

**Parent, Student, and Teacher Perceptions of School Climate:
Investigations Across Organizational Levels**

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ABSTRACT

South Carolina is one of several states that annually assesses school climate through questionnaire data administered to parents, teachers, and students. The purposes of this study were to investigate the dimensions of school climate; to determine if the perceptions of school climate change from the years between elementary and high school; and to examine the relationships between climate, school report card variables and indicators of school performance, such as standardized test scores. Exploratory factor analysis revealed dimensions of climate underlying responses to the student, teacher, and parent surveys. Four student factors, five teacher factors, and four parent factors were identified. Factor scores, aggregated to the school level, were used along with other report card variables, in a block linear regression analysis to determine how much variance each of the factors could explain in the outcomes. Regression information suggested that the climate surveys can be very helpful in understanding the complex dynamics of the relationships between school-level contexts and school achievement.

INTRODUCTION

Researchers have noted the importance of a positive school climate for teachers, parents, and students. A favorable school climate provides the structure within which students, teachers, administrators, and parents function cooperatively and constructively. Hoy and Miskel (1982) defined school climate as a school's personality, and its importance has intrigued researchers for approximately 50 years (Anderson, 1982). Edmunds (1982) and Lezotte (1990) were prominent in linking climate directly to school effectiveness. School climate has been found to positively affect academic achievement (Greenberg, 2004; Lee & Burkham, 1996; Roney, Coleman, & Schlichtin, 2007; Stewart, 2007), to influence a student's behavior (e.g., conduct problems, depression), and to impact the decision to remain in school (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Byrk & Thum, 1989; Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Loukas & Murphy, 2007; Rumberger, 1995).

For teachers, the benefits of a positive school climate include increased job satisfaction (Ma & MacMillan, 1999), increased retention and attendance, and better home-school relationships (Brown & Medway, 2007; DiStefano, Monrad, May, McGuinness, & Dickenson, 2007). Additionally, a positive school climate has been found to be positively related to indicators of school success, such as standardized test scores, annual yearly progress (AYP) measures, and school report card information (DiStefano et al. 2007; Greenberg, 2004; Sebring, Allensworth, Bryk, Easton, and Luppescu, 2006). While measures of school success are essential for schools to show progress under the guidelines of the No Child Left Behind legislation, assessing school climate has received only passing interest from policy makers as a critical element of accountability.

As students progress developmentally, some students become increasingly disenchanted with school and the school environment (Samdal, Nutbeam, Wold, & Kannas, 1998). This dissatisfaction may express itself as discipline problems, suspensions, and

increases in the high school drop-out rate. A greater understanding of the impact of school climate on performance, especially as students develop from elementary grades to high school, is needed. Educational researchers, school administrators, and teachers would benefit from an in-depth investigation of factors related to school climate and study of the relationship between climate and indicators of school accountability. While these are questions of interest, there have been few studies that investigated school climate spanning organizational levels. This may be because of the lack of a comprehensive data set that encompasses such a wide grade span.

South Carolina is one of a handful of states to include climate data from surveys of students, teachers, and/or parents on their school report cards. The South Carolina school report card was developed in response to requirements of the state's Education Accountability Act of 1998 (SC Code of Laws, Section 2, Chapter 18, Title 59). Specific variables and data elements included on the report card were selected by the General Assembly's Education Oversight Committee working in collaboration with the State Department of Education and the State Board of Education. The inclusion of school climate data from "evaluations of the school by parents, teachers, and students" in the school, district, and state report cards is a specific requirement of the state's accountability legislation (SC Code of Law, 59-18-900 (D)) and the data are collected annually from questionnaires administered to parents, teachers, and students. The resulting information provides an opportunity to investigate the dimensions of school climate and to determine if the perceptions of school climate change from the years between elementary and high school.

Theoretical framework

School climate, as a factor to increase student achievement, has been receiving increased attention in the school improvement literature. The Consortium on Chicago School Research (CCSR) used information from principals, teachers, and students across over 200 schools to identify "five essential supports for school improvement" (Sebring et al., 2006). The CCSR found the important factors to be: leadership, professional capacity (e.g., knowledge,

skills, and disposition of faculty), parent-community ties, climate, and instruction. The CCSR examined the relationship between the five factors and student achievement as measured by a standardized test. The findings showed that schools strong in most (e.g., 3 to 5) essential areas were up to 10 times more likely to make gains in both reading and mathematics scores on the Iowa Tests of Basic Skills (grades 3-8). Improvements in the essential supports also led to improved achievement.

A study of elementary schools in Chicago also highlighted the importance of positive school climate as characterized by mutual trust and respect. According to Bryk and Schneider (2002), schools with a high degree of “relational trust” between administrators, teachers, and parents were more likely to make changes needed to improve student achievement than schools where relationships were poor. While these two studies conducted in the Chicago schools provide support for the dimensional structure of climate, the studies take place in one large, urban school district. Further, the studies were conducted with elementary schools or were not delineated by grade level.

A study by Greenberg (2004) used information on 4th, 8th, and 12th graders from a national database to determine how National Assessment of Educational Progress (NAEP) mathematics scores were affected by school climate. Using exploratory factor analysis, three components of school climate were identified: student behavior, parental involvement, and school morale. The factor structure did not differ by age group. Regression analyses showed that NAEP mathematics scores increased as climate scores improved, even when controlling for school characteristics (e.g., poverty, urbanicity, type of school, and school size). At all three grade levels, schools with the highest school climate scores had higher average math scores. The findings support the notion that school climate is not a fixed school condition and that climate can be changed (Greenberg, 2004). While the Greenberg study provided an investigation of the relationship between student achievement and school climate for different age groups, only mathematics test scores were studied as the outcome variable. Also,

Greenberg noted that most indicators included in the regression equation were fixed school conditions and were not readily within the ability of the schools to change. Including additional predictors of achievement and outcome variables was suggested as an avenue for future research.

The studies by Greenberg (2004), Furlong et al. (2004), and Sebring et al. (2006) recognize the dimensional nature of school climate and its relationship to achievement. However, it is not known how school climate may vary across the grade span from elementary to high school. Further, it is not known how school climate, viewed at different organizational levels, may impact performance indices. The purpose of this study was to investigate the influence of organizational level on school climate and report card variables using a database of parents, students, and teachers across the state of South Carolina. Explicitly, the research questions for this study are:

- 1) Can dimensions of climate be identified underlying student, parent, and teacher responses to the school climate survey across elementary, middle, and high school levels? If so, do the dimensions of climate differ depending on the organizational level of the school?
- 2) How well do climate dimensions and select report card variables predict school performance (e.g., AYP and standardized test scores) at elementary, middle, and high school levels?

METHODOLOGY

School Climate Surveys

Students and parents at selected grades (typically grades 5, 8 and 11) along with teachers at every public school within the state complete a yearly survey to assess the school's learning environment, parent-school relationships, and social and physical factors related to the school. Three items from each survey are included on school and district report cards.

However, the surveys consist of many items, and relationships among these items may provide information about the dimensional nature of climate, according to student, parent, and teacher perspectives. The full versions of the South Carolina 2006 student, parent, and teacher school climate surveys were used in the current study. Each survey is briefly described.

Student survey. The 43-item 2006 student survey includes questions organized into three areas: *Learning Environment*, measuring students' perceptions about the learning context (18 items); *Social and Physical Environment* measuring students' thoughts about building cleanliness, appearance of the grounds, classroom management/ behavior, school safety, and relationships with other teachers/students (17 items); and *Home and School Relationship* measuring the relationship between schools and parents (8 items). Students respond to each item using a 4-point Likert scale ranging from 1=Disagree; 2=Mostly Disagree; 3=Mostly Agree; to 4=Agree.

Teacher survey. There are 69 items on the 2006 teacher survey. While the items differ somewhat from the student survey, the three scales hypothesized for the students are also hypothesized for teachers. There are 26 items included on the *Learning Environment* scale, 16 items on the *Social and Physical Environment* scale; and 11 items on the *Home and School Relationship* scale. In addition, teachers were administered a *Working Conditions* scale, consisting of 13 items. Teachers responded to each item using a 4-point Likert scale: 1=Disagree; 2=Mostly Disagree; 3=Mostly Agree; 4=Agree.

Parent survey. The 2006 Parent Survey consists of 54 items arranged into different sections with varying formats. The survey includes 21 Likert scale questions on three scales (*Learning Environment*, *Home-School Relationship*, and *Social and Physical Environment*). Parents responded to each item using a 5-point Likert scale: 1=Disagree; 2=Mostly Disagree; 3=Mostly Agree; 4=Agree, 5 = 'Don't Know'. In the analyses, the "don't know" option was recoded as missing.

The remaining 33 items on the parent survey are organized into four sections of varying length and format. These sections are labeled “*Parent Participation*,” “*Parent Responsibilities*,” “*Parent Obstacles to Involvement*” and overall “*School Ratings*.” For the present study, only the section with 21 Likert scale items similar to items from the teacher and student surveys were utilized.

State Report Card Variables

Each year South Carolina's public schools are evaluated using the state report card to provide information about how the state's public schools are performing. The report card provides school level information for a variety of variables, including characteristics about the school and its programs (e.g., poverty index, number of art opportunities, and percentage of students in gifted programs), faculty (e.g., teacher and principal experience, percentage of teacher vacancies, number of professional development days, and average salary), and student achievement (e.g., standardized test scores from the Palmetto Achievement Challenge Test (PACT) and annual yearly progress).

The following report card variables were extracted from the South Carolina Department of Education's 2006 state report card file and used in subsequent analyses. These indicators were chosen since they were considered to be those most strongly influenced by programs, approaches, and leadership at the school level, and thus, a school would have some ability to impact scores on these indicators:

- student attendance rate
- percentage of students older than usual for grade
- percentage of students out-of-school because of suspensions or expulsions for violent and/or criminal offenses
- teacher attendance rate
- percentage of teachers with advanced degrees
- percentage of classes not taught by highly qualified teachers
- percentage of teachers with emergency or provisional certificates

- percentage of teachers returning from the previous school year
- number of professional development days per teacher

One additional variable, the school’s poverty index, a measure that combines the percentage of students in the school eligible for Medicaid service with the percentage of students in the school participating in free or reduced price lunch service, was also included in the analyses. This is a variable over which the school has little or no control, but one which is typically strongly related to achievement. This study examined the degree to which the variation in achievement and other outcome measures would be “explained” when the survey and report card data were considered prior to including the poverty index.

Schools and Participants

A unique feature of the current study was the availability of a statewide data set with approximately 120,000 responses from students in grades 3-11, 31,000 parents of students, and 81,000 teachers working in elementary, middle, and high schools. A total of 569 elementary schools, 235 middle schools, and 183 high schools from across the state of SC were included in the database. Survey responses from students, parents, and teachers were arranged into elementary, middle, and high school databases using definitions of school organizations as defined by the South Carolina Department of Education. Table 1 provides the number of students, parents, and teachers in each organizational configuration.

Table 1

Sample Sizes – 2006 South Carolina School Climate Surveys

Climate Survey	Elementary n = 578	Middle n = 226	High n = 185
Students	48,290	42,858	31,823
Parents	32,511	20,034	11,041
Teachers	20,250	9,041	11,219

Outcome Measures

In South Carolina, a school's "absolute value" is the basis for determining a school's absolute rating. This index reflects, among other things, student performance on achievement measures. Ratings are given on a five-point scale ranging from excellent to unsatisfactory. The absolute rating is the major element in determining a school's accountability status in South Carolina and was included in this study as one of the outcome measures. Other outcome indicators included vary depending on the organizational level of the school. These outcomes included the percentages of students scoring proficient or advanced on the Palmetto Achievement Challenge Test (PACT) in English-language arts (ELA) and in math, for elementary and for middle schools; the percentage of tenth grade students passing both sections of the High School Assessment Program (HSAP) on the first attempt; and the high school graduation rate. High school graduation rate was included in the analyses because of its prominence in the accountability reporting and its obvious importance in South Carolina, where graduation rates have historically been among the lowest in the nation. Additional information about the report card indicators and performance outcomes used in the study is available in the 2006-2007 South Carolina Accountability Manual (Education Oversight Committee, 2006)

DATA ANALYSIS

Data analysis was conducted at two levels: the individual level and the school level. For individual-level analyses, parent, teacher, and student samples at each organizational level were randomly split in half, allowing for creation of a validation sample and a replication sample for subsequent analyses. At the school level, individual-level data was aggregated and used along with data from the school report cards. Analyses were conducted using SAS software (version 9.2), LISREL (version 8.54), and R software (version 2.6).

Analysis of School Climate Surveys

Exploratory Factor Analysis. Exploratory factor analysis (EFA) was conducted separately for student, teacher, and parent data sets using the validation samples. The purpose of the EFA was to account for patterns among observed variables by summarizing the data according to themes or dimensions (Comrey & Lee, 1992; Crocker & Algina, 1986; Gorsuch, 1983; Loehlin, 1992). Ideally, no *a priori* hypotheses should be made regarding the number of common factors required to account for the relationships underlying a dataset (Crocker & Algina, 1986). While survey items were written to measure a stated area, it is not known if these dimensions were relevant for each organizational level. Therefore, for this study there were no *a priori* hypotheses regarding the common underlying dimensions of the survey items, and consequently, the EFA was exploratory in nature.

An iterative maximum likelihood factor analysis with promax rotation was used for all data sets. Rotation methods help to redistribute the relationships among factors mathematically, without altering the item-factor relationships to facilitate the interpretability of a factor solution (Comrey & Lee, 1992; Gorsuch, 1983).

A scree plot was used to help determine a starting point for the number of factors needed to summarize the data sets. The plot illustrates the number of factors thought to represent the underlying dimensions of the data set through a graph of the percentage of variance extracted by successive numbers of factors (Gorsuch, 1983). The suggested number of dimensions underlying a data set can be identified at the point in which the graph begins to 'level off' signifying that an additional factor is not contributing much variance to the overall factor solution. Using suggestions from the scree plot, several different factor solutions were run and evaluated for the parent, teacher, and student samples (Gorsuch, 1983).

Each EFA solution was individually evaluated based upon four criteria. First, the presence of simple structure was considered. Simple structure refers to a solution where each item associates strongly with only one factor. Items with a factor loading value of .30 or higher

were kept in the solution. Cross-loadings were considered present if the items were within .10, or if loadings values were above .30 on the secondary factor. Items were dropped if they did not meet the criteria for simple structure. Next, the absence of specific factors was assessed. Specific factors consist of one or two items and indicate that a data set may have been “over factored”. Third, the factor solution was reviewed for interpretability. In order for a factor solution to be informative, the factors should be explainable based on knowledge of the content area. Finally, the percent variance explained by each individual factor as well as the overall set of factors was examined.

Confirmatory Factor Analysis. Confirmatory factor analysis (CFA) procedures were used to compare the final EFA solutions for students, teachers, and parents across the organizational levels and the combined sample. CFA procedures are appropriate to use when a researcher holds prior knowledge of the underlying latent structure of an instrument (Benson, 1998; Byrne, 1998; Hoyle & Panter, 1993). A series of alternative models were developed using information from the EFA runs. Because of known problems when EFA and CFAs are applied to the same set of data (Gorsuch, 1986), the series of CFAs were tested in the replication samples. The series of confirmatory analyses were conducted to determine if one factor analysis solution could be used for all grade levels within the student, teacher, and parent databases or if separate factor solutions by organizational level were needed. Separate factor solutions by grade level would indicate differences in views of school climate possibly due to school organizational level or differences in perceptions of school climate based on the level taught.

For each organizational level, a covariance matrix was used as input. The Maximum Likelihood estimation technique was used to obtain parameter estimates and fit information; however, due to the large sample sizes for each data set, individual parameter estimates were not evaluated. Selected fit information was used to judge the fit of each individual model as well as to compare across the set of alternative models. These seven fit indices were chosen on the

basis of recommendations from Gerbing and Anderson (1993), Hu and Bentler (1999), and Tanaka (1993): (1) Chi-square statistic; (2) goodness-of-fit index (GFI); (3) normed fit index (NNFI); (4) root mean square error of approximation (RMSEA); (5) comparative fit index CFI, (6) standardized root mean residual (SRMR); and (7) expected cross validation index (ECVI). All fit indices are included as part of the LISREL output.

Traditionally, a non-significant Chi-square value has been used as evidence of good model-data fit, but it is widely known today that the Chi-square value is sensitive to model size and non-normality (Bollen, 1989). Attention has shifted to using multiple fit indices that cover different aspects of model-data fit (Gerbing & Anderson, 1993; Schumaker & Lomax, 1996; Tanaka, 1993). The Goodness-of-Fit Index (GFI) is an absolute fit index, and it provides a measure of the amount of variance/covariance in the sample matrix that is predicted by the model implied variance/covariance matrix. Both the Non-Normed Fit Index (NNFI) and Comparative Fit Index (CFI) are incremental fit indices, and test the proportionate improvement in fit by comparing the target model to a baseline model with no correlations among observed variables (Bentler & Bonett, 1980). GFI, NNFI, and CFI values approximating 0.95 were indicative of good fit (Hu & Bentler, 1999). The standardized root mean square residual (SRMR) is the average of the standardized residuals between the specified and obtained variance-covariance matrices (Bollen, 1989; Jöreskog & Sörbom, 1996). The SRMR value should approximate or be less than 0.08 (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) represents closeness of fit and should approximate or be less than 0.05 to demonstrate close fit of the model (Browne & Cudeck, 1993). The 90% confidence interval (CI) around the RMSEA point estimate should contain 0.05 to indicate the possibility of close fit (Browne & Cudeck, 1993). The Expected Cross-Validation Index (ECVI) is a single sample estimate of how well the current solution would fit in an independently drawn sample, and it can be employed to compare the fit of competing models (Browne & Cudeck, 1993). In the present study, the fit information was evaluated in two different ways: within a solution and

across grade spans. First, we wanted to feel comfortable that the number of factors identified through EFA illustrated acceptable fit within each organizational level. Second, we wanted to investigate differences across levels for students, parents, and teachers, respectively.

Factor Scores

After an optimal and final factor solution was identified, factor scores were generated to provide an individual's placement on the factor distribution. The scores are standardized scale scores developed from the factor structure and based upon the weights assigned to individual items. Factor score values generally range from a low of -3 to a high of 3, representing three standard deviations from the mean, where values near zero represent an average performance. Considering climate, positive factor scores depict above average ratings whereas negative scores describe a climate rating that is below average. Factor scores were aggregated to the school level to represent students' and teachers' perceptions of their school's climate across multiple domains. A minimum of 10 individual factors scores at a school were required for the generation of a mean factor score for the school.

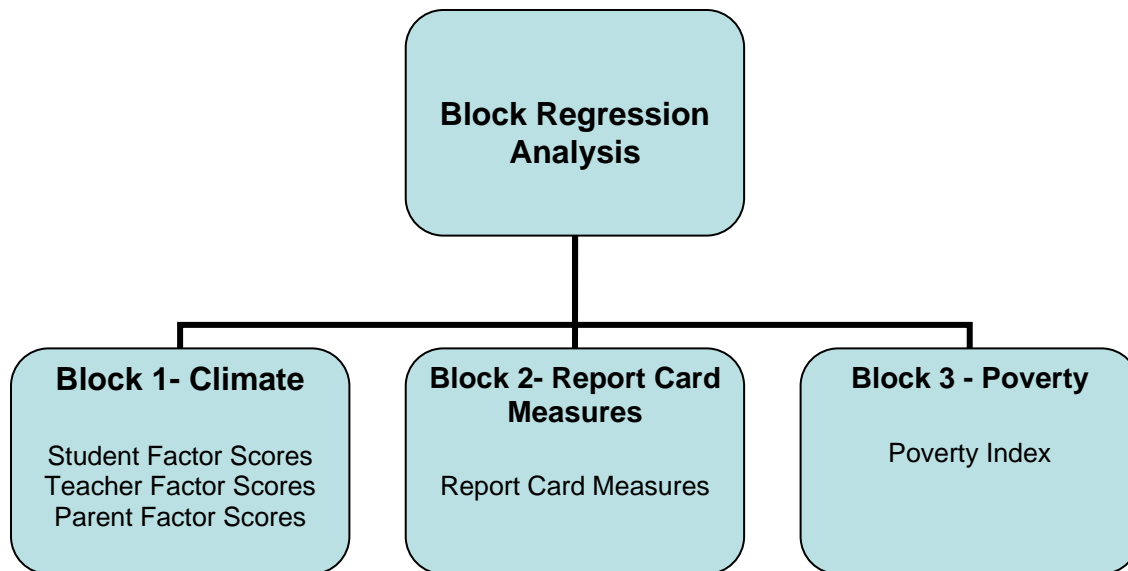
Analysis of Relationships Among Variables

School level information was used to examine relationships between the survey dimensions, contextual variables, and achievement outcomes using correlation.

Correlation Analysis. The Pearson product-moment correlation coefficients between each of the contextual indicators and the outcome measures were computed. Correlation coefficients can range from 0 to +1, where, the higher the number, regardless of sign, the stronger the relationship is between the two variables. Values of .90 or greater indicate a near linear relationship between the two while values near zero suggest no relationship.

Block Regression Analysis. To determine the degree to which the survey data could explain the relationships with school performance outcomes, block regression was used. Here, variables are entered in sets (i.e., blocks) to determine how much variability a block of variables explains in the performance measure. In the regression analyses, survey factor scores (block

one) were entered in the regression equations first, the report card measures next (block two), and the poverty index last (block 3). The Adjusted R -squared value (Adj R-sq) was used to measure the percentage of the variability of the outcome measure accounted for by the set of explanatory variables.



RESULTS

Exploratory Factor Analysis - Results

Scree plots suggested that between three and six factors were underlying the parent, student, and teacher data sets. Each solution was run and evaluated using the aforementioned criteria. In a series of iterations, the Likert scaled items on each survey were factor analyzed. Following each round, cross-loading and low-loading items were identified and eliminated from the analyses. This process resulted in the elimination of 14 items from the teacher survey, from 65 to 51 items and also 8 on the student survey, from 43 to 35 items. No items were eliminated from the parent survey. The final factor analysis solutions are presented in this section.

For the teacher survey, a five-factor solution was determined to be the most interpretable. This five factor solution was identified within each of the three organizational levels. For teachers, the first factor, *Working Conditions/Leadership*, describes the

administrative leadership, perceptions of inclusion of teachers, and enforcement of work-related policies. This factor included items such as: “The school administration provides effective instructional leadership” and “The school administration communicates clear instructional goals for the school.” *Home-school Relationship* describes the relationship between parents and their involvement with school activities. Example items include: “I am satisfied with the home-school relations” and “Parents attend school meetings and other school events.” The third factor, *Instructional Focus*, measures an understanding of instructional standards and high expectations for students to meet those standards. The *Physical Environment* factor measures teachers’ views of the physical environment of the schools and were closely associated with building cleanliness and maintenance. Finally, the factor, *Safety*, expressed teachers’ perceived safety during the school day and while going to and coming from school.

A four-factor solution was thought to be optimal for the student survey within each organizational level. These factors have been named: *Learning Environment*, *Social-Physical Environment*, *Home-School Relationship*, and, *Safety*. The *Learning Environment* factor was defined by items such as: “My classes are interesting and fun,” “My teachers spend enough time helping me learn”, and “I am satisfied with the learning environment in my school.” Positive student responses to these items suggest the existence of a nurturing learning environment in which the student feels supported by teachers and engaged in learning. The second factor, *Social-Physical Environment*, is similar to the *Physical Environment* factor for teachers, with items relating to building cleanliness and maintenance. The third dimension, *Home-School Relationship*, is primarily associated with parent involvement with the school and student learning. The *Safety* factor for students is comparable to that outlined for teachers: the perception of security both at school and coming to and going from school.

A four-factor solution was determined to be optimal for the parent survey within each organizational level. These factors have been named: *Learning Environment*, *Social-Physical Environment*, *Home-School Relationship*, and *Teacher Care and Support*. The *Learning*

Environment factor was defined by items such as: “My teachers encourage my child to learn.” Positive parent responses to these items suggest the existence of a nurturing learning environment in which the student feels supported by teachers and engaged in learning. The second factor, *Social-Physical Environment*, is similar to the *Physical Environment* factor for teachers and students, with items relating to building cleanliness and maintenance. The third dimension, *Home-School Relationship*, is primarily associated with parent involvement with the school and student learning. The *Teacher Care and Support* factor reflects a perception that the teachers are nurturing and supportive of parents.

Confirmatory Factor Analysis - Results

For the series of CFAs, the final EFA solutions were tested for the parent, teacher, and student data sets. This meant testing the final solutions by organizational level as well as with the combined data set across all organizational levels. While solutions with similarly defined constructs were identified, the individual items relating to each dimension differed slightly by organizational level. Thus, the goal with the CFAs was to determine whether a common solution could be used across all organizational levels for a given data set. A common solution would illustrate that the constructs were defined similarly for students and parents, regardless of grade organization and for teachers, regardless of grade taught. Also, one factor solution could be used to represent respondents' perceptions of school climate.

CFAs for the teacher samples fit acceptably within each of the organizational levels and the combined sample. However, fit indices were slightly higher than acceptable for the RMSEA (.08 across all levels) and GFI indices showed poor fit (GFI = .78 across all levels); all other fit indices were within acceptable levels. While these two indices illustrated poor fit, fit was not worse for one model as compared to the other models, but was at the same level for all CFAs tested. All model fit indices overlapped across the four samples, showing that the solutions were statistically equivalent across teachers working at different organizational levels. Based on

this information, we felt comfortable with using one factor analysis result to describe climate in the SC teacher population. This EFA solution for the combined sample of teachers is presented in Table 2.

Table 2.

Items and Factors of the 2006 South Carolina Teacher Survey

Factor		Loading Values				
		Working Conditions/ Leadership	Home-School Relationship	Instructional Focus	Physical Environment	Safety
Items	<i>Working Conditions and Leadership</i>					
	The school leadership makes a sustained effort to address teacher concerns.	95				
	I feel supported by administrators at my school.	94				
	I feel comfortable raising issues and concerns that are important to me.	92				
	My decisions in areas such as instruction and student progress are supported.	83				
	Teachers at my school are encouraged to develop innovative solutions to problems.	79				
	The school administration provides effective instructional leadership.	79				
	Teachers at my school are recognized and appreciated for good work.	76				
	I am satisfied with my current working conditions.	71				
	The level of teacher staff morale is high at my school.	70				
	The school administration communicates clear instructional goals for the school.	69				
	The faculty and staff at my school have a shared vision.	67				
	The school administration arranges for collaborative planning and decision making.	58				
	I am satisfied with the learning environment in my school.	53				
	Sufficient resources are available to allow teachers to take advantage of professional development activities.	50				
	My non-instructional duties do not interfere with my essential role of educating students.	44				
	The rules for behavior are enforced at my school.	40				
There are relevant professional development opportunities offered to teachers at my school.	37					
Rules and consequences for behavior are clear to students.	35					
Teachers respect each other at my school.	35					

Table 2. Cont.

		Loading Values				
		Working Conditions/ Leadership	Home-School Relationship	Instructional Focus	Physical Environment	Safety
Items	<i>Home-School Relationship</i>					
	Parents at my school are interested in their children's schoolwork.		89			
	Parents attend school meetings and other school events.		88			
	Parents attend conferences requested by teachers at my school.		85			
	Parents participate as volunteer helpers in the school or classroom.		80			
	Parents at my school support instructional decisions regarding their children.		80			
	Parents at my school cooperate regarding the discipline problems.		79			
	Students at my school behave well in class.		57			
	Parents at my school understand the school's instructional programs.		55			
	Students at my school behave well in class.		57			
	Parents at my school understand the school's instructional programs.		55			
	Students at my school behave well in the hallways, in the lunchroom, and on school grounds.		54			
	Parents are involved in school in school decisions through advisory committees.		52			
	Students at my school are motivated and interested in learning.		52			
	Parents at my school know about school activities.		40			
	Parents at my school know about school policies.		39			
	Students from different backgrounds get along well at my school.		34			
	<i>Instructional Focus</i>					
	Teachers at my school focus instruction on understanding, not just memorizing facts			82		
	Teachers at my school effectively implement the State Curriculum Standards.			79		
	Teachers at my school have high expectations for students' learning.			79		
	Student assessment information is effectively used by teachers to plan instruction.			72		
	Effective instructional strategies are used to meet the needs of low achieving students.			69		
	My school provides challenging instructional programs for students.			68		
	Instructional strategies are used to meet the needs of academically gifted students.			53		
My school offers effective programs for students with disabilities.			43			
There is a sufficient amount of classroom time allocated to instruction in essential skills.			41			
Computers are used effectively for instruction at my school.			29			

Table 2 Cont.

Factor		Loading Values				
		Working Conditions/ Leadership	Home-School Relationship	Instructional Focus	Physical Environment	Safety
Items	<i>Physical Environment</i>					
	The hallways at my school are kept clean.				88	
	The grounds around my school are kept clean.				83	
	The bathrooms at my school are kept clean.				78	
	The school building is maintained well and repaired when needed.				72	
	There is sufficient space for instructional programs at my school.				32	
Items	<i>Safety</i>					
	I feel safe at my school during the school day.					92
	I feel safe at my school before and after hours.					84
	I feel safe going to or coming from my school.					83

Considering students, the CFAs fit well within each of the organizational levels and for the combined sample. GFI indices were slightly under the guideline of .90 for middle (GFI = .89) and high school (GFI = .87) samples; all other fit indices were within acceptable levels. The fit indices for the CFAs overlapped across the four samples, showing that the solutions were statistically equivalent across students' organizational level. Based on this information, we felt comfortable with using one factor analysis result to describe climate in the SC student population. The final EFA solution for the combined sample of students is presented in Table 3.

Table 3

Items and Factors of the 2006 South Carolina Student Survey

Factor		Loading Values			
		Learning Environment	Social-Physical Environment	Home-School Relationship	Safety
Items	<i>Learning Environment</i>				
	My teachers help students when they do not understand something.	76			
	My teachers spend enough time helping me learn.	70			
	My teachers want me to understand what I am learning, not just remember facts.	62			
	My teachers do a good job teaching me mathematics.	54			
	Teachers work together to help students at my school.	53			
	My teachers expect students to learn.	53			
	My teachers praise students when they do a good job.	51			
	My classes are interesting and fun.	50			
	I am satisfied with the learning environment in my school.	47			
	The textbooks and workbooks I use at my school really help me learn.	45			
	My teachers give tests on what I learn in class.	43			
	My teachers do a good job teaching me English language arts.	42			
	My teachers expect students to behave.	35			
The rules about how students should behave in my school are fair.	33				
Work done by students can be seen on the walls of my school.	31				
Items	<i>Social- Physical Environment</i>				
	Students at my school behave well in the hallways, in the lunchroom, and on school grounds.		83		
	Students at my school behave well in class.		82		
	The bathrooms at my school are kept clean.		54		
	The grounds around my school are kept clean.		49		
	Students from different backgrounds get along well at my school.		44		
	Teachers and students get along well with each other at my school.		43		
	The hallways at my school are kept clean.		40		
I feel safe at my school during the school day.		37			
Broken things at my school get fixed.		31			
Items	<i>Home-School Relationship</i>				
	My parent knows what I am expected to learn in school.			65	
	My parent knows how well I am doing in school.			63	
	My parent helps me with my homework when I need it.			60	
	My school informs my parents about school programs and activities.			53	
	Parents at my school know their children's homework assignments.			51	
	Parents are welcomed at my school.			48	
	Parents volunteer and participate in activities at my school.			48	
I am satisfied with home-school relations.			47		
Items	<i>Safety</i>				
	I feel safe at my school during the school day.				84
	I feel safe at my school before and after school hours.				73
	I feel safe going to or coming from school.				65

For parents, the CFAs fit adequately within each organizational level. GFI indices were under the recommended .90 benchmark for the three groups and RMSEA confidence intervals suggested moderate to poor fit. However, for each organizational level, NNFI, CFI and SRMR values were within acceptable levels. The fit indices for the parent CFAs overlapped across the four samples, showing that the solutions were statistically equivalent across the grade span. Interestingly, the combined dataset illustrated the best fit, with all values exceeding recommended benchmarks. Based on this information, we felt comfortable with using one factor analysis result to describe parents' views of school climate.

Table 4

Items and Factors of the 2006 South Carolina Parent Survey

Factor		Loading Values			
		Learning Environment	Home-School Relationship	Social-Physical Environment	Teacher Care and Support
Items	<i>Learning Environment</i>				
	My child's teachers encourage my child to learn.	88			
	My child's school has high expectations for student learning.	76			
	My child's teachers give homework that helps my child learn.	74			
	My child's teachers provide extra help when my child needs it.	63			
	I am satisfied with the learning environment at my child's school.	56			
Items	<i>Home-School Relationship</i>				
	My child's school considers changes based on what parents say.		71		
	My child's school includes me in decision-making.		65		
	The principal at my school is available and welcoming.		62		
	I am satisfied with the home-school relations at my child's school.		56		
	My child's school schedules activities at times when I can attend.		55		
	My child's school treats all students fairly.		55		
	My child's school gives me information about what my child should be learning in school.		51		
	My child's school returns my phone calls or emails promptly.		44		

Table 4 Cont.

Factor		Loading Values			
		Learning Environment	Home-School Relationship	Social-Physical Environment	Teacher Care and Support
Items	<i>Social- Physical Environment</i>				
	My child feels safe at school.			80	
	I am satisfied with the social and physical environment at my			76	
	Students at my child's school are well behaved.			70	
	My child's school is kept neat and clean.			67	
Items	<i>Teacher Care and Support</i>				
	My child's teachers tell me how I can help my child learn.				79
	My child's teachers contact me to say good things about my child.				76
	My child's teachers invite me to visit my child's classroom during the school day.				64

Correlations Among Contextual Variables and Achievement

Correlations between the survey factor scores, the nine non-survey contextual measures, and nine outcome indicators are presented in Tables 5-7. In addition, the school poverty index, an indicator over which the school has little or no influence, is included in these tables.

The strongest positive correlation, $-.88$, was found between the poverty index and the school absolute value for middle schools. The poverty index was also strongly related to the other outcome measures, with correlations frequently in the $.70$ s and $.80$ s. The survey predictor variable most consistently associated with outcomes was the teacher factor score for home-school relations. Teacher home-school relations correlated with absolute value $.72$ at the elementary level, $.72$ at the middle school level, and $.72$ for the high schools. Its association with the percentage of students scoring proficient or advanced on the PACT was at a comparable level, with correlations in the high $.60$ s or low $.70$ s. It was also associated with both high school outcomes, with correlations of $.58$ for the HSAP and $.65$ for graduation rate.

Table 5

Correlations of Factor Scores and Report Card Variables with School Absolute Value

Predictor	Absolute Value Elem/N			Absolute Value MS/N			Absolute Value HS/N		
Factor score for Student Learning Environment	0.22	**	535	0.05		231	0.27	**	155
Factor score for Student Social-Physical Environment	0.51	**	535	0.43	**	231	0.56	**	155
Factor score for Student Home-School Relationship	0.36	**	535	0.12	*	231	0.17	*	155
Factor score for Student Safety	0.48	**	535	0.51	**	231	0.53	**	155
Factor score for Teacher Work Environment	0.36	**	521	0.36	**	224	0.37	**	151
Factor score for Teacher Home-School Relationship	0.72	**	521	0.72	**	224	0.72	**	151
Factor score for Teacher Instructional Focus	0.47	**	521	0.50	**	224	0.49	**	151
Factor score for Teacher Physical Environment	0.27	**	521	0.25	**	224	0.23	**	151
Factor score for Teacher Safety	0.51	**	521	0.56	**	224	0.37	**	151
Factor score for Parent Learning Environment	0.47	**	523	0.43	**	230	0.45	**	148
Factor score for Parent Teacher Care-Support	0.18	**	523	-0.11	*	230	0.10		148
Factor score for Parent Home-School Relationship	0.45	**	523	0.27	**	230	0.38	**	148
Factor score for Parent Social-Physical Environment	0.64	**	523	0.53	**	230	0.51	**	148
Student attendance rate	0.29	**	535	0.45	**	231	0.44	**	155
% students older than usual for grade	-0.37	**	535	-0.54	**	231	-0.69	**	154
% students with out-of-school suspensions/expulsions	-0.14	**	535	-0.14	*	231	-0.15		154
Poverty index	-0.81	**	534	-0.88	**	231	-0.72	**	155
Teacher attendance rate	0.15	**	534	0.13		230	0.15		155
% of teachers with advanced degrees	0.16	**	535	0.26	**	231	0.35	**	154
% of classes NOT taught by highly qualified teachers	-0.09	**	534	-0.42	**	231	-0.40	**	155
% of teachers with emergency or provisional certificates	-0.28	**	535	-0.52	**	231	-0.48	**	154
% of teachers returning from the previous school year	0.33	**	518	0.50	**	224	0.50	**	151
Number of professional development days per teacher	-0.12	**	532	-0.07		229	0.06		155

Legend: * p < .05 ** p < .01

Table 6

Correlations of Factor Scores and Report Card Variables with Elementary and Middle School PACT

Achievement

Predictor	Proficient+Advanced ELA Elem/ N	Proficient+Advanced ELA MS/ N	Proficient+Advanced Math Elem/ N	Proficient+Advanced Math MS/ N
Factor score for Student Learning Environment	0.24 * ** 520	0.06 226	0.20 ** 520	0.16 * 226
Factor score for Student Social-Physical Environment	0.50 ** 520	0.41 ** 226	0.48 ** 520	0.49 ** 226
Factor score for Student Home-School Relationship	0.37 ** 520	0.13 226	0.33 ** 520	0.20 ** 226
Factor score for Student Safety	0.47 ** 520	0.49 ** 226	0.46 ** 520	0.54 ** 226
Factor score for Teacher Work Environment	0.34 ** 506	0.30 ** 219	0.34 ** 506	0.37 ** 219
Factor score for Teacher Home-School Relationship	0.70 ** 506	0.68 ** 219	0.68 ** 506	0.72 ** 219
Factor score for Teacher Instructional Focus	0.46 ** 506	0.43 ** 219	0.45 ** 506	0.50 ** 219
Factor score for Teacher Physical Environment	0.26 ** 506	0.18 ** 219	0.25 ** 506	0.24 ** 219
Factor score for Teacher Safety	0.49 ** 506	0.49 ** 219	0.46 ** 506	0.55 ** 219
Factor score for Parent Learning Environment	0.48 ** 508	0.44 ** 225	0.44 ** 508	0.45 ** 225
Factor score for Parent Teacher Care-Support	0.21 ** 508	-0.07 225	0.18 ** 508	-0.05 225
Factor score for Parent Home-School Relationship	0.44 ** 508	0.30 ** 225	0.42 ** 508	0.30 ** 225
Factor score for Parent Social-Physical Environment	0.63 ** 508	0.52 ** 225	0.59 ** 508	0.54 ** 225
Student attendance rate	0.29 ** 520	0.41 ** 226	0.29 ** 520	0.46 ** 226
% students older than usual for grade	-0.39 ** 520	-0.55 ** 226	-0.34 ** 520	-0.53 ** 226
% students with out-of-school suspensions/expulsions	-0.13 ** 520	-0.13 * 226	-0.11 ** 520	-0.17 ** 226
Poverty index	-0.79 ** 519	-0.86 ** 226	-0.79 ** 519	-0.82 ** 226
Teacher attendance rate	0.13 ** 519	0.10 225	0.14 ** 519	0.11 225
% of teachers with advanced degrees	0.17 ** 520	0.25 ** 226	0.16 ** 520	0.22 ** 226
% of classes NOT taught by highly qualified teachers	-0.06 519	-0.36 ** 226	-0.03 519	-0.40 ** 226
% of teachers with emergency or provisional certificates	-0.26 ** 520	-0.42 ** 226	-0.25 ** 520	-0.48 ** 226
% of teachers returning from the previous school year	0.31 ** 503	0.45 ** 219	0.31 ** 503	0.49 ** 219
Number of professional development days per teacher	-0.11 * 517	-0.04 224	-0.12 ** 517	-0.05 224

Legend: * p < .05 ** p < .01

Table 7

Correlations of Factor Scores and Report Card Variables with High School Outcomes

Predictor	HSAP / N			Grad Rate / N		
Factor score for Student Learning Environment	0.20	*	160	0.31	**	156
Factor score for Student Social-Physical Environment	0.49	**	160	0.48	**	156
Factor score for Student Home-School Relationship	0.12		160	0.29	**	156
Factor score for Student Safety	0.49	**	160	0.44	**	156
Factor score for Teacher Work Environment	0.35	**	156	0.34	**	152
Factor score for Teacher Home-School Relationship	0.58	**	156	0.65	**	152
Factor score for Teacher Instructional Focus	0.40	**	156	0.39	**	152
Factor score for Teacher Physical Environment	0.18	*	156	0.26	**	152
Factor score for Teacher Safety	0.37	**	156	0.31	**	152
Factor score for Parent Learning Environment	0.33	**	153	0.44	**	149
Factor score for Parent Teacher Care-Support	0.03		153	0.22	**	149
Factor score for Parent Home-School Relationship	0.26	**	153	0.38	**	149
Factor score for Parent Social-Physical Environment	0.42	**	153	0.48	**	149
Student attendance rate	0.38	**	160	0.44	**	156
% students older than usual for grade	-0.61	**	159	-0.64	**	155
% students with out-of-school suspensions/expulsions	-0.06		159	-0.20	*	155
Poverty index	-0.63	**	160	-0.41	**	156
Teacher attendance rate	0.29	**	160	0.04		156
% of teachers with advanced degrees	0.33	**	159	0.22	**	155
% of classes NOT taught by highly qualified teachers	-0.35	**	160	-0.19	*	156
% of teachers with emergency or provisional certificates	-0.46	**	159	-0.26	**	155
% of teachers returning from the previous school year	0.44	**	153	0.39	**	151
Number of professional development days per teacher	0.07		160	0.05		156

Legend: * p < .05 ** p < .01

A striking finding in this study was the number of survey factors with moderate to strong correlations with the outcome measures. Six of the 13 survey factors had correlations of .50 or higher with one or more of the absolute value measures:

- *Student Social-Physical Environment*
- *Student Safety*
- *Teacher Home-School Relationship*
- *Teacher Instructional Focus*
- *Teacher Safety*
- *Parent Social-Physical Environment*

Among the non-survey report card variables deemed to be strongly influenced by the school milieu, the percentages of students older than usual for grade - largely reflecting student retention rate – was most strongly related to outcomes. These values ranged from -.69 for high school absolute value to -.34 for the percentage of students scoring proficient or advanced in math at the middle school level. Two other non-survey report card measure registered correlations of .50 or higher with one or more of the measures of school absolute value:

- the percentage of teachers with emergency or provisional certificates
- the percentage of teachers returning to the school from the previous school year

Multiple linear regression analyses for contextual variables and outcome indicators

The adjusted R-square values are presented in Table 8.

Table 8

Block Regression Summary (with Adjusted R-squares) for Key Outcome Variables

Outcome variable description	Survey only	Survey + report card	Survey + report card + poverty index
Absolute Value for Elementary Schools	0.6408	0.6444	0.7609
Number of Schools	509	489	489
Absolute Value for MS	0.6963	0.7552	0.8416
Number of Schools	223	214	214
Absolute Value for HS	0.6109	0.6837	0.7086
Number of Schools	144	139	139
Proficient+Advanced % ELA (Elementary)	0.6165	0.6158	0.7254
Number of Schools	494	474	474
Proficient+Advanced % ELA (MS)	0.6667	0.7087	0.7852
Number of Schools	218	209	209
Proficient+Advanced % Math (Elementary)	0.5666	0.5735	0.7118
Number of Schools	494	474	474
Proficient+Advanced % Math (MS)	0.6603	0.7148	0.7719
Number of Schools	218	209	209
Percent Passed Both Subtests of HSAP Exam	0.3758	0.5027	0.5194
Number of Schools	149	141	141
Graduation Rate	0.481	0.5522	0.5522
Number of Schools	145	139	139

Inspection of Table 8 indicates that between 38% (with the HSAP) and 70% (with the absolute value for middle schools) of the variation in the outcome measures could be explained by the climate survey data alone. Prediction was best for the middle school values, intermediate for the elementary indicators, and lowest for the high school outcomes. For the key accountability measures upon which school ratings are based, the absolute values, the surveys accounted for 61%-70% of the variation. Table 8 reveals that the addition of the non-survey report card variables (block two) added between almost one-half percentage point (absolute value for the elementary schools) and thirteen percentage points (HSAP) to the adjusted R-squares.

In general, the elementary measures were aided slightly by the addition of block two, but middle and high school adjusted R-squares typically showed improvements of five or more points. When poverty was added to the equations, the adjusted R-squares for the high school outcome measures were little changed, while the middle school measures were moderately improved, between 6 and 8 percentage points. The improvement in predictive power at the elementary schools, on the other hand, was between 9 and 14 percentage points. Overall, the three block regression models accounted for between 52% and 84% of the variation in outcomes.

DISCUSSION

The study identified dimensions of school climate and compared the solutions across students, parents, and teachers in grades 3-11 to determine if school dimensions of climate were similar from elementary to high school. Results from the factor analyses showed similarities in the factors identified across groups as well as across developmental ages. Further, this study used school-level indicators of climate to determine how much variance the climate factors could explain in selected outcome variables.

The series of factor analyses showed that the factor structures were stable across organizational levels. This means that, for a given dataset, identified factors were similar across the grade span -- regardless of developmental age of the student or the level taught by a teacher. While many characteristics of school are thought to change as students' progress (e.g., curriculum), it was interesting to note that measures of school climate were essentially stable for all survey groups regardless of organizational level. Therefore, issues such as school safety, working conditions, and home-school relationships were important, regardless of the grade level.

We do want to stress that the constructs have similar definitions, not that the relationships are the same across organizational levels. For example, elementary students generally held a more positive view of school than did middle school or high school students. While relationships with individual items may differ, what is important is that the same factors were identified in each dataset with the same operational definitions of the constructs. The similarity of the information across solutions allowed for a common factor analytic model to represent students, parents, and teacher datasets.

While similarly defined factors were identified within a dataset, the factors may also be compared across the groups of participants. Factors were similar in definition across the three types of surveys (parent, teacher, and student) and are consistent with dimensions identified with prior research particularly school climate research from the Consortium on Chicago School Research (CCSR). The CCSR used information from principals, teachers, and students across over 200 schools to identify "five essential supports for school improvement" (Sebring et al., 2006). The CCSR found the important supports to be: leadership, professional capacity (e.g., knowledge, skills, and disposition of faculty), parent-community ties, climate, and instruction. Similar dimensions were identified with the SC analyses. The leadership and instructional focus factors were found in both the SC teacher dataset and the CCSR analyses. The professional capacity factor identified by CCSR was similar to the social-physical factor in the SC dataset.

Also, both the parent and teacher datasets identified factors of climate and relationship between home and school (professional-community ties). The consistency between the two studies lends support to the existence of these latent dimensions of climate.

Perceived safety was an important construct for all three response groups. It is noteworthy that the safety items tended to load on a separate factor than the social and physical climate items. Teachers and students viewed safety as distinct from social relationships at the school (e.g., students getting along well together) or from the physical climate (e.g., clean restrooms). Parents perceived safety as the level of teacher care and support. Thus, safety seems to add dimensionality as an important consideration to school climate.

Also of note, is the amount of variance attributed to the poverty index. When included in the regression equation, the poverty index added unique information beyond survey factors. While we recognize that there may be a relationship between poverty and school climate, this index is not readily manipulated by school systems. The relationship between poverty and climate may impact a number of aspects of schooling, from instructional quality and/or leadership at the school to parent support of learning. Schools with large concentrations of poor students, for example, are often found in poorly funded districts where the availability of highly qualified teachers is an issue. Future research may focus on identifying the factors underlying the association between the poverty index and school outcomes. The clarification of this relationship is an essential step in developing the goals, strategies, and programs necessary to effectively address educational improvement.

Many accountability indices, such as poverty, are not readily changeable by schools. A goal of the present study was to investigate relationships between information which schools could manipulate (e.g. school climate) and school performance outcomes. Interestingly, climate factor scores accounted for about two-thirds of the variation in the school achievement measures (PACT and absolute school values). Teacher factor scores for “home school relations” was consistently the most potent predictor of outcomes at the elementary, middle, and

high school levels. Teacher working conditions/leadership was also a powerful predictor across most outcome measures for elementary and middle schools. Initially, schools wanting to improve their performance outcomes may want to focus on improving climate in these two areas.

Limitations of the Study

It should be emphasized that this study represents an analysis of relationships among climate factors, other contextual variables, and measures of school-level performance in South Carolina. While utilizing large data samples, the outcome measures were developed to measure the South Carolina curriculum. The findings may not be generalizable to other educational systems.

Also, we recognize that this was an associative study of archival data, not an experimental study. Correlation is not necessarily causation. While the relationships reported here can be a starting point for examining potential cause and effect, more sophisticated studies of program effectiveness are necessary to establish cause and effect. In the case of the strong negative relationship found between the poverty index and a school's outcome indicators, it is well understood that family income level, *per se*, does not *cause* low achievement.

In summary, this study provided information about factors related to school climate as well as information about how these climate factors may differ across grade span. Understanding school climate can benefit students by promoting achievement, reducing dropout rates, and increasing positive attitudes. For teachers, a better school climate can help foster a positive working environment by reducing absenteeism and stress, lowering turnover rates, and increasing job satisfaction. The large statewide sample is a unique characteristic of this study; most investigations do not have access to a large sample across organizational levels. Finally, the results can provide greater insight about how climate and report card variables impact the prediction of selected accountability outcomes. As shown here, school climate not only impacts

school performance, but this measure is within a school's ability to change. The results may be used to identify factors of climate and school report cards that are alterable as well as highly related to accountability outcomes.

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