....	56
School Climate Data.....	60
Student Achievement Data.....	76
School Climate and Student Achievement Data.....	81
Summary of Data and Emerging Themes.....	128
CHAPTER 5 SUMMARY, CONCLUSION, DISCUSSION.....	138
Introduction.....	138
Overarching Research Question.....	138
Findings.....	140
Summary of Findings.....	148
Implications.....	150
Recommendations for Future Studies.....	151
Reflections.....	152



References.....	158
Appendix A: Training in Human Subjects Protection.....	163
Appendix B: IRB Approval.....	164
Appendix C: Approval from Selected School Division.....	165
Appendix D: Climate Survey Response Rates.....	166
Appendix E: Climate Survey Questions.....	169
Appendix F: Demographic Data used to Cluster Schools.....	174
Appendix G: Clustered Elementary Schools.....	178
Appendix H: Climate Data Spreadsheet CDS.....	179
Appendix I: Student Achievement Spreadsheet SAS.....	197
Appendix J: Clustered Climate Index and Student Achievement Table.....	204
Appendix K: Clustered Combined Agreement.....	209

## LIST OF TABLES

Table 1	Demographics of Each Cluster.....	60
Table 2	Clustered Responses by % to Factor One .....School Climate.....	62
Table 3	Clustered Responses by % to Factor Two .....School Climate.....	65
Table 4	Clustered Responses by % to Factor Three .....School Climate.....	69
Table 5	Clustered Responses by % to Factor Four .....School Climate.....	72
Table 6	Clustered Responses by % to Factor Five ..... School Climate.....	75
Table 7	Clustered Data on Reading SOL Pass Percentages.....	78
Table 8	Clustered Data on Math SOL Pass Percentages.....	80
Table 9	Cluster One Student Achievement and Climate Data.....	83
Table 10	Cluster Two Student Achievement and Climate Data.....	86
Table 11	Cluster Three Student Achievement and Climate Data.....	88
Table 12	Cluster Four Student Achievement and Climate Data.....	90
Table 13	Student Achievement/School Climate - % PA-Reading-All 5 <sup>th</sup> .....	97
Table 14	Student Achievement/School Climate - % P-Reading-All 5 <sup>th</sup> .....	101
Table 15	Student Achievement/School Climate - % PA-Reading-SES.....	105
Table 16	Student Achievement/School Climate - % P-Reading-SES.....	107
Table 17	Student Achievement/School Climate - % PA-Reading-White.....	109
Table 18	Student Achievement/School Climate - % P-Reading-White.....	111
Table 19	Student Achievement/School Climate - % PA-Reading-Black.....	112
Table 20	Student Achievement/School Climate - % P-Reading-Black.....	115
Table 21	Student Achievement/School Climate - % PA-Math-All 5 <sup>th</sup> .....	117
Table 22	Student Achievement/School Climate - % P-Math-All 5 <sup>th</sup> .....	120

Table 23	Student Achievement/School Climate - % PA-Math-SWD.....	122
Table 24	Student Achievement/School Climate - % PA-Math-White.....	124
Table 25	Student Achievement/School Climate - % P-Math-White.....	125
Table 26	Student Achievement/School Climate - % PA-Math-Black.....	127

## LIST OF FIGURES

1	Theoretical Model based on Howard's Climate Factors.....	10
2	Theoretical Model Based on the Cohen's Climate Factors.....	11
3	Theoretical Model Based on the DiStepano's Climate Factors.....	12
4	Conceptual Model .....	14

## CHAPTER 1

## INTRODUCTION OF THE STUDY

The purpose of this study was to investigate the relationship between *school climate* and *student achievement* in elementary schools located in the selected school division. The factors that shape school climate and the perceptions of students, parents and educators in regard to school climate were also studied. Student achievement was measured using the 2007- 2008 Virginia Standards of Learning (SOL) tests results in reading and math at the fifth grade level. The data in regard to school climate were taken from the school division's 2008 School Climate Survey. Both the Virginia SOL tests and School Climate Survey were given in the spring of 2008.

The enactment of the No Child Left Behind Act (NCLB) in 2002 brought a new level of accountability to the nation's public schools. The stakes are high for students, educators, schools, and school divisions. States were required to establish standards of accountability and to close the achievement gap (U.S.Government, 2001). To comply with NCLB and meet Adequate Yearly Progress (AYP), every student is required to meet certain academic standards (U.S. Department of Education, 2001).

The Virginia Department of Education directed local school boards to use the Virginia Standards of Learning (SOL) tests in math and reading to assess student achievement and to meet AYP requirements. SOL testing is governed by the Regulations Establishing Standards for Accrediting Public Schools in Virginia (8 VAV 20-131-10 et. seg.). Virginia uses the Standards of Learning (SOL) tests

as the measure of proficiency for AYP in math and reading (Virginia Department of Education, 2006). Accordingly, educators have increased their focus on research based programs and strategies to improve student achievement (Warren, 2007).

School leaders are being held accountable for student achievement. Educators are accountable for results and under NCLB, local school divisions have 12 years beginning with the 2002-2003 school year for all their students to achieve proficiency in reading and math (U.S. Government, 2001). The *pass* percentage required in 2007-2008 was 75% in math and 77% in reading. That percentage changed for 2010-2011 to a 90% *pass* rate in both subject areas. The 2013-2014 school year will be the twelfth year. As the act is currently written, public schools nationwide will need a 100% *pass* rate on an assessment of annual measurable objectives in math and reading in order to meet AYP for the 2013-2014 school year (U.S. Government, 2001). In addition to the overall *pass* percentage required in math and reading, elementary schools are required to have a 94% attendance rate based on *Average Daily Attendance* in order to meet AYP (U.S. Government, 2001).

NCLB mandates that all public schools and school divisions be held accountable for student achievement and that each state must have a system of sanctions and rewards with which to address school performance based on student achievement (U.S. Government, 2001). NCLB requires that a school's AYP status be published and made assessable via a web site or printed report card (U.S. Department of Education, 2002). This study investigated the

relationship between *school climate* and *student achievement*. Analyses of the data could facilitate the development of strategies and interventions intended to improve student performance.

Researchers have identified school climate as a significant component of effective schools (Hoy & Hannum, 1997). Esposito (1999) wrote that urban schools have problematic school climates and a relationship exists between that *school climate* and *student achievement* (Esposito, 1999). An unhealthy school climate appears to have a negative impact on student achievement (Esposito, 1999). There appears to be a relationship between healthy organizational climate and student achievement (Hoy & Woolfolk, 1993; Roney, Coleman, & Schlichtin, 2007). A healthy school has a positive impact on student achievement. Johnson and Stevens (2006) reported a significant relationship between *school climate* and *student achievement*. However, the relationship was smaller in schools with large populations of students with low socio-economic status (Johnson & Stevens, 2006).

A 2005 study performed by researchers from the University of Nevada investigated the relationship between leadership and school climate. Their study looked at the relationship between leadership and school climate in elementary schools and found principals have the power and authority to make an impact on school climate (Kelley, Thornton, & Daugherty, 2005). In order to create healthy school climates, leaders must be skilled in building trust in order to promote open communication. Without effective feedback from their stakeholders,

administrator's ability to impact school climate will be diminished (Kelley et al., 2005).

Several studies discuss the possible connection between *school climate* and *student achievement* (Hoy & Hannum, 1997; Hoy & Woolfolk, 1993; Warren, 2007). Other researchers touched on the importance of school leadership as a change agent in regard to school climate (Kelley et al., 2005).

This study investigated the relationship between *school climate* and *student achievement* within elementary schools. The study included 57 elementary schools located in one Virginia school division. Two of the elementary schools were dropped from the study as they did not contain a fifth grade class. Data from 55 elementary schools were used in this study. The selected school division is located in the southeastern region of the Commonwealth of Virginia. At the time of this study there were 57 elementary schools, 15 middle schools, and 11 high schools located in urban, suburban, and rural settings. There were 72,477 students enrolled during the 2007-2008 school year. This study focused on the academic achievement of fifth grade students of which there were 5,346 enrolled in the fall of 2007-2008. Data on the variables that shape school climate: instructional programming, interpersonal relationships, safety/discipline, communication/collaboration and physical environment, the perceptions of stakeholders in regard to school climate, and student achievement were analyzed. The school division conducted the School Climate Survey during the spring of the 2007-2008 school year, which coincided with the administration of the fifth grade Virginia SOL tests of reading and math. The School Climate



Survey was administered to students in the fifth, eighth, and twelfth grade. The survey was also administered to all parents and all educators within each elementary school. Teachers, building administrators, teacher assistants, counselors and instructional staff are included in the educators' category. The fifth grade survey results were reported for each individual elementary school.

### Statement of the Problem

NCLB focuses attention on student achievement and holds educators accountable. Student academic progress is required to be measured using quantitative data (U.S. Government, 2001). The Commonwealth of Virginia developed the Virginia Standards of Learning SOL tests to assess student achievement. The SOL tests were the assessment designated by Virginia to meet the mandates of NCLB. A school's *pass rates* on the Virginia SOL tests are used to determine AYP and state accreditation (Virginia Department of Education, 2006). If a school fails to meet AYP, the state must follow NCLB mandates to improve student achievement (U.S. Department of Education, 2002). The AYP status for each school is publicized by the local media. States and local school divisions do not receive sanctions if they fail to make AYP. However, the individual schools under their jurisdiction will receive sanctions if they fail to make AYP (U.S. Department of Education, 2002). If a school fails to meet AYP for three years in a row, supplemental services of free tutoring must be given to students (U.S. Department of Education, 2002). If a school misses AYP for the fourth year, the school is required to write a school improvement plan which must be submitted to and approved by the state (U.S. Department of

Education, 2002). After the fifth failure to make AYP, the school would be restructured based on the plan developed by each state (U.S. Department of Education, 2002).

The stakes are high; NCLB requires schools to improve the academic achievement of all students. NCLB requires improvement in academic performance for the following identified subgroup categories: Black, Asian, Native American, Hispanic, and White, low socio-economic status (SES), limited English proficiency (LEP), and students with disabilities (SWD) (U. S. Department of Education, 2002). This study will incorporate the terms used by NCLB above for ethnicity and race.

Some researchers have identified the requirements addressing the academic achievement of subgroups within a school's population as the most controversial aspects of NCLB (Abedi & Dietel, 2004). One of the challenges faced by schools is that some subgroups like limited English proficiency students may fall into several NCLB identified subgroups; low SES, LEP, and SWD (Abedi & Dietel, 2004). Their score would be counted more than once in the calculations for AYP, while the scores of students within the general population are counted once (Abedi & Dietel, 2004).

The achievement gap as defined by Hess is the difference in the student achievement of White and Asian students when compared to the achievement of identified subgroups, Black, Native American, and Hispanic (Hess, 2006). A primary purpose of NCLB is closing the achievement gap among subgroups (Hess, 2006). Lewis noted that NCLB has not closed the achievement gap

between White students and minority students (Lewis, 2007). Hess used the data from three public opinion polls to analyze public opinion in regard to NCLB (Hess, 2006). The majority of respondents felt that the achievement gap was caused by non-school factors (Hess, 2006). The consensus was that schools did not cause the achievement gap, but schools had a responsibility to close the gap. This study could provide educators with data on how the achievement of individual subgroups is affected by school climate.

Cohen identified four major factors of school climate: safety, relationships, teaching and learning, and the environment (Cohen, 2007). School leaders are aware of the relationship between school climate and student achievement (Cohen, 2007). Cohen asserts that what school leaders frequently neglect is the evaluation of school climate. He contends that the best way to build a healthy school climate is to formally evaluate and analyze a school's current climate (Cohen, 2007).

To raise student achievement educators need data on the variables that impact student achievement. These variables include the components of school climate. Cohen identified four factors of school climate: safety, relationships, teaching and learning, and the environment (Cohen, 2007). A 2008 study identified five factors of school climate: environment, safety, home-school relationship, working condition and leadership, and instructional focus (DiStefano et al., 2008). Evaluation of a school's climate and its factors could provide data from which to analyze the relationship between *school climate* and *student*

*achievement*. It could also provide data on how the individual factors that shape school climate impact student achievement.

### Purpose of the Study

The purpose of this study was to investigate the relationship between *school climate* and *student achievement* in elementary schools in one school division in the Commonwealth of Virginia. Of particular interest was the impact that individual factors had on student achievement. These factors are discussed in the theoretical framework below; the factors found in the theoretical framework became the basis for the factors used in the conceptual model, as well as this study. Another area of interest was the perspective of various stakeholders in regard to school climate and if their perspective of school climate had a relationship to student achievement. The best method to measure school climate is to survey all members of the school community (Cohen, 2007). All stakeholders, teachers, parents, and students, should be included. Assessments that take in the perspectives of all stakeholders tend to be more valuable as they reveal differences among and between the groups (Cohen, 2007).

This study used data from a School Climate Survey given by the selected school division to fifth grade students, parents, and educators. The data from this survey were compared with the division's 2007-2008 fifth grade Virginia Standards of Learning (SOL) assessments in math and reading. This study used the *pass* percentage for the fifth grade math and reading SOL tests as the measure of student achievement. The Virginia SOL tests of math and reading were selected as they coincide with the AYP requirement that every student meet

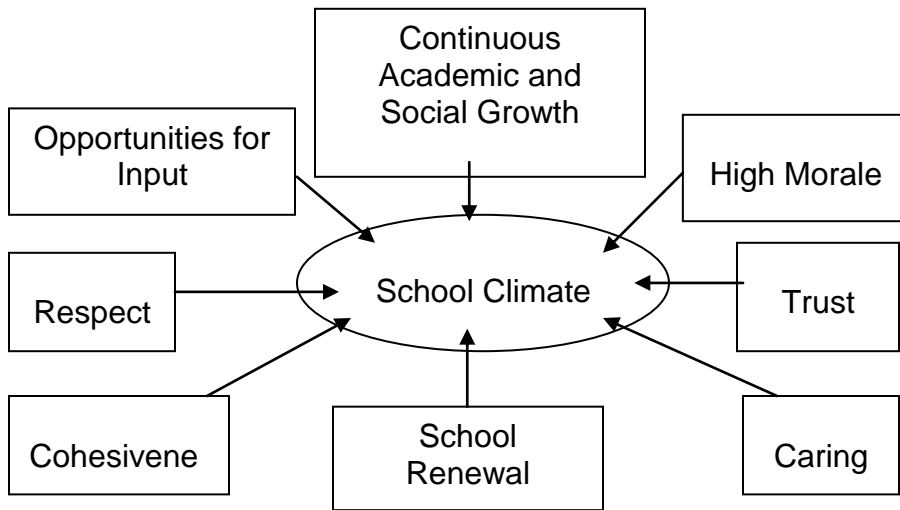
academic standards in math and reading (U.S. Department of Education, 2001). The School Climate Survey was already in use by the school division being studied. This study used data generated from that survey to analyze the relationship between school climate and student achievement in elementary schools located within the selected school division.

### Significance of the Study

This study investigated the relationship between *school climate* and *student achievement*. There have been a number of studies focused on the relationship between *school climate* and *student achievement*. However, there has been limited research involving the perceptions of all the members of the school community in regard to school climate and the relationship between those individual perceptions and student achievement. The analysis of how the individual factors that comprise school climate impacts student achievement is another area of limited research. The factors that comprise school climate are discussed in the theoretical framework below. This study investigated all three of the issues outlined in the theoretical framework.

### Theoretical Framework

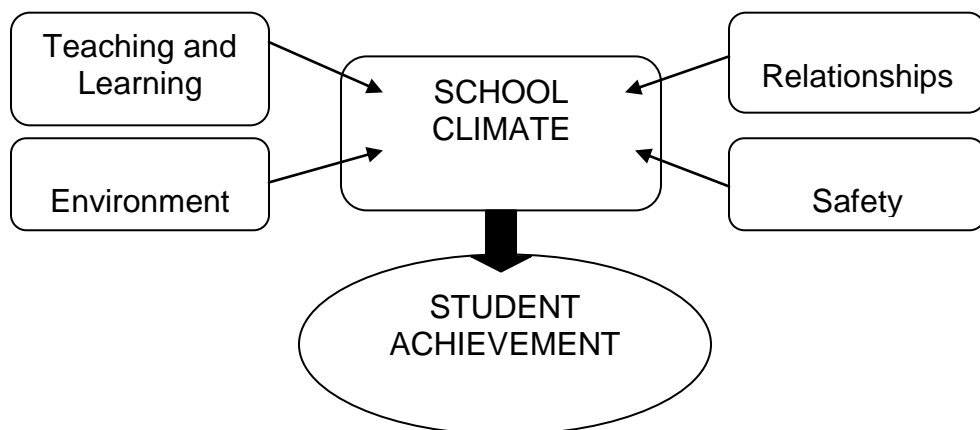
The authors of the Handbook for Conducting School Climate Improvement Projects identified eight factors that contribute to school climate: continuous academic and social growth, respect, trust, high morale, cohesiveness, and opportunities for input, school renewal, and caring (Howard, Howell & Brainard, 1987). Continuous academic and social growth was described as a school where the staff had high expectations for all their students (Howard et al., 1987).



*Figure 1. Theoretical Model, based on the Handbook for Conducting School Climate Improvement Projects (Howard et al., 1987). Note. Diagram designed to illustrate the climate factors identified by Howard.*

Respect is the care individuals take in listening and speaking with one another. Within this model respect is mutual between staff and students and trust was the belief that others can be relied upon to do their part (Howard et al., 1987). High morale is the way one feels about what is going on in the school. Cohesiveness is the sense of one’s belonging (Howard et al., 1987). Each stakeholder feels he/she has a voice in the operation of the school. This is referred to as opportunity for input (Howard et al., 1987).

School renewal is the manner in which the staff is involved in improving the school (Howard et al., 1987). The final factor, caring, is the belief held by those within the community that someone was concerned about their needs.

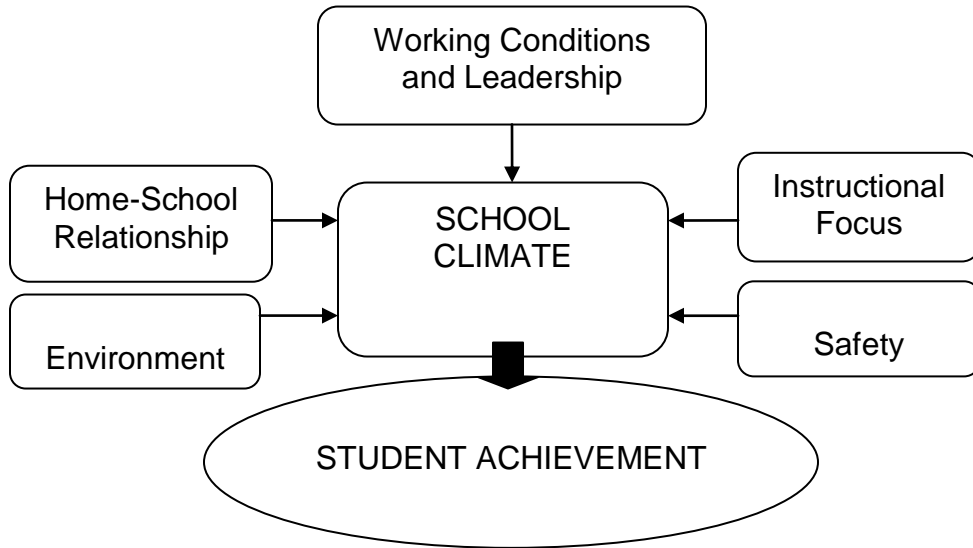


*Figure 2. Theoretical Model: Based on 2007 Cohen, Evaluating and Improving School Climate (Cohen, 2007). Note. Diagram designed to illustrate the climate factors identified by Cohen.*

These eight factors shape school climate and create an atmosphere for learning (Howard et al., 1987).

Cohen identifies four factors that shape school climate and maintains that school climate is predictive of student achievement (Cohen, 2007). Cohen identifies teaching/learning, relationships and safety as the first three factors of climate. The fourth factor, environment, includes the condition of the physical facility; adequate space, as well as time and materials (Cohen, 2007).

In 2008, researchers in South Carolina; DiStefano, Monrad, May, Smith, Gay, Mindria, Gareau, and Rawls, asserted educators would benefit from an in-depth study of the factors that shape school climate and the relationship between school climate and student achievement (DiStefano et al., 2008). Their study is the basis for the DiStefano theoretical model. The purpose of the South Carolina



*Figure 3. Theoretical Model: Based on a paper presented at the Annual Meeting of the American Educational Research Association in New York, NY on March 26, 2008 (DiStefano et al., 2008). Note. Diagram designed to illustrate the climate factors identified by DiStefano.*

study was to identify the factors of school climate that related to student, parent and teacher responses on the statewide climate survey (DiStefano et al., 2008). The five factors that shape school culture in this model are working conditions/leadership, home/school relations, Instructional focus, safety, and the environment (DiStefano et al., 2008). The DiStefano theoretical model includes working conditions and leadership as additional factors that shape school climate (DiStefano et al., 2008).

The three theoretical models above form the framework for the conceptual model of this study. Instruction is mentioned in all three models. Cohen called it *teaching and learning* (Cohen, 2007), DiStefano labeled it *instructional focus*



(DiStefano et al., 2008), and Howard refers to it as continuous academic growth (Howard et al., 1987). Instruction and learning are the central purpose of any school. It would appear that how students are instructed would shape the climate of a school.

Howard's model used several factors that are associated with relationships: trust, respect, and caring (Howard et al., 1987). Both Cohen and DiStefano name relationships as one of their factors (Cohen, 2007; DiStefano et al., 2008). The conceptual model refers to the identification of relationships as a factor in all three of the theoretical models. Relationship, as a factor, is included in the conceptual model because schools are human organizations and interpersonal relationships are fundamental to organizational health. Hoy wrote that school health is about organizational relationships (Hoy & Woolfolk, 1993). Environment and safety are two factors mentioned by both Cohen and DiStefano. They are also included in the conceptual model because they both appear to have an impact on one's sense of well being. Researchers have also investigated the relationship between leadership and school climate in elementary schools and found principals have the power and authority to make an impact on school climate (Kelley et al., 2005). The only way principals could impact school climate is by communicating their beliefs and values. For these reasons communication is another factor included in this conceptual model.

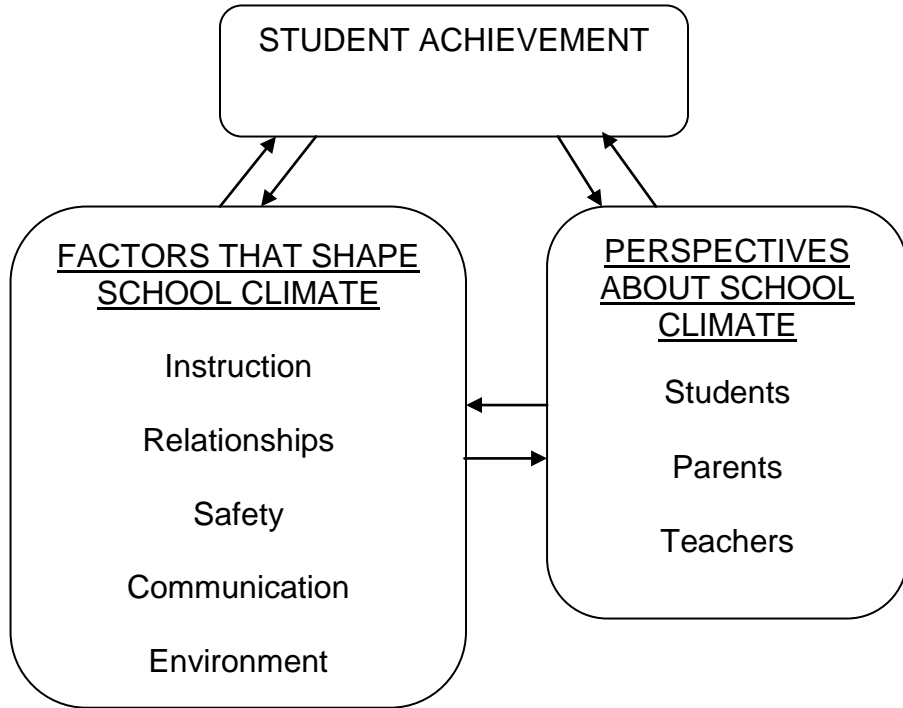


Figure 4. Conceptual Model for this study

The five factors listed in the conceptual model instruction, relationships, safety, communication, and environment; coincide with the five factors identified in the climate survey used to measure school climate in this study. Those five factors are instructional programming, interpersonal relationships, communication/ collaboration, safety/discipline, and physical environment.

The purpose of this study was to investigate the relationship between *school climate* and *student achievement* in elementary schools located in the selected school division. Of particular interest was the impact individual variables have on student achievement. Another area of interest was the perspective of

various stakeholders in regard to school climate and the relationship between those individual perspectives and student achievement.

#### Definition of Terms

1. School Climate is defined as the characteristics of one school that distinguished it from another (Hoy & Miskel, 1996).
2. Organizational climate is defined as a “set of internal characteristics that distinguishes one organization from another and influences the behavior of organizational members” (Hoy, Hannum & Tschannen-Morgan, 1998 p. 237).
3. Achievement Gap is defined by NCLB as the difference in the achievement of the subgroups: Black, Asian, Native American, Hispanic, and White, economically disadvantaged; low socio-economic status (SES), limited English Proficiency (LEP), and students with disabilities (SWD) (U.S. Department of Education, 2002).
4. School climate is defined operationally as the perceptions of stakeholders, students, parents and educators in regard to instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment.

#### Research Questions

*The overarching question for this study was as follows:*

What is the relationship between school climate as reflected by the 2008 School Climate Survey and student achievement as reflected on the 2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math?

*Subordinate Questions:*

1. How do individual factors, instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment impact student achievement?
2. If a relationship exists between school climate and student achievement, is there a significant difference in that relationship in regard to the achievement of individual subgroups: Black, Asian, Hispanic, and White, low socio-economic status (SES), and students with disabilities (SWD)?
3. How do the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey, relate to student achievement?

Limitations/Delimitations

This study utilized the 2008 Climate Survey given by the selected school division to fifth grade students, parents, and teachers/administrators. The data collected from this survey came from one school division; it may not be generalized to other school divisions. There is no method to determine the truthfulness of those taking the survey. Respondents may be influenced by contextual issues and experiences unrelated to the survey. Their responses may be shaped by past experiences or cultural beliefs.

The survey as administered in elementary schools was given only to fifth grade students; however, the same limitation was not placed on parents or educators. All the parents and teachers within the school could take the survey. The data for school climate comes from the perspectives of fifth grade students and the perspectives of parents and educators representative of all the grades within the school. If the responses of parents and educators had been limited to those associated with the fifth grade, their perspectives may have been more representative of that grade level. By administering the survey to parents and teachers without regard to grade, their responses could be confounded by concerns in various grades not shared by those in fifth grade.

This study used the Johnson Max Process applied by SPSS to build clusters by stacking variables according to their similarities. The process produced four clusters. The first cluster contained 35 schools, the second contained 12 and the last two clusters contained 2 and 6 schools respectively. The wide variance in the number of schools contained in each cluster caused changes to be made in the way data were analyzed. These changes will be discussed fully in chapters three and four.

#### Overview of the Study

This study is organized into five chapters. The first chapter introduces the study and includes the following sections: Introduction, Statement of the Problem, Purpose of the Study, Significance of the Study, Theoretical Framework, Definitions of Terms, Overview of the Study, Research Questions, and Limitations/Delimitations. The second chapter restates the thesis and then

reviews related literature. The third chapter focuses on methodology, including the method of data collection, population, and research design. The fourth chapter reports the data. The fifth chapter reports the research findings, makes recommendations for implementation of those findings, list limitations, and provides recommendations for future study.

## CHAPTER 2

## REVIEW OF RELATED LITERATURE

The purpose of this study was to investigate the relationship between school climate and student achievement in elementary schools located in the selected school division. Also of interest were the factors that shape school climate and the perceptions of students, parents, and educators in regard to school climate. With the enactment of the No Child Left Behind Act (NCLB) in 2002, public schools are now being held to a new level of accountability. States are required to establish standards of accountability and to close the achievement gap (U.S. Government, 2001). NCLB requires improvement in academic performance for the following subgroup categories: ethnic; Black, Asian, Native American, Hispanic, and White, economically disadvantaged; low socio-economic status (SES), limited English proficiency (LEP), and students with disabilities (SWD) (U.S. Department of Education, 2002). This study will use the terms above for race and ethnicity to maintain consistency with NCLB. Some researchers have noted the importance of standards and accountability in closing the achievement gap. School divisions that have improved the student achievement of all their students and closed the achievement gap are those that had both clear standards and accountability (Scheurich & Skrla, 2003).

Hoy and Miskel (1996) define *school climate* as the characteristics of one school that distinguished it from another. *School climate* influences the behavior of the stakeholders within the school (Hoy & Miskel, 1996). Owens (1991) states the characteristics that define *organizational climate* are interwoven throughout

the environment of the school building and that organizational climate is shaped by the perceptions of those within the organization (Owens, 1991).

Several researchers have discussed the connection between school climate and student achievement (Hoy & Woolfolk, 1993; Smith, 2005; Johnson & Stevens, 2006; Warren, 2007). Others have indicated school climate as a significant component of effective schools (Hoy & Hannum, 1997). Hoy described school climate as the lasting or enduring quality of a school's environment (Hoy & Hoy, 2009). That quality is based on the collective perception of those within the school (Hoy & Hoy, 2009). Researchers study climate because they are interested in organizational outcomes (Hoy & Hoy, 2009). Of particular interest to this study was how school climate relates to student achievement. If a relationship exists between school climate and student achievement, school climate may be an indicator of schools with high levels of student achievement. This would suggest that if the climate in a school could be improved, the student achievement in the school might also improve.

Common themes have emerged from a review of the literature. There are indications a relationship exists between school climate and student achievement. It is unclear how this relationship manifests itself at the elementary school level. School climate is based on a collection of factors or characteristics unique to each school. Studies have found the perceptions of stakeholders shape school climate. It is unclear if those perceptions of school climate also predict student achievement. If a relationship exists between school climate and



student achievement, more research is needed on the factors that impact school climate.

### School Climate Studies

Recent studies on the relationship between school climate and student achievement began with the climate of accountability created by NCLB (Smith, 2005; Warren, 2007). This climate of accountability has created a need for schools to understand the relationship between school climate and student achievement (Smith, 2005). *Positive school climate* has been identified by school reformers as a means to improve student achievement (Hoy et al., 1991). Smith was interested in the relationship between school climate and student achievement (Smith, 2005). His focus was on middle schools and data from the 132 school divisions in the Commonwealth of Virginia (Smith, 2005).

The data from each school division were included in a Virginia Department of Education data base and included the results of the 2002 – 2003 Virginia Standards of Learning (SOL) test, which were used to determine student achievement in each of the four core subject areas: mathematics, English, social studies, and science (Smith, 2005). Data related to school climate also came from data submitted to the Virginia Department of Education for each school division and included free and reduced lunch as a measure of low SES, discipline (disorderly conduct, fighting, and vandalism), and tardiness (Smith, 2005). A z-score was calculated for each school division and then entered into Statistical Package for the Social Sciences (SPSS). The analysis performed by SPSS grouped the school districts by similar factors. They were then clustered using

the Johnson Max process (Smith, 2005). The school divisions were grouped by like factors using a Hierarchical Cluster method as applied by the Johnson Max process. Based on similar demographic characteristics, the school divisions were divided into five clusters creating a climate index that represented the original 132 Virginia school divisions (Smith, 2005). These clusters were then analyzed to determine if there were a relationship between school division climate and student achievement. The analysis did find a relationship between school climate and student achievement (Smith, 2005).

Smith used discipline factors to indicate school climate. Other researchers have also identified discipline/safety as one of several factors that shape school climate. This study looked at five factors that shape school climate: instruction, relationships, safety, communication, and environment. These five factors are based on the three theoretical models discussed in chapter one (Howard et al., 1987; Cohen, 2007; DiStefano et al., 2008).

Smith's study found a relationship between school discipline and student achievement (Smith, 2005). The data produced by the Climax Index (CI) used in Smith's study indicated that lower achieving school divisions had higher incidents of student discipline (Smith, 2005). In contrast, higher achieving school divisions had lower incidents of student discipline (Smith, 2005). Smith found that school divisions with higher incidents of disorderly conduct, fights, truancy, and who had a higher percentage of students who received free and reduced lunch, could expect to have lower student achievement (Smith, 2005).

The strength in Smith's study was the large sample size. The number of divisions included in this study offered a large amount of data from which to analyze. Of concern in Smith's study was the variance between the school divisions. The school divisions varied between urban and rural settings and in the number of schools and students contained in each (Smith, 2005). This concern was effectively dealt with by clustering the divisions. Smith also converted all of the statistics to a scale of 100. This process took into account the variance in size between school divisions. There was some concern about the inconsistency of discipline reporting by administrators (Smith, 2005). The common definition of discipline incidents as defined by the state as well as commonalities in the reporting process of data to the state could increase or lessen the variance in the discipline data (Smith, 2005). However, there was still subjectivity in how each administrator reports discipline for their individual school and some differences in the way individual divisions reported discipline (Smith, 2005).

Warren's study looked at the relationship between school climate and student achievement and was a replication of the Smith study. Warren (2007) performed a study designed to test for a relationship between incidents of student discipline and student achievement within four states. Her focus like that of Smith's, was on middle schools. The states were Maryland, New Jersey, Pennsylvania, and Virginia (Warren, 2007).

Warren began her study looking for a relationship between incidents of student discipline and student achievement (Warren, 2007). However, she also had an interest in any variations that may exist in regard to gender, race, and

social economic status (Warren, 2007). The study described the relationship between student discipline and student achievement.

Warren used hierarchical clustering analysis for the formation of five clusters of school divisions. These clusters were organized into seven reporting categories: free and reduced lunch, disorderly conduct, weapons, violence, substance abuse, race, and gender (Warren, 2007). State-wide assessment data for each state was used to determine student achievement (Warren, 2007). Each of the clusters was then analyzed to determine if a relationship existed between the incidents of student discipline and student achievement.

Warren's study found a relationship between the incidents of discipline and student achievement (Warren, 2007). When considering race, the study found a relationship between student discipline and student achievement in both reading and mathematics (Warren, 2007). There was also a relationship between student discipline and student achievement by socio-economic status for reading and math (Warren, 2007).

Parish conducted a study in 2002 that looked at the relationship between school climate and student achievement. The focus was on middle schools. The data used for student achievement were the 2001 Virginia eighth grade reading and math SOL tests (Parish, 2002). A School Climate Index (SCI) was used to analyze school climate. The SCI was completed by 690 teachers from 49 Virginia middle schools (Parish, 2002). Parish did find a relationship between school climate and student achievement (Parish, 2002). All three of the Virginia studies were conducted at the middle school level; the findings of each appear to

indicate a relationship between school climate and student achievement (Smith, 2005; Warren, 2007; Parish, 2002). None of the studies focused on how that relationship manifests itself at the elementary school level. This current study investigates the relationship between school climate and student achievement at the elementary school level within a single school division within the Commonwealth of Virginia.

Imperial (2005) studied ten schools that serve the Children of Military Parents (COMP). Of specific interest to Imperial was how the organizational climate in these schools impacts the achievement gap between Caucasian and minority students (Imperial, 2005). Imperial solicited the participation of 136 COMP elementary schools to participate in the study. The data set used in the study consisted of 247 survey respondents (Imperial, 2005). Two survey instruments were used in this study; the first was the Perceptions of Multicultural Education (PME) and the second was the Organizational Health Inventory Elementary Edition (OHI-E) (Imperial, 2005). The OHI-E was first used and validated by Hoy in New Jersey (Hoy et al., 1991). The PME was developed and validated by Imperial who used peer review and revision for validation (Imperial, 2005).

Imperial ran a factor analysis on the data collected on the PME and a second factor analysis on data from the OHI-E. The analysis indicated that the majority of COMP schools had a healthy school climate (Imperial, 2005). The standardized test scores for students in third to fifth grade in each of the schools with a healthy climate was analyzed to determine if a relationship existed

between climate and student achievement (Imperial, 2005). There were significant findings on the third grade math, social studies, and total curriculum scores, and the fourth grade science scores (Imperial, 2005). From these results Imperial stated the existence of significant correlation between organizational health and student achievement (Imperial, 2005). Minority performance was compared to the school's overall health score (Imperial, 2005). Imperial (2005) concluded that as organizational health scores rise, the performance on standardized test scores increases. A correlation also appears to exist between a healthy school climate and higher student achievement by minority students. Imperial (2005) stated that a correlation was found between a healthy school climate and lowering the minority performance gap (Imperial, 2005).

The results of this study indicate that there is a relationship between a healthy school climate and student achievement (Imperial, 2005). Additionally, there appears to be a relationship between minority student achievement and a healthy school climate (Imperial, 2005). The children of military parents live within a separate culture, the military, aside from their own ethnic background (Wertsch, 2006). The student's cultural background, both ethnic and military, may have an impact on this study.

Each of the studies reviewed above have relevance to this study. All four appear to indicate a relationship between school climate and student achievement. The Warren and Imperial studies each looked at the achievement gap. The Imperial study was the only one of the four to focus on elementary schools. This study investigates the relationship between school climate and

student achievement in elementary schools located in the selected school division. It also analyzes the data to determine if the relationship manifested itself the same across each of the NCLB subgroup categories: Black, Asian, Native American, Hispanic, and White, low Social Economic Status (SES), and Students With Disabilities (SWD) (U. S. Department of Education, 2002).

#### Studies on Stakeholder Perceptions

Johnson and Stevens (2006) focused on elementary schools in their study. The focus of the study was student achievement and teachers' perceptions of school climate. Their study looked at teachers' perceptions in fifty-nine elementary schools. They used the School Level Environment Questionnaire (SLEQ), which had been modified for use in the study. The study found there was a relationship between teacher perceptions of school climate and student achievement (Johnson & Stevens, 2006). Other data indicated that though there was a relationship, it was somewhat mitigated by context variables within the school and community (Johnson & Stevens, 2006). This was particularly true in the case of students with low socio-economic status (Johnson & Stevens, 2006).

Their study focused on school climate and its relationship to student achievement (Johnson & Stevens, 2006). It also looked at the relationship of these two variables and community and school context. The researchers wanted to see if there was a relationship between school climate and student achievement and how school and community context might impact that

relationship (Johnson & Stevens, 2006). Two models were tested in this study. The subtests of Terra Nova were used to establish student achievement (Johnson & Stevens, 2006). The first model focused on school climate and its relationship with student achievement. The analysis of the first model tested only for school climate as a predictor of student achievement (Johnson & Stevens, 2006).. The first model looked only at the relationship between school climate and student achievement. It did not take into consideration the impact of school or community context (Johnson & Stevens, 2006). The second model looked at how school and community context might affect student achievement. The study wanted to see if context impacted not just student achievement, but also school climate (Johnson & Stevens, 2006).

In the first model, there was a significant relationship between teachers' perceptions of school climate and student achievement. In the second model, this relationship was smaller (Johnson & Stevens, 2006). The Johnson and Stevens study found a relationship between school climate and student achievement. It is unique in its analysis of the impact of school or community context on this relationship.

The Bevans study, like the Johnson and Stevens study, focused on the staff's perceptions of organizational health. However, researchers also investigated how both school level factors impacted student achievement. Of specific interest to the researchers was how staff perceptions and school level factors could be used to predict organizational health. A multilevel analysis was used on data collected from 1,395 staff members from 37 elementary schools in



five school divisions within the state of Maryland. (Bevans, Bradshaw, Miech, & Leaf, 2007).

Researchers proposed that school level factors such as student enrollment, faculty turnover, attendance, and discipline would shape staff perceptions of the school climate. The researchers also indicate that the perceptions of staff members are likely to differ depending on their background and position within the organization. A multi-level analysis was used to study the interactions of staff members and school level factors and the impact on perceptions regarding organizational health (Bevans et al., 2007).

The response rate to the Bevan's survey was approximately 82%. The survey instrument used was the Organizational Health Index (OHI), which was developed by Hoy in 1987 (Hoy & Feldman, 1987). A later version was developed for use in elementary schools called the OHI-E (Hoy et al., 1991). The OHI consists of thirty-seven items. Participants respond to the questions using a four point Likert scale; 1-rarely occurs to 4- very frequently occurs. The researchers averaged the subscales; higher averages indicated higher levels of organizational health (Bevans et al., 2007).

School staff members each completed a demographic questionnaire. The questions included race, gender, and their position within the school. School data were collected from the Maryland State Department of Education and included: student enrollment, faculty turnover, student mobility, and free and reduced lunch. Student achievement was based on attendance, suspensions, and student

achievement on the Maryland standardized assessment in reading and math (Bevans et al., 2007).

The analysis revealed that at a time when educators are under increased accountability, legislative and district demands may impact staff perceptions more than school based demands (Bevans et al., 2007). One's position within an organization will shape that person's perception of school organizational health. For instance, a staff member may view high turnover as indicating poor leadership. Administrators may interpret the same situation as positive leadership in that an unsatisfactory staff is replaced with more qualified staff (Bevans et al., 2007).

The Bevans study began to look at how stakeholder perceptions might impact organizational health. These perceptions are impacted by one position and the characteristics of the school. If there are differences in perceptions based on one's position within the organization, how will the perceptions vary? Will the perceptions of any one group be more predictive of student achievement than another? This was an area of specific interest in this study. How will the perceptions of school climate by teachers, parents, and students vary?

The only way to ensure a healthy climate is to formally evaluate the existing school climate and the best way to measure the existing climate is to poll all the constituencies of the school in order to obtain the perceptions of all stakeholders (Cohen, 2007). Educators would benefit from an in-depth study of the factors that shape school climate and the relationship between school climate

and student achievement (DiStefano et al., 2008). In the State of South Carolina, the students and parents in specific grades complete an annual survey intended to assess school climate. The survey topics include environment, parent-school relationship, social, and physical factors. The survey is typically administered in the fifth, eighth, and eleventh grade. The results of the survey are included on the school's annual report card (DiStefano et al., 2008).

The purpose of the DiStefano study was to identify the dimensions of school climate that related to student, parent, and teacher responses to the climate survey. Did the perceptions of school climate differ based on the organizational role of the respondent? Did the perception of school climate as reflected on the survey and as reported on the annual report card predict student performance as indicated by AYP and standardized test scores (DiStefano et al., 2008)? A few earlier studies investigated teacher perceptions of school climate (Johnson & Stevens, 2006; Bevans et al., 2007). The study conducted by the researchers in South Carolina was the first to take a look at the perceptions of each group of stakeholders: teachers, parents, and students.

The 2006 student survey had 43 questions organized into three categories: learning environment, social and physical environment, home and school relationship. The 2006 teacher survey had 69 questions. The teacher survey added a fourth category, working conditions. The 2006 parents survey included 54 questions and the same 3 categories used on the student survey. All three surveys utilized a Likert scale format (DiStefano et al., 2008).

The researchers extracted data from the South Carolina Department of Education 2006 state report card file. These data for each school included attendance, percentage of overage students in each grade, suspensions and expulsions, percentage of teachers with advanced degrees, percentage of classes not taught by highly qualified teachers, percentage of teachers with provisional certifications, percentage of returning teachers, and number of professional days per teacher (DiStefano et al., 2008). It had a data set of 120,000 responses, 31,000 parents and 81,000 teachers. The respondents came from 569 elementary schools, 235 middle schools, and 183 high schools (DiStefano et al., 2008). A series of factor analyses followed by a multiple linear regression were conducted. The analyses found that the factors, school safety, working conditions, and home-school relationships, were important across all grade levels (DiStefano et al., 2008). School climate factors accounted for two thirds of the variation in school achievement measures (DiStefano et al., 2008).

### Summary of Research

This study investigated the relationship between *school climate* and *student achievement* in elementary schools located in the selected school division. Of particular interest was the impact individual variables may have on student achievement. Another area of interest was the perspective of various stakeholders in regard to school climate and if their perspectives impacted student achievement.

If researchers establish a relationship between school climate and student achievement, effective school leaders would consider school climate when

planning for increased student achievement (Kelley et al., 2005). The review of literature has revealed several studies that investigated the relationship between school climate and student achievement (Hoy & Hannum, 1997; Hoy & Woolfolk, 1993; Imperial, 2005; Johnson & Stevens, 2006; Smith, 2005; Warren, 2007). The results of these studies appeared to indicate that there was a relationship between school climate and student achievement (Imperial, 2005; Smith, 2005; Warren 2007). A limited number of studies investigated the relationship at the elementary school level. Though a few studies looked at teacher perceptions, there was very little research on parent and student perceptions and their impact. Another area with limited research was how the individual factors that shape school climate impact student achievement. The relationship could be impacted by context variables. A study by Johnson and Stevens (2006) indicated that though there was a relationship between school climate and student achievement, it was somewhat mitigated by context variables within the school and community (Johnson & Stevens, 2006). This has been particularly true in the case of students with low socio-economic status (Johnson & Stevens, 2006).

Within the findings of researchers, there is limited discussion about the perception of stakeholders within the school community and its impact on school climate. Researchers focused on the impact of teacher perceptions on school climate and student achievement; more research was needed in this area (Bevans et al., 2007). Cohen wrote that the best way to measure school climate is to poll all the members of the school to obtain the perceptions of all the stakeholders (Cohen, 2007). The DiStefano study conducted in South Carolina

appears to have been the first to focus on the perceptions of all the stakeholders: students, parents, and teachers and how these perceptions were related to school climate and student achievement (DiStefano et al., 2008). The perception of students, parents, and educators in regard to school climate and how that correlates with student achievement was of particular interest to the researchers. Specifically, did the perception of stakeholders differ in regard to school climate and did these perceptions predict student achievement (DiStefano et al., 2008)? The elements brought together in the DiStefano study were those of interest to this researcher. The impact individual variables may have on student achievement was of particular interest. Another area of interest was the perspective of various stakeholders in regard to school climate and if their perspective impacted student achievement. The perceptions of stakeholders shape school climate and there appears to be a relationship between school climate and student achievement. This study investigated the relationship between school climate and student achievement in elementary schools.

## CHAPTER 3

### METHODOLOGY

#### Introduction

Chapter three contains a brief introduction restating the purpose of this study and research questions. The sections included in this chapter are methodology, population, data collection process, research design, data analysis, and summary of methodology.

The purpose of this study was to investigate the relationship between *school climate* and *student achievement* in elementary schools located in the selected school division. Of particular interest was the impact that the individual variables: instructional programming, interpersonal relationships, safety/discipline, communication/collaboration, and physical environment had on student achievement. Another area of interest was the perspective of various stakeholders in regard to school climate and the relationship between those individual perspectives and student achievement.

#### Overarching Research Question

*The overarching question for this study was as follows:*

What is the relationship between school climate as reflected by the 2008 School Climate Survey and student achievement as reflected on the 2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math?

*Subordinate Questions:*

1. How do individual factors, instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment impact student achievement?
2. If a relationship exists between school climate and student achievement, is there a significant difference in that relationship in regard to the achievement of individual subgroups: Black, Asian, Hispanic, and White, low socio-economic status (SES), and students with disabilities (SWD)?
3. How do the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey, relate to student achievement?

Many researchers have indicated school climate is a significant component of effective schools (Hoy & Hannum, 1997). An unhealthy school climate appears to have a negative impact on student achievement (Esposito, 1999). Schools with healthy climates appear to be higher achieving schools (Hoy & Woolfolk, 1993). Johnson and Stevens reported a significant relationship between school climate and student achievement (Johnson & Stevens, 2006). This study investigated the relationship between school climate and student achievement. School climate is defined operationally as the perceptions of stakeholders, students, parents and educators in regard to instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment. The data from this study could



facilitate the development of strategies and interventions intended to improve student performance.

### Population for the Study

The researcher of this study received training in human subjects' protection; the certificate for that training can be found in Appendix A. Prior to conducting this study, an application for permission to proceed was submitted to the Institutional Review Board (IRB) of Virginia Polytechnic Institute and State University. The IRB approval form is displayed as Appendix B. Permission was also obtained from the selected school system. This letter is displayed as Appendix C.

The population for this study was 55 elementary schools located within the selected school division in the southeastern region of the Commonwealth of Virginia. There are 57 elementary schools located within this school division. However, 2 of those schools did not have a fifth grade class and thus were not included in the study.

The school division collects data on school climate through the annual School Climate Survey and student achievement through the fifth grade reading and math SOL tests. The data collected from these two sources are archived within the school division's data bases for each of the elementary schools. The data from these two sources were used to determine the relationship between school climate and student achievement. The selected school division collects and archives data on both student achievement and school climate. The

availability of these data aided in the selection of this school division for this study.

The diversity of the school population within the selected school division was another area of consideration in the selection process. This study analyzed the achievement of individual subgroups and the impact of school climate. The school division had a diversified population: 27.5% Black, 56% White, 5.7% Hispanic, and 5.7% Asian. *Pass* percentages on the Virginia SOL tests in reading and math were reported for both individual subgroups and the total fifth grade. By using the individual subgroups *pass* percentages differences in the relationship between school climate and the student achievement of each subgroup could be investigated.

An annual School Climate Survey is used within the selected school division and is administered to fifth, eighth, and twelfth grade students each spring within the same time span as the Virginia SOL tests. The survey was administered to all parents and all educators within each elementary school. Teachers, building administrators, and teacher assistants were included in the educators category. The fifth grade survey results were reported for each individual elementary school.

Data collected from this survey were used to analyze stakeholder perceptions of school climate. This study focused on the academic achievement of fifth grade students of which there were 5,346 enrolled in fall 2007-2008. The fifth grade population was composed of 27% Black, 56% White, 5% Hispanic, and 5% Asian. The school division had an enrollment of 11% SWD and 30% low

SES in fifth grade. Data from the 2008 School Climate Survey and 2008 fifth grade reading and math Virginia SOL tests, archived by the school division for each of the 55 elementary schools, served as the database for this investigation. Data from the 2007-2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math were used to measure student achievement. The math and reading SOL tests were analyzed separately as there could be a variance in the impact of school climate on one from the other. Data on instructional programming, interpersonal relationships, communication/ collaboration, safety/discipline, and physical environment came from the fifth grade 2008 Annual School Climate Survey.

#### Data Collection Process

For an elementary school to make AYP during the 2007-2008 school year, 75% of the students had to *pass* an assessment of Annual Measurable Objectives in math and 77% in reading (Government, 2001). In order to meet this NCLB requirement the Virginia Department of Education directed local school boards to use the Standards of Learning (SOL) tests in reading and math as the assessment to meet AYP requirements. SOL testing is governed by the Regulations Establishing Standards for Accrediting Public Schools in Virginia (8 VAV 20-131-10 et seq.). The *pass* percentage for the 2007-2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math was used to measure student achievement. Disaggregated data for subgroups, race; low social economic status (SES); and students with disabilities (SWD) were included in the analysis.

The SOL *pass* percentage was the statistic selected for use in this study because it is used as the measurement of student achievement for both state accreditation and AYP. The SOL *pass* percentages are also published by both the school division and the state. The *pass* percentage for each school and individual subgroups within a school was downloaded from the school division's website or individual school report cards. The *pass* percentage does not include students who moved into the school division after the start of the year and did not receive the entire curriculum assessed by the Virginia SOL tests. If the scores of these students were included, they could have added a confounding variable to the analysis. It would be difficult to determine if lack of exposure to parts of the curriculum or school climate impacted their achievement. The *pass* percentage did include students who passed the Virginia SOL tests by alternate assessment, Virginia Grade Level Assessment (VGLA), and Virginia Alternate Assessment Program (VAAP). Students who receive a functional academic curriculum are assessed using the VAAP. Students with disabilities (SWD) who meet specific guidelines may be assessed using VGLA. The inclusion of the *pass* rates for these students was necessary to have an accurate statistic in regard to SWD achievement. The exclusion from the *pass* percentage of students who moved into the district and did not receive the entire curriculum and the inclusion of those students who passed the Virginia SOL tests by alternate means was important to this study.

Data on school climate for each of the 55 elementary schools were obtained from the school division's archived data base. Data on instructional

programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment came from the fifth grade 2008 Annual School Climate Survey. The survey was used by the school division to measure the perceptions of three groups of stakeholders, students, parents, and educators. At the time of this study, the School Climate Survey had been used by the selected school division for 12 years. Prior to 2006 the survey's primary focus was on school climate; it also included unrelated items of interest to various central office departments. A decision was made to focus the survey on measuring the climate within the school. The division's Department of Research, Evaluation, and Assessment was tasked with developing the new survey. Assessment specialists within that department reviewed current literature. Their focus was to find common factors that shaped school climate and were measured by pre-existing School Climate Surveys. The factors of school climate that appeared most frequently in the literature served as the starting point in developing the revised survey. There were five factors incorporated in the revised survey: instructional programming, interpersonal relationships, communication/ collaboration, safety/discipline, and physical environment. The revised survey was piloted and validated in 2006 by the participants in the school division's Official for the Day Program. This revised School Climate Survey was used in 2006-2007 by grades five, eight, and twelve division wide. The School Climate Survey in its revised format was used for the second time in 2007-2008. The Virginia SOL tests and the climate survey used in this study were administered in the late spring of 2008.

This study used data from the 2008 Annual School Climate Survey administered to three groups of stakeholders: fifth grade students, all parents who have students in the elementary school, and all educators within each elementary school. Teachers, building administrators, and teacher assistants are included in the educators category. The survey response rate for each group was varied. The student response rate was 95%; the response rate for parents was 24%; and for educators it was 67%. The school climate response rates for each school are displayed on Appendix D. The statements given to each group were the same; however, the wording was tailored to each individual group. See Appendix E for School Climate Survey questions.

### Research Design

This study used a quantitative research design using descriptive statistics. Quantitative research uses statistics to describe relationships between factors or variables within a situation or phenomenon (McMillan & Wergin, 2006). Descriptive research is the systematic approach that describes a given population using characteristics or facts about the population (Issac & Michael, 1983). Descriptive statistics are characterized by the collection of data or data sets (Salkind, 2004). Descriptive research uses statistics to describe a phenomenon (McMillan & Wergin, 2006). Descriptive statistics include: percentages, averages, means, and standard deviations (McMillan & Wergin, 2006). These statistics can be used to describe how often something occurs and the variations of that occurrence. Descriptive data can also describe the difference in how different variables impact an outcome (McCall, 2001). This

study described the relationship between school climate and student achievement in 55 elementary schools, making it a descriptive research design.

For the purpose of this study, Hierarchical Clusters were created using data from each elementary school. Descriptive data were collected for each of the NCLB identified subgroups: Black, White, SWD, and low SES, and for the following reporting categories: the fall membership of the school, and percentage of each particular subgroup within the total fifth grade population. These data were downloaded into an Excel spreadsheet and used to calculate a mean, standard deviation, and z-score. A separate z-score was calculated for each of the four subgroups for each of the 55 elementary schools. The z-scores were calculated by rescaling the number of students in each subgroup per ten students for each elementary school. Then subtracting the mean of the distribution from the statistic for each subgroup and then dividing the difference from the distribution standard deviation score. The z-scores for each school and each subgroup were then entered into SPSS to be grouped according to like factors; this process is called Hierarchical Clustering (Smith, 2005). This study used the Johnson Max Process applied by SPSS to build clusters by stacking variables according to their similarities (Smith, 2005). The climate data collected from the school divisions climate survey were grouped by cluster on spreadsheets to form a climate index for each cluster which represented the original 55 elementary schools. Each of the clusters was analyzed to determine if a relationship exists between school climate and student achievement.

The school division's Research, Evaluation and Assessment (REA) department entered the following climate data for each individual school onto a second spreadsheet: the percentage of agreement for each of the five factors on the 2008 School Climate Survey. The five factors include instructional programming, interpersonal relationships, communication/ collaboration, Safety/Discipline, and physical environment. The names of individual schools were removed and replaced with randomly selected numeric codes. This method facilitated the use of data for each elementary school without identifying specific schools. This spreadsheet was referred to as the Climate Data Spreadsheet (CDS) and was used as a method to store climate data until used for further analysis.

The same method was used to organize the student achievement data. The researchers downloaded the *pass proficient* and *pass advanced* percentages from the 2008 fifth grade math and reading SOL tests for each subgroup: Black, White, Hispanic, Asian, low SES, and SWD into an Excel spreadsheet. A perfect score for the Virginia SOL tests is 600. Students whose score was between 500 and 600 *pass advanced*. Those with scores between 400 and 499 *pass proficient*. Students with scores lower than 399 failed the test. This spreadsheet was referred to as the Student Achievement Spreadsheet (SAS) and used as a method to store student achievement data until used for further analysis. The SAS contained data for each of the 55 elementary schools.

Climate and achievement data were downloaded from the CDS and SAS into a spreadsheet for each individual cluster. These clusters were determined by



the Johnson Max Process as applied by SPSS. The elementary schools were separated into clusters by stacking variables according to their similarities (Smith, 2005). These data were used to calculate a mean and standard deviation score for each school. A separate mean and a standard deviation score were calculated for each reporting category. These means and standard deviation scores were averaged across the clusters to determine the possibility of a relationship between cluster membership, student achievement, and school climate.

The schools within the selected division vary in size, setting, and diversity. By clustering the 55 elementary schools by like factors, the contextual differences can be eliminated when determining the relationship between school climate and student achievement.

An analysis was completed using a linear regression. The researcher initially planned to use the data created by the Hierarchical Cluster Analysis to run the regression. However, to perform a regression one needs multiple observations. This could not be achieved using the clustered data so the regressions were run using data from the individual 55 schools. The regression analysis was chosen because it makes a prediction of one variable from others whereas an ANOVA focuses on differences across the group (Keith, 2006). This study had multiple independent variables, each of which had a possible influence on student achievement. By analyzing the data using multivariate linear regression analysis, this study was able to use multiple independent variables associated with school climate to explain variation in the dependent variable,

student achievement. This study analyzed the impact of each of the five individual factors measured by the School Climate Survey upon student achievement. The regression also analyzed the relationship between the perceptions of each group of stakeholders and student achievement. This process would seek to determine if there was a variation between these individual variables and student achievement.

### Summary of Methodology

This study investigated the relationship between school climate and student achievement in elementary schools in a selected school division. The factors that shaped school climate and the perceptions of students, parents, and educators in regard to school climate were also studied. The population for this study was 55 elementary schools from a school division in Virginia. The 55 schools in that school division were clustered using Hierarchical Clustering. Descriptive data from each school were downloaded onto an Excel spread sheet. These data were used to calculate a mean, standard deviation score, and z-score for each school. The z-scores for each school and each reporting category were then entered into SPSS and clustered using the Johnson Max Process. The databases or Climate Index produced through this process were analyzed to determine if a relationship existed between school climate and student achievement. An analysis using linear regression which included ANOVAs, t-tests, and Pearson Correlations were completed on climate and student achievement data to determine the impact of each of the five individual factors measured by the School Climate Survey upon student achievement. The linear

regression also analyzed the relationship between the perceptions of each group of stakeholders and student achievement.

If this study establishes a relationship between *school climate* and *student achievement*, administrators could use those data to develop strategies to improve the climate within individual schools. If an individual factor impacted student achievement more than other factors school leaders could allocate resources where they would be most effective. For instance, if instructional programs had a greater impact on student achievement than other factors additional resources could be expended on staff development that focuses on instructional strategies. However, if student achievement was impacted more by communication then administrators would need to allocate resources to systems that improve communication between the school and its stakeholders. Administrators could use these data to focus resources to those factors that have the greatest impact on student achievement.

## CHAPTER 4

### PRESENTATION OF DATA

#### Introduction

Chapter 4 includes the purpose and population of this study followed by research questions and methodology procedures. Also included is a presentation of data followed by concluding remarks.

The purpose of this study was to investigate the relationship between school climate and student achievement in elementary schools located in a selected school division. Of particular interest was the relationship of individual school climate factors with student achievement. These factors include: instructional programming, interpersonal relationships, safety/discipline, communication/collaboration, and physical environment. Another area of interest was the perspectives of various stakeholders in regard to school climate and if their perspectives impacted student achievement.

*The overarching question for this study was as follows:*

What is the relationship between school climate as reflected by the 2008 School Climate Survey and student achievement as reflected on the 2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math?

*Subordinate Questions:*

1. How do individual factors, instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment impact student achievement?

2. If a relationship exists between school climate and student achievement, is there a significant difference in that relationship in regard to the achievement of individual subgroups: Black, Asian, Hispanic, and White, low socio-economic status (SES), and students with disabilities (SWD)?
3. How do the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey, relate to student achievement?

### Methodology

The population for this study was the 55 elementary schools located within the selected school division. There were a total of 57 elementary schools in the school division. However, two of the schools were identified as lower primary and did not have a fifth grade class; therefore, they were not included. This study focused on the academic achievement of 5,346 fifth grade students enrolled in these schools in the fall of 2007-2008. The fifth grade population was composed of 27% Black, 56% White, 5% Hispanic, and 5% Asian. The school division had an enrollment of 11% SWD and 30% low SES in fifth grade.

For the purposes of this study, data from the 2007-2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math were used to measure student achievement. The math and reading SOL tests were analyzed separately to determine any variance in their relationship with school climate. The *pass* percentages were analyzed for the total fifth grade as well as the following NCLB identified subgroups: White, Black, low SES and SWD. The *pass* percentages of students who receive free or reduced lunch are those reported

under low SES. Data on instructional programming, interpersonal relationships, communication/ collaboration, safety/discipline, and physical environment came from the school division's fifth grade 2008 Annual School Climate Survey and were used to measure school climate. The data for both the Virginia SOL tests and the climate survey were obtained from the school division's archived data base.

The Virginia Department of Education directed local school boards to use the Standards of Learning (SOL) tests in reading and math as the assessment to meet the AYP requirements of NCLB and state accreditation. This study used the *pass proficient* and *pass advanced* percentages for the spring 2008 fifth grade Virginia SOL tests in reading and math to measure student achievement. Disaggregated data for the identified subgroups of race, social economic status, and students with disabilities were included in the analysis.

Data on school climate for each of the 55 elementary schools came from the school division's archived database. Data on instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment came from the division's fifth grade 2008 Annual School Climate Survey. The survey was used by the school division to measure the perceptions of three groups of stakeholders, educators, parents, and students. The 2007-2008 Virginia SOL tests and the climate survey used in this study were administered in the late spring of 2008.

The 2008 Annual School Climate Survey was administered to three groups of stakeholders: fifth grade students, all parents who have students in the

elementary school, and all educators within each elementary school. Teachers, building administrators, counselors, teacher assistants and other educational staff are included in the educators category. The survey response rate for each group varied. The student response rate was 95%, the response rate for parents was 24%, and for educators the rate was 67%. The school climate response rates for each school are displayed in Appendix D. Questions from the School Climate Survey are displayed in Appendix E.

This study incorporated a quantitative research design using descriptive statistics. School climate and student achievement data for each school was downloaded onto a spreadsheet by the selected school division. They entered the percentage of agreement for each of the five factors on the 2008 School Climate Survey. These factors included instructional programming, interpersonal relationships, communication/ collaboration, safety/discipline, and physical environment. This spreadsheet is referred to as the Climate Data Spreadsheet (CDS) and was used as a method to store climate data for further analysis.

The same method was used to organize the student achievement data. The school division downloaded the *pass* percentages from the 2008 fifth grade reading and math SOL tests for each NCLB identified subgroup: Black, White, Hispanic, Asian; low socio-economic status (SES); and student with disabilities (SWD), into an Excel spreadsheet. This spreadsheet was referred to as the Student Achievement Spreadsheet (SAS) and was used to store student achievement data until needed for further analysis. The CDS and SAS contained data for each of the 55 elementary schools. The names of individual schools

were removed by the school division and replaced with randomly selected numeric codes. This method facilitated the use of data for each elementary school without identifying specific schools.

For the purpose of this study, Hierarchical Clusters were created using data from each elementary school. Descriptive data were collected for each of these identified subgroups: Black, White, SWD, and low SES, and for the following reporting categories; the fall membership for the school, and percentage of each particular subgroup within the total fifth grade population. These data were downloaded into an Excel spreadsheet and used to calculate a mean, standard deviation score, and z-score. A separate z-score was calculated for each of the four subgroups and for each of the 55 elementary schools. The z-scores for each school were calculated to facilitate a Hierarchical Cluster Analysis using SPSS.

The z-scores were calculated by rescaling the number of students in each subgroup per 10 students for each elementary school, then subtracting the mean of the distribution from the statistic for each subgroup and dividing the difference from the distribution standard deviation score. The z-scores for each school and each subgroup were then entered into SPSS and grouped according to like factors. This process is called Hierarchical Clustering (Smith, 2005). The demographic data used to cluster schools is displayed in Appendix F. The selected school division provided a large volume of raw data from the 55 individual schools. The schools were clustered as a method to facilitate the analysis of that data. This process allowed the researcher to separate data into



more manageable clusters. The climate data collected from the School Climate Survey and student achievement from the Virginia SOL tests in reading and math were grouped by cluster on spreadsheets. Four clusters included all fifty-five elementary schools that enrolled fifth grade students. The clustered elementary schools are displayed in Appendix G.

These data were sorted by cluster and downloaded into spreadsheets. Achievement data for the Hispanic and Asian subgroups were not downloaded to the cluster spreadsheets. The state does not report *pass* rates for subgroups with less than ten students in an individual school's fifth grade population. The *pass* rates for both the Hispanic and Asian subgroups were reported for seven of the 55 schools included in this study. The state Department of Education did not report the achievement of Hispanic and Asian students in 48 schools as their populations were too small. Because of the small enrollment of Hispanic and Asian students, the calculations made during analysis would not be statistically accurate. As each of these subgroups was underrepresented, they were not included in the analysis.

The cluster process resulted in four clusters. Cluster One contained thirty-five schools; Cluster Two contained twelve schools; Cluster Three contained two schools; and Cluster Four contained six schools. The clustered data produced from this process were analyzed to determine trends between school climate and student achievement in schools with similar demographics.

The data from the School Climate Survey included the response rates for each question associated with a particular factor: instructional programming, interpersonal relationships, communication/ collaboration, safety/discipline, and physical environment. The number of questions for each of the five factors varied and ranged from 4 to 28 questions. Each question had four possible responses: *strongly agree*, *agree*, *disagree*, and *strongly disagree*. The data for the survey contained the percentage of respondents in each group of stakeholders (students, parents, educators) who responded for each response *strongly agree*, *agree*, *disagree* and *strongly disagree* for each question and under each factor. To facilitate analysis of the data the researcher averaged the percentages of respondents who responded *strongly agree* to each question under a particular factor. This process was followed for each of the three groups of stakeholders (students, parents, educators). A separate percentage was produced for the *strongly agree* responses, *agree* responses, *disagree* responses, and *strongly disagree* responses for each group. This method produced 12 statistics for each factor these included the percentage of *strongly agree* responses, *agree* *disagree* responses, responses, and *strongly disagree* responses for each of the three groups of stakeholders. This method was repeated for each of the five factors. Twelve statistics for each of the five factors repeated for each of the 55 schools. The averaged percentages for each school were entered on a spreadsheet to be used in the regression analysis. A second spreadsheet was used to separate the data into the clusters created by the cluster analysis. Individual school percentages were averaged to produce a *strongly agree*, *agree*,

*disagree* and *strongly disagree* percentage for each of the five factors under each of the four clusters.

An analysis was completed using a linear regression. The researcher initially planned to use the data created by the Hierarchical Cluster Analysis to run the regression. However, to perform a regression, one needs multiple observations. This could not be achieved using the clustered data so the regressions were run using data from the 55 individual schools. The regression analysis was chosen because it makes a prediction of one variable from others, whereas an ANOVA focuses on differences across the group (Keith, 2006). This study had multiple independent variables, each of which had a possible influence on student achievement. By analyzing the data using linear regression analysis, this study was able to use multiple independent variables associated with school climate to explain variation in the dependent variable; student achievement. The impact of each of the five individual factors measured by the School Climate Survey upon student achievement was studied. The regression also analyzed the relationship between the perceptions of each group of stakeholders and student achievement. This process was used to determine if there was a variation between these individual variables and student achievement.

The linear regression was run using SPSS and included ANOVAs, t-tests, and Pearson correlations. The analysis investigated the impact of each of the five individual factors as measured by the School Climate Survey on student achievement. The regression also analyzed the relationship between the perceptions of each group of stakeholders and student achievement. This

process sought to determine if there was a variation between these individual variables and student achievement. Initially the regression was set up to run with clustered data. However, to perform a regression one needs multiple observations. This could not be achieved using the clustered data so the regressions were set up using data from the individual 55 schools.

The regressions were run using the *pass advance* or *pass proficient* percentage for each of the subgroups as the dependent variable (*DV*). The *strongly agree* (*SA*) and *agree* (*A*) percentage for each group of stakeholders, students, parents and educators, were entered as the independent variable (*IV*). The analysis was run as a series of regressions each using the *pass* percentage for one subgroup as the *DV*. The response percentages were entered one factor at a time. In this process a series of regressions were run for each of the five factors of school climate. In addition the *pass* rates for math and reading were run separately as well. There were twenty regressions run for each of the five factors. Ten were run using the reading *pass* percentages and ten using the math percentage. A total of 100 regressions were run. The regressions produced 77 significant correlations between school climate and student achievement. A second set of regressions was run on each of those 77 correlations individually to double check the findings.

### Presentation of Data

There were 55 elementary schools included in this study. The schools were grouped into four clusters based on like factors. The clusters varied greatly

in size: Cluster One was the largest, consisting of thirty-five schools; Cluster Two contained twelve schools; Cluster Four had six schools; and Cluster Three consisted of two schools. Cluster One's fifth grade population was the largest with 3,248 students. Cluster Three contained the smallest number of member schools which was two, and the smallest fifth grade population, one hundred seven students. The clusters were analyzed to describe the relationship between school climate and student achievement.

Cluster One contains thirty-five ( $n = 35$ ) elementary schools. Its fifth grade population was 3,248. Member schools had an average fifth grade enrollment of 93 students. Cluster One's fifth grade population included 27% Black, 53% White, 12% SWD, and 32% low SES.

Cluster Two contained twelve ( $n = 12$ ) elementary schools. Its fifth grade population was 1,437. Member schools had an average fifth grade enrollment of 120 students. Cluster Two's fifth grade population included 7% Black, 80% White, 8% SWD, and 11% low SES.

Cluster Three contained two ( $n = 2$ ) elementary schools. Its fifth grade population was 107. Member schools had an average fifth grade enrollment of 54 students. Cluster Three's fifth grade population included 21% Black, 66% White, 20% SWD, and 33% low SES.

Cluster Four contained six ( $n = 6$ ) elementary schools. Its fifth grade population was 631. Member schools had an average fifth grade enrollment of

105 students. Cluster Four's fifth grade population included 60% Black, 24% White, 14% SWD, and 60% low SES.

NCLB requires improvement in academic performance for the following identified subgroup categories: Black, Asian, Native American, Hispanic, and White; low socio-economic status (SES); limited English proficiency (LEP); and students with disabilities (SWD) (U.S. Department of Education, 2002). Four subgroups of students were included in each cluster: Black, White, SWD, and low SES. The Hispanic, Asian, and LEP subgroups were not included as their numbers were too low in the majority of schools within this division to have their SOL scores published by the state.

Cluster Four had the highest percentage of Black students at 60%, and Cluster Two had the lowest percent of Black students at 7%. Cluster Two had the largest percentage of White students, 80% and Cluster Four had the lowest percentage of White students at 24%. Cluster Three contained the highest percent of SWD, 20%. Cluster Four had the highest percentage of Black students, 60%, and Cluster Two had the lowest percent of Black students, 7%. Cluster Two had the largest percentage of White students, 80%, and Cluster Four had the lowest percentage of White students, 24%. Cluster Three contained the highest percent of SWD, 20%. Cluster Two contained the smallest percentage of SWD, 8%. Cluster Four contained the largest percentage low SES, 66%, while Cluster Two had the smallest percentage low SES, 11%.

Cluster One contained a student population that was 27% Black, 53% White, 12% SWD, and 32% low SES. Cluster Two contained a student population that was 7% Black, 80% White, 8% SWD, and 11% low SES. Cluster Three contained a student population that was 21% Black, 66% White, 20% SWD, and 33% low SES. Cluster Four contained a student population that was 60% Black, 24% White, 14% SWD, and 66% low SES.

The purpose of this study was to investigate the relationship between school climate and student achievement. For the purposes of this study, the selected school division's School Climate Survey was used to measure school climate which was divided into five individual factors: instructional programming, interpersonal relationships, safety/discipline, communication/collaboration, and physical environment. How each of those factors impacted school climate was also of interest to the researcher, as were the perceptions of individual stakeholders, students, parents, and educators, as reflected on the School Climate Survey.

Data for each elementary school were clustered on spreadsheets using the demographics found in Table 1. Climate data were downloaded onto the Climate Data Spreadsheet, CDS, and is displayed in Appendix H. Student Achievement data were downloaded onto the Student Achievement Spreadsheet SAS, and is displayed in Appendix I.

Table 1

*Demographics of Each Cluster*

<u>Cluster</u>	<u>N</u>	<u>5th</u> <u>07/08</u>	<u>5th Avg.</u> <u>Enrollment</u>	<u>% Black</u>	<u>%White</u>	<u>%SWD</u>	<u>% low</u> <u>SES</u>
1	35	3,248	93	27	53	12	32
2	12	1,437	120	7	80	8	11
3	2	107	54	21	66	20	33
4	6	631	105	60	24	14	66
Tot/Avg.	55	5,423	93	29	56	13	36

School Climate Data

Tables 2 to 6 display data illustrating how each cluster responded to each factor included in the School Climate Survey. Four possible responses are reported on the tables *strongly agree (SA)*, *agree (A)*, *disagree (D)*, and *strongly disagree (SD)*. A response of *strongly agree* or *agree* with the questions on the survey would be considered a positive response. For the purpose of this study a positive response was an affirmation indicating healthy school climate. If the percentage of those who answer *strongly agree* were higher than those who respond *agree*, then the degree of agreement was stronger. The inverse was also true; if the percentage of those responding *agree* were higher, the agreement for that factor was lower. A negative response of *disagree* indicated an unhealthy school climate. A response of *strongly disagree* indicated a higher



degree of disagreement than a response of *disagree*. Appendix E contains the questions for each factor. Factor One focused on the Instruction and Academic Support component of School Climate. The questions associated with this factor were those that investigate student achievement, delivery of a quality education, and expectations in regard to student learning.

Each of the following five tables includes data representative of one of the five factors that compose student achievement. The title for the table includes the specific factor for which the data in that table is representative. The first column in the table indicates who the survey respondent was: students, parents or educators. The second column identifies the type of agreement given by the respondent and includes *strongly agree*, *agree*, *combined agree*, *disagree*, and *strongly disagree*. The next four columns give the percentage of respondents who gave that response in regard to this particular factor. Each of these four columns represents one of the four clusters. The last column contains the mean for each row. In regard to the type of agreement only *strongly agree* and *agree* percentages will be used in the regression analysis. *Combined agree* responses were included as they were studied in an attempt to find trends. Most of the clusters had agreement percentages with each specific factor in the 90 percentile range. The percentages for *disagree* and *strongly disagree* were included in the table as another point of reference and were not included in later analysis. The data in Table 2 is based on respondent's agreement with Factor One. This factor is focused on instructional programming and academic support.

Table 2

*Clustered Responses by % to Factor One on the School Climate Survey*

<u>Survey Responses</u>		<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
		<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
Students	<i>strongly agree</i>	52	52	52	55	53
Students	<i>agree</i>	41	40	40	36	39
Students	<i>combined agree</i>	93	92	92	91	92
Students	<i>disagree</i>	6	6	7	6	6
Students	<i>strongly disagree</i>	1	2	1	3	2
Parents	<i>strongly agree</i>	44	50	46	39	45
Parents	<i>agree</i>	50	45	48	53	49
Parents	<i>combined agree</i>	94	95	94	92	94
Parents	<i>disagree</i>	5	4	4	6	5
Parents	<i>strongly disagree</i>	1	1	1	2	1
Educators	<i>strongly agree</i>	62	74	57	44	59
Educators	<i>agree</i>	34	24	38	46	36
Educators	<i>combined agree</i>	96	98	95	90	95
Educators	<i>disagree</i>	3	1	4	8	4
Educators	<i>strongly disagree</i>	1	1	1	2	1
Cluster	<i>strongly agree</i>	53	59	50	45	52
Cluster	<i>agree</i>	42	36	42	45	41
Cluster	<i>combined agree</i>	95	95	92	90	93

The stakeholders in Cluster One responded (responses arranged by cluster) as follows: students ( $SA = 52\%$ ) and ( $A = 41\%$ ), parents ( $SA = 44\%$ ) and ( $A = 50\%$ ), educators ( $SA = 62\%$ ) and ( $A = 34\%$ ), and cluster mean ( $SA = 53\%$ ) and ( $A = 42\%$ ). The stakeholders in Cluster Two responded as follows: students ( $SA = 52\%$ ) and ( $A = 40\%$ ), parents ( $SA = 50\%$ ) and ( $A = 45\%$ ), educators ( $SA = 74\%$ ) and ( $A = 24\%$ ), and cluster mean ( $SA = 59\%$ ) and ( $A = 36\%$ ). The stakeholders in Cluster Three responded as follows: students ( $SA = 52\%$ ) and ( $A = 40\%$ ), parents ( $SA = 46\%$ ) and ( $A = 49\%$ ), educators ( $SA = 57\%$ ) and ( $A = 38\%$ ), and cluster mean ( $SA = 50\%$ ) and ( $A = 42\%$ ). The stakeholders in Cluster Four responded as follows: students ( $SA = 55\%$ ) and ( $A = 36\%$ ), parents ( $SA = 39\%$ ) and ( $A = 53\%$ ), educators ( $SA = 44\%$ ) and ( $A = 46\%$ ), and cluster mean ( $SA = 45\%$ ) and ( $A = 45\%$ ).

In regard to Factor One, students responded (responses reported by stakeholder) as follows: Cluster One, ( $SA = 52\%$ ) and ( $A = 41\%$ ), Cluster Two, ( $SA = 52\%$ ) and ( $A = 40\%$ ), Cluster Three, ( $SA = 52\%$ ) and ( $A = 40\%$ ), Cluster Four, ( $SA = 55\%$ ) and ( $A = 36\%$ ). Parents responded as follows: Cluster One, ( $SA = 44\%$ ) and ( $A = 50\%$ ), Cluster Two, ( $SA = 50\%$ ) and ( $A = 45\%$ ), Cluster Three, ( $SA = 46\%$ ) and ( $A = 49\%$ ), Cluster Four, ( $SA = 39\%$ ) and ( $A = 53\%$ ). Educators responded as follows: Cluster One, ( $SA = 62\%$ ) and ( $A = 34\%$ ), Cluster Two, ( $SA = 74\%$ ) and ( $A = 24\%$ ), Cluster Three, ( $SA = 57\%$ ) and ( $A = 38\%$ ), and Cluster Four, ( $SA = 44\%$ ) and ( $A = 46\%$ ).

In regard to Factor One, the *combined agreement (CA)* for each cluster represents the percentage of total agreement and is derived by combining the

(SA) and (A) percentages as follows: Cluster One students (CA = 93%), parents (CA = 94%), educators (CA = 95%), and clusters (CA = 95%); Cluster Two students (CA = 92%), parents (CA = 95%), educators (CA = 98%), and clusters (CA = 95%); Cluster Three students (CA = 92%), parents (CA = 95%), educators (CA = 98%), and clusters (CA = 95%); Cluster Four students (CA = 91%), parents (CA = 92%), educators (CA = 86%), Clusters (CA = 90%). See Appendix J for the combined agreement for all five factors.

Factor One is focused on instructional programming and academic support. Across all four clusters there was 90% agreement by all three groups of stakeholders with Factor One. The degree of agreement to Factor One across clusters and stakeholders was the highest among the five factors. Educators responded with higher *agree* percentages to Factor One, than any of the other factors. Students marked *strongly agree* at a higher percentage than other stakeholders. Parents demonstrated the lowest degree of agreement. The responses of parents across all four clusters were very closely aligned. Educators responses to Factor One were similar to the parents responses but reflected more variance than that seen in either students or parents responses.

The second factor of school climate was Interpersonal Relationships. The questions associated with Factor Two were those that investigated relationships; student treatment of one another; respect (student to student, student to teacher, teacher to student); student sense of belonging; diversity; and overall positive atmosphere.

Table 3

*Clustered Responses by % to Factor Two on the School Climate Survey*

<u>Survey Responses</u>		<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
		<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
Students	<i>strongly agree</i>	35	40	35	34	36
Students	<i>agree</i>	45	46	45	44	45
Students	<i>combined agree</i>	80	86	80	78	81
Students	<i>disagree</i>	15	12	13	16	14
Students	<i>strongly disagree</i>	5	2	7	6	5
Parents	<i>strongly agree</i>	43	48	44	36	42
Parents	<i>agree</i>	52	48	50	52	51
Parents	<i>combined agree</i>	95	96	94	88	93
Parents	<i>disagree</i>	4	3	4	9	5
Parents	<i>strongly disagree</i>	1	1	2	3	2
Educators	<i>strongly agree</i>	48	68	52	31	49
Educators	<i>agree</i>	46	30	45	54	44
Educators	<i>combined agree</i>	94	98	97	85	94
Educators	<i>disagree</i>	5	1	3	13	6
Educators	<i>strongly disagree</i>	1	1	0	2	1
Cluster	<i>strongly agree</i>	42	52	44	34	45
Cluster	<i>agree</i>	48	41	47	50	47

Cluster	<i>combined agree</i>	90	93	91	84	90
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In regard to Factor Two, the stakeholders in Cluster One responded (responses arranged by cluster) as follows: students ( $SA = 35\%$ ) and ( $A = 45\%$ ), parents ( $SA = 43\%$ ) and ( $A = 52\%$ ), educators ( $SA = 48\%$ ) and ( $A = 46\%$ ), cluster mean ( $SA = 42\%$ ) and ( $A = 48\%$ ). The stakeholders in Cluster Two responded as follows: students ( $SA = 40\%$ ) and ( $A = 46\%$ ), parents ( $SA = 48\%$ ) and ( $A = 48\%$ ), educators ( $SA = 68\%$ ) and ( $A = 30\%$ ), cluster mean ( $SA = 52\%$ ) and ( $A = 41\%$ ). The stakeholders in Cluster Three responded as follows: students ( $SA = 35\%$ ) and ( $A = 45\%$ ), parents ( $SA = 44\%$ ) and ( $A = 50\%$ ), educators ( $SA = 52\%$ ) and ( $A = 45\%$ ), and cluster mean ( $SA = 52\%$ ) and ( $A = 41\%$ ). The stakeholders in Cluster Four responded as follows: students ( $SA = 34\%$ ) and ( $A = 44\%$ ), parents ( $SA = 36\%$ ) and ( $A = 52\%$ ), educators ( $SA = 31\%$ ) and ( $A = 54\%$ ), cluster mean ( $SA = 34\%$ ) and ( $A = 50\%$ ).

In regard to Factor Two, students responded (responses reported by stakeholder group or respondent) as follows: Cluster One, ( $SA = 35\%$ ) and ( $A = 45\%$ ), Cluster Two, ( $SA = 43\%$ ) and ( $A = 52\%$ ), Cluster Three, ( $SA = 35\%$ ) and ( $A = 45\%$ ), Cluster Four, ( $SA = 34\%$ ) and ( $A = 44\%$ ). Parents responded as follows: Cluster One, ( $SA = 43\%$ ) and ( $A = 52\%$ ), Cluster Two, ( $SA = 48\%$ ) and ( $A = 48\%$ ), Cluster Three, ( $SA = 44\%$ ) and ( $A = 50\%$ ), Cluster Four, ( $SA = 36\%$ ) and ( $A = 52\%$ ). Educators responded as follows: Cluster One, ( $SA = 48\%$ ) and ( $A = 46\%$ ), Cluster Two, ( $SA = 68\%$ ) and ( $A = 30\%$ ), Cluster Three, ( $SA = 52\%$ ) and ( $A = 45\%$ ), Cluster Four, ( $SA = 31\%$ ) and ( $A = 54\%$ ).

In regard to Factor Two, the *combined agreement (CA)* for each cluster represents the percentage of total agreement and is derived by combining the (SA) and (A) percentages as follows: Cluster One students (CA = 80%), parents (CA = 95%), educators (CA = 94%), and clusters (CA = 90%), Cluster Two students (CA = 86%), parents (CA = 96%), educators (CA = 98%) and clusters (CA = 93%), Cluster Three students (CA = 80%), parents (CA = 94%), educators (CA = 97%) and clusters (CA = 91%), Cluster Four students (CA = 78%), parents (CA = 88%), educators (CA = 85%) clusters (CA = 84%).

In regard to Factor Two, Cluster Two, had the highest *strongly agree* percentage (SA = 52%). They were followed by Cluster One (SA = 42%), and Cluster Three (SA = 35%). The lowest percentage was reported for Cluster Four (SA = 34%). The students across clusters had a higher *agree* than *strongly agree* percentage in regard to Factor Two. This would represent a lower degree of agreement. Parents in three of the four clusters had a higher *agree* percentage than *strongly agree* in regard to Factor Two. Educators differed from students and parents as the only group that had a majority of clusters with a higher *strongly agree* percentage in regard to Factor Two. The combined cluster percentages for Factor Two reveal Cluster Two had a higher *strongly agree* percentage. The other three clusters had a higher *agree* percentage. Cluster Two, had the highest *strongly agree* percentage, (SA = 52%). This was also the only cluster that reported a higher *strongly agree* than *agree* percentage. The highest *agree* percentage came from Cluster Four was (A = 50%).

The third factor of school climate was Communication, Collaboration, and Involvement. The questions associated with Factor Three are those that investigated a school's encouragement of parental involvement, effective communication, and opportunities to provide input. In regard to Factor Three the stakeholders in Cluster One responded (responses arranged by cluster) as follows: students (SA= 41%) and (A = 45%), parents (SA = 46%) and (A = 48%), educators (SA = 55%) and (A = 37%), cluster mean (SA = 47%) and (A =43%). The stakeholders in Cluster Two responded as follows: students (SA = 41%) and (A = 45%), parents (SA = 51%) and (A = 44%), educators (SA = 67%) and (A = 29%), cluster mean (SA = 53%) and (A = 39%). The stakeholders in Cluster Three responded as follows: students (SA = 44%) and (A = 45%), parents (SA = 48%) and (A = 44%), educators (SA = 42%) and (A = 44%), cluster mean (SA = 45%) and (A = 44%). The stakeholders in Cluster four responded as follows: students (SA = 45%) and (A = 41%), parents (SA = 45%) and (A = 47%), educators (SA = 41%) and (A = 46%), cluster mean (SA = 44%) and (A = 45%).

In regard to Factor Three, students responded (responses reported by stakeholder) as follows: Cluster One, (SA = 41%) and (A = 45%), Cluster Two, (SA = 41%) and (A = 45%), Cluster Three, (SA = 44%) and (A =45%), Cluster Four, (SA = 45%) and (A = 41%). Parents responded as follows: Cluster One, (SA = 46%) and (A = 48%), Cluster Two, (SA = 51%) and (A = 44%), Cluster Three, (SA = 48%) and (A = 44%), Cluster Four, (SA = 45%) and (A = 47%). Educators responded as follows: Cluster One, (SA = 55%) and (A = 37%); Cluster Two, (SA = 67%) and (A = 29%), Cluster Three, (SA = 42%) and



Table 4

*Clustered Responses by % to Factor Three on the School Climate Survey*

<u>Survey Responses</u>		<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
		<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
Students	<i>strongly agree</i>	41	41	44	45	43
Students	<i>agree</i>	45	45	45	41	44
Students	<i>combined agree</i>	86	86	89	86	87
Students	<i>disagree</i>	10	11	8	9	9
Students	<i>strongly disagree</i>	4	3	3	5	4
Parents	<i>strongly agree</i>	46	51	48	45	47
Parents	<i>agree</i>	48	44	45	47	46
Parents	<i>combined agree</i>	94	95	93	92	94
Parents	<i>disagree</i>	5	4	5	6	5
Parents	<i>strongly disagree</i>	1	1	2	2	2
Educators	<i>strongly agree</i>	55	67	42	41	51
Educators	<i>agree</i>	37	29	44	46	39
Educators	<i>combined agree</i>	92	96	86	87	90
Educators	<i>disagree</i>	6	3	10	10	7
Educators	<i>strongly disagree</i>	2	1	4	3	3
Cluster	<i>strongly agree</i>	47	53	45	44	47
Cluster	<i>agree</i>	43	39	44	45	43

Cluster	<i>combined agree</i>	90	92	89	89	90
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(A = 44%), Cluster Four (SA = 41%) and (A = 46%).

In regard to Factor Three, the *combined agreement (CA)* for each cluster represents the percentage of total agreement and is derived by combining the (SA) and (A) percentages as follows: Cluster One, students (CA = 86%), parents (CA = 94%), educators (CA = 92%) clusters (CA = 90%); Cluster Two, students (CA = 86%), parents (CA = 95%), educators (CA = 92%), clusters (CA = 92%); Cluster Three, students (CA = 89%), parents (CA = 92%), educators (CA = 86%) cluster (CA = 89%); Cluster Four, students (CA = 86%), parents (CA = 92%), educators (CA = 87%) clusters (CA = 89%).

Student responded with a higher *agree* percentage. Both parents and educators split their responses between *strongly agree* and *agree* giving them a slightly higher degree of agreement than the student responses. Cluster Two, had the highest *strongly agree* percentage, and Cluster Four, had the highest *agree* percentage.

The Fourth factor of school climate included on the survey was Safety and Discipline. The questions associated with Factor Four were those that investigated communication of expectations to students, communication of consequences, equity of rules and consequences, safe learning environment.

In regard to Factor Four, the stakeholders in Cluster One

responded (responses arranged by cluster) as follows: students ( $SA = 60\%$ ) and ( $A = 33\%$ ), parents ( $SA = 55\%$ ) and ( $A = 41\%$ ), educators ( $SA = 50\%$ ) and ( $A = 37\%$ ), cluster mean ( $SA = 55\%$ ) and ( $A = 37\%$ ). The stakeholders in Cluster Two responded as follows: students ( $SA = 59\%$ ) and ( $A = 34\%$ ), parents ( $SA = 59\%$ ) and ( $A = 38\%$ ), educators ( $SA = 63\%$ ) and ( $A = 29\%$ ), cluster mean ( $SA = 60\%$ ) and ( $A = 34\%$ ). The stakeholders in Cluster Three responded as follows: students ( $SA = 62\%$ ) and ( $A = 30\%$ ), parents ( $SA = 53\%$ ) and ( $A = 42\%$ ), educators ( $SA = 44\%$ ) and ( $A = 40\%$ ), cluster mean ( $SA = 53\%$ ) and ( $A = 37\%$ ). The stakeholders in Cluster Four responded as follows: students ( $SA = 59\%$ ) and ( $A = 33\%$ ), parents ( $SA = 52\%$ ) and ( $A = 43\%$ ), educators ( $SA = 36\%$ ) and ( $A = 43\%$ ), cluster mean ( $SA = 49\%$ ) and ( $A = 40\%$ ).

In regard to Factor Four, students responded (responses reported by stakeholder) as follows: Cluster One, ( $SA = 60\%$ ) and ( $A = 33\%$ ), Cluster Two, ( $SA = 59\%$ ) and ( $A = 34\%$ ), Cluster Three, ( $SA = 62\%$ ) and ( $A = 30\%$ ), Cluster Four, ( $SA = 59\%$ ) and ( $A = 33\%$ ). Parents responded as follows: Cluster One, ( $SA = 55\%$ ) and ( $A = 41\%$ ), Cluster Two, ( $SA = 59\%$ ) and ( $A = 38\%$ ), Cluster Three, ( $SA = 53\%$ ) and ( $A = 42\%$ ), Cluster Four, ( $SA = 52\%$ ) and ( $A = 43\%$ ). Educators responded as follows: Cluster One, ( $SA = 50\%$ ) and ( $A = 37\%$ ), Cluster Two, ( $SA = 63\%$ ) and ( $A = 29\%$ ), Cluster Three, ( $SA = 44\%$ ) and ( $A = 40\%$ ), Cluster Four, ( $SA = 36\%$ ) and ( $A = 43\%$ ).

Table 5

*Clustered Responses by % to Factor Four on the School Climate Survey*

<u>Survey Responses</u>		<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
		<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
Students	<i>strongly agree</i>	60	59	62	59	60
Students	<i>agree</i>	33	34	30	33	33
Students	<i>combined agree</i>	93	93	92	92	93
Students	<i>disagree</i>	5	5	6	5	5
Students	<i>strongly disagree</i>	2	2	2	3	2
Parents	<i>strongly agree</i>	55	59	54	52	55
Parents	<i>agree</i>	41	38	42	43	41
Parents	<i>combined agree</i>	96	97	96	95	96
Parents	<i>disagree</i>	3	2	3	3	3
Parents	<i>strongly disagree</i>	1	1	1	2	1
Educators	<i>strongly agree</i>	50	63	44	36	48
Educators	<i>agree</i>	36	29	40	43	37
Educators	<i>combined agree</i>	86	92	84	79	85
Educators	<i>disagree</i>	6	7	14	14	10
Educators	<i>strongly disagree</i>	2	1	2	6	3
Cluster	<i>strongly agree</i>	55	60	53	49	54
Cluster	<i>agree</i>	37	34	37	40	37

Cluster	<i>combined agree</i>	92	94	90	89	91
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In regard to Factor Four, the *combined agreement (CA)* for each cluster represents the percentage of total agreement and is derived by combining the (SA) and (A) percentages as follows: Cluster One, students (CA = 93%), parents (CA = 96%), educators (CA = 87%) clusters (CA = 92%); Cluster Two, students (CA = 93%), parents (CA = 97%), educators (CA = 92%) clusters (CA = 94%); Cluster Three, students (CA = 92%), parents (CA = 95%), educators (CA = 84%) clusters (CA = 90%); Cluster Four, students (CA = 92%), parents (CA = 95%), educators (CA = 79%) clusters (CA = 89%).

Factor Four had greater consistency in stakeholder responses than that found in the first three factors. The clusters' combined percentages reflected higher *strongly agree* percentages than *agree* percentages across clusters. Both students and parents had a rate of agreement with Factor Four in the 90% range. Educators differ from other stakeholders with a lower agreement rate in regard to Factor Four. This lower agreement is reflected to a higher degree in Cluster Two which had the highest *strongly agree* percentages and Cluster Four which had the lowest *strongly agree* percentages.

This pattern was reversed in regard to the *agree* percentage. Cluster Four had the highest *agree* percentage and Cluster Two had the lowest *agree* percentage. This continued the trend noted in the first three factors.

The fifth factor of school climate included was physical school environment. The questions associated with Factor Five were those that investigated facility appearance, cleanliness, maintenance, and usability.

In regard to Factor Five, the stakeholders in Cluster One responded (responses arranged by cluster) as follows: students ( $SA = 40\%$ ) and ( $A = 0\%$ ), parents ( $SA = 57\%$ ) and ( $A = 40\%$ ), educators ( $SA = 52\%$ ) and ( $A = 40\%$ ), cluster mean ( $SA = 50\%$ ) and ( $A = 40\%$ ). The stakeholders in Cluster Two responded as follows: students ( $SA = 40\%$ ) and ( $A = 39\%$ ), parents ( $SA = 53\%$ ) and ( $A = 41\%$ ), educators ( $SA = 48\%$ ) and ( $A = 40\%$ ), cluster mean ( $SA = 47\%$ ) and ( $A = 40\%$ ). The stakeholders in Cluster Three responded as follows: students ( $SA = 49\%$ ) and ( $A = 37\%$ ), parents ( $SA = 66\%$ ) and ( $A = 32\%$ ), educators ( $SA = 40\%$ ) and ( $A = 24\%$ ), cluster mean ( $SA = 52\%$ ) and ( $A = 31\%$ ). The stakeholders in Cluster Four responded as follows: students ( $SA = 34\%$ ) and ( $A = 37\%$ ), parents ( $SA = 43\%$ ) and ( $A = 50\%$ ), educators ( $SA = 31\%$ ) and ( $A = 49\%$ ), cluster mean ( $SA = 36\%$ ) and ( $A = 45\%$ ).

In regard to Factor Five, students responded as follows: Cluster One, ( $SA = 40\%$ ) and ( $A = 40\%$ ), Cluster Two, ( $SA = 40\%$ ) and ( $A = 39\%$ ), Cluster Three, ( $SA = 49\%$ ) and ( $A = 37\%$ ), Cluster Four, ( $SA = 34\%$ ) and ( $A = 37\%$ ). Parents responded as follows: Cluster One, ( $SA = 57\%$ ) and ( $A = 40\%$ ), Cluster Two, ( $SA = 53\%$ ) and ( $A = 41\%$ ), Cluster Three, ( $SA = 66\%$ ) and ( $A = 32\%$ ), Cluster Four,

Table 6

*Clustered Responses by % to Factor Five on the School Climate Survey*

<u>Survey Responses</u>		<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
		<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
Students	<i>strongly agree</i>	40	40	49	34	41
Students	<i>agree</i>	40	39	37	37	38
Students	<i>combined agree</i>	80	79	86	71	79
Students	<i>disagree</i>	13	13	9	18	13
Students	<i>strongly disagree</i>	7	8	5	11	8
Parents	<i>strongly agree</i>	57	53	66	43	55
Parents	<i>agree</i>	40	41	32	50	41
Parents	<i>combined agree</i>	97	94	98	93	96
Parents	<i>disagree</i>	3	5	1	5	4
Parents	<i>strongly disagree</i>	0	1	1	2	1
Educators	<i>strongly agree</i>	52	48	40	31	43
Educators	<i>agree</i>	40	40	24	49	38
Educators	<i>combined agree</i>	92	88	64	80	81
Educators	<i>disagree</i>	7	9	36	15	17
Educators	<i>strongly disagree</i>	1	3	0	5	25
Cluster	<i>strongly agree</i>	50	47	52	36	46
Cluster	<i>agree</i>	40	40	31	45	39

Cluster	<i>combined agree</i>	90	87	83	81	85
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(SA = 43%) and (A = 50%). Educators responded as follows: Cluster One, (SA = 52%) and (A = 40%); Cluster Two, (SA = 48%) and (A = 40%), Cluster Three, (SA = 40%) and (A = 24%), Cluster Four, (SA = 31%) and (A = 49%).

In regard to Factor Five, the *combined agreement (CA)* for each cluster represents the percentage of total agreement and is derived by combining the (SA) and (A) percentages as follows: Cluster One, students (CA = 80%), parents (CA = 97%), educators (CA = 92%) clusters (CA = 90%); Cluster Two, students (CA = 79%), parents (CA = 94%), educators (CA = 88%) clusters (CA = 87%); Cluster Three, students (CA = 86%), parents (CA = 98%), educators (CA = 64%) clusters (CA = 83). Cluster Four, students (CA = 71%), parents (CA = 93%), educators (CA = 80%), clusters (CA = 81%).

Factor Five focused on the physical school environment. This factor received the lowest agreement percentages among the five factors. The gap between Factor Five's agreement percentage and the percentages of the other factors was between five and eight percent. In regard to Factor Five both students and educators recorded their highest disagree percentages.

#### Student Achievement Data

The data contained in Tables 2 to 6 were representative of school climate for each cluster. Tables 7 and 8 contain data that represent student achievement. For the purpose of this study student achievement is measured by the 2007-2008 Virginia fifth grade SOL tests in reading and math.



Tables 7 and 8 were designed to present the data representative of student achievement. Table 7 presents the *pass* rates of subgroups on the reading SOL test. The first column contains the subgroup whose *pass* percentages are presented on each row. This column also includes the level of *pass* percentages refer to *pass proficient (P)* or *pass advanced (PA)*. The *pass* percentages in each row are divided by cluster.

The *pass advanced (PA)* percentage represents those students who passed the Virginia SOL tests with a score of 500 to 600. A perfect score on the Virginia SOL tests is 600. The *pass proficient (P)* percentage represents those students who passed the Virginia SOL tests with a score of 400 to 499. A failure is recorded for students who score 399 or below on the Virginia SOL tests. The combined student achievement statistic, *total pass (TP)*, percentage was calculated by adding the *(PA)* and *(P)*.

The clustered student achievement in reading, as measured by the 2007-2008 reading SOL test, follows: The students in Cluster One had a *pass* percentage of Black (*PA* = 30%), (*P* = 58%) and (*TP* = 88%), White (*PA* = 47%), (*P* = 47%) and (*TP* = 94%), SWD (*PA* = 19%), (*P* = 61%) and (*TP* = 80%), low SES (*PA* = 30%), (*P* = 57%) and (*TP* = 87%), fifth grade (*PA* = 41%), (*P* = 51%) and (*TP* = 92%).

The *pass* percentages for students in Cluster Two follows: Black (*PA* = 46%), (*P* = 49%) and (*TP* = 95%), White (*PA* = 64%), (*P* = 34%) and (*TP* = 98%), SWD (*PA* = 28%), (*P* = 59%) and (*TP* = 87%), low SES (*PA* = 36%), (*P* = 50%) and (*TP* = 86%), fifth grade, (*PA* = 61%), (*P* = 36%) and (*TP* = 97%).

Table 7

*Clustered Data on Reading SOL Pass Percentages*

<u>Reading SOL Pass%</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
	<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
<i>Black pass advanced</i>	30	46	40	25	35
<i>Black pass proficient</i>	58	49	40	40	56
<i>Black total pass</i>	88	95	80	65	85
<i>White pass advanced</i>	47	64	65	32	52
<i>White pass proficient</i>	47	34	35	60	44
<i>White Total Pass</i>	94	98	100	92	96
<i>SWD pass advanced</i>	19	28	67	17	33
<i>SWD pass proficient</i>	61	59	25	46	48
<i>SWD total pass</i>	80	87	92	63	81
<i>low SES pass advanced</i>	30	36	40	24	33
<i>low SES pass proficient</i>	57	50	54	59	55
<i>low SES total pass</i>	87	86	94	83	88
<i>5<sup>th</sup> Grade pass advanced</i>	41	61	58	38	47
<i>5<sup>th</sup> Grade pass proficient</i>	51	36	39	58	46
<i>5<sup>th</sup> Grade total pass</i>	92	97	97	96	93

The *pass* percentages for students in Cluster Three follows: Black, (*PA* = 40%) and (*P* = 40%), White, (*PA* = 65%) and (*P* = 35%), SWD, (*PA* = 25% and *P* = 40%), low SES, (*PA* = 40% and *P* = 54%), fifth grade, (*PA* = 58%) and (*P* = 40%).

The *pass* percentages for students in Cluster Four follows: Black (*PA* = 20%), (*P* = 62%) and (*TP* = 82%), White (*PA* = 32%), (*P* = 60%) and (*TP* = 92%), SWD (*PA* = 17%), (*P* = 46%) and (*TP* = 63%), low SES (*PA* = 24%), (*P* = 59%) and (*TP* = 83%), fifth grade (*PA* = 28%), (*P* = 58%) and (*TP* = 86%).

Cluster Two had the highest reading *pass* percentages. Cluster Four has the lowest reading *pass advanced* percentage. However, Cluster Four had the highest reading *pass proficient* percentage (*P* = 62). The lowest reading *passed advanced* percentage for subgroups is shared by SWD and low SES, both of which had a percentage of (*PA* = 33%). White students have the highest *pass advanced* percentage, (*PA* = 52%).

Table 8 presents the *pass* rates of subgroups on the 2007-2008 Virginia SOL test in math. In regard to the clustered student achievement in math, as measured by the 2007-2008 Virginia SOL test in math: The *pass* percentage for students in Cluster One follows: Black (*PA* = 38%), (*P* = 45%) and (*TP* = 83%), White (*PA* = 57%), (*P* = 36%) and (*TP* = 93%), SWD (*PA* = 30%), (*P* = 47%) and (*TP* = 77%), low SES (*PA* = 39%), (*P* = 42%) and (*TP* = 81%), fifth grade (*PA* = 52%), (*P* = 38%) and (*TP* = 90%).

Table 8

*Clustered Data on Math SOL Pass Percentage*

<u>Math SOL Pass%</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Cluster</u>	<u>Mean</u>
	<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	
<i>Black pass advanced</i>	38	45	40	37	40
<i>Black pass proficient</i>	45	49	45	40	45
<i>Black total pass</i>	83	94	85	77	85
<i>White pass advanced</i>	57	65	66	45	58
<i>White pass proficient</i>	36	32	32	41	35
<i>White total pass</i>	93	97	98	86	93
<i>SWD pass advanced</i>	30	35	23	27	29
<i>SWD pass proficient</i>	47	49	54	41	48
<i>SWD total pass</i>	77	84	77	68	77
<i>low SES pass advanced</i>	39	40	50	32	40
<i>low SES pass proficient</i>	42	44	36	43	41
<i>low SES total pass</i>	81	84	84	75	81
<i>5<sup>th</sup> Grade pass advanced</i>	52	62	60	37	53
<i>5<sup>th</sup> Grade pass proficient</i>	38	34	35	42	37
<i>5<sup>th</sup> Grade Total Pass</i>	90	96	95	79	90

The *pass* percentage for students in Cluster Two follows: Black (*PA* = 45%), (*P* = 49%) and (*TP* = 91%), White (*PA* = 65%), (*P* = 32%) and (*TP* = 97%), SWD (*PA* = 35%), (*P* = 49%) and (*TP* = 84%), low SES (*PA* = 40%), (*P* = 44%) and (*TP* = 84%); fifth grade (*PA* = 62%), (*P* = 34%) and (*TP* = 96%).

The *pass* percentage for students in Cluster Three follows: Black (*PA* = 40%), (*P* = 45%) and (*TP* = 85%), White (*PA* = 66%), (*P* = 32%) and (*TP* = 98%), SWD, (*PA* = 23%), (*P* = 54%) and (*TP* = 77%), low SES (*PA* = 50%), (*P* = 36%) and (*TP* = 86%), fifth grade (*PA* = 60%), (*P* = 35%) and (*TP* = 95%).

The *pass* percentage for students in Cluster Four follows: Black (*PA* = 49%), (*P* = 45%) and (*TP* = 94%), White (*PA* = 45%), (*P* = 41%) and (*TP* = 86%), SWD (*PA* = 27%), (*P* = 41%) and (*TP* = 68%), low SES (*PA* = 32%), (*P* = 43%) and (*TP* = 75%), fifth grade, (*PA* = 37%), (*P* = 42%) and (*TP* = 79%).

Across all subgroups the SWD population had the lowest math *pass advanced* percentage, (*PA* = 29%). The White subgroup had the highest math *pass advanced* percentage, (*PA* = 58%).

#### School Climate and Student Achievement Data

The purpose of this study was to investigate the relationship between *school climate* and *student achievement* in elementary schools located in the selected school division. For the purposes of this study, the 2008 School Climate Survey was used to measure school climate. The responses of stakeholders to that survey were recorded on Tables 2 to 6. The 2007-2008 fifth grade Virginia

SOL Tests in reading and math were used to measure student achievement.

Student achievement is reported in Table 7 and Table 8.

Tables 9 to 12 illustrate student achievement and climate data for each of the four clusters. Student achievement was recorded for math and reading for each cluster and included, *pass advanced*, *pass proficient* and *total pass* percentages. The *combined agreement* statistic was recorded for each climate factor within each cluster. There are four tables, one for each cluster. The presentation of data in this manner facilitates comparisons of school climate data with student achievement data to determine possible trends.

The first column of these tables identifies either the *pass* or *agrees* percentages being presented in each row. The first six rows in the main body of the chart present data on student achievement. The next six rows present data on student achievement. The last two rows in the table present demographic information on each of the subgroups. Each table presents data for each NCLB identified subgroup: Black, White, SWD, low SES and total fifth grade.

The student achievement for Cluster One follows: Black, reading ( $TP = 88\%$ ), math ( $TP = 83\%$ ), White, reading ( $TP = 94\%$ ), math ( $TP = 93\%$ ), SWD, reading ( $TP = 80\%$ ), math ( $TP = 77\%$ ), low SES, reading ( $TP = 88\%$ ), math ( $TP = 81\%$ ), and Cluster Mean, reading ( $TP = 92\%$ ), math ( $TP = 90\%$ ).

The Climate data for Cluster One follows: Factor One, ( $CA = 95\%$ ), Factor Two, ( $CA = 90\%$ ), Factor Three, ( $CA = 90\%$ ), Factor Four, ( $CA = 92\%$ ), and Factor Five, ( $CA = 90\%$ ).

Table 9

*Cluster One Student Achievement and Climate Data*

<u>Cluster One</u>	<u>Black</u>	<u>White</u>	<u>SWD</u>	<u>Low</u>	<u>Total</u>
<u>Student Achievement</u>				<u>SES</u>	<u>5<sup>th</sup></u>
<u>Climate Data (n = 35)</u>					<u>Grade</u>
<u>Schools</u>					
Reading <i>pass advanced</i> %	30	47	19	30	41
Reading <i>pass proficient</i> %	58	47	61	57	51
Reading <i>total pass</i> %	88	94	80	87	92
Math <i>pass advanced</i> %	38	57	30	39	52
Math <i>pass proficient</i> %	45	36	47	42	38
Math <i>total pass</i> %	93	93	77	81	90
Factor 1 (CA)%	95	95	95	95	95
Factor 2 (CA)%	90	90	90	90	90
Factor 3 (CA)%	90	90	90	90	90
Factor 4 (CA)%	92	92	92	92	92
Factor 5 (CA)%	90	90	90	90	90
<i>Combined Factors</i> %	91	91	91	91	91
% of Population	27	53	12	32	
Cluster Total 5 <sup>th</sup> Grade Enrollment	3,248				

The responses of stakeholders in Cluster One, reflected 91% agreement (combined *SA* and *A*) to the climate survey. Cluster One had five *pass* percentages in the (*TP* = 90%) or better range. The White subgroup had a total reading *pass* percentage of (*TP* = 94%). The total reading *pass* percentage for all fifth graders in Cluster One was (*TP* = 92%). Both Black and White subgroups in Cluster One had a total math *pass* percentage of (*TP* = 93%) and the *pass* percentage for all fifth graders was (*TP* = 90%).

The measures of school climate for Cluster One were also in the 90% range. All five of the factors had percentages above 90%. Factors Two, Three and Five all had an agreement percentage of (*CA* = 90%). Factor Four had an agreement percentage of (*CA* = 92%). The highest agreement percentage for Cluster One was (*CA* = 94%). The *combined agreement* percentage for Cluster One, the mean of the percentages for each of the five factors, was (*CA* = 91%).

In regard to Cluster One, the *TP* for both math and reading and the percentage for the *combined climate factors* closely parallel one another. The student achievement percentages were reading (*TP* = 92%) and math (*TP* = 90%). The value for school climate was derived by averaging the *CAs* of the five climate factors and that value was 91%.

Both student achievement and climate data are presented in Table 10. Student achievement was recorded for math and reading. The *combined agreement* statistic was recorded for each climate factor. The presentation of data in this manner facilitates comparisons of school climate data with student achievement data to determine possible trends.



The student achievement for Cluster Two follows: Black, reading ( $TP = 96\%$ ), math ( $TP = 94\%$ ), White, reading ( $TP = 98\%$ ), math ( $TP = 97\%$ ), SWD, reading ( $TP = 80\%$ ), math ( $TP = 84\%$ ), low SES, reading ( $TP = 87\%$ ), math ( $TP = 84\%$ ), and Cluster Mean, reading ( $TP = 97\%$ ), math ( $TP = 96\%$ ).

The Climate data for Cluster Two follows: Factor One, ( $CA = 95\%$ ), Factor Two, ( $CA = 93\%$ ), Factor Three, ( $CA = 92\%$ ), Factor Four, ( $CA = 94\%$ ), and Factor Five. ( $CA = 87\%$ ).

The responses of stakeholders in Cluster Two reflected 92% agreement (combined *SA* and *A*) to the climate survey. Cluster Two had the highest student achievement of the four clusters with six *pass* percentage between 95% and 98%. The White subgroup had a total reading *pass* percentage of ( $TP = 98\%$ ). The Black subgroup had a rate of ( $TP = 95\%$ ). The total reading *pass* percentage for all fifth graders in Cluster Two was ( $TP = 97\%$ ). The Black subgroup had a total math *pass* percentage of ( $TP = 95\%$ ) and the *pass* percentage for the White subgroup was ( $TP = 97\%$ ). The *pass* percentage for all fifth graders in Cluster Two was ( $TP = 96\%$ ).

The measures of school climate for Cluster Two were also in the 90% range. Factor Five was lower than the other four ( $CA = 87\%$ ). The other four factors were in the 90 percentile and at a higher percentage than those seen in Cluster Two. Factor Three had a percentage of ( $CA = 92\%$ ) and Factor Two was ( $CA = 93\%$ ). Factor Four's agreement percentage was ( $CA = 94\%$ ). The highest agreement percentage in Cluster Two was for Factor One ( $CA = 95\%$ ). The combined agreement percentage for Cluster Two was ( $CA = 92\%$ ).

Table 10

*Cluster Two Student Achievement and Climate Data*

<u>Cluster Two</u>	<u>Black</u>	<u>White</u>	<u>SWD</u>	<u>Low</u>	<u>Total</u>
<u>Student Achievement</u>				<u>SES</u>	<u>5<sup>th</sup></u>
<u>Climate Data (n = 12)</u>					<u>Grade</u>
<u>Schools</u>					
Reading <i>pass advanced</i> %	46	64	28	36	61
Reading <i>pass proficient</i> %	49	34	59	50	36
Reading <i>total pass</i> %	95	98	89	86	97
Math <i>pass advanced</i> %	45	65	35	40	62
Math <i>pass proficient</i> %	49	32	49	44	34
Math <i>total pass</i> %	95	97	84	84	96
Factor 1 (CA) %	95	95	95	95	95
Factor 2 (CA) %	93	93	93	93	93
Factor 3 (CA) %	92	92	92	92	92
Factor 4 (CA) %	94	94	94	94	94
Factor 5 (CA) %	87	87	87	87	87
<i>Combined Factors</i> %	92	92	92	92	92
% of Population	7	80	8	11	
Cluster Total 5 <sup>th</sup> Grade Enrollment	1,437				

In regard to Cluster Two, the *TP* for both math and reading and the percentage for the *combined climate factors* closely parallel one another. The student achievement percentages were reading (*TP* = 97%) and math (*TP* = 96%). The value for school climate was derived by averaging the *CAs* of the five climate factors and that value was 92%.

Both student achievement and climate data are presented in Table 11. Student achievement was recorded for math and reading. The *combined agreement* statistic was recorded for each climate factor. The presentation of data in this manner facilitates comparisons of school climate data with student achievement data to determine possible trends.

The student achievement for Cluster Three follows: Black, reading (*TP* = 80%), math (*TP* = 85%), White, reading (*TP* = 100%), math (*TP* = 98%), SWD, reading (*TP* = 65%), math (*TP* = 77%), low SES, reading (*TP* = 94%), math (*TP* = 86%), and Cluster Mean, reading (*TP* = 98%), math (*TP* = 95%).

The Climate data for Cluster Three follows: Factor One, (*CA* = 92%), Factor Two, (*CA* = 92%), Factor Three, (*CA* = 89%), Factor Four, (*CA* = 90%), and Factor Five. (*CA* = 83%).

The responses of stakeholders in Cluster Three, reflect 89% agreement (combined *SA* and *A*) to the climate survey. Cluster Three had the next to lowest student achievement of the four clusters. It also had the next to lowest agreement percentages in regard to school climate. The White subgroup had a total reading *pass* percentage of (*TP* = 100%) and a math *pass* percentage of

Table 11

*Cluster Three Student Achievement and Climate Data*

<u>Cluster Three</u>	<u>Black</u>	<u>White</u>	<u>SWD</u>	<u>Low</u>	<u>Total</u>
<u>Student Achievement</u>				<u>SES</u>	<u>5<sup>th</sup></u>
<u>Climate Data (n = 2)</u>					<u>Grade</u>
<u>Schools</u>					
Reading <i>pass advance</i> %	40	65	25	54	46
Reading <i>pass proficient</i> %	40	35	40	40	38
Reading <i>total pass</i> %	80	100	65	94	84
Math <i>pass advanced</i> %	40	66	23	50	45
Math <i>pass proficient</i> %	45	32	54	36	42
Math <i>total pass</i> %	85	98	77	86	87
Factor 1 (CA)%	92	92	92	92	92
Factor 2 (CA)%	91	91	91	91	91
Factor 3 (CA)%	89	89	89	89	89
Factor 4 (CA)%	90	90	90	90	90
Factor 5 (CA)%	83	83	83	83	83
<i>Combined Factors</i> %	89	89	89	89	89
% of Population	21	66	20	33	
Cluster Total 5 <sup>th</sup> Grade Enrollment	107				

( $TP = 98\%$ ). The low SES subgroup had a reading *pass* percentage of ( $TP = 94\%$ ). The rest of the *pass* percentages for Cluster Three ranged from 65% to 87%.

The measures of school climate for Cluster Three also showed more variance than that seen in the first two clusters. Three factors had agreement percentages in the 90% range: Factor One ( $CA = 92\%$ ), Factor Two ( $CA = 91\%$ ), and Factor Four ( $CA = 90\%$ ). The other factors were in the 80 percentage range including the *combined agreement* percentage for Cluster Three which was ( $CA = 89\%$ ).

In regard to Cluster Three, the  $TP$  for both math and reading and the percentage for the *combined climate factors* closely parallel one another. The student achievement percentages were reading ( $TP = 84\%$ ) and math ( $TP = 87\%$ ). The value for school climate was derived by averaging the  $CA$ s of the five climate factors with that value being 89%.

Both student achievement and climate data are presented in Table 12. Student achievement was recorded for math and reading. The *combined agreement* statistic was recorded for each climate factor. The presentation of data in this manner facilitates comparisons of school climate data with student achievement data to determine possible trends.

The student achievement for Cluster Four follows: Black, reading ( $TP = 82\%$ ), math ( $TP = 77\%$ ), White, reading ( $TP = 92\%$ ), math ( $TP = 86\%$ ), SWD,

Table 12

*Cluster Four Student Achievement and Climate Data*

<u>Cluster Four</u>	<u>Black</u>	<u>White</u>	<u>SWD</u>	<u>Low</u>	<u>Total</u>
<u>Student Achievement</u>				<u>SES</u>	<u>5<sup>th</sup></u>
<u>Climate Data (n = 6)</u>					<u>Grade</u>
<u>Schools</u>					
Reading <i>pass advanced</i> %	20	32	17	24	28
Reading <i>pass proficient</i> %	62	60	46	59	58
Reading <i>total pass</i> %	82	92	63	83	86
Math <i>pass advanced</i> %	37	45	27	32	37
Math <i>pass proficient</i> %	40	41	41	43	42
Math <i>total pass</i> %	77	86	68	75	79
Factor 1 (CA)%	90	90	90	90	90
Factor 2 (CA)%	84	84	84	84	84
Factor 3 (CA)%	89	89	89	89	89
Factor 4 (CA)%	89	89	89	89	89
Factor 5 (CA)%	81	81	81	81	81
<i>Combined Factors</i> %	86	86	86	86	86
% of Population	60	24	14	66	
Cluster Total 5 <sup>th</sup> Grade Enrollment	631				

reading ( $TP = 63\%$ ), math ( $TP = 68\%$ ), low SES, reading ( $TP = 83\%$ ), math ( $TP = 75\%$ ), and Cluster Mean, reading ( $TP = 86\%$ ), math ( $TP = 78\%$ ).

The Climate data for Cluster Four follows: Factor One, ( $CA = 94\%$ ), Factor Two, ( $CA = 84\%$ ), Factor Three, ( $CA = 89\%$ ), Factor Four, ( $CA = 89\%$ ), Factor Five. ( $CA = 81\%$ ).

The responses of stakeholders in Cluster Four, reflected 86% agreement (combined *SA* and *A*) to the climate survey. Cluster Four had the greatest variance in percentages for both *student achievement* and *school climate*. The reading total *pass* rate for Cluster Four was ( $TP = 86\%$ ) and the math percentage was ( $TP = 79$ ). The *combined agreement* for school climate was ( $CA = 86\%$ ). Cluster four had both the lowest *pass* percentages in student achievement and the lowest *agree* percentages in regard to school climate.

The *TP* for both math and reading and the percentage for the *combined climate factors* closely parallel one another. The student achievement percentages were reading ( $TP = 86\%$ ) and math ( $TP = 79\%$ ). The value for school climate was derived by averaging the *CAs* of the five climate factors with that value being 86%.

The data reported above are reported by cluster. These data gave the researcher information concerning the relationship between school climate and student achievement. A comparison between school climate data as represented by the *agree* percentages to the School Climate Survey and student achievement as represented by the *pass* percentages to the Virginia SOL reading and math tests investigates the relationship between the two. By visually comparing the

clustered data it was noted that the *agree* percentages for school climate paralleled the *pass* percentages for student achievement. In the first two clusters student achievement percentages were in the 90 percentile range. This was matched by the *agree* percentages for the same clusters which indicated agreement with school climate in the 90 percentile range. Clusters Three and Four had *pass* percentages in the 80 percentile range. The *agree* percentages for these two clusters was also in the 80 percentile.

A regression analysis was run to obtain the data needed to investigate how the relationship was impacted by the individual factors that composed student climate. The regressions were also run to gain data needed to analyze how the perceptions of individual stakeholders might impact student achievement. As stated at the beginning of Chapter Four, a linear regression was run using SPSS and included ANOVAs, t-tests, and Pearson correlation. The analysis investigated the impact of each of the five individual factors as measured by the School Climate Survey on student achievement. The regression also analyzed the relationship between the perceptions of each group of stakeholders and student achievement. This process sought to determine if there was a variation in the relationship between the individual factors of school climate and student achievement. The regressions were initially constructed to run with clustered data. However, the clusters did not produce the multiple observations needed to run the regression analysis; therefore, the researcher made the decision to run the regressions using data from the 55 individual schools.



The regressions were run using the *pass* percentages on the 2007-2008 Virginia fifth grade SOL tests in reading and math as the measure of student achievement. These data were entered as the dependent variable (*DV*) in the regression analysis. The *agree* percentages on the School Climate Survey were entered as the independent variables (*IV*). The analysis was run as a series of regressions for each of the five factors of school climate individually. The *pass* percentages for one individual subgroup; White, Black, SWD, low SES or total fifth grade on the reading or math SOL tests were entered as the *DV*. The *agree* percentages on the School Climate Survey were entered for one of the five school climate factors as the *IV*.

There were twenty regressions run for each of the five factors; ten were run using the reading *pass* percentages and ten using the math percentages. A total of 100 regressions were run. The regressions produced 77 significant correlations between school climate and student achievement.

The data included in Tables 13 to 26 compare school climate as represented by the *agree* percentages to the School Climate Survey and student achievement as represented by the *pass* percentages to the Virginia SOL reading and math tests. These data were used to investigate the relationship between the two. The data helped determine how that relationship is impacted by the individual school climate factors and how the perceptions of individual stakeholders might impact student achievement.

The identification of the subject test, reading or math, can be found in the title of each table. It is also listed in the first column in the first row of the table. The second row on the first column identifies the *pass* percentage and subgroup that represents student achievement. The second column identifies the stakeholder and the factor from which the *agree* percentage used for school climate in the regression was derived.

The third column contains data that measures the relationship between the two variables ( $r$ ). The ( $r$ ) value represents the strength of the relationship. The correlations can range from -1 to +1. The perfect negative correlation is -1, and the perfect positive correlation is +1. There is no linear relationship if ( $r = 0$ ) (Salkind, 2004). How close the statistic in this column comes to -1 or +1 gives the researcher an indication of how strong the relationship is between the two factors (Salkind, 2004).

This study contains both positive and negative correlations. These correlations are between student achievement as measured by the *pass advance* and *pass proficient* percentages and school climate as measured by the *strongly agree* and *agree* percentages. A positive correlation exists when the pass percentage value increases and the value for the agree percentage also increases; if the value for both decreases there is also a positive correlation (Salkind, 2004). A negative correlation exists when the value of one variable increases and the value for the other decreases (Salkind, 2004).

The *strongly agree* percentages in this study tended to be larger than the *agree* percentages. As stakeholders responded most frequently to *strongly agree* the *agree* percentages decreased. When a lower *agree* percentage correlated to a higher *pass advance* or *pass proficient* percentage there was a negative correlation between the two. The *pass proficient* percentages tended to be higher than *pass advance* percentages. When a higher *strongly agree* percentage correlated to a lower *pass proficient* or *pass advance* percentage there was a negative correlation.

A correlation coefficient between ( $r = .4$ ) and ( $r = .6$ ) is generally interpreted as having a moderate relationship (Salkind, 2004). The highest correlations found in this study were in the ( $r = .5$ ,  $r = .6$ ) range. In the case of ( $r = .5$ ) the variation of one variable upon the other variable is 25%. This would indicate that 25% of the variation in one variable can be explained by variation in the other variable. The value of ( $r = .6$ ) is 36% (Salkind, 2004). Out of the 77 correlations that indicated a significant relationship at the .01 level, 10 had a correlation of ( $r = .5$ ,  $r = .6$ ). Those correlation values would indicate moderate relationship.

The statistic in column four is the p-value and it represents the significance of the relationship. The data contained in this column are significant at either the .01 level or .05 levels. Those found significant at the .01 level are found significant at a higher level. However, .05 is the most commonly used “level of significance” and indicates a significant correlation between the two variables. It needs to be noted that correlation does not imply causation.

Tables 13 to 26 present data that represents the relationship between student achievement, the *DV*, and the school climate values *IV*, which have a significant correlation with the *DV*. The *IV* includes the data related to the group of stakeholders whose agree percentages were used, which *agree* percentages SA or A were used, and to which school climate factor the response was made.

Table 13 presents data illustrating the significant correlations between the measures of student climate and the fifth grade *pass advanced* percentage for the 2007-2008 SOL tests in reading the following data are presented:

Students (SA) with Factor Two, relationship ( $r = .437^{**}$  and  $p = .001$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Parents (SA) with Factor One, instruction ( $r = .448^{**}$  and  $p = .001$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Parents (A) with Factor One, instruction ( $r = .443^{**}$  and  $p = .001$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Parents (SA) with Factor Two, relationship ( $r = .440^{**}$  and  $p = .001$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Table 13

*Student Achievement / School Climate - % Pass Adv - Reading - All 5<sup>th</sup> Graders*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>
<u>pass advance %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>
	<u>School Div Climate Survey</u>		
All 5 <sup>th</sup> grade students (pass advance)	Students - SA - Factor 2 (relationship)	.437**	.001
All 5 <sup>th</sup> grade students (pass advance)	Parents - SA - Factor 1 (instruction)	.448**	.001
All 5 <sup>th</sup> grade students (pass advance)	Parents - A - Factor 1 (instruction)	.443**	.001
All 5 <sup>th</sup> grade students (pass advance)	Parents - SA - Factor 2 (relationship)	.440**	.001
All 5 <sup>th</sup> grade students (pass advance)	Educators - SA - Factor 1 (instruction)	.577**	.000
All 5 <sup>th</sup> grade students (pass advance)	Educators - A - Factor 1 (instruction)	-.598**	.000
All 5 <sup>th</sup> grade students (pass advance)	Educators - SA - Factor 2 (relationship)	.678**	.000
All 5 <sup>th</sup> grade students	Educators - A - Factor 2	-.618**	.000

( <i>pass advance</i> )	(relationship)		
All 5 <sup>th</sup> grade students	Educators - SA - Factor 3	.480**	.000
( <i>pass advance</i> )	(communication)		
All 5 <sup>th</sup> grade students	Educators - A - Factor 3	-.463**	.000
( <i>pass advance</i> )	(communication)		
All 5 <sup>th</sup> grade students	Educators - SA - Factor 4	.530**	.000
( <i>pass advance</i> )	(safety)		
All 5 <sup>th</sup> grade students	Educators - A - Factor 4	-.385**	.004
( <i>pass advance</i> )	(safety)		

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Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

Educators (SA) with Factor One, instruction ( $r = .557^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r$ ) indicated a moderate relationship.

Educators (A) with Factor One, instruction ( $r = -.598^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r$ ) indicated a moderate relationship.

Educators (SA) with Factor Two, relationship ( $r = .678^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r$ ) indicated a moderate relationship.

Educators (A) with Factor Two, relationship ( $r = -.618^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r$ ) indicated a moderate relationship.

Educators (SA) with Factor Three, communication ( $r = .480^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level however the correlation value ( $r$ ) indicated a weak to moderate relationship.

Educators (A) with Factor Three, communication ( $r = -.463^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level however the correlation value ( $r$ ) indicated a weak to moderate relationship.

Educators (SA) with Factor Four, safety ( $r = .530^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r$ ) indicated a moderate relationship.

Educators (A) with Factor Four, safety ( $r = .385^{**}$  and  $p = .004$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Twelve school climate variables were found to have a significant correlation with the fifth grade *pass advanced* percentage for the tests in reading. All 12 correlations were significant at the 0.01 level. One correlation was found for student (SA) agreement with Factor Two, relationship. There were three correlations in relation to parents responses: (A) and (SA) with Factor One, instruction, and (SA) with Factor Two, relationship. Educators had the highest number of significant correlations with fifth grade *pass advanced* percentages on

the reading SOL tests. They had eight correlations: (SA) and (A) with Factor One, instruction, (SA) and (A) with Factor Two- relationship, (SA) and (A) with Factor Three, communication, and (SA) and (A) with Factor Four, safety. There were four correlations with Factor One, instruction, four correlations with Factor Two, relationships, and two correlations each for Factor Three, communication and Factor Four, safety.

There were five correlations that had both a significant correlation and a correlation value that indicated a moderate relationship. All five of the correlations were based on the agreement percentages of educators: two with Factor One, instruction, two with Factor Two, relationships, and one with Factor Four, safety.

Table 14 presents data illustrating the significant correlations between the measures of student climate and the fifth grade *pass proficient* percentage for the Virginia SOL test in reading the following data is presented:

Students (SA) with Factor Two, relationship ( $r. = -.409^{**}$  and  $p. = .002$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated a weak to moderate relationship.

Parents (SA) with Factor One, instruction ( $r. = -.395^{**}$  and  $p. = .003$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated a weak relationship.



Table 14

*Student Achievement / School Climate - % Pass Prof - Reading - All 5<sup>th</sup> Graders*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass proficient %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r</u>	<u>p</u>	
	<u>School Div Climate Survey</u>			
All 5 <sup>th</sup> grade students (pass proficient)	Students - SA - Factor 2 (relationship)	-.409**	.002	55
All 5 <sup>th</sup> grade students (pass proficient)	Parents - SA - Factor 1 (instruction)	-.395**	.003	55
All 5 <sup>th</sup> grade students (pass proficient)	Parents - A - Factor 1 (instruction)	.434**	.001	55
All 5 <sup>th</sup> grade students (pass proficient)	Parents - SA - Factor 2 (relationship)	-.395**	.003	55
All 5 <sup>th</sup> grade students (pass proficient)	Parents - A - Factor 2 (relationship)	.272*	.044	55
All 5 <sup>th</sup> grade students (pass proficient)	Educators - SA - Factor 1 (instruction)	-.528**	.000	55
All 5 <sup>th</sup> grade students (pass proficient)	Educators - A - Factor 1 (instruction)	.569**	.000	55
All 5 <sup>th</sup> grade students	Educators - SA - Factor 2	-.629**	.000	55

<i>(pass proficient)</i>	(relationship)			
All 5 <sup>th</sup> grade students	Educators - A - Factor 2	.612**	.000	55
<i>(pass proficient)</i>	(relationship)			
All 5 <sup>th</sup> grade students	Educators - SA - Factor 3	-.484**	.000	55
<i>(pass proficient)</i>	(communication)			
All 5 <sup>th</sup> grade students	Educators - A - Factor 3	.482**	.000	55
<i>(pass proficient)</i>	(communication)			
All 5 <sup>th</sup> grade students	Educators - SA - Factor 4	-.463**	.000	55
(pass proficient)	(safety)			
All 5 <sup>th</sup> grade students	Educators - A - Factor 4	.356**	.008	55
(pass proficient)	(safety)			

*Note.* \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

Parents (A) with Factor One, instruction ( $r = .434^{**}$  and  $p.001$ ), there was a significant correlation at the 0.01 level; however, the correlation value indicated ( $r$ .) a weak to moderate relationship.

Parents (SA) with Factor Two, relationship ( $r = -.395^{**}$  and  $p = .004$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ .) indicated a weak relationship.

Parents (A) with Factor Two, relationship ( $r = .272^*$  and  $p = .044$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ .) indicated a weak relationship.

Educators (SA) with Factor One, instruction ( $r. = -.528^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r.$ ) indicated a moderate relationship.

Educators (A) with Factor One, instruction ( $r. = .569^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r.$ ) indicated a moderate relationship.

Educators (SA) with Factor Two, relationship ( $r. = .629^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r.$ ) indicated a moderate relationship.

Educators (A) with Factor Two, relationship ( $r. = -.612^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level and the correlation value ( $r.$ ) indicated a moderate relationship.

Educators (SA) with Factor Three, communication ( $r. = -.484^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated indicates a weak to moderate relationship.

Educators (A) with Factor Three, communication ( $r. = -.482^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated a weak to moderate relationship.

Educators (SA) with Factor Four, safety ( $r. = -.463^{**}$  and  $p. = .000$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated a weak to moderate relationship.

Educators (A) with Factor Four, safety ( $r = .356^{**}$  and  $p = .008$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Thirteen school climate variables were found to have a significant correlation with the fifth grade *pass proficient* percentage for the Virginia SOL test in reading. Twelve of the correlations were significant at the 0.01 level. One correlation was significant at the 0.05 level, parents (A) Factor Two. One correlation was found for student (SA) agreement with Factor Two, relationship. There were four correlations in relation to parents responses: (A) and (SA) with Factor One, instruction, and (SA) and (A) with Factor Two, relationship. Educators had the highest number of significant correlations with fifth grade *pass proficient* percentages on the reading SOL test. They had eight correlations: (SA) and (A) with Factor One, instruction, (SA) and (A) with Factor Two, relationship, (SA) and (A) with Factor Three, communication, and (SA) and (A) with Factor Four, safety. There were four correlations with Factor One, instruction, four correlations with Factor Two, relationship, and two correlations each for Factor Three, communication and Factor Four, safety. There were four correlations that had both a significant correlation and a correlation value that indicated a moderate relationship. All four were based on educators responses, (SA) and (A) with Factor One, instruction, (SA) and (A) with Factor Two, relationships.

Table 15 presents data illustrating the significant correlations between the measures of student climate and the low SES *pass advanced* percentage for the Virginia SOL test in reading the following data is presented as follows:

Table 15

*Student Achievement / School Climate - % Pass Adv - Reading - Low SES*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	
<u>pass advanced %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	<u>N</u>
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>(r.)</u>	<u>(p.)</u>	
	<u>School Div Climate Survey</u>			
low SES ( <i>pass advanced</i> )	Educators - SA – Factor 2 (relationship)	.342*	.016	49
low SES ( <i>pass advanced</i> )	Educators - SA - Factor 4 (safety)	.386**	006	49

Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

Educators (SA) with Factor Two, relationship ( $r = .342^*$  and  $p = .016$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ .) indicated a weak relationship.

Educators (SA) with Factor Four, safety ( $r = -.463^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ .) indicated a weak to moderate relationship.

Six of the 55 schools did not have *pass* percentages in this category and were excluded from the analysis which was run on the remaining 49 schools.

Table 16 presents data illustrating the significant correlations between the measures of student climate and the low SES *pass proficient* percentage for the Virginia SOL test in reading the following data are presented as follows:

Parents (SA) with Factor Four, safety ( $r = .306^*$  and  $p = .033$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Parents (A) with Factor Four, safety ( $r = .300^*$  and  $p = .039$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Parents (SA) with Factor Five, environment ( $r = .419^{**}$  and  $p = .003$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Parents (A) with Factor Five, environment ( $r = -.333^*$  and  $p = .020$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (A) with Factor Three, communication ( $r = .285^*$  and  $p = .047$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Four school climate variables were found to have a significant correlation with the low SES *pass proficient* percentage for the Virginia SOL test in reading. Five of the correlations were significant at the 0.05 level. One correlation was

Table 16

*Student Achievement / School Climate - % Pass Prof - Reading - Low SES*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass proficient %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
low SES ( <i>pass proficient</i> )	Parents - SA - Factor 4 (safety)	.306*	.033	49
low SES ( <i>pass proficient</i> )	Parents - A - Factor 4 (safety)	.300*	.039	49
low SES ( <i>pass proficient</i> )	Parents - SA - Factor 5 (environment)	.419**	.003	49
low SES ( <i>pass proficient</i> )	Parents - A - Factor 5 (environment)	-.333*	.020	49
low SES ( <i>pass proficient</i> )	educators - A - Factor 3 (Communication)	.285*	.047	49

Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

significant at the 0.01 level, parents (*A*) with Factor Five. There were four correlations in relation to parents responses: (*A*) and (*SA*) with Factor Four, safety, and (*SA*) and (*A*) with Factor Five, environment. There was one correlation in relation with educators (*A*) percentage with Factor Three, communication. This set of correlations is the only one to include a correlation with Factor Five, environment. Six of the 55 schools did not have *pass* percentages in this category and were excluded from the analysis which was run on the remaining 49 schools.

Table 17 presents data illustrating the significant correlations between the measures of student climate and the *White pass advanced* percentage for the Virginia SOL test in reading the following data is presented as follows:

Students (*SA*) with Factor Three, communication ( $r = .346^*$  and  $p = .020$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Students (*A*) with Factor Three, communication ( $r = -.342^*$  and  $p = .022$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Students (*SA*) with Factor Four, safety ( $r = .351^*$  and  $p = .018$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.



Table 17

*Student Achievement / School Climate - % Pass Adv - Reading - White*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	
<u>pass advanced %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	<u>N</u>
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
White ( <i>pass advanced</i> )	Students - SA – Factor 3 (communication)	.346	.022	45
White ( <i>pass advanced</i> )	Students - A – Factor 3 (communication)	-.342*	.002	45
White ( <i>pass advanced</i> )	Students - SA – Factor 4 (safety)	.351*	.018	45
White ( <i>pass advanced</i> )	Students - A - Factor 4 (safety)	-.404**	.007	45
White ( <i>pass advanced</i> )	Educators - SA - Factor 4 (Safety)	-.309*	.039	45
White ( <i>pass advanced</i> )	Educators - A - Factor 4 (safety)	.342*	.023	45

Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

Students (A) with Factor Four, safety ( $r = -.404^{**}$  and  $p = .007$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Educators (SA) with Factor Four, safety ( $r = -.309^*$  and  $p = .039$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (A) with Factor Four, safety ( $r = .342^*$  and  $p = .023$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Five school climate variables were found to have a significant correlation with the *White pass advanced* percentage for the Virginia SOL test in reading. Four of the correlations were significant at the 0.05 level. One correlation was significant at the 0.01 level: Students (A), Factor Four.

Table 17 displayed data illustrating four correlations for students (SA) and (A) agreement with Factor Three, communication and Factor Four, safety. There were two correlations in relation to educators (SA) and (A) with Factor Four, safety. Ten of the 55 schools did not have *pass* percentages in this category and were excluded from the analysis which was run on the remaining 45 schools.

Table 18 presents data illustrating the significant correlations between the measures of student climate and the *White pass proficient* percentage for the Virginia SOL test in reading the following data are presented as follows:

Table 18

*Student Achievement / School Climate - % Pass Prof - Reading - White*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	
<u>pass proficient %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	<u>N</u>
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
White ( <i>pass proficient</i> )	Educators - SA - Factor 2 (relationship)	-.335*	.014	53

*Note.* \* Correlation was significant at the 0.05 level (2-tailed).

Educators (A) with Factor Four, safety ( $r. = -.335^*$  and  $p. = .014$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship. There was only one correlation reported in regard to the DV; *pass proficient* percentage of White students who took the 2007-2008 Virginia SOL test in reading.

One school climate variable was found to have a significant correlation with the White *pass proficient* percentage for the 2007-2008 Virginia SOL test in reading. The correlation was significant at the 0.05 level.

Table 19 presents data illustrating the significant correlations between the measures of student climate and the Black *pass advanced* percentage for the

Table 19

*Student Achievement / School Climate - % Pass Adv - Reading - Black*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	
<u>pass advanced %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	<u>N</u>
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
Black ( <i>pass advanced</i> )	Parents - SA - Factor 1 (instruction)	.333*	.022	47
Black ( <i>pass advanced</i> )	Parents - A - Factor 1 (instruction)	-.348*	.017	47
Black ( <i>pass advanced</i> )	Parents - SA - Factor 2 (relationship)	.398*	.006	47
Black ( <i>pass advanced</i> )	Educators - SA - Factor 2 (relationship)	.392**	.006	47
Black ( <i>pass advanced</i> )	Educators - A - Factor 2 (relationship)	-.357*	.014	47
Black ( <i>pass advanced</i> )	Educators - SA - Factor 4 (safety)	.328*	.025	47
Black ( <i>pass advanced</i> )	Educators - A - Factor 4 (safety)	-.328*	.024	47

Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

2007-2008 Virginia SOL test in reading the following data are presented as follows:

Parents (SA) with Factor One, instruction ( $r = .333^*$  and  $p = .022$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Parents (A) with Factor One, instruction ( $r = -.348^*$  and  $p = .017$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Parents (SA) with Factor Two, relationship ( $r = .398^{**}$  and  $p = .006$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (SA) with Factor Two, relationship ( $r = .392^{**}$  and  $p = .006$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (A) with Factor Two, relationship ( $r = -.357^*$  and  $p = .014$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (SA) with Factor Four, safety ( $r = .328^*$  and  $p = .025$ ), and there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (A) with Factor Four, safety ( $r. = -.328^*$  and  $p. = .024$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Seven school climate variables were found to have a significant correlation with the Black *pass advanced* percentage for the 2007-2008 Virginia SOL test in reading. Two of the correlations were significant at the 0.01 level. There were two correlations in relation to parents' responses: (SA) and (A) with Factor One, instruction, and one (SA) with Factor Two, relationship. Educators had four correlations: (SA) and (A) with Factor Two, relationship and (SA) and (A) with Factor Four, safety. Eight of the 55 schools did not have *pass* percentages in this category and were excluded from the analysis which was run on the remaining 47 schools.

Table 20 presents data illustrating the significant correlations between the measures of student climate and the Black *pass proficient* percentage for the 2007-2008 SOL tests in reading *pass proficient* percentage the following data are presented as follows:

Parents (SA) with Factor Two, relationship ( $r. = -.314^*$  and  $p. = .032$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Educators (SA) with Factor Two, relationship ( $r. = -.335^*$  and  $p. = .022$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Table 20

*Student Achievement / School Climate - % Pass Prof - Reading - Black*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	
<u>pass proficient %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	<u>N</u>
<u>2007/8 Reading -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
Black ( <i>pass proficient</i> )	Parents - SA - Factor 2 (relationship)	-.314*	.032	47
Black ( <i>pass proficient</i> )	Educators - SA - Factor 2 (relationship)	-.335*	.022	47
Black ( <i>pass proficient</i> )	Educators - A - Factor 2 (relationship)	.336*	.021	47

Note. \* Correlation was significant at the 0.05 level (2-tailed).

Educators (A) with Factor Two, relationship ( $r. = .336^*$  and  $p. = .012$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Three school climate variables were found to have a significant correlation with the Black *pass proficient* percentage for the 2007-2008 Virginia SOL test in reading. There was one correlation in relation to parents' responses: (SA) with Factor Two, relationship. Educators had two correlations, (SA) and (A), with Factor Two, relationship. Eight of the 55 schools did not have *pass* percentages

in this category and were excluded from the analysis which was run on the remaining 47 schools.

Students (SA) with Factor Two, relationship ( $r = .361^{**}$  and  $p = .007$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Parents (SA) with Factor One, instruction ( $r = -.341^*$  and  $p = .001$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Parents (A) with Factor One, instruction ( $r = -.347^{**}$  and  $p = .009$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Table 21 presents data illustrating the significant correlations between the measures of student climate and the fifth grade *pass advanced* percentage for the 2007-2008 Virginia SOL test in math the following data are presented as follows:

Parents (SA) with Factor Two, relationship ( $r = .368^{**}$  and  $p = .006$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (SA) with Factor One, instruction ( $r = .419^{**}$  and  $p = .001$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.



Table 21

*Student Achievement / School Climate - % Pass Adv - Math - All 5<sup>th</sup> Graders*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass advanced %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	
<u>2007/8 Math -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
All 5 <sup>th</sup> grade students (pass advanced)	Students - SA - Factor 2 (relationship)	.361**	.007	55
All 5 <sup>th</sup> grade students (pass advanced)	Parents - SA - Factor 1 (instruction)	.341*	.011	55
All 5 <sup>th</sup> grade students (pass advanced)	Parents - A - Factor 1 (instruction)	-.347**	.009	55
All 5 <sup>th</sup> grade students (pass advanced)	Parents - SA - Factor 2 (relationship)	.368**	.006	55
All 5 <sup>th</sup> grade students (pass advanced)	Educators - SA - Factor 1 (instruction)	.419**	.001	55
All 5 <sup>th</sup> grade students (pass advanced)	Educators - A - Factor 1 (instruction)	-.416**	.002	55
All 5 <sup>th</sup> grade students (pass advanced)	Educators - SA - Factor 2 (relationship)	.511**	.000	55
All 5 <sup>th</sup> grade students	Educators - A - Factor 2	-.384**	.004	55

<i>(pass advanced)</i>	(relationship)			
All 5 <sup>th</sup> grade students	Educators - SA - Factor 3	.368**	.006	55
<i>(pass advanced)</i>	(communication)			
All 5 <sup>th</sup> grade students	Educators - A - Factor 3	-.329*	.017	55
<i>(pass advanced)</i>	(communication)			
All 5 <sup>th</sup> grade students	Educators - SA – Factor 4	.401**	.002	55
<i>(pass advanced)</i>	(safety)			

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Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

Educators (A) with Factor One, instruction ( $r = .416^{**}$  and  $p = .002$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak to moderate relationship.

Educators (SA) with Factor Two, relationship ( $r = .511^{**}$  and  $p = .000$ ), there was a significant correlation at the 0.01 level and a correlation value that ( $r$ ) indicated a moderate relationship.

Educators (A) with Factor Two, relationship ( $r = -.384^{**}$  and  $p = .004$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (SA) with Factor Three, communication ( $r = .368^{**}$  and  $p = .006$ ), there was a significant correlation at the 0.01 level however the correlation value ( $r$ ) indicated a weak relationship.

Educators (A) with Factor Three, communication ( $r. = -.329^*$  and  $p. = .017$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Educators (SA) with Factor Four, safety ( $r. = .401^{**}$  and  $p. = .002$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated a weak to moderate relationship.

Eleven school climate variables were found to have a significant correlation with the fifth grade *pass advanced* percentage for the 2007-2008 Virginia SOL test in math. Nine of the correlations were significant at the 0.01 level. One correlation was found for student (SA) agreement with Factor Two, relationship. There were three correlations in relation to parents responses; (SA) and (A) with Factor One, instruction, and (SA) with Factor Two, relationship. Educators had the highest number of significant correlations with fifth grade *pass advanced* percentages on the math SOL test. Educators had seven correlations; (SA) and (A) with Factor One, instruction, (SA) and (A) with Factor Two, relationship, (SA) and (A) with Factor Three-communication, and (SA) with Factor Four, safety.

There was one correlation with educators (SA) with Factor Two, relationship that was significant at the 0.01 level and a correlation value that indicated a moderate relationship with the *pass proficient* percentage of all fifth grade students who took the 2007-2008 Virginia SOL tests in math. This was the only correlation in regard to math student achievement that met both significance ( $r. = .511^{**}$ ) and indication of a moderate relationship ( $p. = .000$ ).

Table 22

*Student Achievement / School Climate - % Pass Prof - Math - All 5<sup>th</sup> Graders*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>Pass Proficient %</u>	<u>% (SA) Strongly Agree</u>	<u>Correlation</u>	<u>2-tailed</u>	
<u>2007/8 Math -VA SOL</u>	<u>(A) Agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
All 5 <sup>th</sup> grade students ( <i>pass proficient</i> )	Parents - A - Factor 1 (instruction)	.300*	.026	55
All 5 <sup>th</sup> grade students ( <i>pass proficient</i> )	Parents - SA - Factor 2 (relationship)	-.305*	.023	55

*Note.* \* Correlation was significant at the 0.05 level (2-tailed).

Table 22 presents data illustrating the significant correlations between the measures of student climate and the fifth grade *pass proficient* percentage for the Virginia SOL test in math the following data are presented as follows:

Parents (SA) with Factor One, instruction ( $r. = .300^*$  and  $p. = .026$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Parents (SA) with Factor Two, relationship ( $r. = -.305$  and  $p. = .023$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

In regard to Table 22 - Two school climate variables were found to have a significant correlation with the fifth grade *pass proficient* percentage for the 2007-2008 Virginia SOL test in math *pass proficient* percentage of all fifth grade students who took the 2007-2008 Virginia SOL test in math.

Table 23 presents data illustrating the significant correlations between the measures of student climate and the SWD grade *pass proficient* percentage for the 2007-2008 Virginia SOL test in math the following data are presented as follows:

Parents (A) with Factor One, instruction ( $r. = -.360^*$  and  $p. = .031$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship

Parents (SA) with Factor Two, relationship ( $r. = .356^*$  and  $p. = .033$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Parents (A) with Factor Two, relationship ( $r. = -.430^{**}$  and  $p. = .009$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r.$ ) indicated a weak to moderate relationship.

Parents (SA) with Factor Three, communication ( $r. = .345^*$  and  $p. = .039$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Table 23

*Student Achievement / School Climate - % Pass Prof - Math - SWD*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass proficient %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	
<u>2007/8 Math -VA SOL</u>	<u>(A) agree with</u>	<u>r.</u>	<u>p.</u>	
	<u>School Div Climate Survey</u>			
SWD ( <i>pass proficient</i> )	Parents- A - Factor 1 (instruction)	-.360*	.031	36
SWD ( <i>pass proficient</i> )	Parents - SA - Factor 2 (relationship)	.356*	.033	36
SWD ( <i>pass proficient</i> )	Parents - A - Factor 2 (relationship)	-.430**	.009	36
SWD ( <i>pass proficient</i> )	Parents - SA - Factor 3 (communication)	.345*	.039	36
SWD ( <i>pass proficient</i> )	Parents - A - Factor 3 (communication)	-.390*	.019	36
SWD ( <i>pass proficient</i> )	Parents - SA - Factor 4 (Safety)	-.370*	.029	36

Note. \*\* Correlation was significant at the 0.01 level (2-tailed).

\* Correlation was significant at the 0.05 level (2-tailed).

Parents (A) with Factor Three, communication ( $r. = -.390^*$  and  $p. = .019$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Parents (SA) with Factor Four, safety ( $r. = -.370^*$  and  $p. = .029$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Six school climate variables were found to have a significant correlation with the *pass proficient* percentage of SWD who took the 2007-2008 Virginia SOL test in math. One of the correlations was significant at the 0.01 level. All of the correlations were associated with or related to parents responses: (A) with Factor One, instruction, (SA) and (A) with Factor Two, relationship, (SA) and (A) with Factor Three, communication and (SA) with Factor Four, safety. Nineteen of the 55 schools did not have *pass* percentages in this category and were excluded from the analysis which was run on the remaining 36 schools.

Table 24 presents data illustrating the significant correlations between the measures of student climate and the *White pass advanced* percentage for the Virginia SOL test in math the following data are presented:

Educators (SA) with Factor Four, safety ( $r. = -.302^*$  and  $p. = .027$ ), there was a significant correlation at the 0.05 level; however the correlation value ( $r.$ ) indicated a weak relationship.

Table 24

*Student Achievement / School Climate - % Pass Adv - Math - White*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass advanced %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	
<u>2007/8 Math -VA SOL</u>	<u>(A) agree with</u>		<u>(P)</u>	
	<u>School Div Climate Survey</u>			
White ( <i>pass advanced</i> )	Educators - SA - Factor 4 (safety)	-.302*	.027	54
White ( <i>pass advanced</i> )	Educators - A - Factor 4 (safety)	.373**	.006	53

*Note.* \*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Educators (A) with Factor Four, safety ( $r = -.373^{**}$  and  $p = .006$ ), there was a significant correlation at the 0.01 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Two school climate variables were found to have a significant correlation with the White pass advanced percentage for the Virginia SOL test in math. One of the correlations was significant at the 0.01 level, and one at the 0.05 level. Both of the correlations were associated with educators responses; (SA) and (A) with Factor Four, safety. One of the 55 schools did not have *pass* percentages in relation to the (SA) responses and were excluded from the analysis which was



Table 25

*Student Achievement / School Climate - % Pass Prof - Math - White*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass proficient %</u>	<u>% (SA) strongly agree</u>	<u>Correlation</u>	<u>2-tailed</u>	
<u>2007/8 Math -VA SOL</u>	<u>(A) agree with</u>		<u>(P)</u>	
	<u>School Div Climate Survey</u>			
White ( <i>pass proficient</i> )	Educators - A - Factor 4 (safety)	-.335*	.014	53

*Note.* \* Correlation is significant at the 0.05 level (2-tailed).

run on the remaining 54 schools. Two schools did not have *pass* percentages in relation to the (A) responses and were excluded from the analysis which was run on the remaining 53 schools.

Table 25 presents data illustrating the significant correlations between the measures of student climate and the White *pass proficient* percentage for the Virginia SOL test in math the following data are presented as follows:

Educators (A) with Factor Four, safety ( $r = -.335^*$  and  $p = .014$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

One school climate variable was found to have a significant correlation with the White *pass proficient* percentage for the 2007-2008 Virginia SOL test in

math. The correlation was significant at the 0.05 level. The correlation was associated with educators' response; (A) with Factor Four, safety. One of the 55 schools did not have *pass* percentages in relation to the (A) response and was excluded from the analysis which was run on the remaining 54 schools.

Table 26 presents data illustrating the significant correlations between the measures of student climate and the *pass advanced* percentage of Black students who took the Virginia SOL test in math the following data are presented:

Student (SA) with Factor Three, communication ( $r. = .346^*$  and  $p. = .020$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicates a weak relationship.

Student (A) with Factor Three, communication ( $r. = .342^*$  and  $p. = .022$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Student (SA) with Factor Four, safety ( $r. = .351^*$  and  $p. = .016$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak relationship.

Student (A) with Factor Four, safety ( $r. = -.404^*$  and  $p. = .007$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r.$ ) indicated a weak to moderate relationship.

Table 26

*Student Achievement / School Climate - % Pass Adv – Math - Black*

<u>Student Achievement (DV)</u>	<u>School Climate (IV)</u>	<u>Pearson</u>	<u>Sig</u>	<u>N</u>
<u>pass advanced %</u>	<u>% (SA) strongly agree</u>	<u>correlation</u>	<u>2-tailed</u>	
<u>2007/8 Math -VA SOL</u>	<u>(A) agree with</u>		<u>(P)</u>	
	<u>School Div Climate Survey</u>			
Black ( <i>pass advanced</i> )	Students - SA - Factor 3 (communication)	.346*	.020	45
Black ( <i>pass advanced</i> )	Students - A - Factor 3 (communication)	.342*	.022	45
Black ( <i>pass advanced</i> )	Students - SA - Factor 4 (safety)	.351*	.016	45
Black ( <i>pass advanced</i> )	Students - A - Factor 4 (safety)	-.404**	.007	44
Black ( <i>pass advanced</i> )	Educators - SA - Factor 4 (safety)	-.309*	.039	45
Black ( <i>pass advanced</i> )	Educators - A - Factor 4 (safety)	.342*	.023	44

Note. \*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Educators (SA) with Factor Four, safety ( $r = -.309^*$  and  $p = .020$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Educators (A) with Factor Four, safety ( $r = -.342^*$  and  $p = .023$ ), there was a significant correlation at the 0.05 level; however, the correlation value ( $r$ ) indicated a weak relationship.

Six school climate variables were found to have a significant correlation with the Black *pass advanced* percentage for the 2007-2008 Virginia SOL test in math. One of the correlations was significant at the 0.01 level and five were at the 0.05 level. Four correlations were associated with Student responses: (SA) and (A) with Factor Three, communication, (SA) and (A) with Factor Four-safety. Two correlations were associated with educators responses, (SA) and (A) with Factor Four, safety. Ten of the 55 schools did not have *pass* percentages in this category and were excluded from the analysis which was run on the remaining 45 schools.

### Summary of Data and Emerging Themes

*The overarching question for this study was as follows:*

What was the relationship between school climate as reflected by the School Climate Survey and student achievement as reflected on the 2007-2008 fifth grade Virginia Standards of Learning (SOL) assessments in math and reading?

The purpose of this study was to investigate the relationship between *school climate* and *student achievement*. Fifty-five schools were clustered into four clusters based on like factors. When the school climate data were placed next to student achievement data for each of these four clusters comparisons could be made. From these comparisons themes began to emerge.

The following data were used to compare school climate and student achievement. The *total pass (TP)* percentages for reading and math for each cluster was compared with the (*CF*) *combined factor* percentage. The (*CF*) is a value for school climate that was derived by averaging the CAs of the five climate factors. These three values were then compared for each cluster.

For Cluster One, the (*TP*) for both math and reading and the percentage for the combined climate factors closely parallel one another. The student achievement percentages were reading ( $TP = 92\%$ ) and math ( $TP = 90\%$ ) and the ( $CF = 91\%$ ). For Cluster Two the student achievement percentages were reading ( $TP = 97\%$ ) and math ( $TP = 96\%$ ), the *combined factor* percentage was ( $CF = 92\%$ ). For Cluster Three the student achievement percentages were reading ( $TP = 84$ ) and math ( $TP = 87\%$ ), the *combined factor* percentage was ( $CF = 89\%$ ). For Cluster Four the student achievement percentages were reading ( $TP = 86$ ) and math ( $TP = 79\%$ ), the *combined factor* percentage was ( $CF = 86\%$ ). When the *achievement percentages* were in the 90 percentile the climate *agreement percentages* were also in the 90 percentile. When the *achievement percentages* were in the 80 percentile the climate *agreement percentages* were also in the 80 percentile.

After using the cluster analysis to compare *school climate* and *student achievement* the researcher used regression analysis to further investigate this relationship. The regressions were run on individual schools rather than clusters as multiple observations were required and the clusters did not provide large enough samples. The analysis produced 77 significant correlations between school climate and student achievement. Initially the researcher looked at all 77 correlations identified as being significant at either the ( $p. = 0.01$ ) or ( $p. = 0.05$ ) levels. There were 49 correlations associated with school climate and student achievement in reading. There were 28 correlations associated with school climate and student achievement in math.

In reading most of the correlations were related to the *pass percentages* of all the fifth grade students who took the Virginia SOL tests, 25. For the subgroups, Black *pass percentages* correlated with 10 school climate values. The *pass percentages* for both White and low SES subgroups had 7 correlations. The SWD subgroup did not have any correlations in regard to reading. The school climate factor with the most correlations in regard to reading was Factor Two, relationships with 17. It was followed by Factor Four, safety with 13 correlations and then Factor One, instruction with 10. Factor Three, communication had 7 and Factor Five, environment had 2. The stakeholder with the largest number of correlations in regard to the reading SOL test was educators with 28, followed by parents with 15 and students with 6.

In math most of the correlations were related to the *pass percentages* of all the fifth grade students with 23 correlations. For the NCLB identified

subgroups the Black *pass* percentages correlated with 6 school climate values. The White *pass* percentages had 3 correlations. The low SES subgroup did not have any correlations in regard to math and SWD had 6 correlations. The school climate factor with the most correlations in regard to math was Factor Four with 9. It was followed by Factor Two with 7 correlations. Both Factor One and Factor Three had 6 correlations. Factor Five did not have any correlations in regard to math. The stakeholder with the largest number of correlations with the math SOL test were educators with 12, followed by parents with 11, and students with 5.

The researcher then looked at the correlation coefficient for each of the 77 correlations identified as being significant at either the ( $p = 0.01$ ) or ( $p = 0.05$ ) levels. A correlation coefficient between ( $r = .4$ ) and ( $r = .6$ ) is generally interpreted as having a moderate relationship (Salkind, 2004). The highest correlations found in this study were in the ( $r = .5$ ) and ( $r = .6$ ) range. Out of the 77 correlations initially identified 10 were found to be both statistically significant and to have a moderate relationship.

All ten of the correlations found to be statistically significant and to have a moderate relationship were derived from educators *agree* percentages with three factors correlating with three student achievement *DV*. Factor One, instruction, correlated (*SA*) and (*A*) with both (*PA*) and (*P*) on the Virginia SOL tests for reading by all fifth graders. Factor Two, relationships, also correlated (*SA*) and (*A*) with both (*PA*) and (*P*) on the Virginia SOL test for reading by all fifth graders. Factor Four, safety, had a correlation (*SA*) with (*PA*) on the Virginia SOL test for reading by all fifth graders. Nine of the correlations were with the reading SOL

test. There was only one correlation with the math SOL test. Factor One correlated (*SA*) with the (*PA*) on the Virginia SOL test for math by all fifth graders.

The (*DV*) for student achievement was the fifth grade *pass advanced* percentage for the 2007-2008 Virginia SOL test in reading which correlated with the following school climate (*IV*) each of which was statistically significant and had a correlation value (*r.*) that indicated the variables had a moderate relationship:

Educators (*SA*) with Factor One, instruction ( $r. = .557^{**}$  and  $p. = .000$ );

Educators (*A*) with Factor One, instruction ( $r. = -.598^{**}$  and  $p. = .000$ );

Educators (*SA*) with Factor Two, relationship ( $r. = .678^{**}$  and  $p. = .000$ );

Educators (*A*) with Factor Two, relationship ( $r. = -.618^{**}$  and  $p. = .000$ );

Educators (*SA*) with Factor Four, Safety ( $r. = .530^{**}$  and  $p. = .000$ ).

The (*DV*) for student achievement was the fifth grade *pass proficient* percentage for the 2007-2008 Virginia SOL test in reading which correlated with the following school climate (*IV*) each of which was statistically significant and had a correlation value (*r.*) that indicated the variables had a moderate relationship:

Educators (*SA*) with Factor One, instruction ( $r. = -.528^{**}$  and  $p. = .000$ );

Educators (*A*) with Factor One, instruction ( $r. = .569^{**}$  and  $p. = .000$ );

Educators (*SA*) with Factor Two, relationship ( $r. = .629^{**}$  and  $p. = .000$ );

Educators (*A*) with Factor Two, relationship ( $r. = -.612^{**}$  and  $p. = .000$ ).



The (*DV*) for student achievement was the fifth grade *pass advanced* percentage for the 2007-2008 Virginia SOL test in math which correlated with the following school climate (*IV*) each of which was statistically significant and had a correlation value (*r.*) that indicated the variables had a moderate relationship: Educators (*SA*) with Factor Two, relationship ( $r. = .511^{**}$  and  $p. = .000$ ).

*Subordinate Question 1:*

How did the individual factors instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment impact student achievement?

There was 90% agreement or better across all four clusters and all stakeholders in regard to Factor One, instructional programming and academic support. The degree of agreement to Factor One across clusters and stakeholders was the highest among the five factors. Educators responded with higher agreement to Factor One than any of the other factor. Students marked *strongly agree* at a higher percentage than other shareholders. Parents demonstrated the lowest degree of agreement. The responses of parents across all four clusters were very closely aligned. Educators responses to Factor One were similar to the parents responses but reflected more variance than that seen in either student or parents responses.

Students across clusters had a higher *agree* than *strongly agree* percentage in regard to Factor Two. This would represent a lower degree of agreement. Parents in three of the four clusters had a higher *agree* percentage than *strongly agree* in regard to Factor Two. Educators differed from students

and parents as the only group that had a majority of clusters with a higher *strongly agree* percentage in regard to Factor Two.

Student responses reflected a higher *agree* percentage which reflected a lower degree of agreement in regard to Factor Three, communication and collaboration. Both parents and educators split their responses between *strongly agree* and *agree* giving them a slightly higher degree of agreement than the student responses.

Factor Four had greater consistency in stakeholder responses than that found in the first three factors. The clusters' combined percentages reflect higher *strongly agree* percentages than *agree* percentages across clusters in regard to Factor Four, safety and discipline. Both students and parents had a rate of agreement with Factor Four in the 90% range. Educators differ from other stakeholders with a lower agreement rate in regard to Factor Four.

Factor Five, physical environment, facilities received the lowest agreement percentages among the five factors. The gap between Factor Five's agreement percentage and the percentages of the other factors was between five and eight percent. In regard to Factor Five both students and educators recorded their highest *disagree* percentages.

The school climate factors that correlated with student achievement in reading follows: Factor One correlated with ten, Dependent Variables *DV* for student achievement in reading Factor Two had seventeen correlations with the *DV*, Factor Three correlated seven times with the *DV*, Factor Four with the *DV* thirteen times, and Factor Five had two correlations with the *DV*.

The school climate factors that correlated with student achievement in math follows: Factor One had six correlations with the *DV*, Factor Two correlated with the *DV* seven times. Factor Three had six correlations with the *DV* for student achievement in math; Factor Four correlated with the *DV* nine times and Factor Five did not correlate with any *DV* for student achievement in math.

*Subordinate Question 2:*

If a relationship exists between school climate and student achievement, is there a significant difference in that relationship in regard to the achievement of individual subgroups: Black, Asian, Hispanic, and White, low socio-economic status (SES), and students with disabilities (SWD)?

The *DV* student achievement measures in reading that correlated with the school climate Independent Variables, *IV* follows:

Total (*PA*) correlated with the school climate Independent Variables, *IV* ( $n = 12$ ),  
 Total (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 13$ ),  
 Black (*PA*) correlated with the school climate Independent Variables, *IV* ( $n = 7$ ),  
 Black (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 3$ ),  
 White (*PA*) correlated with the school climate Independent Variables, *IV* ( $n = 6$ ),  
 White (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 1$ ),  
 low SES (*PA*) correlated with the school climate Independent Variables, *IV* ( $n = 2$ ),  
 low SES (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 5$ ).

The *DV* student achievement measures in math that correlated with the school climate Independent Variables, *IV* follows:

Total (*PA*) correlated with *IV* ( $n = 11$ ), fifth grade (*P*) correlated with *IV* ( $n = 2$ ), Black (*PA*) correlated with the school climate Independent Variables, *IV* ( $n = 6$ ), Black (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 3$ ), White (*PA*) correlated with the school climate Independent Variables, *IV* ( $n = 2$ ), White (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 1$ ) SWD (*P*) correlated with the school climate Independent Variables, *IV* ( $n = 6$ ).

*Subordinate Question 3:*

How do the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey, relate to student achievement?

Did the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey have a relationship to student achievement?

Student agreement percentages to specific climate factors that correlated with student achievement in reading follows: student with Factor One, ( $n = 0$ ), student with Factor Two, ( $n = 2$ ), student with Factor Three, ( $n = 2$ ), student with Factor Four, ( $n = 2$ ), student with Factor Five, ( $n = 0$ ), and student total correlations with student achievement reading, ( $n = 6$ ).

Parents agreement percentages to specific climate factors that correlated with student achievement in reading follows: parents with Factor One, ( $n = 6$ ), parents with Factor Two, ( $n = 5$ ), parents with Factor Three, ( $n = 0$ ), parents with Factor Four, ( $n = 2$ ), parents with Factor Five, ( $n = 2$ ), and parents total correlations with student achievement reading, ( $n = 15$ ).

Educators agreement percentages to specific climate factors that correlated with student achievement follows in reading: educators with Factor One, ( $n = 1$ ), educators with Factor Two, ( $n = 10$ ), educators with Factor Three, ( $n = 5$ ), educators with Factor Four, ( $n = 9$ ), educators with Factor Five, ( $n = 0$ ), and educators total correlations with student achievement reading, ( $n = 28$ ).

Student agreement percentages to specific climate factors that correlated with student achievement in math follows: Student with Factor One, ( $n = 0$ ), Student with Factor Two, ( $n = 1$ ), Student with Factor Three, ( $n = 2$ ), Student with Factor Four, ( $n = 2$ ), Student with Factor Five, ( $n = 0$ ), and student total correlations with student achievement math, ( $n = 5$ ).

Parents agreement percentages to specific climate factors that correlated with student achievement in math follows: parents with Factor One, ( $n = 4$ ), Parents with Factor Two, ( $n = 4$ ), parents with Factor Three, ( $n = 2$ ), parents with Factor Four, ( $n = 1$ ), parents with Factor Five, ( $n = 0$ ), and parents total correlations with student achievement math, ( $n = 11$ ).

Educators agreement percentages to specific climate factors that correlated with student achievement in math follows: educators with Factor One, ( $n = 2$ ), educators with Factor Two, ( $n = 2$ ), educators with Factor Three, ( $n = 2$ ), educators with Factor Four, ( $n = 6$ ), educators with Factor Five, ( $n = 0$ ), and educators total correlations with student achievement math, ( $n = 12$ ).

## CHAPTER 5

## SUMMARY, CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

## Introduction

Chapter five contains a brief introduction restating the purpose of this study and research questions. The sections included in this chapter are: findings, summary of findings, implications, suggestions for future studies, and reflections.

The purpose of this study was to investigate the relationship between school climate and student achievement in elementary schools located in the selected school division. Of particular interest was the impact that the individual variables: instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment had on student achievement. Another area of interest was the perspective of various stakeholders in regard to school climate and the relationship between those individual perspectives and student achievement.

## Overarching Research Question

*The overarching question for this study was as follows:*

What is the relationship between school climate as reflected by the 2008 School Climate Survey and student achievement as reflected on the 2008 fifth grade Virginia Standards of Learning (SOL) tests in reading and math?

*Subordinate Questions:*

1. How do individual factors including instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment impact student achievement?
2. If a relationship exists between school climate and student achievement, is there a significant difference in that relationship in regard to the achievement of individual subgroups: Black, Asian, Hispanic, and White, low socio-economic status (SES), and students with disabilities (SWD)?
3. How do the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey, relate to student achievement?

NCLB requires improvement in academic performance for the following identified subgroups: Black, Asian, Native American, Hispanic, and White, socio-economic Status (SES), limited English proficiency (LEP), and students with disabilities (SWD) (U. S. Department of Education, 2002). School climate is one of the factors that impact student achievement. As such educators should investigate the relationship between school climate and student achievement. Hoy and Miskel (1996) define school climate as the characteristics of one school that distinguishes it from another. School climate influences the behavior of the stakeholders within the school (Hoy & Miskel, 1996). Owens (1991) states the characteristics that define organizational climate are interwoven throughout the environment of the school building and that organizational climate is shaped by the perceptions of those within the organization (Owens, 1991). School climate is defined operationally as the perceptions of stakeholders, students, parents and

educators in regard to instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment.

Several researchers have discussed the connection between school climate and student achievement (Hoy & Woolfolk, 1993; Smith, 2005; Johnson & Stevens, 2006; Warren, 2007). Studies suggest that a relationship exists between healthy school climate and student achievement (Hoy & Woolfolk, 1993; Smith, 2005; Warren, 2007). Conversely, an unhealthy school climate appears to have a negative impact on student achievement (Esposito, 1999).

Of particular interest to this study was how school climate relates to student achievement. If a relationship exists between school climate and student achievement, school climate may be an indicator of schools with high levels of student achievement. This would suggest that if the climate in a school could be improved, the student achievement in the school might also improve.

### Findings

1. There is a relationship between school climate and student achievement as the cluster *total pass* percentages for reading and math correspond with their *combined factor* percentage.

The *total pass* percentages measure student achievement and the *combined factor* percentage is a measure of school climate. When the *total pass* percentages for reading and math were in the 90 percentile, the cluster's *combined factor* percentage was also in the 90 percentile. In this study both Clusters One and Two had a *total pass* percentage for reading in the 90 percentile



and a *total pass* percentage for math in the 90 percentile. The *combined factor* percentage for each of these clusters was also in the 90 percentile. Clusters Three and Four had a *total pass* percentage for reading in the 80 percentile and a *total pass* percentage for math in the 80 percentile. The *combined factor* percentage for each of these clusters was also in the 80 percentile.

These findings are consistent with the findings of earlier research. Smith's study found a relationship between school discipline and student achievement (Smith, 2005). The data used in Smith's study indicated that lower achieving school divisions had higher incidents of student discipline (Smith, 2005). In Smith's study higher incidents of student discipline indicated a negative school climate.

Findings 2 to 10 contain both positive and negative correlations. These correlations are between student achievement as measured by the *pass advance* and *pass proficient* percentages and school climate as measured by the *strongly agree* and *agree* percentages. A positive correlation exists when the pass percentage value increases and the value for the agree percentage also increases; if the value for both decreases there is also a positive correlation (Salkind, 2004). A negative correlation exists when the value of one variable increases and the value for the other decreases (Salkind, 2004).

The *strongly agree* percentages in this study tended to be larger than the *agree* percentages. As stakeholders responded most frequently to *strongly agree*

the *agree* percentages decreased. When a lower *agree* percentage correlated to a higher *pass advance* or *pass proficient* percentage there was a negative correlation between the two. The *pass proficient* percentages tended to be higher than *pass advance* percentages. When a higher *strongly agree* percentage correlated to a lower *pass proficient* or *pass advance* percentage there was a negative correlation.

2. There is a relationship between student achievement on the 2007-2008 Virginia SOL tests for reading and math and educators perceptions of school climate.

The *pass* percentages, *pass advanced* and *pass proficient*, for the Virginia SOL tests in reading and math had 10 statistically significant correlations with the *agree* percentages for educators who responded, *strongly agree* and *agree*, with the School Climate Survey, and a correlation value (*r.*) that indicated the variables had a moderate relationship. Educators had an additional 30 statistically significant correlations between the *pass* percentages and *agree* percentages. The (*r.*) variable for the second set of correlations indicated a weak to moderate correlation.

These findings are consistent with earlier studies. Johnson and Stevens (2006) focused on elementary schools in their study. The focus of the study was student achievement and teachers' perceptions of school climate. Their study looked at teachers' perceptions in 59 elementary schools. The study found there was a

relationship between teacher perceptions of school climate and student achievement (Johnson & Stevens, 2006).

3. There is a relationship between student achievement on the 2007-2008 Virginia SOL tests for reading and math and parents perceptions of school climate.

The *pass* percentages, *pass advanced* and *pass proficient*, for the 2007-2008 Virginia SOL tests in reading and math had 26 statistically significant correlations with the *agree* percentages for parents who responded, *strongly agree* and *agree*, with the School Climate Survey, and a correlation value (*r.*) that indicated the variables had a weak to moderate relationship.

These findings are consistent with the findings of earlier studies. A 2006 study conducted by the researchers in South Carolina was the first to take a look at the perceptions of each group of stakeholders: teachers, parents, and students (DiStefano et al., 2008). The researchers extracted data from the South Carolina Department of Education 2006 state report card file. The 2006 study had a data set of 120,000 responses, 31,000 parents and 81,000 teachers. The respondents came from 569 elementary schools, 235 middle schools, and 183 high schools (DiStefano et al., 2008). The analyses found that the factors of school safety, working conditions, and home-school relationships were important across all grade levels (DiStefano et al., 2008). School climate

factors accounted for two thirds of the variation in school achievement measures (DiStefano et al., 2008)

4. There is a relationship between student achievement on the 2007-2008 Virginia SOL tests for reading and math and student perceptions of school climate.

The *pass* percentages, *pass advanced* and *pass proficient*, for the 2007-2008 Virginia SOL tests in reading and math had 11 statistically significant correlations with the *agree* percentages for students who responded, *strongly agree* and *agree*, with the School Climate Survey, and a correlation value (*r.*) that indicated the variables had a weak to moderate relationship.

These findings are consistent with the findings of earlier studies. The Bevans study began to look at how stakeholder perceptions might impact organizational health (Bevans et al., 2007). The findings of the Bevan's study were consistent with the findings of both the Johnson and DiStefano studies mentioned earlier. There was a relationship between teacher perceptions of school climate and student achievement.

5. There is a relationship between student achievement on the Virginia SOL tests for reading and math and school climate Factor Two, interpersonal relationships and Factor Four, safety and discipline.

The *pass* percentages, *pass advanced* and *passed proficient*, for the Virginia SOL tests in reading and math had statistically significant correlations with the *agree* percentages of stakeholders who responded, *strongly agree* and *agree*, with Factor Two, interpersonal relationships and Factor Four, safety and discipline, 22 correlations. These two factors are grouped together as both relate to the perception of wellbeing within the school population.

The findings of this study coincide with the findings of earlier studies. In the State of South Carolina the students and parents in specific grades complete an annual survey intended to assess school climate. The survey topics include parent/school relationship (DiStefano et al., 2008). School climate factors accounted for two thirds of the variation in school achievement measures (DiStefano et al., 2008).

6. There is a relationship between student achievement on the Virginia SOL tests for reading and math and school climate Factor One, instructional programming and Factor Three, communication and collaboration.

The *pass* percentages, *pass advanced* and *passed proficient*, for the Virginia SOL tests in reading and math had statistically significant correlations with the *agree* percentages of stakeholders who responded, *strongly agree* and *agree* with Factor One, instructional programming, 17 correlations and Factor Three,

communication and collaboration, 13 correlations. These two factors are grouped together as each relates to the preparation and delivery of instruction.

The findings of this study coincide with the findings of earlier studies. The South Carolina study found school climate factors accounted for two thirds of the variation in school achievement measures (DiStefano et al., 2008).

7. There is a relationship between student achievement on the Virginia SOL tests for reading and math and school climate Factor Five, physical school environment.

The *pass* percentages, *pass advanced* and *passed proficient*, for the Virginia SOL tests in reading and math had statistically significant correlations with the *agree* percentages of stakeholders who responded, *strongly agree* and *agree*, with Factor Five, physical school environment with 2 correlations.

The findings of this study coincide with the findings of earlier studies. In the State of South Carolina the survey topics included the environment and found a relationship between school climate and student achievement (DiStefano et al., 2008).

8. There is a relationship between school climate and the student achievement of identified ethnic subgroups on the Virginia SOL tests for reading and math.

The *pass* percentages of identified ethnic subgroups (*PA*) and (*P*) for the Virginia SOL tests in reading and math had statistically significant correlations with school climate: Black achievement had 16 correlations and White achievement had 10 correlations with school climate.

The findings of this study correspond with the findings of earlier studies. Warren's study found a relationship between the incidents of discipline and student achievement (Warren, 2007). When considering race, the study found a relationship between student discipline and student achievement in both reading and mathematics (Warren, 2007). Imperial found that a correlation appears to exist between a healthy school climate and higher student achievement by minority students. Imperial (2005) stated that a correlation was found between a healthy school climate and lowering the minority performance gap (Imperial, 2005).

9. There is a relationship between school climate and the student achievement of students with low socio-economic status SES on the Virginia SOL test in reading.

The *pass* percentages of students with low socio-economic status SES (*PA*) and (*P*) for the Virginia SOL test in reading had a statistically significant correlation with school climate. There were 7

correlations between the reading achievement of students with low socio-economic status SES and school climate.

The findings of this study correspond with the findings of earlier studies. The Warren study found a relationship exist between student discipline and student achievement by students with low socio-economic status for reading and math (Warren, 2007).

10. There is a relationship between school climate and the student achievement of students with disabilities SWD on the Virginia SOL test in math.

The *pass* percentages of students with disabilities SWD (*PA*) and (*P*) for the Virginia SOL test in math had a statistically significant correlation with school climate. There were 6 correlations between the math achievement of students with disabilities SWD and school climate.

The findings of this study correspond with the findings of earlier studies. Warren's study found a relationship between the incidents of discipline and student achievement (Warren, 2007).

### Summary of Findings

Findings were based on the analysis of school climate as measured by the spring 2008 School Climate Survey and student achievement as measured by



the 2007 - 2008 fifth grade Virginia Standards of Learning (SOL) test in math and reading. These are supported by the findings of previous studies discussed in chapter two of this paper.

In the content areas of reading and math, lower *pass advance* and *pass proficient* percentages on the 2007/8 Virginia SOL tests were related to lower *strongly agree* and *agree* percentages in response to the spring 2008 School Climate Survey. In the content areas of reading and math, higher *pass advanced* and *pass proficient* percentages on the 2007-2008 Virginia SOL tests were related to higher *strongly agree* and *agree* percentages in response to the spring 2008 School Climate Survey. Based on these findings, schools that have a *negative school climate* as perceived by its stakeholders, students, parents, and educators, can expect to have *lower student achievement* scores; whereas, schools that have a *positive school climate* as perceived by its stakeholders, students, parents, and educators, can expect to have *higher student achievement* scores.

These findings support previous research (DiStefano et al., 2008; Imperial, 2005; Johnson & Stevens, 2006; Smith, 2005; & Warren, 2007) that a positive school climate must be provided for students to achieve. These findings are consistent with research that school climate factors, instructional programming, interpersonal relationships, communication/collaboration, safety/discipline, and physical environment, are related to student achievement (DiStefano et al., 2008; Smith, 2005; & Warren, 2007). Furthermore, these findings support previous studies that found a relationship between stakeholder perceptions of school

climate and student achievement (Johnson & Stevens, 2006). Lastly, these findings support previous findings that a relationship exists between school climate and the achievement of subgroups: Black, low SES, and SWD.

### Implications

Based on the findings of this study, school divisions may improve school climate by investigating and addressing the following:

1. School divisions and their schools should improve communication between students, parents and educators to communicate high expectations in regard to the achievement for all their students.
2. School divisions and their schools should design and use instructional programming that engages all their students in an effort to close the achievement gap for identified subgroups.
3. School divisions and their schools should foster healthy relationships: student to student, student to teacher, teacher to student, and school to home.
4. School divisions and their schools should develop opportunities for greater collaboration between educators and between the school and home.
5. School divisions should assess school safety and assist individual schools in the correction of safety concerns.
6. School divisions should develop methods to collect data on school climate based on the perceptions of stakeholders.

7. School divisions and their schools should analyze data collected on school climate in relation to student achievement to determine more effective allocation of resources.
8. School divisions should develop workshops that will assist schools with the improvement of school climate with the understanding that each school has a unique school climate.

#### Recommendations for Future Studies

Based on the findings of this study, the recommendations for further study follow:

1. It is recommended that this study be replicated using elementary schools throughout the Commonwealth of Virginia to see if climate affects student achievement in a broader population.
2. It is recommended that this study be replicated using middle schools in the Commonwealth of Virginia.
3. It is recommended that this study be replicated using high schools in the Commonwealth of Virginia.
4. It is recommended that this study be replicated using a survey instrument developed outside the school division in which the study is being conducted.
5. It is recommended that this study be conducted using focus groups or interviews in addition to the survey.
6. It is recommended that this study be replicated with increased focus on the performance of identified subgroups.

7. It is recommended that this study be replicated using a variety of assessments to measure student achievement.

### Reflections

This study focused on the relationship between school climate and student achievement. An analysis of the data found that a relationship did exist and was consistent with earlier studies. Earlier studies had separated school climate into a set of factors that together compose the unique climate of each school. These factors work together to form the learning environment. Each of these factors represents a specific part of the school climate. The five factors identified in this study were instruction, relationships, communication, safety, and environment. As I researched this topic, I began to see school climate as the rope that binds a school together. The five factors are like the strands of that rope, they give school climate its strength. If the strands are strong, the rope will do its job; if not, it will fail. In the same way if the factors are strong, if they are performing as they should, school climate will be positive. If one or more of the factors falter, then the school climate will not be conducive to student learning and the climate will be negative.

Of particular interest was how these five factors impact student achievement? Was the relationship between school climate and student achievement the same for all the factors or was it different for each? Instruction is where learning takes place. Would instruction impact student achievement more than providing a safe environment? Relationships in a school are about the connections people make. These relationships form the foundation for any

community. Was the impact of relationships stronger than communication? The daily activities of a school are carried out within a facility, an environment. How did the condition of that facility impact student achievement in relation to the other four factors?

In this study the two factors that had the largest number of correlations with student achievement were relationships and safety. Factor Two is concerned with all the interpersonal relationships in the school, how people relate to one another. Factor Four is about safety and discipline; do people feel secure? Both of these factors have at their core the well being of an individual. There is support provided by the relationships and protection under the safety factor. When students have a positive sense of well being, they can focus on learning.

Factor One, instruction and academic support, had the third highest number of correlations with student achievement. In an environment where individuals feel supported and safe, they can turn their attention to learning. The activities that occur in Factor One are those directly involved in student learning. These activities include the planning and delivery of instruction, determining how and what will be taught. It also includes activities that support learning. The activities that ask what do we do for a student who is not learning and for the student who has mastered the skills being taught. This factor has the most obvious relationship with student achievement. However, it appears that before students can be receptive to learning they need to gain a sense of well being. Once the sense of well being has been achieved it appears then the activities of instruction and academic support take on greater importance.

Factor Three, communication and collaboration, followed closely behind instruction in the strength of its relationship with student achievement. Indeed, there appear to be connections between these two factors. Collaboration should occur between educators at all stages of instruction, planning, assessment, and intervention. Collaboration concerning student learning and achievement should also occur between educators and parents. When stakeholders had high *agree* percentages with this factor there were corresponding high *pass* percentages.

I was intrigued by the results for Factor Five, the physical school facility. This factor had two correlations with student achievement. I had expected it to have similar results as that produced by the other four factors. I went back to the questions on the survey of which there were four. The questions asked if the facilities were clean, attractive, and well maintained. The survey then asked if the facilities were sufficient to support student learning. These questions were of a general nature. It would be interesting to see if and how the results varied if the questions were more specific. For instance, does the school's roof leak? Does the heating system work well? Is the building free of graffiti? Are there enough electrical outlets to support new technology? After completing this study, it is Factor Five I would like to investigate further by reviewing current studies that focused specifically on the relationship between school facilities and student achievement. I remain curious as to why only two correlations between facilities were found in this study and would have expected greater correlation.

Were there significant differences in the relationship between school climate and the achievement of identified subgroups? There was variation among

the subgroups. There were correlations between school climate and the achievement of Black and White subgroups in math and reading. This was the pattern that I expected to see among all four subgroups. However, school climate had a correlation with low SES achievement in reading only; there were no correlations with math. The reverse was true with the SWD subgroup. The SWD achievement is math correlated; their reading achievement did not. School climate correlated with Black achievement more than any other subgroup. There were significant differences in the relationship between school climate and the achievement of identified subgroups. However, the greatest number of correlations was in the relationship between school climate and the student achievement of the total population.

After conducting this study, I still had questions about the relationship between school climate and the achievement of individual subgroups. What would happen if more alternate assessments were used to determine student achievement? The use of one assessment, the Virginia SOL tests, produced enough data to indicate the existence of a relationship between school climate and student achievement. Alternate assessments could give us additional data as to how that relationship with individual subgroups manifests itself. The multiple choice format of the Virginia SOL tests may be a more accurate measure of the achievement of one subgroup than that of another. The use of alternate assessments may give researchers a more accurate measure of student achievement for all students.

The Virginia SOL pass percentages for the Hispanic, Asian and Native American subgroups were not reported by the state. Their population within each school was too small. Their inclusion in the study would have produced more data from which to study the relationship between school climate and student achievement.

Did the perceptions of individual stakeholders, students, parents, and educators, as reflected on the climate survey have a relationship to student achievement? There was a relationship between student achievement and stakeholders perceptions of school climate. The perceptions of educators had the highest number of correlations followed by parents and then students. The response rates of each group are of concern. The student response rates were in the 90 percentile range; educators' responses, in the 80 percentile range; and parents, in the 20 percentile range. The survey would benefit from greater parental participation. It may be beneficial to add focus groups or interviews to this process.

Schools cannot close the achievement gap without developing a learning environment that facilitates student learning. Administrators need data on how students learn and what variables affect that learning. This study investigated the school climate factors that have a relationship with student learning. School leaders should focus on improving these five factors to produce a positive school climate. School divisions should assist schools in determining the positive and negative aspects of their school climate. Then workshops need to be developed to assist educators in the creation of positive school climates that are conducive



to student learning. A positive school climate should provide an environment that facilitates learning and increased achievement for all students.

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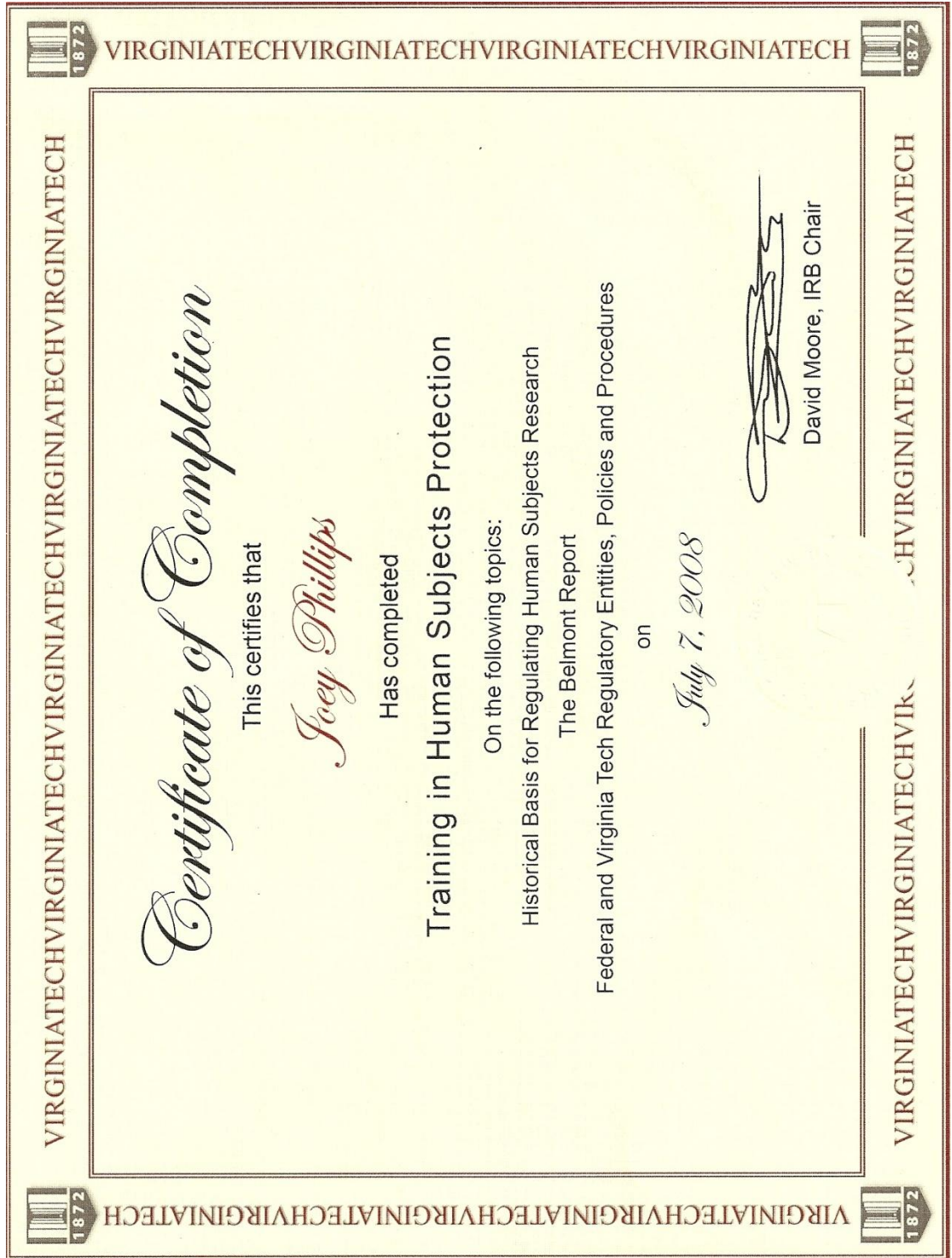
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Appendix A

Training in Human Subjects Protection



Appendix B

IRB Approval



**Office of Research Compliance**  
Carmen T. Green, IRB Administrator  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, Virginia 24061  
540/231-4358 Fax 540/231-0959  
e-mail [ctgreen@vt.edu](mailto:ctgreen@vt.edu)  
[www.irb.vt.edu](http://www.irb.vt.edu)  
FVA00000572 (expires 1/20/2010)  
IRB # is IRB00000687

DATE: March 6, 2009

MEMORANDUM

TO: Travis W. Twiford  
Joey Phillips

FROM: Carmen Green 

SUBJECT: **IRB Exempt Approval:** "The Relationship Between Elementary School Climate and Student Achievement in a School Division in the Commonwealth of Virginia", IRB # 09-241

I have reviewed your request to the IRB for exemption for the above referenced project. The research falls within the exempt status. Approval is granted effective as of March 6, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in the research protocol. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File

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Appendix C

Approval from Selected School Division

April 6, 2009

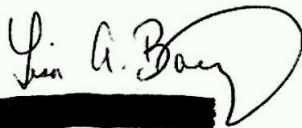
Mr. Joey H. Phillips  
[REDACTED]

Dear Mr. Phillips:

This letter serves as the Department of Research, Evaluation, and Assessment's approval for your research study entitled "The Relationship Between Elementary School Climate and Student Achievement in a School Division in the Commonwealth of Virginia." It is our understanding that you will provide the Department of Research, Evaluation, and Assessment with an Excel data file containing the publicly available fifth-grade SOL results for the 2007-08 school year. Once we receive this file, we will provide you with the annual climate survey results for fifth-grade students from that same year. The file that will be returned to you will not contain school names. Your study was approved with the understanding that you will not indicate the name of the school division in your final report.

Our approval for your study will expire one year from the date of this letter. If there are any changes to the methods or materials that you plan to use as part of your study, you must submit the changes to our office for review prior to proceeding. It is our expectation that you will submit an electronic copy of the final report upon its completion to the Department of Research, Evaluation, and Assessment. Please send the report to [REDACTED]. If you have any questions, please contact me at [REDACTED].

Sincerely,



[REDACTED]  
Research Specialist

pc: [REDACTED] Assistant Superintendent  
Department of Research, Evaluation, and Assessment

[REDACTED] Assistant Superintendent for Middle School Education  
Department of School Administration

**RECEIVED**

APR - 9 2009

## Appendix D

## Climate Survey Response Rates

School	Student Survey Response Rate	Parent Survey Response Rate	Educator (Teacher) Response Rate
48	92.59	24.75	60.38
266	95.16	13.39	62.50
388	95.51	25.30	67.11
400	94.87	19.42	87.27
401	97.87	19.16	56.60
402	77.92	25.00	72.73
403	98.41	44.58	64.58
404	92.37	41.08	68.00
405	97.17	26.58	62.90
406	97.62	26.64	69.05
407	76.58	38.12	41.67
408	100.00	20.14	50.91
412	95.12	23.25	54.35
413	94.81	18.13	59.68
414	97.37	24.21	74.47
416	95.06	14.37	68.66
419	96.43	13.62	92.00
422	92.31	37.37	66.67
423	100.00	23.36	80.70
424	100.00	27.07	64.15
428	94.74	14.91	66.67
430	96.15	26.58	49.02
433	94.05	20.25	63.33
434	94.34	18.46	57.41

436	95.24	21.63	69.23
438	100.00	16.28	55.00
439	97.83	21.29	73.47
440	95.77	28.93	60.32
445	96.88	33.71	55.56
446	100.00	31.03	83.87
447	99.07	23.08	69.09
450	96.77	24.95	64.52
452	95.20	10.52	72.00
458	97.20	15.37	60.98
469	96.39	17.53	77.42
474	86.08	21.05	61.82
475	89.58	14.01	66.67
479	100.00	35.41	71.88
480	91.01	36.70	71.15
481	94.23	21.34	70.97
482	87.41	35.50	50.77
485	95.92	22.88	70.69
486	100.00	22.73	71.43
489	96.03	29.46	70.97
491	96.51	31.25	71.15
492	98.85	16.10	57.14
493	90.86	7.77	71.88
494	93.75	19.74	71.43
495	79.03	25.00	58.82
496	93.27	33.03	70.69
497	96.81	20.33	76.47

498	85.47	26.61	77.59
556	96.36	32.21	64.29
558	98.21	36.52	72.31
597	91.26	20.06	70.59
Mean	94,57	24.31	66,75

## Appendix E

## Climate Survey Questions

## Survey

Type	Item ID	Item Description
------	---------	------------------

Instructional Program and Academic Support

Parent	1	Teachers at this school care about how well my child does in school.
Parent	2	This school provides students with a high-quality education.
Parent	3	Teachers at this school expect all students to do well.
Parent	4	Students at this school want to learn.
Parent	5	Teachers give my child extra help when needed.
Parent	6	This school provides students with the things they need to learn.
Parent	7	In this school, my child is learning to use computer technology.
Parent	8a	This school provides high-quality instruction and services in the area of Reading
Parent	8b	. . . Writing
Parent	8c	. . . Mathematics
Parent	8d	. . . Social Studies
Parent	8e	. . . Science
Parent	8f	. . . Music
Parent	8g	. . . Art
Parent	8h	. . . Health
Parent	8i	. . . Physical Education
Parent	8l	. . . Guidance Services
Parent	8m	. . . Gifted Education
Parent	8n	. . . Special Education
Parent	8o	. . . English as a Second Language

Interpersonal Relationships

Parent	9	My child enjoys going to school.
Parent	10	Students treat one another with respect.

Parent	11	Students treat teachers with respect.
Parent	12	Teachers treat students with respect.
Parent	13	My child feels a sense of belonging at this school. This school respects diversity and welcomes all cultures.
Parent	14	
Parent	15	Teachers and students at this school care about each other.
Parent	16	There is an overall positive feeling in this school.

Communication, Collaboration and

Involvement

Parent	17	This school encourages parents to be involved with their child's learning.
Parent	18	This school effectively communicates important information to parents.
Parent	19	Parents have opportunities to provide input about school-related issues.
Parent	20	This school gives students a chance to participate in activities.
Parent	21	School events are scheduled to encourage parent participation.

Safety and Discipline

Parent	22	My child knows what behavior is expected of him or her at this school.
Parent	23	This school provides a safe and orderly place for students to learn. My child knows the consequences for misbehaving at this school.
Parent	24	
Parent	25	Rules for behavior apply equally to all students.
Parent	26	There are high expectations for student behavior at this school.
Parent	27	The consequences for breaking the rules are the same for all students.

Physical School Environment

Parent	28	This school is attractive.
Parent	29	This school is kept clean. This school is well-maintained and kept in good repair.
Parent	30	
Parent	31	This school's facilities are sufficient to support student learning.

Instructional Program and Academic Support

Teacher	1	The teachers at this school care about how well their students do in school.
Teacher	2	This school provides students with a high-quality education.
Teacher	3	Teachers at this school expect all students to do well.
Teacher	4	Students at this school want to learn.
Teacher	5	Students actively participate in classroom activities.

Teacher	6	Teachers give students extra help when needed.
Teacher	7	In this school, students are learning to use computer technology.
Teacher	8	This school provides students with the things they need to learn. This school provides high-quality instruction and services in the area of
Teacher	9a	Reading.
Teacher	9b	. . . Writing
Teacher	9c	. . . Mathematics
Teacher	9d	. . . Social Studies
Teacher	9e	. . . Science
Teacher	9f	. . . Music
Teacher	9g	. . . Art
Teacher	9h	. . . Health . . . Physical
Teacher	9i	Education
Teacher	9l	. . . Gifted Education . . . Special
Teacher	9m	Education
Teacher	9n	. . . English as a Second Language . . . Guidance
Teacher	9o	Services

#### Interpersonal Relationships

Teacher	10	Students enjoy coming to school.
Teacher	11	Students treat one another with respect.
Teacher	12	Students treat teachers with respect.
Teacher	13	Teachers treat students with respect.
Teacher	14	Students feel a sense of belonging at this school. This school respects diversity and welcomes all
Teacher	15	cultures.
Teacher	16	Teachers and students at this school care about each other.
Teacher	17	There is an overall positive feeling in this school.

#### Communication, Collaboration and

##### Involvement

Teacher	18	This school encourages parents to be involved with their child's learning. In this school, important information is effectively communicated to
Teacher	19	teachers.
Teacher	20	Teachers have opportunities to provide input about school-related issues.
Teacher	21	This school gives students a chance to participate in activities.
Teacher	22	School events are scheduled to encourage parent participation.
Teacher	23	Teachers and administrators work well together.
Teacher	24	The (PAC) provides an effective method for teachers to share concerns...

Teacher	25	I am kept informed about the meetings, activities, and accomplish... of the PAC.
Teacher	26	Teachers serving on the PAC work effectively with the principal on issues.

Safety and Discipline

Teacher	27	Students know what behavior is expected of them at this school.
Teacher	28	This school provides a safe and orderly place for students to learn.
Teacher	29	Students know the consequences for misbehaving at this school.
Teacher	30	Rules for behavior apply equally to all students.
Teacher	31	There are high expectations for student behavior at this school.
Teacher	32	The consequences for breaking the rules are the same for all students.

Physical School Environment

Teacher	33	This school is attractive.
Teacher	34	This school is kept clean.
Teacher	35	This school is well-maintained and kept in good repair.
Teacher	36	This school's facilities are sufficient to support student learning.

Instructional Program and Academic Support

Students	1	My teachers care about how well I do in school.
Students	2	This school provides students with a high-quality education.
Students	3	Teachers at this school expect all students to do well.
Students	4	Students at this school want to learn.
Students	5	Students actively participate in classroom activities
Students	6	My teachers give me extra help when I need it
Students	7	My teachers let me know how I can do better
Students	8	This school provides students with the things they need to learn.
Students	9	In this school I am learning how to use computer technology.
Students	10a	This school provides high-quality instruction and services in the area of Reading.
Students	10b	. . . Writing
Students	10c	. . . Mathematics
Students	10d	. . . Social Studies
Students	10e	. . . Science
Students	10f	. . . Music



Students	10g	. . . Art
Students	10h	. . . Health
Students	10i	. . . Physical Education

Interpersonal Relationships

Students	11	I enjoy going to school.
Students	12	Students treat one another with respect.
Students	13	Students treat teachers with respect.
Students	14	Teachers treat students with respect.
Students	15	I feel a sense of belonging at this school This school respects diversity and welcomes all cultures.
Students	16	
Students	17	Teachers and students at this school care about each other.
Students	18	There is an overall positive feeling in this school.

Communication, Collaboration and involvement

Students	19	This school encourages my parents to be involved with my learning.
Students	20	This school shares important information with students.
Students	21	Students have an opportunity to provide input on school related issues.
Students	22	This school gives students a chance to participate in activities.
Students	23	School events are scheduled so that my parents can attend.

Safety and Discipline

Students	24	I know what behavior is expected of me at this school
Students	25	I know the consequences of misbehaving at this school.
Students	26	Rules for behavior apply equally to all students.
Students	27	There are high expectations for student behavior at this school.
Students	28	The consequences for breaking the rules are the same for all students.

Physical School Environment

Students	29	This school is attractive.
Students	30	This school is kept clean.
Students	31	This school is well-maintained and kept in good repair.

Appendix F

Demographic Data Used to Cluster Schools

School	Fall Mem	Black						White					
		%	Raw Score	Per 10	Diff. Mean	Diff. Mean2	Z Score	%	Raw Score	Per 10	Diff. Mean	Diff. Mean 2	Z Score
ES 48	106	0.251	27	2.51	0.08	0.01	0.05	0.57	60	5.69	-0.07	0.01	-0.04
ES 266	53	0.47	25	4.70	-2.11	4.45	1.26	0.31	16	3.11	2.51	6.28	1.33
ES 388	152	0.324	49	3.24	-0.65	0.42	0.39	0.34	52	3.40	2.22	4.91	1.18
ES 400	73	0.241	18	2.41	0.18	0.03	0.11	0.57	41	5.66	-0.04	0.00	-0.02
ES 401	96	0.244	23	2.44	0.15	0.02	0.09	0.60	58	6.03	-0.41	0.17	-0.22
ES 42	80	0.206	16	2.06	0.53	0.28	0.32	0.64	52	6.44	-0.82	0.68	-0.44
ES 403	129	0.059	8	0.06	2.53	6.40	1.51	0.75	96	7.48	-1.86	3.48	-0.99
ES 404	132	0.028	4	0.03	2.56	6.56	1.53	0.88	116	8.81	-3.19	10.20	-1.70
ES 405	105	0.214	22	2.14	0.45	0.20	0.27	0.60	63	5.99	-0.37	0.14	-0.20
ES 406	42	0.174	7	1.74	0.85	0.72	0.51	0.69	29	6.91	-1.29	1.67	-0.69
ES 407	110	0.043	5	0.43	2.16	4.66	1.29	0.84	92	8.38	-2.76	7.64	-1.47
ES 408	59	0.373	22	3.73	-1.14	1.30	0.68	0.43	26	4.33	1.29	1.65	0.68
ES 412	81	0.224	18	2.24	0.35	0.12	0.21	0.57	46	5.67	-0.05	0.00	-0.03
ES 413	80	0.354	28	3.54	-0.95	0.90	0.57	0.47	37	4.66	0.96	0.91	0.51
ES 414	77	0.274	21	2.74	-0.15	0.02	0.09	0.56	43	5.64	-0.02	0.00	-0.01
ES 416	82	0.557	46	5.57	-2.98	8.88	1.78	0.26	21	2.56	3.06	9.34	1.62
ES 419	77	0.324	25	3.24	-0.65	0.42	0.39	0.38	29	3.75	1.87	3.48	0.99
ES 422	105	0.104	11	1.04	1.55	2.40	0.93	0.76	79	7.55	-1.93	3.74	-1.03
ES 423	58	0.44	26	4.40	-1.81	3.28	1.08	0.31	18	3.11	2.51	6.28	1.33
ES 424	88	0.212	19	2.12	0.47	0.22	0.28	0.60	53	6.04	-0.42	0.18	-0.23
ES 428	78	0.695	54	6.95	-4.36	19.01	2.61	0.15	11	1.47	4.15	17.19	2.20
ES 430	106	0.268	28	2.68	-0.09	0.01	0.05	0.51	54	5.09	0.53	0.28	0.28
ES 433	169	0.351	59	3.51	-0.92	0.85	0.55	0.37	62	3.67	1.95	3.79	1.03
ES 434	106	0.204	22	2.04	0.55	0.30	0.33	0.61	65	6.12	-0.50	0.25	-0.27
ES 436	80	0.248	20	2.48	0.11	0.01	0.07	0.59	47	5.92	-0.30	0.09	-0.16
ES 438	79	0.518	41	5.18	-2.59	6.71	1.55	0.24	19	2.35	3.27	10.67	1.74
ES 439	93	0.328	31	3.28	-0.69	0.48	0.41	0.47	43	4.67	0.95	0.89	0.50
ES 440	146	0.049	7	0.49	2.10	4.41	1.25	0.80	117	7.99	-2.37	5.64	-1.26
ES 445	130	0.135	18	1.35	1.24	1.54	0.74	0.71	92	7.07	-1.45	2.11	-0.77
ES 446	128	0.041	5	0.41	2.18	4.75	1.30	0.85	109	8.53	-2.91	8.49	-1.55
ES 447	113	0.293	33	2.93	-0.34	0.12	0.20	0.47	53	4.68	0.94	0.88	0.50
ES 450	122	0.212	26	2.12	0.47	0.22	0.28	0.55	67	5.47	0.15	0.02	0.08
ES 452	124	0.446	55	4.46	-1.87	3.50	-	0.40	49	3.98	1.64	2.68	0.87

Elementary School Climate and Student Achievement 175

							1.12							
ES 458	105	0.378	40	3.78	-1.19	1.42	-	0.71	0.39	41	3.88	1.74	3.01	0.92
ES 469	80	0.153	12	1.53	1.06	1.12	-	0.63	0.68	55	6.83	-1.21	1.47	-0.65
ES 474	81	0.359	29	3.59	-1.00	1.00	-	0.60	0.45	36	4.46	1.16	1.34	0.61
ES 475	52	0.494	26	4.94	-2.35	5.52	-	1.40	0.33	17	3.33	2.29	5.22	1.21
ES 479	62	0.054	3	0.54	2.05	4.20	-	1.22	0.88	54	8.79	-3.17	10.08	-1.69
ES 480	88	0.08	7	0.80	1.79	3.20	-	1.07	0.82	73	8.24	-2.62	6.89	-1.39
ES 481	102	0.313	32	3.13	-0.54	0.29	-	0.32	0.53	54	5.25	0.37	0.13	0.19
ES 482	135	0.054	7	0.54	2.05	4.20	-	1.22	0.84	114	8.42	-2.80	7.86	-1.49
ES 485	99	0.253	25	2.53	0.06	0.00	-	0.04	0.60	59	5.99	-0.37	0.14	-0.20
ES 486	42	0.238	10	2.38	0.21	0.04	-	0.13	0.55	23	5.53	0.09	0.01	0.05
ES 489	76	0.132	10	1.32	1.27	1.61	-	0.76	0.72	55	7.23	-1.61	2.61	-0.86
ES 491	92	0.163	15	1.63	0.96	0.92	-	0.57	0.68	63	6.80	-1.18	1.40	-0.63
ES 492	84	0.274	23	2.74	-0.15	0.02	-	0.09	0.54	46	5.42	0.20	0.04	0.10
ES 493	216	0.861	186	8.61	-6.02	36.25	-	3.60	0.06	12	0.55	5.07	25.66	2.69
ES 494	59	0.277	16	2.77	-0.18	0.03	-	0.11	0.50	30	5.00	0.62	0.38	0.33
ES 495	65	0.252	16	2.52	0.07	0.00	-	0.04	0.62	40	6.19	-0.57	0.33	-0.31
ES 496	196	0.087	17	0.87	1.72	2.96	-	1.03	0.78	153	7.79	-2.17	4.73	-1.16
ES 497	91	0.342	31	3.42	-0.83	0.69	-	0.50	0.49	44	4.87	0.75	0.56	0.40
ES 498	116	0.184	21	1.84	0.75	0.56	-	0.45	0.67	78	6.69	-1.07	1.15	-0.57
ES 556	112	0.086	10	0.86	1.73	2.99	-	1.03	0.77	86	7.71	-2.09	4.39	-1.11
ES 558	111	0.179	20	1.79	0.80	0.64	-	0.48	0.59	65	5.86	-0.24	0.06	-0.13
ES 597	100	0.204	20	2.04	0.55	0.30	-	0.33	0.58	58	5.82	-0.20	0.04	-0.11
Mean				2.58		2.800					5.61		3.541	
SD				1.67							1.88			

School	Fall Mem	SWD						SES (SES)					
		%	Raw Score	Per 10	Diff. Mean	Diff. Mean 2	Z Score	%	Raw Score	Per 10	Diff. Mean	Diff. Mean 2	Z Score
ES 48	106	0.14	14	1.35	-0.17	0.03	-0.55	0.119	13	1.19	1.91	3.65	1.07
ES 266	53	0.10	6	1.04	0.14	0.02	0.42	0.503	27	5.03	-1.93	3.73	-1.08
ES 388	152	0.11	16	1.05	0.13	0.02	0.39	0.295	45	2.95	0.15	0.02	0.08
ES 400	73	0.12	9	1.22	-0.04	0.00	-0.14	0.353	26	3.53	-0.43	0.19	-0.24
ES 401	96	0.13	12	1.28	-0.10	0.01	-0.33	0.389	37	3.89	-0.79	0.62	-0.44
ES 402	80	0.15	12	1.46	-0.28	0.08	-0.89	0.302	24	3.02	0.08	0.01	0.04
ES 403	129	0.02	2	0.16	1.02	1.03	3.19	0.319	41	3.19	-0.09	0.01	-0.05
ES 404	132	0.07	9	0.68	0.50	0.25	1.56	0.031	4	0.31	2.79	7.78	1.56
ES 405	105	0.08	9	0.82	0.36	0.13	1.12	0.25	26	2.50	0.60	0.36	0.34

ES 406	42	0.18	8	1.83	-0.65	0.43	-2.06	0.26	11	2.60	0.50	0.25	0.28
ES 407	110	0.09	9	0.86	0.32	0.10	0.99	0.109	12	1.09	2.01	4.04	1.12
ES 408	59	0.11	7	1.13	0.05	0.00	0.14	0.512	30	5.12	-2.02	4.08	-1.13
ES 412	81	0.12	9	1.16	0.02	0.00	0.05	0.236	19	2.36	0.74	0.55	0.41
ES 413	80	0.13	10	1.25	-0.07	0.01	-0.23	0.454	36	4.54	-1.44	2.07	-0.81
ES 414	77	0.14	11	1.40	-0.22	0.05	-0.71	0.366	28	3.66	-0.56	0.31	-0.31
ES 416	82	0.15	12	1.49	-0.31	0.10	-0.99	0.663	54	6.63	-3.53	12.46	-1.97
ES 419	77	0.13	10	1.25	-0.07	0.01	-0.23	0.392	30	3.92	-0.82	0.67	-0.46
ES 422	105	0.10	10	0.99	0.19	0.03	0.58	0.062	7	0.62	2.48	6.15	1.39
ES 423	58	0.11	6	1.12	0.06	0.00	0.17	0.471	27	4.71	-1.61	2.59	-0.90
ES 424	88	0.10	9	0.98	0.20	0.04	0.61	0.207	18	2.07	1.03	1.06	0.58
ES 428	78	0.12	9	1.21	-0.03	0.00	-0.11	0.591	46	5.91	-2.81	7.90	-1.57
ES 430	106	0.11	12	1.13	0.05	0.00	0.14	0.174	18	1.74	1.36	1.85	0.76
ES 433	169	0.09	16	0.94	0.24	0.06	0.74	0.299	51	2.99	0.11	0.01	0.06
ES 434	106	0.14	14	1.36	-0.18	0.03	-0.58	0.263	28	2.63	0.47	0.22	0.26
ES 436	80	0.09	7	0.92	0.26	0.07	0.80	0.259	21	2.59	0.51	0.26	0.28
ES 438	79	0.13	10	1.26	-0.08	0.01	-0.27	0.601	47	6.01	-2.91	8.47	-1.63
ES 439	93	0.16	15	1.56	-0.38	0.15	-1.21	0.277	26	2.77	0.33	0.11	0.18
ES 440	146	0.11	15	1.06	0.12	0.01	0.36	0.086	13	0.86	2.24	5.02	1.25
ES 445	130	0.10	12	0.95	0.23	0.05	0.71	0.114	15	1.14	1.96	3.84	1.10
ES 446	128	0.10	13	1.00	0.18	0.03	0.55	0.051	7	0.51	2.59	6.71	1.45
ES 447	113	0.09	10	0.87	0.31	0.09	0.96	0.247	28	2.47	0.63	0.40	0.35
ES 450	122	0.13	16	1.29	-0.11	0.01	-0.36	0.166	20	1.66	1.44	2.07	0.80
ES 452	124	0.16	20	1.63	-0.45	0.21	-1.43	0.721	89	7.21	-4.11	16.89	-2.30
ES 458	105	0.12	13	1.22	-0.04	0.00	-0.14	0.428	45	4.28	-1.18	1.39	-0.66
ES 469	80	0.14	11	1.35	-0.17	0.03	-0.55	0.43	34	4.30	-1.20	1.44	-0.67
ES 474	81	0.14	11	1.40	-0.22	0.05	-0.71	0.378	31	3.78	-0.68	0.46	-0.38
ES 475	52	0.15	8	1.52	-0.34	0.12	-1.08	0.735	38	7.35	-4.25	18.06	-2.38
ES 479	62	0.08	5	0.84	0.34	0.11	1.05	0.123	8	1.23	1.87	3.50	1.05
ES 480	88	0.09	8	0.87	0.31	0.09	0.96	0.051	4	0.51	2.59	6.71	1.45
ES 481	102	0.11	11	1.12	0.06	0.00	0.17	0.311	32	3.11	-0.01	0.00	-0.01
ES 482	135	0.08	10	0.76	0.42	0.17	1.30	0.091	12	0.91	2.19	4.80	1.22
ES 485	99	0.09	9	0.94	0.24	0.06	0.74	0.299	30	2.99	0.11	0.01	0.06
ES 486	42	0.15	6	1.47	-0.29	0.09	-0.93	0.464	19	4.64	-1.54	2.37	-0.86
ES 489	76	0.08	6	0.77	0.41	0.16	1.27	0.175	13	1.75	1.35	1.82	0.75
ES 491	92	0.13	12	1.34	-0.16	0.03	-0.52	0.174	16	1.74	1.36	1.85	0.76
ES 492	84	0.11	9	1.05	0.13	0.02	0.39	0.407	34	4.07	-0.97	0.94	-0.54
ES 493	216	0.13	29	1.32	-0.14	0.02	-0.45	0.66	143	6.60	-3.50	12.25	-1.96
ES 494	59	0.16	9	1.56	-0.38	0.15	-1.21	0.397	23	3.97	-0.87	0.76	-0.49

ES 495	65	0.22	14	2.18	-1.00	1.01	-3.16	0.411	27	4.11	-1.01	1.02	-0.56
ES 496	196	0.10	19	0.98	0.20	0.04	0.61	0.127	25	1.27	1.83	3.35	1.02
ES 497	91	0.13	12	1.34	-0.16	0.03	-0.52	0.39	35	3.90	-0.80	0.64	-0.45
ES 498	116	0.11	13	1.11	0.07	0.00	0.21	0.269	31	2.69	0.41	0.17	0.23
ES 556	112	0.12	14	1.24	-0.06	0.00	-0.20	0.124	14	1.24	1.86	3.46	1.04
ES 558	111	0.10	11	0.95	0.23	0.05	0.71	0.126	14	1.26	1.84	3.38	1.03
ES 597	100	0.16	16	1.61	-0.43	0.19	-1.37	0.337	34	3.37	-0.27	0.07	-0.15
Mean				1.1753		0.101				3.099		3.200	
SD				0.32						1.79			

Appendix G

Clustered Elementary Schools

School	SPSS Case #	Cluster	School	SPSS Case #	Cluster
ES 48	1	1	ES 403	7	2
ES 266	2	1	ES 404	8	2
ES 388	3	1	ES 407	11	2
ES 400	4	1	ES 422	18	2
ES 401	5	1	ES 440	28	2
ES 402	6	1	ES 445	29	2
ES 405	9	1	ES 446	30	2
ES 408	12	1	ES 479	38	2
ES 412	13	1	ES 480	39	2
ES 413	14	1	ES 482	41	2
ES 414	15	1	ES 489	44	2
ES 419	17	1	ES 496	50	2
ES 423	19	1	ES 406	10	3
ES 424	20	1	ES 495	49	3
ES 430	22	1	ES 416	16	4
ES 433	23	1	ES 428	21	4
ES 434	24	1	ES 438	26	4
ES 436	25	1	ES 452	33	4
ES 439	27	1	ES 475	37	4
ES 447	31	1	ES 493	47	4
ES 450	32	1			
ES 458	34	1			
ES 469	35	1			
ES 474	36	1			
ES 481	40	1			
ES 485	42	1			
ES 486	43	1			
ES 491	45	1			
ES 492	46	1			
ES 494	48	1			
ES 497	51	1			
ES 498	52	1			
ES 556	53	1			
ES 558	54	1			
ES 559	55	1			

Appendix H

Clustered - Climate Data Spreadsheet

Cluster 1

Student

Instructional Program & Academic Supp.

Interpersonal Relationships

Ind Schools Factor 1

Ind Schools Factor 2

S-Agree	Agree	Tot %	school	S-Agree	Agree	Tot %	school
52.22	39.71	91.93	48	31.79	48.75	80.54	48
53.78	38.93	92.71	266	35.48	36.73	72.21	266
64.46	33.03	97.49	388	46.24	44.26	90.5	388
42.41	46.3	88.71	400	30.72	46.8	77.52	400
52.83	40.86	93.69	401	37	42.49	79.49	401
51.32	41.58	92.9	402	35.16	48.09	83.25	402
47.51	42.66	90.17	405	31.83	45.62	77.45	405
50.63	43.27	93.9	408	39.68	43.23	82.91	408
53.16	37.65	90.81	412	45	37.96	82.96	412
40.78	48.89	89.67	413	28.38	45.36	73.74	413
56.16	38.8	94.96	414	43.11	40.41	83.52	414
51.37	42.81	94.18	419	33.69	38.56	72.25	419
50.24	41.13	91.37	423	28.02	44.81	72.83	423
52.74	38.63	91.37	424	35.95	44.88	80.83	424
53.83	37.44	91.27	430	35.13	42.13	77.26	430
47.56	43.1	90.66	433	33.52	48.81	82.33	433
54	40.01	94.01	434	40.84	44.06	84.9	434
51.81	42.52	94.33	436	34.26	49.39	83.65	436
54.45	38.7	93.15	439	32.81	44.39	77.2	439
48.97	43.06	92.03	447	32.14	45.43	77.57	447
51.46	42.72	94.18	450	38.59	44.92	83.51	450
57.72	35.78	93.5	458	39.95	45.22	85.17	458
55.69	37.13	92.82	469	40.51	41.52	82.03	469
46.98	44.23	91.21	474	30.04	52.06	82.1	474
53.59	36.27	89.86	481	37.17	40.58	77.75	481
51.2	41.05	92.25	485	33.09	50.12	83.21	485
56.85	36.14	92.99	486	40.59	41.53	82.12	486
48.67	41.15	89.82	491	27.76	45.7	73.46	491
53.19	40.44	93.63	492	32.29	45.73	78.02	492
46.39	44.87	91.26	494	30.35	50.24	80.59	494
54.49	37.23	91.72	497	34.07	41.5	75.57	497
50.01	42.98	92.99	498	39.07	47.39	86.46	498
49.14	42.36	91.5	556	35.62	47.7	83.32	556

Elementary School Climate and Student Achievement 180

55.21	39.39	94.6	558	40.41	45.77	86.18	558
50.3	42.42	92.72	597	32.18	48.27	80.45	597
51.74	40.66	92.41	Mean	35.49	44.86	80.36	Mean

Communication, collaboration, Involve.

Safety and Discipline

Ind Schools Factor 3

Ind Schools Factor 4

S-Agree	Agree	Tot %	school	S-Agree	Agree	Tot %	school
52.43	44.7	97.13	48	66	30	96	48
41.67	42.33	84	266	69.49	25.42	94.91	266
55.23	38.96	94.19	388	83.67	15.65	99.32	388
35.13	45.8	80.93	400	78.38	18.92	97.3	400
41.17	43.39	84.56	401	67.03	29.67	96.7	401
41.48	46.17	87.65	402	60	38.33	98.33	402
43.08	42.38	85.46	405	55.31	35.73	91.04	405
46.97	43.03	90	408	59.71	35.18	59.71	408
47.18	43.08	90.26	412	61.38	31.94	93.32	412
37.06	50.21	87.27	413	47.98	41.28	89.26	413
45.7	43.46	89.16	414	61.15	33.97	95.12	414
39.1	52.12	91.22	419	55.75	36.25	92	419
38.9	42.25	81.15	423	58.03	29.52	87.55	423
39.52	45.62	85.14	424	54.37	35.91	90.28	424
39.21	45.68	84.89	430	58.84	32.07	90.91	430
34.3	49.42	83.72	433	52.92	38.97	91.89	433
45.85	41.4	87.25	434	63.56	30.18	93.74	434
36.15	48.46	84.61	436	65.12	28.68	93.8	436
44.51	39.12	83.63	439	60	33.56	93.56	439
37.81	46.55	84.36	447	54.96	38.15	93.11	447
36.79	49.01	85.8	450	58.03	36.43	94.46	450
44.22	44.08	88.3	458	59.07	33.02	92.09	458
42.05	44.71	86.76	469	60.59	32.46	93.05	469
40.41	47.74	88.15	474	56.43	36.34	92.77	474
43.97	39.32	83.29	481	60.11	30.12	90.23	481
41.18	47.53	88.71	485	61.12	36.1	97.22	485
43.64	45.91	89.55	486	59.14	36.67	95.81	486
31.68	47.22	78.9	491	51.43	36.48	87.91	491
48.14	39.78	87.92	492	57.99	34.53	92.52	492
29.15	54.42	83.57	494	52.44	42.52	94.96	494
41.33	42.89	84.22	497	58.78	31.86	90.64	497
51.54	40.83	92.37	498	60.94	34.43	95.37	498
36.68	46.13	82.81	556	58.77	33.66	92.43	556
39.78	49.35	89.13	558	67.06	29.23	96.29	558
39.43	47.13	86.56	597	57.55	35.84	93.39	597
41.49	45.14	86.64		60.37	33.05	93.42	Mean



## Physical School Environment

## Ind Schools Factor 5

S-Agree	Agree	Tot %	school
45	27	72	48
28.81	35.03	63.84	266
43.02	44.82	87.84	388
47.05	39.36	86.41	400
54.58	34.79	89.37	401
42.78	42.22	85	402
33.42	42.4	75.82	405
47.05	41.98	89.03	408
57.69	30.77	88.46	412
25.33	46.53	71.86	413
45.49	39.64	85.13	414
42.89	40.35	83.24	419
33.94	35.76	69.7	423
39.08	38.8	77.88	424
26.8	37.74	64.54	430
34.12	41.2	75.32	433
42.44	40.22	82.66	434
39.96	39.93	79.89	436
34.64	41.59	76.23	439
26.78	44.16	70.94	447
37.45	45.5	82.95	450
35.7	45.58	81.28	458
45.63	39.38	85.01	469
40.09	44.42	84.51	474
48.86	28.78	77.64	481
43.61	45.74	89.35	485
43.94	38.64	82.58	486
31.33	40.56	71.89	491
37.17	38.74	75.91	492
38.89	46.67	85.56	494
34.88	39.66	74.54	497
44.33	41.66	85.99	498
40.57	47.48	88.05	556
47.81	38.68	86.49	558
41.3	40.56	81.86	597
40.06	40.18	80.25	

Cluster 1

Parent

Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
43.64	51.36	95	48
33.54	55.14	88.68	266
43.44	51.52	94.96	388
49.35	47.39	96.74	400
39.29	53.93	93.22	401
40.13	53.87	94	402
43.89	46.67	90.56	405
45.33	51.15	96.48	408
42.19	50.44	92.63	412
39.04	55.81	94.85	413
52.21	43.64	95.85	414
46.94	47.99	94.93	419
33.65	60.58	94.23	423
40.46	54.11	94.57	424
47.7	43.84	91.54	430
39.41	53.04	92.45	433
34.02	60.7	94.72	434
36.99	55.54	92.53	436
35.86	55.25	91.11	438
46.38	50.07	96.45	439
45.84	47.59	93.43	447
36.16	56.37	92.53	450
44.32	49.91	94.23	458
48.71	46.17	94.88	469
50.65	46.62	97.27	474
35.99	55.9	91.89	481
52.42	42.72	95.14	485
50.94	44.22	95.16	486
42.49	52.71	95.2	491
54.33	42.05	96.38	492
43.96	51.11	95.07	494
34.8	60.7	95.5	497
45.44	48.34	93.78	498
55.48	41.14	96.62	556
56.95	38.7	95.65	558
48.55	46.55	95.1	597

Parent

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
42.94	53.68	96.62	48
33.44	57.94	91.38	266
42.13	53.05	95.18	388
48.41	48.98	97.39	400
36.99	57.09	94.08	401
41.99	53.73	95.72	402
45.4	49	94.4	405
35.13	55.91	91.04	408
47.06	46.29	93.35	412
35.11	61.52	96.63	413
49.67	47.59	97.26	414
43.35	50.52	93.87	419
33.34	58.04	91.38	423
46.64	48.47	95.11	424
37.81	58.71	96.52	430
35.92	58.23	94.15	433
33.49	61.42	94.91	434
37.77	56.46	94.23	436
36.31	51.15	36.31	438
41.34	52.88	94.22	439
41.99	50.37	92.36	447
36.96	56.99	93.95	450
44.26	47.59	91.85	458
54.31	43.03	97.34	469
45.2	49.08	94.28	474
38.7	55.46	94.16	481
54.12	43.13	97.25	485
53.91	42.75	96.66	486
39.62	54.62	94.24	491
52.93	43.72	96.65	492
39.88	56.58	96.46	494
37.19	56.7	93.89	497
43.28	51.36	94.64	498
55.37	42.08	97.45	556
55.17	40.11	95.28	558
48.81	45.3	94.11	597

Elementary School Climate and Student Achievement 183

43.90	50.35	94.25	Mean	42.94	51.66	93.17	Mean
Parent Communication, collaboration, Involve.				Parent Safety and Discipline			
Ind Schools Factor 3				Ind Schools Factor 4			
S-Agree	Agree	Tot %	school	S-Agree	Agree	Tot %	school
43.96	52.18	96.14	48	51.96	44.83	96.79	48
37.68	55.38	93.06	266	43.57	53.77	97.34	266
41.16	51.69	92.85	388	52.61	43.16	95.77	388
47.1	48.39	95.49	400	58.83	39.67	98.5	400
37.92	55.16	93.08	401	55.16	39.5	94.66	401
32.99	55.77	88.76	402	46.85	49.14	95.99	402
53.16	42.43	95.59	405	58.5	37.84	96.34	405
44.75	50.02	94.77	408	55.06	41.03	96.09	408
38.93	52.08	91.01	412	56.43	39.93	96.36	412
49.43	44.75	94.18	413	48.57	49.69	98.26	413
56.37	41.51	97.88	414	59.45	39.09	98.54	414
54.91	41.23	96.14	419	58.16	39.36	97.52	419
41.22	51.67	92.89	423	46.76	48.87	95.63	423
46.81	47.44	94.25	424	51.26	45.13	96.39	424
44.95	49.62	94.57	430	58.19	38.48	96.67	430
32.89	56.34	89.23	433	45.59	48.72	94.31	433
36.79	56.34	93.13	434	49.37	48.1	97.47	434
41.62	48.56	90.18	436	48.97	48.81	97.78	436
36.04	54.93	90.97	438	50.24	44.89	95.13	438
42.45	52.67	95.12	439	58.39	39.3	97.69	439
48.9	43.71	92.61	447	52.61	42.26	94.87	447
36.74	52.91	89.65	450	44.61	51.84	96.45	450
49.49	43.91	93.4	458	57.05	39.61	96.66	458
59.39	35.31	94.7	469	72.84	24.95	97.79	469
52.8	44.66	97.46	474	60.56	37.88	98.44	474
38.58	53.59	92.17	481	51.76	43.7	95.46	481
62.92	34.27	97.19	485	69.17	29.17	98.34	485
53.74	42.21	95.95	486	59.36	37.23	96.59	486
44.07	47.02	91.09	491	56.18	39.14	95.32	491
59.48	35.5	94.98	492	71.43	26.19	97.62	492
46.9	45.63	92.53	494	51.96	47.3	99.26	494
34.4	59.05	93.45	497	46.17	49.1	95.27	497
47.06	47.5	94.56	498	61.51	35.39	96.9	498
57.23	40.23	97.46	556	65.45	33.37	98.82	556
56.3	39.14	95.44	558	63.63	33.78	97.41	558
51.65	41.47	93.12	597	57.47	40.51	97.98	597
46.13	47.61	93.75	Mean	55.43	41.40	96.84	Mean

Parent			
Physical School Environment			
Ind Schools Factor 5			
S-Agree	Agree	Tot %	school
47.25	49.2	96.45	48
36.19	61.39	97.58	266
53.36	44.47	97.83	388
82.84	16.05	98.89	400
73.29	26.37	99.66	401
79.85	20.78	100.63	402
51.49	42.82	94.31	405
49.55	48.19	97.74	408
72.89	26.81	99.7	412
26.81	66.39	93.2	413
53.26	44.93	98.19	414
87.5	12.5	100	419
34.2	39.08	73.28	423
42.86	50	92.86	424
44.04	51.4	95.44	430
45.96	51.54	97.5	433
41.46	56.33	97.79	434
40.87	54.46	95.33	436
42.35	53.06	95.41	438
54.55	41.67	96.22	439
48.03	47.78	95.81	447
40.83	55.86	96.69	450
42.85	51.85	94.7	458
75.41	24.59	100	469
67.19	29.69	96.88	474
54.08	44.4	98.48	481
81	18.75	99.75	485
64.24	34.65	98.89	486
60.24	38.33	98.57	491
71.43	28.13	99.56	492
43.48	52.72	96.2	494
62.5	37.15	99.65	497
46.76	52.4	99.16	498
81.02	18.98	100	556
72.6	27.01	99.61	558
65.67	33.96	99.63	597
56.60	40.38	96.98	Mean

Elementary School Climate and Student Achievement 185

Cluster 1

Educator  
Instructional Program & Academic  
Supp.

Educator

Interpersonal Relationships

Ind Schools Factor 1

Ind Schools Factor 2

S-Agree	Agree	Tot %	school	S-Agree	Agree	Tot %	school
62.17	30.66	92.83	48	37.55	48.99	86.54	48
69.14	27.12	96.26	266	51.67	42.8	94.47	266
55.27	41.51	96.78	388	47.2	48.36	95.56	388
57.25	39.35	96.6	400	47.4	48.18	95.58	400
63.75	33.34	97.09	401	41.93	53.49	95.42	401
67.01	29.22	96.23	402	67.74	29.84	97.58	402
69.97	27.66	97.63	405	62.5	36.22	98.72	405
63.79	30.62	94.41	408	42.13	39.83	81.96	408
57.94	38.07	96.01	412	48	51	99	412
48.07	43.63	91.7	413	42.23	46.28	88.51	413
86.37	12.43	98.8	414	82.86	16.43	99.29	414
57.26	37.31	94.57	419	39.53	52.59	92.12	419
62.56	34.2	96.76	423	43.66	47.94	91.6	423
76.32	22.28	98.6	424	60.66	34.56	95.22	424
62.85	26.62	89.47	430	50.5	38	88.5	430
61.57	36.58	98.15	433	49.22	45.5	94.72	433
58.9	37.2	96.1	434	50	43.95	93.95	434
49.38	46.54	95.92	436	35.42	56.94	92.36	436
44.04	50.34	94.38	438	31.96	62.69	94.65	438
72.18	26.28	98.46	439	51.27	42.8	94.07	439
44.23	48.27	92.5	447	29.62	61.93	91.55	447
68.17	30.09	98.26	450	56.88	39.06	95.94	450
52.75	39.63	92.38	458	39.75	55	94.75	458
50.72	45.17	95.89	469	36.01	61.11	97.12	469
64.28	32.08	96.36	474	45.22	50	95.22	474
64.66	33	97.66	481	55.4	43.18	98.58	481
53.28	41.24	94.52	485	41.56	53.75	95.31	485
60.38	36.82	97.2	486	54.64	45	99.64	486
58.9	36.87	95.77	489	46.48	50.1	96.58	489
67.92	30.96	98.88	491	42.28	52.95	95.23	491
44.38	47.77	92.15	492	31.25	61.72	92.97	492
48.85	44.37	93.22	493	29.35	50	79.35	493
62.32	36.98	99.3	494	50	49.29	99.29	494
51.42	44.23	95.65	497	17.18	55.49	72.67	497
74.85	22.93	97.78	498	64.45	32.78	97.23	498
83.18	15.53	98.71	556	75.69	23.96	99.65	556
77.79	20.31	98.1	558	72.87	26.6	99.47	558

Elementary School Climate and Student Achievement 186

71.46	26.21	97.67	597	64.06	34.12	98.18	597
61.72	34.30	96.01	Mean	48.31	45.59	93.90	Mean

Educator  
Communication, collaboration, Involve.

Educator  
Safety and Discipline

Ind Schools Factor 3

Ind Schools Factor 4

S-Agree	Agree	Tot %	school	S-Agree	Agree	Tot %	school
44.61	31.29	75.9	48	28.1	32.9	61	48
63.4	29.69	93.09	266	68.33	23.88	92.21	266
58.45	35.09	93.54	388	50.61	35.52	86.13	388
44.09	47.74	91.83	400	44.55	40.07	84.62	400
50.21	41.35	91.56	401	40.23	49.43	89.66	401
56.08	39.59	95.67	402	66.13	25.81	91.94	402
75.21	23.65	98.86	405	58.12	29.49	87.61	405
40.31	42.3	82.61	408	35.91	33.49	69.4	408
47.29	44.81	92.1	412	38	40	78	412
48.41	43.37	91.78	413	45.73	37.58	83.31	413
95.24	4.76	100	414	85.71	11.43	97.14	414
52.84	36.92	89.76	419	40.94	42.75	83.69	419
52.06	41.64	93.7	423	44.77	37.48	82.25	423
74.77	22.54	97.31	424	52.94	35.29	88.23	424
58.04	28.61	86.65	430	43.33	40	83.33	430
43.55	45.6	89.15	433	55.08	28.44	83.52	433
52.38	40.71	93.09	434	53.23	32.26	85.49	434
38.23	49.86	88.09	436	56.75	40.93	97.68	436
49.72	43.77	93.49	438	46.14	46.67	92.81	438
64.81	31.79	96.6	439	67.13	26.39	93.52	439
50.58	42.39	92.97	447	46.4	39.99	86.39	447
38.14	52.89	91.03	450	59.58	34.58	94.16	450
49.93	42.62	92.55	458	51	37.67	88.67	458
53.82	42.66	96.48	469	53.96	39.73	93.69	469
64.62	30.08	94.7	474	41.17	41.67	82.84	474
72.07	25.38	97.45	481	60.23	32.2	92.43	481
53.57	34.83	88.4	485	35.42	40.83	76.25	485
47.74	41.25	88.99	486	59.16	36.67	95.83	486
45.07	43.01	88.08	489	25.88	44.9	70.78	489
48	47.69	95.69	491	38.9	56.49	95.39	491
31.6	54.86	86.46	492	43.23	49.48	92.71	492
55.56	41.3	96.86	493	32.61	45.65	78.26	493
48.14	45.31	93.45	494	60	37.62	97.62	494
23.29	56.04	79.33	497	7.6	21.4	29	497
74.68	24.07	98.75	498	58.89	35.56	94.45	498
86.06	11.78	97.84	556	71.76	23.61	95.37	556

Elementary School Climate and Student Achievement 187

81.56	15.84	97.4	558	73.76	22	95.76	558
72.22	25.17	97.39	597	69.65	24.05	93.7	597
55.43	36.90	92.33	Mean	50.28	35.62	85.91	Mean

Educator

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
17.19	57.81	75	48
65	30	95	266
39.16	51.94	91.1	388
77.08	21.36	98.44	400
87.07	12.93	100	401
77.42	21.77	99.19	402
60.9	31.41	92.31	405
51.79	45.54	97.33	408
73	26	99	412
17.57	62.16	79.73	413
53.17	37.48	90.65	414
79.89	17.39	97.28	419
37.7	48.67	37.7	423
59.56	38.24	97.8	424
20.42	45.42	65.84	430
50.63	41.89	92.52	433
29.03	50	79.03	434
43.35	55.26	98.61	436
33.12	60.75	93.87	438
21.53	60.42	81.95	439
21.71	55.26	76.97	447
63.13	33.75	96.88	450
27	59.5	86.5	458
74.48	25	99.48	469
71.33	26.47	97.8	474
59.46	38.27	97.73	481
55	37.5	92.5	485
60	35	95	486
53.12	42.31	95.43	489
56.76	41.9	98.66	491
41.41	56.25	97.66	492
19.02	58.7	77.72	493
56.55	42.02	98.57	494
53.95	45.4	99.35	497
43	46.93	89.93	498

95.77	4.23	100	556
87.23	11.7	98.93	558
49.71	44	93.71	597
52.18	39.78	90.92	Mean

Cluster 2

Student Instructional Program & Academic Supp. Ind Schools Factor 1			
S-Agree	Agree	Tot %	school
51.88	40.06	91.94	403
52.44	40.04	92.48	404
52.3	37.38	89.68	407
53.91	38.5	92.41	422
46.44	44.72	91.16	440
53.72	40.57	94.29	445
52.06	40.7	92.76	446
44.62	46.02	90.64	479
55	36.69	91.69	480
55.48	38.52	94	482
51.99	41.98	93.97	489
58.26	33.87	92.13	496
52.34	39.92	92.26	Mean

Student Interpersonal Relationships Ind Schools Factor 2			
S-Agree	Agree	Tot %	school
40.63	48.96	89.59	403
44.84	47.39	92.23	404
37.29	44.4	81.69	407
39.64	46.8	86.44	422
38.64	47.81	86.45	440
36.42	48.3	84.72	445
34.67	51.4	86.07	446
25.19	44.02	69.21	479
41.05	46.42	87.47	480
43.65	44.16	87.81	482
43.76	43.72	87.48	489
51.95	37.08	89.03	496
39.81	45.87	85.68	Mean

Student Communication, collaboration, Involve. Ind Schools Factor 3			
S-Agree	Agree	Tot %	school
34.56	49.61	84.17	403
37.35	48.43	85.78	404
37.15	44.63	81.78	407
45.38	41.17	86.55	422
34.13	48.86	82.99	440
42.79	46.23	89.02	445
37.04	51.46	88.5	446
38.03	45.57	83.6	479
40.92	43.87	84.79	480
46.48	41.13	87.61	482
48.82	38.75	87.57	489
50.4	38.44	88.84	496
41.08	44.84	85.93	Mean

Student Safety and Discipline Ind Schools Factor 4			
S-Agree	Agree	Tot %	school
61.08	34.16	95.24	403
57.46	36.9	94.36	404
57.56	31.91	89.47	407
59.58	33.84	93.42	422
58.49	37.84	96.33	440
60.58	34.54	95.12	445
55.88	38.93	94.81	446
46.13	42.1	88.23	479
57.28	34.07	91.35	480
59.69	35.37	95.06	482
66.05	26.33	92.38	489
67.7	26.68	94.38	496
58.95	34.38	93.34	Mean

Student



Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
31.98	45.08	77.06	403
43.25	44.9	88.15	404
48	33.24	81.24	407
37.78	44.04	81.82	422
33.82	49.02	82.84	440
42.74	40.86	83.6	445
41.98	36.89	78.87	446
34.42	37.7	72.12	479
33.88	37.19	71.07	480
41.63	38.15	79.78	482
45.18	20.22	65.4	489
39.52	43.99	83.51	496
39.51	39.27	78.78	Mean

Cluster 2

Parent

Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
65.4	28.84	94.24	403
47.72	47.78	95.5	404
51.75	44.63	96.38	407
42.7	50.9	93.6	422
45.2	49.68	94.88	440
52.22	45.19	97.41	445
51.66	41.75	93.41	446
38.54	53.84	92.38	479
47.79	48.44	96.23	480
49.04	43.3	92.34	482
53.38	41.19	94.57	489
49.36	46.73	96.09	496
49.56	45.18	94.75	Mean

Parent

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
66.08	31.88	97.96	403
41.87	53.7	95.57	404
50.18	47.04	97.22	407
40.03	54.81	94.84	422
45.58	51.7	97.28	440
48.47	49.2	97.67	445
48.88	47.2	96.08	446
38.1	55.95	94.05	479
45.15	52.12	97.27	480
46.19	47.09	93.28	482
54.78	40.91	95.69	489
48.55	49.72	98.27	496
47.82	48.44	96.26	Mean

Parent

Communication, collaboration, Involve.

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
63.13	33.76	96.89	403
43.25	50.56	93.81	404
60.78	37.27	98.05	407

Parent

Safety and Discipline

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
71.55	26.73	98.28	403
54.93	41.95	96.88	404
62.39	34.94	97.33	407

42.48	50.3	92.78	422	48.98	47.24	96.22	422
47.29	47.64	94.93	440	60.88	37.4	98.28	440
51.43	44.33	95.76	445	59.99	38.3	98.29	445
50.86	42.8	93.66	446	60.52	36.2	96.72	446
48.15	49.63	97.78	479	51.29	43.2	94.49	479
44.45	50.46	94.91	480	50.03	48.15	98.18	480
53.67	39.68	93.35	482	61.45	35.88	97.33	482
56.24	39.88	96.12	489	63.42	32.6	96.02	489
52.4	44.21	96.61	496	58.59	38.83	97.42	496
51.17	44.21	95.38	Mean	58.66	38.45	97.12	Mean

Parent

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
24.18	50.94	75.12	403
54.28	43.77	98.05	404
78.82	21.01	99.83	407
38.98	57.64	96.62	422
69.49	29.84	99.33	440
66.53	31.51	98.04	445
53.22	41.39	94.61	446
60.81	36.83	97.64	479
31.99	57.45	89.44	480
41.82	47.56	89.38	482
75.99	22.85	98.84	489
39.41	53.3	92.71	496
52.96	41.17	94.13	Mean

Cluster 2

Educator  
Instructional Program & Academic  
Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
81.47	12.3	93.77	403
84.14	14.71	98.85	404
70.72	27.08	97.8	407
70.94	26.77	97.71	422
68.56	28.98	97.54	440
76.06	22.67	98.73	445
84.05	15.11	99.16	446
71.46	27.54	99	479

Educator

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
79.31	17.24	96.55	403
75.37	24.63	100	404
75	24.38	99.38	407
69.08	30.26	99.34	422
63.74	34.95	98.69	440
60.36	38.22	98.58	445
76.68	22.35	99.03	446
64.68	32.61	97.29	479

Elementary School Climate and Student Achievement 191

81.22	17.2	98.42	480	75	25	100	480
65.63	29.66	95.29	482	61.75	36.36	98.11	482
58.9	36.87	95.77	489	46.48	50.1	96.58	489
71.4	25.97	97.37	496	71.34	28.35	99.69	496
73.71	23.73	97.45	Mean	68.23	30.37	98.60	Mean

Educator Communication, collaboration, Involve. Ind Schools Factor 3				Educator Safety and Discipline Ind Schools Factor 4			
S-Agree	Agree	Tot %	school	S-Agree	Agree	Tot %	school
82.94	14.33	97.27	403	70.61	18.43	89.04	403
75.75	21.97	97.72	404	74.85	21.79	74.85	404
63.89	35	98.89	407	70	25.83	95.83	407
52.81	40.34	93.15	422	55.13	32.12	87.25	422
67.4	32.31	99.71	440	61.84	35.09	96.93	440
63.03	34.66	97.69	445	62.69	29.16	91.85	445
75.18	20.28	95.46	446	75.88	17.36	93.24	446
64.01	34.03	98.04	479	59.42	36.96	96.38	479
82.55	16.19	98.74	480	59.25	32.12	91.37	480
60.61	37.03	97.64	482	62.63	28.79	91.42	482
45.07	43.01	88.08	489	25.88	44.9	70.78	489
75.63	23.81	99.44	496	74.84	22.09	96.93	496
67.40	29.41	96.81	Mean	62.75	29.35	89.65	Mean

Educator Physical School Environment Ind Schools Factor 5			
S-Agree	Agree	Tot %	school
16.93	34.68	51.61	403
55.15	39.7	94.85	404
81.25	18.75	100	407
42.77	49.35	92.12	422
59.87	36.19	96.06	440
50.71	39.29	90	445
44.71	45.19	89.9	446
78.26	21.74	100	479
33.78	47.97	81.75	480
32.57	49.24	81.81	482
53.12	42.31	95.43	489
28.05	57.32	85.37	496
48.09	40.14	88.24	Mean

Cluster 3

Student

Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
61.03	35.8	96.83	406
43.89	43.43	87.32	495
52.46	39.61	92.07	Mean

Student

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
44.32	46.18	90.5	406
26.26	43.82	70.08	495
35.29	45	80.29	Mean

Student

Communication, collaboration, Involve.

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
51.71	40	91.71	406
35.54	49.62	85.16	495
43.62	44.81	88.43	Mean

Student

Safety and Discipline

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
71.7	25.37	97.07	406
52.39	34.22	86.61	495
62.04	29.79	91.84	Mean

Student

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
61.52	31.03	92.55	406
35.49	42.2	77.69	495
48.50	36.61	85.12	Mean

Cluster 3

Parent

Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
47.91	47.95	95.86	406
43.48	50.8	94.28	495
45.69	49.37	95.07	Mean

Parent

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
46.49	47.87	94.36	406
41.6	53.09	94.69	495
44.04	50.48	94.52	Mean

Parent

Communication, collaboration, Involve.

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
52.4	39.58	91.98	406
43.66	49.38	93.04	495
48.03	44.48	92.51	Mean

Parent

Safety and Discipline

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
57.36	39.58	96.94	406
49.59	44.62	94.21	495
53.47	42.1	95.57	Mean

Parent

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
68.15	31.41	99.56	406
64.35	32.64	96.99	495
66.25	32.02	98.27	Mean

Cluster 3

Educator  
Instructional Program & Academic  
Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
57.18	37.42	94.6	406
56.84	39.31	96.15	495
57.01	38.36	95.37	Mean

Educator

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
56.47	42.24	98.71	406
46.63	47.11	93.74	495
51.55	44.67	96.22	Mean

Educator

Communication, collaboration, Involve.

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
36.57	47.04	83.61	406
47.97	41.63	89.6	495
42.27	44.33	86.60	Mean

Safety and Discipline

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
43.68	37.36	81.04	406
43.67	43.42	87.09	495
43.67	40.39	84.06	Mean

Educator

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
8.14	21.86	30	406
71	27	98	495
39.57	24.43	64	Mean

Cluster 4

Student

Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
48.57	37.69	86.26	416
64.37	31.24	95.61	428
56.07	36.7	92.77	438
56.26	36.54	92.8	452

Student

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
30.54	40.45	70.99	416
31.62	51.1	82.72	428
40.67	42.55	83.22	438
37.15	41.98	79.13	452

57.98	35.16	93.14	475	37.9	44.41	82.31	475
48.48	41.12	89.6	493	24.61	43.36	67.97	493
55.28	36.40	91.69	Mean	33.74	43.97	77.72	Mean

Student  
Communication, collaboration, Involve.

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
36.73	39.83	76.56	416
54.06	37.88	91.94	428
45.36	43.53	88.89	438
48.51	38.97	87.48	452
45.05	42.69	87.74	475
38.77	43.83	82.6	493
44.74	41.12	85.86	Mean

Student  
Safety and Discipline

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
53.29	31.9	85.19	416
72.75	23.97	96.72	428
57.02	36.11	93.13	438
62.21	31.07	93.28	452
58.64	36	94.64	475
49.92	37.62	87.54	493
58.97	32.77	91.75	Mean

Student  
Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
28.57	33.33	61.9	416
35.56	40.34	75.9	428
40.79	35.09	75.88	438
35.61	37.89	73.5	452
40.48	39.68	80.16	475
25.98	34.94	60.92	493
34.49	36.87	71.37	Mean

Cluster 4  
Parent  
Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
37.34	52.89	90.23	416
44.56	51.55	96.11	428
35.86	55.25	91.11	438
37.36	57.32	94.68	452
41.33	46.72	88.05	475
36.86	52.04	88.9	493
38.88	52.62	91.51	Mean

Parent  
Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
31.94	52.08	84.02	416
38.52	54.76	93.28	428
36.31	51.15	87.46	438
33.08	58.65	91.73	452
45.04	45.38	90.42	475
33.4	48.09	81.49	493
36.38	51.68	88.06	Mean

Parent  
Communication, collaboration, Involve.

Parent  
Safety and Discipline

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
42.95	45.4	88.35	416
46.56	49.51	96.07	428
36.04	54.93	90.97	438
46.87	49.43	96.3	452
48.45	44.41	92.86	475
49.93	40.91	90.84	493
45.13	47.43	92.56	Mean

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
45.59	44.21	89.8	416
51.38	47.79	99.17	428
50.24	44.89	95.13	438
52.8	42.02	94.82	452
60.06	38.2	98.26	475
54.33	39.76	94.09	493
52.4	42.81	95.21	Mean

Parent

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
37.5	56.5	94	416
31.2	54.99	86.19	428
42.35	53.06	95.41	438
40.93	58.68	99.61	452
70.69	29.31	100	475
35.62	49.6	85.22	493
43.04	50.35	93.40	Mean

Educator

Instructional Program & Academic Supp.

Ind Schools Factor 1

S-Agree	Agree	Tot %	school
19.28	52.97	72.25	416
45.3	47.39	92.69	428
44.04	50.34	94.38	438
46.43	45.63	92.06	452
57.52	37.51	95.03	475
48.85	44.37	93.22	493
43.57	46.36	89.93	Mean

Educator

Interpersonal Relationships

Ind Schools Factor 2

S-Agree	Agree	Tot %	school
10.65	48.73	59.38	416
21.99	66.15	88.14	428
31.96	62.69	94.65	438
35.93	53.24	89.17	452
53.52	44.53	98.05	475
29.35	50	79.35	493
30.56	54.22	84.79	Mean

Educator

Communication, collaboration, Involve.

Ind Schools Factor 3

S-Agree	Agree	Tot %	school
17.58	52.57	70.15	416
21.74	54.28	76.02	428
49.72	43.77	93.49	438
48.95	41.77	90.72	452
52.93	41.14	94.07	475

Educator

Safety and Discipline

Ind Schools Factor 4

S-Agree	Agree	Tot %	school
11.24	30.44	41.68	416
27.63	57.9	85.53	428
46.14	46.67	92.81	438
39.59	41.63	81.22	452
58.05	34.08	92.13	475

55.56	41.3	96.86	493	32.61	45.65	78.26	493
41.08	45.80	86.88	Mean	35.87	42.72	78.60	Mean

Educator

Physical School Environment

Ind Schools Factor 5

S-Agree	Agree	Tot %	school
11.96	47.28	59.24	416
10.72	54.36	65.08	428
33.12	60.75	93.87	438
18.33	64.17	82.5	452
91.41	7.81	99.22	475
19.02	58.7	77.72	493
30.76	48.84	79.60	Mean



Appendix I

Clustered - Student Achievement Spreadsheet SAS

CLUSTER 1

School ID	Case #	Cluster	ALL RA	ALL RP	B RA	B RP	W RA	W RP
48	1	1	45	48	36	50	48	44
266	2	1	50	41	43	50	53	29
388	3	1	54	42	43	52	60	36
400	4	1	50	42	43	48	49	41
401	5	1	46	50	35	55	40	49
402	6	1	44	53	43	48	43	57
405	9	1	42	42	19	67	52	46
408	12	1	24	65	9	70	43	50
412	13	1	53	44	53	41	58	43
413	14	1	45	50	41	52	54	46
414	15	1	51	48	32	64	58	42
419	17	1	37	54	23	67	53	34
423	19	1	24	69	16	76	25	70
424	20	1	42	45	21	59	50	38
430	22	1	43	47	29	54	50	45
433	23	1	35	56	32	58	38	56
434	24	1	36	54	38	46	35	60
436	25	1	38	57	44	50	37	57
439	27	1	43	52	27	64	54	41
447	31	1	36	58	30	57	36	62
450	32	1	58	36	45	32	58	41
458	34	1	39	53	21	67	51	42
469	35	1	42	48	29	50	47	46
474	36	1	33	56	16	74	53	35
481	40	1	35	50	20	63	42	46
485	42	1	41	54	36	59	49	47
486	43	1	36	50	25	58	38	50
491	45	1	41	52	5	70	58	44
492	46	1	36	63	28	72	42	56
494	48	1	32	58	23	62	29	65
497	51	1	30	61	19	71	41	54
498	52	1	46	44	0	63	55	41
556	53	1	45	48	58	33	41	52
558	54	1	57	38	31	54	71	28
597	55	1	34	58	30	63	35	56

Mean 41.22 51.02 29.8 57.68 47.02 47.11

School ID	Case #	Cluster	SWD RA	SWD RP	SES RA	SES RP	ALL MA	ALL MP
48	1	1	20	50	24	59	53	37
266	2	1	<	<	50	41	53	40
388	3	1	36	36	36	57	63	31
400	4	1	9	55	23	67	59	30
401	5	1	<	<	28	60	62	32
402	6	1	47	47	30	65	61	33
405	9	1	<	<	31	58	49	38
408	12	1	0	82	11	70	32	48
412	13	1	<	<	43	52	54	40
413	14	1	33	58	22	67	46	42
414	15	1	9	91	35	65	48	45
419	17	1	<	<	27	67	57	40
423	19	1	<	<	6	25	51	46
424	20	1	<	<	19	69	49	35
430	22	1	29	36	30	40	70	24
433	23	1	5	62	36	49	46	45
434	24	1	7	80	30	55	37	50
436	25	1	<	<	37	63	46	39
439	27	1	22	56	40	50	55	41
447	31	1	<	<	44	50	56	35
450	32	1	17	56	48	43	73	21
458	34	1	14	71	36	58	54	37
469	35	1	17	67	19	65	52	32
474	36	1	20	60	21	61	41	55
481	40	1	12	47	26	40	58	39
485	42	1	25	50	27	65	38	51
486	43	1	<	<	35	55	46	27
491	45	1	25	67	19	67	51	29
492	46	1	9	82	24	74	46	38
494	48	1	9	82	30	60	43	44
497	51	1	12	76	21	69	33	47
498	52	1	8	58		59	58	31
556	53	1	13	50	43	43	54	37
558	54	1	<	<	36	50	66	29
597	55	1	36	43	24	73	53	39
Mean			18.87	60.91	29.73	57.45	51.8	37.91

School ID	Case #	Cluster	B MA	B MP	W MA	W MP	SWD MA	SWD MP
48	1	1	36	41	55	38	30	50
266	2	1	46	43	47	47	<	<
388	3	1	54	42	67	22	36	29
400	4	1	50	40	56	34	18	27
401	5	1	60	20	68	32	<	<
402	6	1	45	35	66	32	58	21
405	9	1	29	33	60	37	<	<
408	12	1	9	41	54	43	0	60
412	13	1	41	41	58	43	<	<
413	14	1	42	38	53	42	27	45
414	15	1	24	64	60	35	9	91
419	17	1	54	41	61	37	<	<
423	19	1	48	48	50	45	<	<
424	20	1	31	45	60	28	<	<
430	22	1	57	36	75	21	36	57
433	23	1	32	57	59	36	19	57
434	24	1	33	58	37	48	13	67
436	25	1	35	41	52	37	<	<
439	27	1	39	58	65	30	50	44
447	31	1	50	39	60	33	<	<
450	32	1	64	23	76	20	44	28
458	34	1	39	45	58	33	36	36
469	35	1	21	43	61	29	25	58
474	36	1	29	65	53	47	27	53
481	40	1	39	55	67	33	29	59
485	42	1	18	64	43	49	27	27
486	43	1	<	<	42	35	<	<
491	45	1	20	40	54	31	33	42
492	46	1	43	36	50	40	73	18
494	48	1	31	54	35	58	0	90
497	51	1	17	63	51	30	6	29
498	52	1	19	38	67	26	9	55
556	53	1	67	25	52	40	24	53
558	54	1	35	54	78	18	<	<
597	55	1	40	56	56	37	31	38
Mean			38.14	44.76	57.31	35.6	30	47.25

School ID	Case #	Cluster	SES MA	SES MP
48	1	1	29	53
266	2	1	56	31
388	3	1	55	36
400	4	1	52	38
401	5	1	8	52
402	6	1	42	37
405	9	1	22	56
408	12	1	23	38
412	13	1	43	48
413	14	1	29	51
414	15	1	27	58
419	17	1	64	33
423	19	1	39	57
424	20	1	44	38
430	22	1	55	25
433	23	1	35	49
434	24	1	30	50
436	25	1	55	25
439	27	1	30	67
447	31	1	56	33
450	32	1	74	14
458	34	1	48	41
469	35	1	35	38
474	36	1	27	64
481	40	1	32	64
485	42	1	23	54
486	43	1	56	17
491	45	1	24	25
492	46	1	47	28
494	48	1	35	40
497	51	1	29	50
498	52	1	30	41
556	53	1	33	40
558	54	1	36	50
597	55	1	47	44
Mean			39.14	42.42

CLUSTER 2

School ID	Case #	Cluster	ALL RA	ALL RP	B RA	B RP	W RA	W RP
403	7	2	89	11	90	10	88	12
404	8	2	70	28	<	<	70	27
407	11	2	54	41	<	<	56	41
422	18	2	68	30	45	55	66	31
440	28	2	57	39	<	<	60	37
445	29	2	40	60	29	67	44	56
446	30	2	66	33	40	60	69	30
479	38	2	49	48	<	<	52	44
480	39	2	66	29	<	<	69	28
482	41	2	69	25	<	<	72	24
489	44	2	35	53	28	55	50	46
496	50	2	64	31	<	<	70	28
Mean			60.58	35.66	46.4	49.4	63.83	33.66

School ID	Case #	Cluster	SWD RA	SWD RP	SES RA	SES RP	ALL MA	ALL MP
403	7	2	<	<	<	<	92	7
404	8	2	<	<	<	<	40	58
407	11	2	<	<	<	<	57	36
422	18	2	20	70	<	<	69	30
440	28	2	17	56	44	56	64	35
445	29	2	0	95	11	89	42	46
446	30	2	31	62	<	<	44	55
479	38	2	<	<	<	<	57	34
480	39	2	36	36	70	10	72	20
482	41	2	<	<	36	50	80	17
489	44	2	<	<	16	67	57	37
496	50	2	36	36	40	30	66	30
Mean			28	59.16	36.16	50.33	61.66	33.75

School ID	Case #	Cluster	B MA	B MP	W MA	W MP	SWD MA	SWD MP
403	7	2	70	20	93	7	<	<
404	8	2	<	<	37	60	<	<
407	11	2	<	<	59	32	<	<
422	18	2	37	73	72	27	30	60
440	28	2	<	<	63	36	44	56
445	29	2	26	57	50	43	5	68
446	30	2	<	<	49	50	17	83
479	38	2	<	<	60	33	<	<

## Elementary School Climate and Student Achievement 202

480	39	2	<	<	76	17	36	18
482	41	2	<	<	82	16	<	<
489	44	2	48	44	67	30	90	10
496	50	2	<	<	71	27	25	50
Mean			45.25	48.5	64.91	31.5	35.29	49.28

School ID	Case #	Cluster	SES MA	SES MP
403	7	2	<	<
404	8	2	<	<
407	11	2	<	<
422	18	2	<	<
440	28	2	44	56
445	29	2	12	53
446	30	2	<	<
479	38	2	<	<
480	39	2	50	30
482	41	2	47	40
489	44	2	49	42
496	50	2	36	45
Mean			39.67	44.33

### CLUSTER 3

Cluster	Case #	Cluster	ALL RA	ALL RP	B RA	B RP	W RA	W RP
406	10	3	53	45	40	40	59	46
495	49	3	63	34	40	40	74	26
Mean			58	39.5	40	40	66.5	36

Cluster	Case #	Cluster	SWD RA	SWD RP	SES RA	SES RP	ALL MA	ALL MP
406	10	3	25	40	27	64	58	38
495	49	3	25	40	52	43	62	32
Mean			25	40	39.5	53.5	60	35

Cluster	Case #	Cluster	B MA	B MP	W MA	W MP	SWD MA	SWD MP
406	10	3	40	45	64	32	50	36
495	49	3	40	45	67	31	50	36
Mean			40	45	65.5	31.5	50	36

Cluster	Case #	Cluster	SES MA	SES MP
406	10	3	45	36
495	49	3	55	36

Mean 50 36

CLUSTER 4

School ID	Case #	Cluster	ALL RA	ALL RP	B RA	B RP	W RA	W RP
416	16	4	23	58	16	64	35	47
428	21	4	34	52	28	57	<	<
438	26	4	32	60	13	67	16	84
452	33	4	35	57	28	58	45	55
475	37	4	25	65	16	72	50	44
493	47	4	18	56	18	54	13	69
Mean			27.83	58	19.83	62	31.8	59.8

School ID	Case #	Cluster	SWD RA	SWD RP	SES RA	SES RP	ALL MA	ALL MP
416	16	4	23	38	23	53	23	49
428	21	4	14	42	29	55	43	36
438	26	4	<	<	24	63	45	39
452	33	4	20	56	34	56	55	37
475	37	4	<	<	21	68	38	45
493	47	4	9	47	13	59	20	39
Mean			16.5	45.75	24	59	37.33	40.83

School ID	Case #	Cluster	B MA	B MP	W MA	W MP	SWD MA	SWD MP
416	16	4	23	51	24	53	31	38
428	21	4	31	44	<	<	33	25
438	26	4	24	48	46	42	<	<
452	33	4	41	47	61	37	26	61
475	37	4	25	63	56	31	<	<
493	47	4	17	41	38	44	16	38
Mean			26.83	49	45	41.4	26.5	40.5

School ID	Case #	Cluster	SES MA	SES MP
416	16	4	16	51
428	21	4	37	41
438	26	4	36	41
452	33	4	49	43
475	37	4	36	48
493	47	4	16	36
Mean			31.66	43.33

Appendix J

Clustered Climate Index and Student Achievement Table

Cluster Climate Factor One, Instructional Program and Academic Support

IV		Cluster One	Cluster Two	Cluster Three	Cluster Four	Mean
Student	Strong-Agree	52	52	52	55	53
Student	Agree	41	40	40	36	39
Student	Comb. Agree	93	92	92	91	92
Parent	Strong-Agree	44	50	46	39	45
Parent	Agree	50	45	48	53	49
Parent	Comb. Agree	94	95	94	92	94
Educator	Strong-Agree	62	74	57	44	59
Educator	Agree	34	24	38	46	36
Educator	Comb. Agree	96	98	95	90	95
Cluster	Strong-Agree	53	59	50	45	52
Cluster	Agree	42	36	42	45	41
Cluster	Comb. Agree	95	95	92	90	93

Cluster Climate Data for Factor Two, Interpersonal Relationships

IV		Cluster One	Cluster Two	Cluster Three	Cluster Four	Mean
Student	Strong-Agree	35	40	35	34	36
Student	Agree	45	46	45	44	45
Student	Comb. Agree	80	86	80	78	81
Parent	Strong-Agree	43	48	44	36	42
Parent	Agree	52	48	50	52	51



Parent	Comb. Agree	95	96	94	88	93
Educator	Strong-Agree	48	68	52	31	49
Educator	Agree	46	30	45	54	44
Educator	Comb. Agree	94	98	97	85	94
Cluster	Strong-Agree	42	52	44	34	45
Cluster	Agree	48	41	47	50	47
Cluster	Comb. Agree	90	93	91	84	90

Cluster Climate Data for Factor Three Communication, Collaboration, and Involvement IV

		Cluster One	Cluster Two	Cluster Three	Cluster Four	Mean
Student	Strong-Agree	41	41	44	45	43
Student	Agree	45	45	45	41	44
Student	Comb. Agree	86	86	89	86	87
Parent	Strong-Agree	46	51	48	45	47
Parent	Agree	48	44	45	47	46
Parent	Comb. Agree	94	95	93	92	94
Educator	Strong-Agree	55	67	42	41	51
Educator	Agree	37	29	44	46	39
Educator	Comb. Agree	92	96	86	87	90
Cluster	Strong-Agree	47	53	45	44	47
Cluster	Agree	43	39	44	45	43
Cluster	Comb. Agree	90	92	89	89	90

Cluster Climate Data for Factor Four, Safety and Discipline

IV	Cluster	Cluster	Cluster	Cluster	Mean
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		One	Two	Three	Four	
Student	Strong-Agree	60	59	62	59	60
Student	Agree	33	34	30	33	33
Student	Comb. Agree	93	93	92	92	93
Parent	Strong-Agree	55	59	54	52	55
Parent	Agree	41	38	42	43	41
Parent	Comb. Agree	96	97	96	95	96
Educator	Strong-Agree	50	63	44	36	48
Educator	Agree	36	29	40	43	37
Educator	Comb. Agree	86	92	84	79	85
Cluster	Strong-Agree	55	60	53	49	54
Cluster	Agree	37	34	37	40	37
Cluster	Comb. Agree	92	94	90	89	91

Cluster Climate Data for Factor Five, Physical School Environment IV

		Cluster One	Cluster Two	Cluster Three	Cluster Four	Mean
Student	Strong-Agree	40	40	49	34	41
Student	Agree	40	39	37	37	38
Student	Comb. Agree	80	79	86	71	79
Parent	Strong-Agree	57	53	66	43	55
Parent	Agree	40	41	32	50	41
Parent	Comb. Agree	97	94	98	93	96
Educator	Strong-Agree	52	48	40	31	43
Educator	Agree	40	40	24	49	38

Educator	Comb. Agree	92	88	64	80	81
Cluster	Strong-Agree	50	47	52	36	46
Cluster	Agree	40	40	31	45	39
Cluster	Comb. Agree	90	87	83	81	85

Cluster - Student Achievement Reading SOL Pass Percentages

DV	Black Pass Adv	Black Pass Pro	White Pass Adv	White Pass Pro	SWD Pass Adv	SWD Pass Pro
1	30	58	47	47	19	61
2	46	49	64	34	28	59
3	45	55	65	35	67	25
4	20	62	32	60	17	46
Mean	35	56	52	44	33	48

SES Pass Adv	SES Pass Pro	5th Gr Pass Adv	5th Gr Pass Pro
30	57	41	51
36	50	61	36
40	54	58	40
24	59	28	58
33	55	47	46

Cluster - Student Achievement Math SOL Pass Percentages

Cluster	Black Pass Adv	Black Pass Pro	White Pass Adv	White Pass Pro	SWD Pass Adv	SWD Pass Pro
1	38	45	57	36	30	47
2	45	49	65	32	35	49
3	45	45	66	32	54	23
4	49	45	45	41	27	41
Mean	44	46	58	35	37	40

SES Pass Adv	SES Pass Pro	5th Gr Pass Adv	5th Gr Pass Pro
39	42	52	38
40	44	62	34
50	36	60	35

32	43	37	42
40	41	53	37

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Appendix K

Clustered Combined Agreement

Clustered Combined Agreement (CA) Responses by % to each Factor

Clustered Combined Agreement

<u>Survey</u>		<u>Cluster I</u>	<u>Cluster II</u>	<u>Cluster III</u>	<u>Cluster IV</u>
<u>Respondents</u>					
Student	Factor 1 (CA)	93	93	92	91
Parent	Factor 1 (CA)	94	95	95	92
Educator	Factor 1 (CA)	95	98	98	86
Cluster	Factor 1 (CA)	95	95	95	90
Student	Factor 2 (CA)	80	86	80	78
Parent	Factor 2 (CA)	95	96	94	88
Educator	Factor 2 (CA)	94	98	97	85
Cluster	Factor 2 (CA)	90	93	91	84
Student	Factor 3 (CA)	86	86	89	86
Parent	Factor 3 (CA)	94	95	92	82
Educator	Factor 3 (CA)	92	92	86	87

	(CA)				
Cluster	Factor 3 (CA)	90	92	89	89
Student	Factor 4 (CA)	93	93	92	92
Parent	Factor 4 (CA)	96	97	95	95
Educator	Factor 4 (CA)	87	92	84	87
Cluster	Factor 4 (CA)	92	94	90	89
Student	Factor 5 (CA)	80	79	86	71
Parent	Factor 5 (CA)	97	94	98	93
Educator	Factor 5 (CA)	92	88	64	80
Cluster	Factor 5 (CA)	90	87	83	81

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