The Relationship between School Climate and School Performance

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Abstract

While measures of school success are essential for schools to show progress under state and federal accountability requirements, assessing school climate has received only passing interest from policy makers as a critical element of accountability. This study examined school climate and its relationship to school report card indicators by analyzing statewide questionnaires administered to parents, teachers, and students. The purposes of this study were to investigate the dimensions of school climate and to examine the relationships between climate and report card variables, such as student test scores and graduation rates, using factor analyses, Spearman rank-order correlations, and cluster analyses. Results suggest that the climate surveys can be very helpful in understanding the complex dynamics of the relationships between school-level contexts and school achievement.
The Relationship between School Climate and School Performance

Statement of the Problem

Declining aptitude test results during the 1970s and 1980s, combined with recent unflattering international comparisons, led legislators across the United States to enact far reaching educational accountability measures. Perhaps the most controversial measure, No Child Left Behind (NCLB) Act of 2001, set a goal for all children to demonstrate achievement at least equal to their grade level by the year 2014. While the merits of NCLB and other high stakes accountability systems have been heatedly argued, there is no doubt that in every state there has been an intense focus on academic performance. Too often, the importance of school climate as a critically important contextual factor in which teachers teach and students learn has tended to fade into the background, a casualty of other "priorities." And yet, among the preconditions for school success, there are few rivals to the motivation to teach and the motivation to learn. Often, motivation of teachers, students, and parents hinges on the levels of support, challenge, collaboration, and partnership provided to them by the school - its climate.

According to Perkins (2006), school climate is the learning environment created through the interaction of human relationships, physical setting, and psychological atmosphere. The construct of school climate is generally characterized as multidimensional and representative of shared perceptions of behavior (Ashforth, 1985; Hoy, 1990; Van Houtte, 2005). A favorable school climate provides the structure within which students, teachers, administrators, and parents function cooperatively and constructively. 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, & Schlictin, 2007; Stewart, 2007), to positively 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).
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, Monrad, May, McGuiness, & Dickenson, 2007; Greenberg, 2004; Sebring, Allensworth, Bryk, Easton, Luppescu, 2006; Monrad, May, DiStefano, Smith, Gay, Mindrila, Gareau, & Rawls, 2008). While measures of school success are essential for schools to show progress under the guidelines of the NCLB legislation, assessing school climate has received only passing interest from policy makers as a critical element of accountability.

**Summary of the Methodology**

In 2007, a study was conducted of 32 elementary schools designated as gap-closing schools based upon a 4-year history of high performance on report card indices by historically underachieving students at the identified schools (DiStefano et al., 2007). An important finding of this research was that gap-closing schools differed from other elementary schools on key climate indicators as measured by the state’s school climate surveys in 2005. Given the intriguing findings of this study, University faculty and staff in collaboration with the state’s Department of Education and Education Oversight Committee, decided to pursue state-wide research focused on school climate’s relationship with school performance and school improvement.

Students and parents at selected grades (typically grades 5, 8 and 11) along with teachers at every public school within the state complete an annual survey to assess the school’s learning environment, home-school partnership, and social and physical factors related to the school using a series of Likert-scale items. The 2006 school climate data for all schools in the state were analyzed to identify factors underlying the school climate surveys for teachers, students, and parents. The factor structures were used to create four clusters of elementary, middle, and high schools within the state that varied on the identified dimensions of school climate. The relationship between school cluster membership and outcomes such as student test scores, growth in achievement, and attainment of the NCLB student progress goals was investigated. The goal of the current
study was to validate the work with the 2006 climate surveys by analyzing the state surveys from 2007 using the same techniques as used for the 2006 surveys. Explicitly, the aims of this study were to:

1) Use exploratory factor analytic (EFA) techniques to identify the factor structure of student, teacher, and parent responses to the school climate survey across organizational levels;

2) Investigate the relationships between identified factors, report card variables, and indicators of school performance (e.g., AYP and standardized test scores) for elementary, middle, and high school levels.

To determine which factors were being measured in the school climate surveys, EFA was conducted separately for the 2007 student, teacher, and parent data sets. Principal axis factoring with oblique rotation was used for all data sets and conducted separately by organizational level (elementary, middle, and high). Each EFA solution was evaluated based upon four criteria: percentage of variance explained by the overall set of factors, presence of simple structure, the absence of specific factors, interpretability, and match to theory (Comrey & Lee, 1992; Crocker & Algina, 1986; Gorsuch, 1983). Confirmatory factor analysis (CFA) procedures were used to compare the final EFA solutions for students, teachers, and parents across the organizational levels as well as for a combined sample ignoring organizational level. The series of confirmatory analyses determined that one factor analysis solution could be used for all grade levels within each student, teacher, and parent database. Selected fit information was used to judge the fit of each individual model as well as to compare model-data fit across the set of alternative models.

To investigate the relationship between climate and achievement, Spearman rank-order correlations between factor scores and report card indices were conducted. Second, cluster analyses were conducted to group schools into smaller subsets of similar climate. The cluster analysis used student and teacher factor scores aggregated to the school level to group schools based on climate. Clustering was conducted by organizational level. Cluster membership was used to examine the difference between clusters on schools’ climate factor scores, parent survey responses, and report card variables. These
relationships were then tested using t-tests between most positive and least positive climate groups.

Results

The 2006 EFA solutions showed similarities in the factors identified across groups as well as across developmental ages. EFA results indicated six teacher climate factors: administrative support, home-school partnership, instruction, resources, physical environment, and safety; four student climate factors: instruction, social and physical environment, home-school partnership, and safety; and four parent climate factors: home-school partnership, instruction, social and physical environment, and teacher communication. The 2007 EFA results were completed and replicated these findings, providing support to validate the existence of these constructs. Tests of the reliability for each of the factors on the 2006 and 2007 parent, teacher, and student surveys were conducted. Standardized Cronbach’s alphas ranged from 0.82 (2008 student home-school partnership) to 0.96 (2007 administrative support of teachers). These results revealed that school climate factors had high internal consistency, which means that items proposed to measure the same climate constructs produced similar scores.

Data analyses revealed that six of the climate factors (teacher safety, student safety, teacher home-school partnership, teacher instruction, student social-physical environment, and parent social-physical environment) had correlations of approximately .50 or higher with one or more achievement outcomes across all organizational levels indicating a moderately positive relationship between these factors and achievement outcomes. Even with poverty partialled out, moderate relationships (ranging from .20 to .54) between the factors and achievement still existed. Finally, schools with poor climate, as defined by negative, below average factor scores, did worst on achievement outcomes; schools with a more favorable climate did progressively better on achievement outcomes. These achievement outcomes included the mean percentage of AYP objectives met, the absolute report card ratings by school level, the mean percentage of students performing basic and above or proficient and advanced on state proficiency exams in English language arts and math, the High School Assessment Program, the high
T-test comparisons between groups of schools with most positive climate and schools identified with least positive climate revealed that these differences were significant (p<.0001) with cluster 1 scores reporting higher levels for outcome variables.

**Conclusions**

Compared with other barriers which are not within the locus of control of schools (e.g., high poverty levels and low state funding) negative school climate factors may be changed. Although there is a growing literature dealing with the assessment of school climate, efforts to systematically improve climate have been limited. Changing school climate “requires explicit, targeted, and aligned change efforts at the leverage points” (McGuigan, 2008, p. 112). Results from this study may be used to foster such efforts by providing greater insight about how climate and report card variables impact the prediction of selected accountability outcomes as well as to identify factors of climate and school report cards that are malleable.
References


Biographical Notes
Diane M. Monrad, PhD, is the director of the South Carolina Educational Policy Center in the College of Education at USC-Columbia and a research associate professor in the Department of Educational Leadership and Policies. Dr. Monrad has extensive research experience in program evaluation, educational policy analysis, and assessment of educational reform programs. She is currently a principal investigator for the evaluation of South Carolina's Reading First (SCRF) program and the Center's ongoing study of school climate.

John May, PhD, is senior research analyst in the SC Educational Policy Center and also President of his company, Palmetto Educational Research Solutions. He has worked in educational research for the past 35 years, including 14 years in accountability and research at SCDE and 15 years directing the research and planning efforts in Richland County School District One. Dr. May has authored numerous evaluation reports, coordinated state and district survey programs, and developed and applied approaches to improve schools.

Christine DiStefano, Ph.D., is an Associate Professor of Educational Research Methodology at USC. She has published numerous articles dealing with measurement, survey design, factor analysis, and cluster analysis. She teaches graduate level courses in educational statistics and measurement, survey design, factor analysis, and structural equation modeling (SEM). Her research interests include investigations of multivariate methods used for classification, application of SEM and advanced statistical and measurement techniques to survey data, and survey creation and validation.

Sarah Gareau, MEd, is a Research Associate at the South Carolina Educational Policy Center, where she has worked collaboratively with the USC Office of Program Evaluation to evaluate state and federal education programs, including SCRF, a study of magnet programs, an investigation of gap-closing schools, and analyses of the state's gifted education program and teacher loan forgiveness program. Currently finishing her doctorate in public health, her research interest is policy analysis impacting women and families.

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